

# KELLOGG

**USE — is the Test**

## *LINE CONSTRUCTION MATERIAL CATALOGUE NUMBER 1 - 1917*

“Everything to Connect the Phone to the Board” a listing of poles, cross arms, insulators, brackets, wire, pole hardware and tools for line construction of open wire plant.

Produced in bound soft cover book form, 7 3/4 X 10 inches, 20# coated stock printed in one color by letterpress.

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JKL Museum of Telephony

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1917

# LINE CONSTRUCTION MATERIAL

Everything to Connect  
the Phone to the Board

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**USE IS THE TEST**

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Catalogue No. 1

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY CHICAGO, ILLINOIS

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Branch Offices: Kansas City, Mo. San Francisco, Cal.

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### DISTRIBUTING HOUSES

Canada West Electric, Ltd., Regina, Sask., Can.; The McGraw Co., Sioux City, Iowa;  
The McGraw Co., Omaha, Neb.; Pacific States Electric Co., Los Angeles, Cal.,  
Oakland, Cal., Portland, Ore., Seattle, Wash.; Northwestern Electric Equipment  
Co., St. Paul, Minn.; Duluth, Minn.; Tower-Binford Electric and Mfg. Co.,  
Richmond, Va.; National Telephone Supply and Development Co., Atlanta, Ga.

## TO THE PURCHASER

Index, Pages 106, 107, 108

### TERMS

Our terms are 30 days net with discounts for cash payments within 10 days from date of invoice as stated for various lines of goods on latest net price list applying to this catalog. Purchasers unknown to us should have satisfactory bank or commercial references accompany their first order when it is desired to have same shipped on open account, and a remittance with first order will avoid the delay incident to the necessary credit investigation. Goods may be forwarded by freight with sight draft attached to bill of lading or by express collect on delivery, if a remittance, sufficient to pay express charges both ways, accompanies the order.

### CHANGES AND CANCELLATIONS

Owing to the special nature of many construction materials, changes and cancellations of orders once entered cannot be made without our consent and on terms that will make good all loss and expenses incurred in preparing the order for shipment.

### SHIPMENTS

Shipments are made according to directions received with orders. In their absence we will use our best judgment in making selections of routes. State whether we shall ship by freight, express or parcel post. It is our endeavor to ship standard goods immediately upon receipt of orders, and customers will greatly assist us in making prompt shipments if they will order by number and thus save delay in entering orders correctly.

### CLAIMS

Goods are carefully packed by experienced men, and each article is checked three times before reaching the packing case. Claims for shortage should be made immediately upon receipt of goods, and should be accompanied by the packer's ticket, which is placed in each packing case. Do not deduct from your remittances any charges for freight or express, unless we shall have agreed to allow them.

Do not return goods without writing us, and in all cases when shipping goods back, notify us at once what disposition should be made of them. Transportation charges should be prepaid on all goods returned.

### LIABILITY

We cannot be responsible for packages after having obtained "In good order" receipt from transportation company. All claims for breakage and damage should be made to the carrier.

### PARCEL POST SHIPMENTS

Goods ordered to be shipped by parcel post will only be sent at purchaser's risk of loss or damage unless insured.

We reserve the right to insure mail shipments when we deem them of sufficient value. The additional postage charges incurred will be charged to the customer.

### PRICES

We issue price lists from time to time which are subject to change without notice, and are f. o. b. factory unless otherwise stated, giving latest and lowest market prices upon all standard goods. In asking for quotations please state quantities desired and include on another sheet with name of company and address to facilitate service. Do not include order and request for quotation on same sheet. Please order, as far as possible, all items by code number and name to avoid error.

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### TELEPHONE POLES

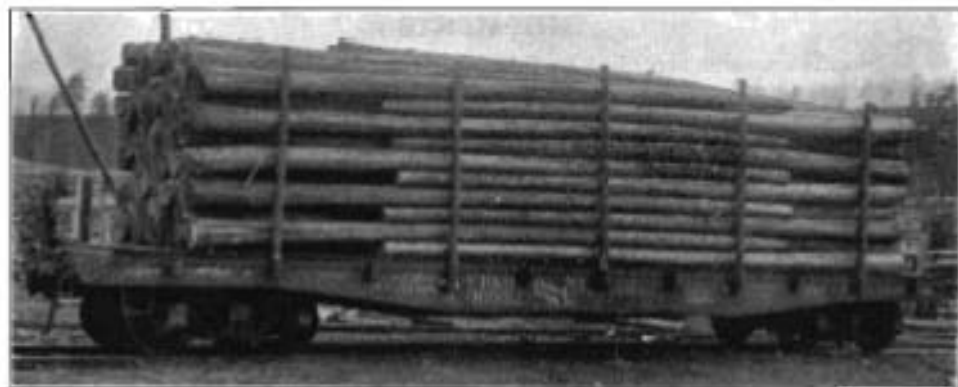
For general telephone line construction we recommend Northern White Cedar Poles. Where large numbers of very long poles are needed or appearance is most essential we advise Western Red Cedar Poles. It is very important in considering Western Poles to have them plenty large at top. Experience has proven and authorities are agreed that because of greater taper—hence more timber at ground line—a 6-inch top Northern Pole is equal to a 7-inch top Western Pole. We advise butt treatment of all Western Poles—Northern Poles will render excellent service without treatment; however, treatment by either the dipping process or the brush method is a very good investment.

All Cedar Poles furnished by us are thoroughly seasoned—carefully selected and graded—each pole must be fully up to Standard Specifications to pass the critical judgment of our inspectors.

All shipments are made from stock, immediately when ordered, subject only to car supply. Principal shipping points—Gladstone, Michigan; Minneapolis and Duluth, Minnesota.

A POLE FOR EVERY PURPOSE under standard or special specifications, including butt treatment—when full carload of poles is not needed can fill with fence posts.

Full price data supplied promptly upon receipt of list of needs, and point of delivery.



2 in. 20 ft. Northern White Cedar

#### OFFICIAL N. W. C. A. SPECIFICATIONS REVISED JANUARY 31st, 1917

All poles shall have been cut from live green growing Northern White Cedar timber. No pole shall contain both the maximum crook and the maximum butt rot. Not more than 10 per cent of the number of pieces of any lot or shipment shall contain the maximum crook or butt rot. If not to exceed 2 per cent of the pieces in any lot or shipment are below minimum size and there is equal number as large as minimum for next larger size the shipment shall be considered up to size. Circumference shall govern top sizes. Poles shorter than 20 feet may be either 2 inches longer or 2 inches shorter than specified length—poles 20 feet and longer may be short of specified length  $\frac{3}{4}$  inch for each 5 feet of length or may be 6 inches longer than specified length. All poles shall be peeled and knots closely trimmed. Knots are permitted if sound, smoothly trimmed and do not plainly impair strength of the pole. Short kinks not permitted. Sap or skid rot not permitted. Poles of minimum top size required must have sound tops. When 1 inch or more in circumference above minimum top size may have one pipe rot not more than  $\frac{3}{4}$  inch in diameter. Butt or ring rot combined shall not exceed 10 per cent of the area of the butt. Winding twist permitted unless very unsightly and exaggerated. Cat faces permitted if sound and if distance from top is not less than 20 per cent of the length of 30 foot and shorter poles. 25 per cent on 35 foot and longer poles. Discoloration is not a defect. Crook or sweep below ground line not to exceed diameter of butt. Above ground line reverse sweep and two way sweep allowed providing line drawn from center of pole at top to center at ground line does not leave pole at any point. One way sweep not to exceed maximum shown in table on following page.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## MINIMUM TOP SIZES SEASONED TIMBER

4 in. top, circumference 12 in.	6½ in. top, circumference 20 in.
4½ in. top, circumference 13½ in.	7 in. top, circumference 22 in.
5 in. top, circumference 15 in.	8 in. top, circumference 24 in.
5½ in. top, circumference 17 in.	9 in. top, circumference 27 in.
6 in. top, circumference 18½ in.	

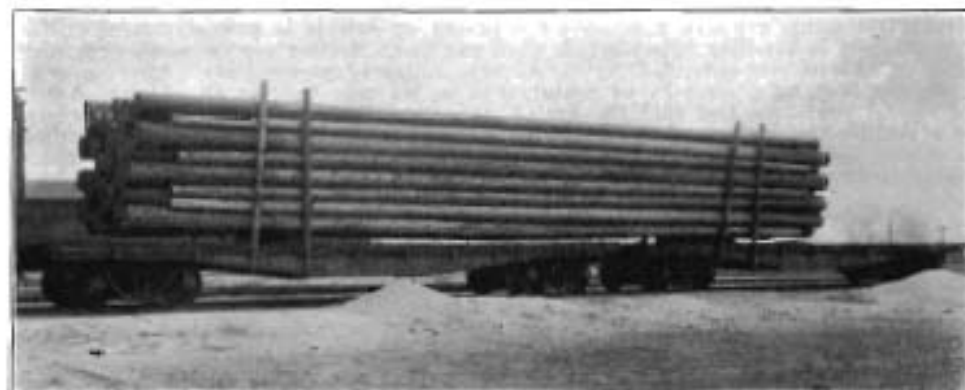
## MAXIMUM SWEEP ALLOWED BETWEEN TOP AND GROUND LINE. GROUND LINE 4 FEET FROM BUTT ON 16, 18 AND 20 FEET, 6 FEET FROM BUTT ON ALL LONGER LENGTHS

36 ft., 18 ft. and 20 ft. .... 4 in.	50 ft. .... 10 in.
30 ft. .... 5 in.	55 ft. .... 11 in.
30 ft. .... 6 in.	60 ft. .... 12 in.
35 ft. .... 7 in.	65 ft. .... 13 in.
40 ft. .... 8 in.	70 ft. .... 14 in.
45 ft. .... 9 in.	

## TABLE OF STOCK SIZES AND LENGTHS—WEIGHTS—NUMBER REQUIRED FOR CARLOAD

Size	Estimated Weight	Shipping Weight	Standard Carload Pieces	Size	Estimated Weight	Shipping Weight	Standard Carload Pieces
4 in. 16 ft. ....	85 lbs.	79 lbs.	420-640	Scant 7 in. 25 ft. ....	250 lbs.	240 lbs.	125-190
5 in. 16 ft. ....	105 lbs.	95 lbs.	340-520	7 in. 25 ft. ....	250 lbs.	240 lbs.	125-190
6 in. 16 ft. ....	135 lbs.	128 lbs.	270-410	8 in. 25 ft. ....	450 lbs.	380 lbs.	85-125
7 in. 16 ft. ....	165 lbs.	158 lbs.	220-345	9 in. 25 ft. ....	275 lbs.	250 lbs.	110-205
8 in. 16 ft. ....	200 lbs.	188 lbs.	190-280	Scant 8 in. 30 ft. ....	275 lbs.	250 lbs.	120-190
9 in. 16 ft. ....	240 lbs.	220 lbs.	155-230	8 in. 30 ft. ....	250 lbs.	240 lbs.	125-190
4 in. 18 ft. ....	95 lbs.	79 lbs.	400-600	Scant 7 in. 30 ft. ....	250 lbs.	240 lbs.	125-190
5 in. 18 ft. ....	125 lbs.	120 lbs.	330-485	7 in. 30 ft. ....	450 lbs.	380 lbs.	85-125
6 in. 18 ft. ....	155 lbs.	155 lbs.	245-360	8 in. 30 ft. ....	800 lbs.	680 lbs.	60-95
7 in. 18 ft. ....	190 lbs.	180 lbs.	195-280	4 in. 35 ft. ....	275 lbs.	260 lbs.	120-200
8 in. 18 ft. ....	230 lbs.	200 lbs.	155-235	6 in. 35 ft. ....	450 lbs.	380 lbs.	85-125
9 in. 18 ft. ....	270 lbs.	240 lbs.	120-220	Scant 7 in. 35 ft. ....	450 lbs.	420 lbs.	70-205
4 in. 20 ft. ....	140 lbs.	80 lbs.	375-560	7 in. 35 ft. ....	600 lbs.	480 lbs.	60-95
Scant 5 in. 20 ft. ....	180 lbs.	90 lbs.	335-500	8 in. 35 ft. ....	850 lbs.	680 lbs.	45-65
5 in. 20 ft. ....	180 lbs.	100 lbs.	300-450	4 in. 40 ft. ....	625 lbs.	500 lbs.	60-90
Scant 6 in. 20 ft. ....	130 lbs.	120 lbs.	230-340	Scant 7 in. 40 ft. ....	625 lbs.	600 lbs.	50-75
6 in. 20 ft. ....	230 lbs.	150 lbs.	280-380	7 in. 40 ft. ....	350 lbs.	310 lbs.	45-65
7 in. 20 ft. ....	250 lbs.	200 lbs.	250-370	8 in. 40 ft. ....	1,100 lbs.	900 lbs.	35-50
8 in. 20 ft. ....	350 lbs.	280 lbs.	195-240	9 in. 40 ft. ....	900 lbs.	720 lbs.	40-120
9 in. 20 ft. ....	450 lbs.	360 lbs.	95-225	7 in. 45 ft. ....	1,100 lbs.	830 lbs.	70-100
4 in. 25 ft. ....	150 lbs.	150 lbs.	320-475	8 in. 45 ft. ....	1,350 lbs.	1,100 lbs.	35-50
5 in. 25 ft. ....	200 lbs.	160 lbs.	190-280	4 in. 50 ft. ....	1,250 lbs.	970 lbs.	45-100
Scant 6 in. 25 ft. ....	200 lbs.	180 lbs.	185-270	7 in. 50 ft. ....	1,250 lbs.	1,000 lbs.	45-60
6 in. 25 ft. ....	280 lbs.	280 lbs.	150-215	8 in. 50 ft. ....	1,700 lbs.	1,380 lbs.	45-60

Estimated weight is average for all seasons. Our poles, being thoroughly seasoned before shipment, weigh less than this estimate.



8 in. 40 ft. Western Red Cedar Butt Treated

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### OFFICIAL W. R. C. A. SPECIFICATIONS REVISED JULY 15th, 1912

All poles shall be cut from live growing timber, peeled, knots trimmed close, ends sawed square. Tops must be sound and measure as follows in circumference:

4 in. top, 12 in. circumference	8 in. top, 25 in. circumference
5 in. top, 15 in. circumference	9 in. top, 28 in. circumference
6 in. top, 18½ in. circumference	10 in. top, 31 in. circumference
7 in. top, 22 in. circumference	

**CROOK**—One crook one way only permitted if sweep does not exceed 1 inch for every 6 feet in length to be measured by stretching a tape line from top of pole to a point 6 feet from the butt.

**BUTT ROT**—In center of pole, including small ring rot, shall not exceed 10 per cent of the area of the butt. Butt rot of a character which impairs the strength of the pole above the ground is a defect. Large knots, if sound and trimmed smooth, are a defect. Sound, dead or dry streaks are not considered a defect unless they materially impair the strength of the pole.

### NUMBER OF POLES REQUIRED FOR STANDARD CARLOAD

Size	Estimated Weight	Standard Carload	Size	Estimated Weight	Standard Carload
6 in. 25 ft.	250 lbs.	175-225 pcs.	7 in. 40 ft.	675 lbs.	90-120 pcs.
7 in. 25 ft.	325 lbs.	150-175 pcs.	8 in. 40 ft.	800 lbs.	85-110 pcs.
8 in. 25 ft.	400 lbs.	120-140 pcs.	8 in. 45 ft.	1,000 lbs.	70- 85 pcs.
6 in. 30 ft.	325 lbs.	130-175 pcs.	8 in. 50 ft.	1,200 lbs.	60- 75 pcs.
7 in. 30 ft.	400 lbs.	120-150 pcs.	8 in. 55 ft.	1,400 lbs.	55- 70 pcs.
8 in. 30 ft.	550 lbs.	90-120 pcs.	8 in. 60 ft.	1,600 lbs.	50- 65 pcs.
6 in. 35 ft.	450 lbs.	120-150 pcs.	8 in. 65 ft.	1,850 lbs.	45- 60 pcs.
7 in. 35 ft.	550 lbs.	100-120 pcs.	8 in. 70 ft.	2,200 lbs.	40- 50 pcs.
8 in. 35 ft.	650 lbs.	90-110 pcs.			

40 ft. and shorter poles load in single cars.  
45 ft. and longer poles load in double cars.

### TREATMENT OF POLES

This is without doubt one of the most important subjects to the independent telephone companies in sections which have such climatic extremes of cold and hot, wet and dry, as to render pole treatment most advantageous, and, considering the great increase in life which can be had from proper treatment, the setting of untreated poles is absolutely wrong from an economic standpoint and is wholly inexcusable in view of the fact that the cost of a thorough and effective treatment is now much less than formerly.

Brush treatments are recommended only for now existing lines set untreated and when for any reason the poured treatment herein recommended cannot be used. Brush treatments are also valuable for touching up defects in poured treatment due to abrasions in handling between pole yard and line. Neither are the more expensive tank treatments recommended for the average Independent company. Anyone, however, can heat up a quantity of preservative in his pole yard in an old iron kettle or similar container, and pour the hot oil over the pole butts, catching the drippings in a shallow pan so they can be re-heated. The saving in labor costs by this method is almost sufficient to pay for the extra quantity of oil so used, while there is absolutely no comparison in the efficiency of results. The pouring method should be used regardless of whether the entire butt is to be treated or whether the treatment is to be confined to a short distance above and below the neck rot line. What we recommend is a heavy poured treatment at the neck rot line, giving the pole at this point all the oil it can be made to absorb, while the lower portion, well below the ground line, can be given a lighter treatment, consisting of a single pouring. Be sure to remove all inner bark before attempting treatment.

Pole tops and gains can be treated in the same manner by pouring the hot oil with a large cup or dipper and catching the surplus in an ordinary pail.

We recommend the use of "Barrett's Carbosota Grade One Liquid Creosote Oil," or its equivalent, as per Government reports available to you on other oils of like nature. We stock Carbosota.

### THE ECONOMY OF CREOSOTING YOUR POLES

The average life of untreated cedar poles is 14 years.

The approximate increase in life due to treatment with creosote by the brush method is 5 years.

The approximate increase in life due to creosote treatment by the open tank or poured system is 10 to 15 years.

The life of a pole is dependent upon its decay resisting qualities.

95 per cent of all poles are destroyed by decay.

4 per cent of all poles are destroyed by insects.

1 per cent of all poles are destroyed by mechanical abrasion.

Coal-tar creosote oil has proved to be the most efficient agent to protect wood from decay.

Coal-tar creosote oil has been practically in use as a wood preserver since 1838.

Good engineering practice requires that poles shall be preserved from decay, under all conditions.

Coal-tar creosote oil is recommended as the most efficient preservative.

### TREATMENT OF CROSS-ARMS

While the majority of Independent companies have already adopted the practice of treating poles, very few of them realize that equal advantages are to be derived from the treatment of cross-arms, which is very inexpensive and a necessary procedure if maximum life is to be gotten from the arms.

For proper results, heat the oil in the dripping pan recommended for poured treatment of pole butts. Don't get the oil hotter than 150 degrees Fahr., as over-heated oil may make the arms brittle. The treatment of arms in this manner is rapid and convenient, involving very little labor expense and using a comparatively small quantity of oil. Arms must be thoroughly dry at time of treatment. If they are exposed to sun and wind for a few days after treatment they will not be disagreeable to handle, although gloves should be of course worn at all times when handling either freshly treated arms or poles.

For best results arms should be pinned up before being treated. The taper of the pin allows the hot oil to enter perfectly and when arms are treated before being pinned it is frequently found almost impossible to insert either treated or untreated pins.

### CROSS ARMS

For durability and strength, fir has no equal as a cross arm material. Yellow pine was once used extensively, but the test of time has proven it so far inferior to fir that it can no longer be considered in first-class and durable construction.

Arms of all other material are likely to be weakened by knots at critical points, such as pin holes near the center. Fir arms do not warp or twist in the weather like yellow pine—the pin holes remain true, therefore, no splitting or wasting of arms when driving the pins as is often the case with yellow pine. All our arms are made from the best quality, old growth, fine grain, Douglas fir—the best cross-arm lumber in the world. They will last practically twice as long as any other arm. Their first cost is but a trifle more than that of yellow pine, and by reason of their lighter weight, the delivered cost is almost the same. Hence we would recommend their use in every instance.

Cross arms should be attached to poles with a single  $\frac{1}{2}$ -inch or  $\frac{5}{8}$ -inch steel machine bolt with square head and nut fitted with square washers. Years ago it was customary to fasten cross arms to poles with two lag screws, but this method was never satisfactory and has almost been abandoned. Common iron carriage bolts with round heads are frequently used to fasten cross arms to pole, but the round head makes it almost impossible to remove the arm if desired after the nut and threads have rusted. The galvanized steel machine bolt is the only system, for attaching arms to pole, we would recommend.



Six-pis Fir Telephone Cross Arm

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## DIMENSIONS AND WEIGHTS OF BOTH WASHINGTON FIR AND LONG LEAF YELLOW PINE

### Standard Telephone Arms—2½x3¼

Length	Standard Spacing			Weight	
	C	S	E	Fir Arms	Pine Arms
24 in. 2 pin.....	18	.....	3	5 lbs.	6.5 lbs.
30 in. 2 pin.....	24	.....	3	6.25 lbs.	8½ lbs.
36 in. 2 pin.....	30	.....	3	7.5 lbs.	9.75 lbs.
42 in. 4 pin.....	16	10	3	8.75 lbs.	11¾ lbs.
62 in. 6 pin.....	16	10	3	13 lbs.	16.8 lbs.
82 in. 8 pin.....	16	10	3	17 lbs.	22.2 lbs.
102 in. 10 pin.....	16	10	3	21.25 lbs.	27½ lbs.

### Long Distance Arms—3¼x4¼

3 ft. 2 pin.....	28	.....	4	10.2 lbs.	13.2 lbs.
4 ft. 4 pin.....	16	12	4	13.6 lbs.	17.6 lbs.
5 ft. 4 pin.....	18	17	4	17 lbs.	22 lbs.
6 ft. 4 pin.....	22	21	4	20.4 lbs.	26.4 lbs.
6 ft. 6 pin.....	16	12	4	20.4 lbs.	26.4 lbs.
8 ft. 6 pin.....	18	17½	4	27.2 lbs.	35.2 lbs.
8 ft. 8 pin.....	16	12	4	27.2 lbs.	35.2 lbs.
8½ ft. 10 pin.....	16	9¾	4	28.9 lbs.	37.4 lbs.
10 ft. 8 pin.....	17½	15¾	4	34 lbs.	44 lbs.
10 ft. 10 pin.....	16	12	4	34 lbs.	44 lbs.

### Railroad Arms—3x4¼

6 ft. 4 pin.....	22	21	4	19.2 lbs.	24.6 lbs.
6 ft. 6 pin.....	16	12	4	19.2 lbs.	24.6 lbs.
8 ft. 6 pin.....	18	17½	4	25.6 lbs.	32.8 lbs.
8 ft. 8 pin.....	16	12	4	25.6 lbs.	32.8 lbs.
10 ft. 8 pin.....	17½	15¾	4	32 lbs.	41 lbs.
10 ft. 10 pin.....	16	12	4	32 lbs.	41 lbs.

Pin holes on above arms will be bored, unless otherwise specified, as follows: Telephone and Long Distance Arms—¼-inch. Railroad Arms—⅜-inch.

As fir arms come from the Pacific Coast, a great saving in freight is effected by having carloads shipped direct to destination. Write for delivered prices, stating quantity and sizes wanted. Special sizes and borings furnished to order in car lots at no additional cost.

## WOOD PINS AND BRACKETS

### STANDARD INSULATOR PINS

Size	Std. Pkg. Per Bag	Ptd. Oak Wt. per M	Std. Locust Wt. per M
1¼x 8	250	300	325
1½x 9	250	400	450
	Top		
1½x12	1 in.	550	600
1½x12	1¼ in.	600	650
1½x12	1 in.	1000	1200
1½x12	1¼ in.	1100	1300

### TRANSPOSITION OR LONG THREAD INSULATOR PINS

Size	Material	Wt. per M
1¼x 9	Painted Oak	350
1¼x 9	Locust	400
1½x10	Painted Oak	450
1½x10	Locust	500

### CORNER PINS COMPLETE WITH PLAIN BOLTS AND WASHERS

Size	Material	Wt. per M
1¼x 8	Painted Oak	600
1¼x 8	Locust	625
1½x 9	Painted Oak	725
1½x 9	Locust	775



Standard



Transposition



Corner

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## WOOD PINS AND BRACKETS



Duplex



Pole Step



Pole or Side Bracket



Western Union Pin



Ridge Iron

### DUPLEX INSULATOR PINS

Size	Material	Wt. per M
1 1/2 x 1 1/4	Painted Oak	450
1 3/4 x 1 1/4	Locust	500
1 1/2 x 1 2	Painted Oak	600
1 1/4 x 1 2	Locust	650

### WOOD POLE STEPS

1 1/2 x 2 1/4 x 7 inches, Oak	500
Plain, painted or creosoted.	

### STANDARD POLE OR SIDE BRACKETS

These Brackets are fastened to pole or wall by spikes. Holes in Brackets are 3/8-inch diameter.

Size	Material	Wt. per M
No. 4 1 1/2 x 2 x 10	Painted Oak	500
No. 1 1 1/2 x 2 x 12	Painted Oak	700
No. 3 1 1/2 x 2 1/4 x 12	Painted Oak	800
L. D. 1 3/4 x 2 x 12	Painted Oak	800
No. 2 2 x 2 1/4 x 12	Painted Oak	1000
W. U. 2 x 2 1/4 x 12	Unpainted Oak	1100

### STANDARD WESTERN UNION STEEL PINS

Complete With Paraffined Wood Tops

Size	Wt. per C
1/2 x 9 1/2	60
3/8 x 9 1/2	95

### RIDGE IRONS

Ridge Irons are fastened to top of pole by lag screws and are used to carry an extra wire. No. 1 is punched to take 3/8-inch lag screws and 1/2-inch pin. No. 2 is punched to take 1/2-inch lag screws and 3/8-inch pins. No. 3 is punched to take 1/2-inch lag screws and 3/8-inch pins.

Pins or lags are not included in price of ridge irons.

No.	Size	In. High	In. Pole	Wt. per C
No. 1	1/2 x 2 1/4	7	6	140
No. 2	3/8 x 2 3/4	8	7	300
No. 3	1/2 x 2 3/4	8 3/4	7	450

### ALL WOOD TOP STEEL PINS

Complete with Bolt, Nut and Washer

These pins consist of a thoroughly paraffined wood top with a bolt extending through the top for clamping to cross-arms.

Under extraordinary strain these pins will bend, but on account of being reinforced will not break. They also increase the strength of the line over the use of wood pins on account of the smaller holes required in the cross-arms.



No.	Dia. of Top	Dia. of Base	Length of Wood Top	Size of Bolt	Weight per 100
10	1	1 3/8	4 1/2	1/2 x 5 1/2	55
11	1	1 3/8	4 1/2	1/2 x 9 1/2	77
20	1	2 1/4	5 1/2	1/2 x 6 1/2	70
21	1	2 1/4	5 1/2	1/2 x 10 1/2	90
22	1	2 1/4	5 1/2	1/2 x 11 1/2	97
30	1 1/4	2 1/4	4	3/8 x 9	117
40	1 1/4	2 1/4	4 1/2	3/8 x 10 1/2	132
50	1 1/4	2 1/4	5 1/2	3/8 x 10 1/2	142
60	1 1/4	2 1/4	6 1/2	3/8 x 12 1/2	165
70	1 3/8	2 1/2	8	3/8 x 9	148
71	1 3/8	2 1/2	8	3/8 x 14	188
80	1 3/8	2 3/4	9	3/8 x 10 1/2	172
81	1 3/8	2 3/4	9	3/8 x 16	217
90	1 3/8	2 3/4	9	1/2 x 10 1/2	225
91	1 3/8	2 3/4	9	1/2 x 16	290

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POLE LINE HARDWARE

### FLAT CROSS-ARM BRACES



Braces are punched with a  $\frac{1}{8}$  and a  $\frac{1}{4}$  inch hole one inch from each end. Standard bundles are of 20 braces each.

Size	Weight per 1000	Size	Weight per 1000	Size	Weight per 1000
1 x $\frac{1}{8}$ x 20	1000	1 $\frac{1}{2}$ x $\frac{1}{2}$ x 24	1700	1 $\frac{3}{4}$ x $\frac{1}{4}$ x 22	1835
1 x $\frac{1}{8}$ x 22	1100	1 $\frac{1}{2}$ x $\frac{1}{2}$ x 26	1840	1 $\frac{3}{4}$ x $\frac{1}{4}$ x 24	2000
1 x $\frac{1}{8}$ x 24	1200	1 $\frac{1}{2}$ x $\frac{1}{2}$ x 28	1980	1 $\frac{3}{4}$ x $\frac{1}{4}$ x 26	2165
1 $\frac{1}{2}$ x $\frac{1}{2}$ x 20	1420	1 $\frac{1}{2}$ x $\frac{1}{2}$ x 30	2120	1 $\frac{3}{4}$ x $\frac{1}{4}$ x 28	2335
1 $\frac{1}{2}$ x $\frac{1}{2}$ x 22	1560	1 $\frac{3}{4}$ x $\frac{1}{4}$ x 20	1670	1 $\frac{3}{4}$ x $\frac{1}{4}$ x 30	2500

### ANGLE IRON ALLEY ARM BRACES WITH FORGED ENDS AND STEP



Alley braces are punched with  $\frac{1}{8}$ -inch holes, one for attaching to cross-arm and two for attaching to pole.

Size	Weight per 100	Size	Weight per 100
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$ x 5 feet long	750	1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$ x 6 feet long	1240
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$ x 5 feet long	1050	1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$ x 7 feet long	1725
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$ x 5 feet long	1280	2 x 2 x $\frac{1}{2}$ x 10 feet long	3500

### ANGLE IRON DOUBLE SPAN CROSS-ARM BRACES



Size	All Holes Punched 9/16 Diameter	Weight per 100
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	42 inch centers 12 inch drop	780
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	48 inch centers 14 inch drop	890
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	60 inch centers 18 inch drop	1110
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	66 inch centers 20 inch drop	1220
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	72 inch centers 22 inch drop	1330

### ANGLE IRON VERTICAL BRACES

Size	Weight per 100	Size	Weight per 100
2 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	210	2 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	402
3 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	410	3 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	763
4 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	610	4 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	1122
2 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	315	2 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	495
3 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	525	3 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	935
4 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	870	4 arm 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$	1375

### CROSS-ARM BACK BRACES

Size	Weight per 100
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x 6 feet Flat	1210
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$ x 5 feet Angle Iron	690
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{1}{2}$ x 6 feet Angle Iron	830

### DOUBLE ARMING BOLTS



Bolt includes four nuts but no washers. Bolts up to 12 inches have 4-inch thread on each end. Bolts longer than 12 inches have 6-inch thread on each end.

Size	Wt. per 100	Std. Pkg.	Size	Wt. per 100	Std. Pkg.	Size	Wt. per 100	Std. Pkg.	Size	Wt. per 100	Std. Pkg.
$\frac{1}{2}$ x 12	88	225	$\frac{1}{2}$ x 13	107	240	$\frac{1}{2}$ x 15	159	275	$\frac{1}{2}$ x 22	249	349
$\frac{1}{2}$ x 13	90	240	$\frac{1}{2}$ x 14	115	255	$\frac{1}{2}$ x 16	167	290	$\frac{1}{2}$ x 24	274	369
$\frac{1}{2}$ x 14	93	270	$\frac{1}{2}$ x 15	123	270	$\frac{1}{2}$ x 17	184	320	$\frac{1}{2}$ x 26	317	420
$\frac{1}{2}$ x 15	96	225	$\frac{1}{2}$ x 16	129	300	$\frac{1}{2}$ x 18	211	325	$\frac{1}{2}$ x 28	349	469
$\frac{1}{2}$ x 16	100	225	$\frac{1}{2}$ x 17	143	315	$\frac{1}{2}$ x 19	246	360	$\frac{1}{2}$ x 30	361	469
$\frac{1}{2}$ x 17	103	225				$\frac{1}{2}$ x 20	284	390	$\frac{1}{2}$ x 32	382	469

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POLE LINE HARDWARE

### MACHINE BOLTS OR CROSS-ARM THROUGH BOLTS



All bolts 7 inches to 12 inches, inclusive, have 4-inch threads.  
 All bolts 13 inches and longer have 6-inch threads.  
 All bolts 6 inches and shorter have 1½-inch threads.

Size	Weight per 100	Std. Pkg.	Size	Weight per 100	Std. Pkg.	Size	Weight per 100	Std. Pkg.
¾x 3½	15	...	½x13	80	250	¾x18	166	150
¾x 4	16	...	½x14	85	250	¾x20	182	100
¾x 4½	18	...	½x15	90	250	¾x22	198	100
¾x 5	19	...	½x16	96	250	¾x24	214	100
½x 4	32	...	¾x 8	86	225	¾x26	230	100
½x 4½	35	...	¾x 9	94	200	¾x10	150	125
½x 5	37	...	¾x10	102	200	¾x11	162	125
½x 6	43	...	¾x11	110	200	¾x12	173	125
½x 7	48	...	¾x12	118	175	¾x13	185	100
½x 8	53	400	¾x13	126	175	¾x14	196	100
½x 9	58	350	¾x14	134	150	¾x16	219	125
½x10	64	300	¾x15	142	175	¾x17	231	125
½x11	69	300	¾x16	150	175	¾x18	242	125
½x12	74	250	¾x17	158	175	¾x20	265	100

### CARRIAGE OR BRACE BOLTS



Size	Weight per 100	Size	Weight per 100
¾x3	13	½x4	30
¾x3½	15	½x4½	33
¾x4	17	½x5	36
¾x4½	18	½x6	41
¾x5	19		

### GIMLET POINT LAG SCREWS



Size	Weight per 100	Size	Weight per 100
¾x2¼	9	½x3	19
¾x3	10	½x3½	21
¾x3½	11	½x4	23
¾x4	12	½x4½	26
¾x4½	13	½x5	28
¾x5	14	½x6	32
¾x2½	16	½x7	37

### WELDED EYE BOLTS



Bolts up to 12 inches long have 4-inch thread.  
 Bolts longer than 12 inches have 6-inch thread.

Size	Wt. per 100	Std. Pkg.	Size	Wt. per 100	Std. Pkg.	Size	Wt. per 100	Std. Pkg.
½x 6	56	300	½x16	119	225	¾x12	151	150
½x 8	69	250	½x18	132	200	¾x14	170	125
½x10	82	250	½x20	144	150	¾x16	189	150
½x12	95	200	¾x 8	113	175	¾x18	208	150
½x14	107	175	¾x10	132	175	¾x20	227	100
						¾x10	205	
						¾x12	233	
						¾x14	260	
						¾x16	287	
						¾x18	314	
						¾x20	341	

POLE LINE HARDWARE

TURNBUCKLES



Size	Weight per 100	Size	Weight per 100	Size	Weight per 100
1/4 x 6	170	3/8 x 9	340	3/4 x 9	460
1/4 x 9	225	3/8 x 12	425	3/4 x 12	510
1/4 x 12	300				

BUTT PLATES OR HUB GUARDS



These guards are used to protect base of poles from wagon hubs. All holes punched 3/8-inch diameter for 3/4 boat spikes or nails.

Size	Wt. per C
15x18	1335
18x22	2100

STRAIN PLATES



These plates are nailed to pole beneath guy wire to prevent guy from digging into the pole.

Size	Wt. per C
4x8 by No. 14 gauge	90

POLE PROTECTION STRIPS OR CRIBBING GUARDS



These strips are nailed to the pole to prevent horses gnawing the pole.

Size	Wt. per C
2 inches by 4 feet by No. 24 gauge	90

WIRE ROPE THIMBLES



Size	Wt. per C	Size	Wt. per C
3/4	6	3/2	18
7/8	8	3/4	36
1	10	3/4	55
1 1/8	15		

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

POLE LINE HARDWARE

POLE SHIMS



These shims are nailed to pole to prevent guy wire from digging into pole. Shims are punched with 3/4-inch holes, 1/4 inch from each end.

Size	Wt. per C
1 x 7/8 x 8.....	45
1 1/4 x 7/8 x 8.....	60

IRON POLE STEPS



Size	Weight per M	Std. Pkg per Keg
7/8 x 9.....	690	325
3/4 x 9.....	830	250
3/4 x 10.....	920	250

GUY RODS WITH WELDED EYES



One square nut included but no washer.

Size	Wt. per 100	Size	Wt. per 100	Size	Wt. per 100
1/2 x 5.....	295	3/4 x 7.....	680	3/4 x 7.....	950
1/2 x 6.....	340	3/4 x 8.....	770	3/4 x 8.....	1080
1/2 x 7.....	395	3/4 x 4.....	595	1 x 9.....	1210
3/4 x 4.....	415	3/4 x 5.....	730	1 x 8.....	2350
3/4 x 5.....	500	3/4 x 6.....	840	1 x 10.....	2900
3/4 x 6.....	590				

WIRED GROUND RODS



Five turns of No. 10 B. & S. Copper Wire with a 6-inch free end are soldered to rod to insure good connections.

Size	Wt. per 100	Size	Wt. per 100	Size	Wt. per 100
1/2 x 5.....	340	1/2 x 6.....	370	3/4 x 6.....	565

GROUND RODS



Size	Wt. per 100	Size	Wt. per 100	Size	Wt. per 100	Size	Wt. per 100
1/2 x 5.....	176	1/2 x 5.....	330	3/4 x 7.....	390	3/4 x 7.....	640
3/4 x 6.....	213	1/2 x 6.....	360	3/4 x 6.....	555	3/4 x 8.....	725

SQUARE WASHERS



Size	Wt. per 100	Std. Pkg
2x2x1/4-inch for 1/2 and 3/8-inch bolt.....	13	1500
2 1/2 x 2 1/4 x 3/8-inch for 3/4 and 3/4-inch bolt.....	25	1000
3x3x3/8 for 3/4-inch bolt.....	45	600
4x4x3/8 for 3/4 and 1-inch bolt.....	84	350
5x5x3/8 for 1, 1 1/4 and 1 1/2-inch bolt.....	128	150

POLE LINE HARDWARE

ROUND WASHERS



Size	Wt. per 100	Std. Pkg.
1 1/4-inch diameter by No. 14 gauge, 7/8-inch hole..	2	1000
1 1/4-inch diameter by No. 12 gauge, 7/8-inch hole..	3	500
1 1/4-inch diameter by No. 10 gauge, 7/8-inch hole..	4	200
2-inch diameter by No. 9 gauge, 1 1/8-inch hole.....	7	300

UNIVERSAL MESSENGER HANGERS



These hangers are used to suspend messenger wire which in turn suspends the cable.

No.	Size	Wt. per C	Pkg.
1	1 1/2 x 2	300	50
2	3/8 x 1 1/4	240	100

NON-BREAKABLE MESSENGER HANGER



Installed with one through bolt. They hold the messenger strand securely and are absolutely safe for both men and cable.

Galvanized by hot dip process.

Made with two sizes of grooves, one for 7/8-inch strand and smaller, the other for 1 1/4-inch strand and larger. When ordering, specify the size of strand to be used.

Weight, 150 pounds per hundred.

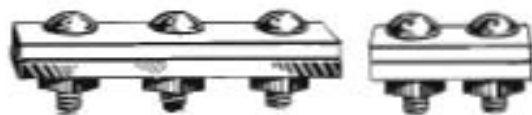


CABLE SUSPENSION CLAMP

This clamp is used where a cheaper hanger than the Universal is required.

Size	Wt. per C
2 1/2 x 2 3/4-inch 1 bolt.....	90

ROLLED STEEL GUY CLAMPS



Size	Wt. per C	Std. Pkg.
2 bolt 3-inch.....	110	150
3 bolt 4-inch.....	150	150
3 bolt 6-inch.....	210	100

UNIVERSAL MALLEABLE IRON GUY CLAMPS



Size	Wt. per C	Std. Pkg.
2 bolt.....	100	200
3 bolt.....	160	150

MATTHEWS TWO-BOLT CLAMPS



Eliminate beating up of guy wires and clamps.

Can be installed in four minutes.

Combine the advantages of the Crosby Clip and the Clamp.

Will hold five times as much as ordinary three-bolt clamp.

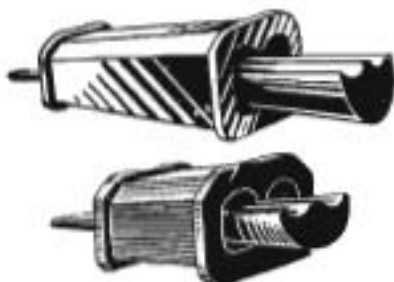
One Chain Lever is needed for each crew.

Weight of clamp, 1 1/4 pounds each.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POLE LINE HARDWARE

### MATTHEWS BOLTLESS GUY CLAMPS



Made in two sizes, the Giant and the Baby. The Giant is designed for use on  $\frac{3}{4}$  and  $\frac{5}{8}$ -inch strand and the Baby for use on  $\frac{1}{2}$  and  $\frac{3}{8}$ -inch strand. There can be no slipping, for the heavier the strain the tighter the wedge is pulled.

It requires but three minutes to install.

Will hold all the strain you will care to put on the strand.

Shipping weight per 100, Baby, 50 lbs.; Giant, 130 lbs.

### WIRE ROPE CLIPS



Size	Wt. per C
$\frac{1}{4}$	16
$\frac{3}{8}$	71
$\frac{1}{2}$	27
$\frac{3}{4}$	46
$\frac{5}{8}$	70

We can furnish either the malleable iron or the genuine Crosby Drop Forged wire rope clips.

### GUY HOOKS



Size	Std. Pkg.	Wt. per C
$1\frac{1}{2} \times \frac{3}{4} \times 4$ -inch 1 bolt.....	350	75
$1\frac{1}{2} \times \frac{3}{4} \times 6$ -inch 2 bolts.....	250	90
$1\frac{1}{4} \times \frac{3}{4} \times 4$ -inch 1 bolt.....	225	90

### STEEL BRACKETS



No. 145

Mfrs. No.	Extension	Size Channel Inches	Mounting Holes	Std. Bundle	Weight per 100
145	$3\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$	25	56
150	$3\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$	25	74

### Vertical Brackets



No. 110-111

No. 150

Mfrs. No.	Wire Spacing	Extension	Size Channel	Mounting Holes	Std. Bundle	Wt. per 100
234	8	$3\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$	25	90
235	12	$3\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$	25	110
236	10	$3\frac{1}{2}$	1	$\frac{5}{8}$	25	143

No. 234-236-236

### Transposition and Cross-Arm Brackets

Mfrs. No.	Wire Spacing	Extension	Size Channel	Mounting	Std. Bundle	Weight per 100
110	...	$3\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$ U Bolt	25	108
111	...	$3\frac{1}{2}$	1	$\frac{3}{4}$ U Bolt	25	170
237	10	3	$\frac{3}{4}$	$\frac{3}{4}$ U Bolt	20	201
437	$6\frac{1}{2}$ & 10	3	$\frac{3}{4}$	$\frac{3}{4}$ U Bolt	10	400

No. 227

No. 427

POLE LINE HARDWARE



No. 3 MARLINE CABLE HANGERS

The hooks are made from No. 9 spring steel wire and are regalvanized by hot dip process after being formed, thus making them practically rustless. The galvanizing is guaranteed to comply with the requirements of the Standard Chemical test.

No. 1 MARLINE CABLE HANGERS

Our No. 1 grade has been used by the telephone trade for years and has given excellent satisfaction. The smaller sizes are made from two-ply Marline and the larger from three-ply Houeline. The hooks are made of No. 9 galvanized steel wire.

No. 3 Marline Cable Hangers

Size Pair	Length of Loop Inches	Material	Wt. Lbs. per 1000
25	9	3-Ply Houeline	35
50	11	3-Ply Houeline	37
75	12	3-Ply Houeline	38
100	14	3-Ply Houeline	40
150	15	3-Ply Houeline	42
200	16	3-Ply Houeline	45

Furnished with No. 9 hook.

No. 6 Regalvanized hooks can be furnished on this grade at special prices.

No. 1 Marline Cable Hangers

Size Pair	Length of Loop Inches	Material	Wt. Lbs. per 1000
25	9	2-Ply Marline	30
50	11	2-Ply Marline	33
75	12	2-Ply Marline	34
100	14	3-Ply Houeline	40
150	15	3-Ply Houeline	42
200	16	3-Ply Houeline	45

Furnished with No. 9 hook.

"SWISHER" CABLE HANGER

Patented March 29, 1910

The Swisher Hanger is easy to install. The marline is secured at both ends of the hook, so it is not possible for the hook to open up when subjected to any extraordinary strain.

Another feature of the formation is that it precludes the possibility of the hook becoming detached from the strand.

Material Used

Hooks are galvanized by hot dip process after they are formed. Marline is 3-Ply Pure American Hemp material.



Cable Style	Will Hang Cable Max. Diameter Inches	Approx. Wt. Lbs. Packed per 1000	Cable Style	Will Hang Cable Max. Diameter Inches	Approx. Wt. Lbs. Packed per 1000
25 pair	1 1/16	25	200 pair	2 1/2	45
50 pair	1 1/8	28	250 pair	2 3/8	52
75 pair	1 1/16	30	300 pair	2 13/16	58
100 pair	1 1/8	32	400 pair	2 25/32	65
150 pair	1 1/16	35			

PIERCE STANDARD CABLE HANGER

Patented January 12, 1909

The hook and marline on the Pierce Hanger are furnished separated. This allows marline to be fastened to cable and readily attached to hooks.

The hooks are made of No. 9 wire, which is galvanized after forming. The hook supporting the marline from each side, it is not possible to open the hook under any strain.



Size Cable	Will Hang Cable Max. Diameter Inches	Standard Quantity	Standard Quantity Lbs.	Style
25 Pair	1 1/8	2000	56	2-Ply Marline
50 Pair	1 1/4	2000	57	2-Ply Marline
75 Pair	1 1/2	2000	58	2-Ply Marline
25 Pair	1 1/8	2000	57	3-Ply Houeline
50 Pair	1 1/4	2000	58	3-Ply Houeline
75 Pair	1 1/2	2000	59	3-Ply Houeline
100 Pair	1 3/4	2000	60	3-Ply Houeline
150 Pair	1 7/8	2000	61	3-Ply Houeline
200 Pair	2	2000	62	3-Ply Houeline
250 Pair	2 1/8	1000	34	3-Ply Houeline
300 Pair	2 1/4	1000	35	3-Ply Houeline
400 Pair	2 1/2	1000	36	3-Ply Houeline

Packed 100 hangers to carton.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POLE LINE HARDWARE AERIAL CABLE RINGS



Single Hook  
Standard Type



Single Hook  
Lapped Type



Double Hook  
Type

### For Suspending Aerial Cable and Bridle Wires

Single hook standard and lapped type rings are used for bridle wire and small cables. Double hook rings should be used for 50 pair and larger sizes of cable.

### Method of Installing

The rings are fastened to the messenger strand by means of special tools. The lineman doing this work inserts a small pilot line which is used to pull through the regular running rope. The cable is then pulled through the rings by means of a team or automobile.

### Material Used in Manufacture

The rings are made of a high-grade quality of mild steel. They are galvanized by hot dip process after they are formed. The galvanizing is smooth and guaranteed to comply with standard specifications.

### As Cable Hangers

The rings are strong and serviceable. They are neat in appearance and allow cable plenty of freedom for expansion and contraction.

	Takes Cable	Std. Pkg. per Bag	Approx. Ship. Wt. per M lbs.
Single Hook:			
1 3/4-inch Standard Type, 5 to 100 pr. cable.....		1000	60
1 3/4-inch Lapped Type, 5 to 100 pr. cable.....		1000	62
Double Hook Type:			
1 3/4-inch, 5 to 100 pr. cable.....		1000	73
2 -inch, 100 to 150 pr. cable.....		500	82
2 1/2-inch, 150 to 300 pr. cable.....		500	90
3 -inch, 300 to 500 pr. cable.....		500	105
3 1/2-inch, 500 pr. and over.....		250	115



### CRIMPING PLIERS

#### For Attaching Aerial Cable Rings

These drop forged tools are strong and light, and can be handled easier and quicker than other styles on the market.

No. 1 size is intended for use on 1 3/4-inch and 2-inch rings only.

No. 2 size for 2 1/2-inch and larger rings.

### DAVIDSON CABLE HANGERS



#### Every Trial Order Makes a Permanent User

This hanger prevents sleet and ice from packing between messenger and cable. Can be attached quickly and neatly without use of tools. Made in three sizes as listed here.

	Length	Capacity		
		Strand	Cable	
No. 1.....	7 3/8 in.	3/8 in.	3/4 in.	30 lbs. per M.
No. 2.....	11 in.	3/4 in.	1 1/4 in.	50 lbs. per M.
No. 3.....	14 in.	3/4 in.	1 3/4 in.	65 lbs. per M.
No. 4.....	16 in.	3/8 in.	2 in.	80 lbs. per M.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POLE LINE HARDWARE

### NEVERSLIP CABLE RINGS



Neverslip Rings are applied by hand, no tool required. Rings fit  $\frac{1}{4}$  to  $\frac{1}{2}$  strand. Neverslip Rings can be installed over or removed from an existing cable without injury to the ring or strand. They never become junk.

	Wt. per 1M.		Wt. per 1M.
No. 2 2 -inch Ring.....	175 lbs.	No. 3 3 -inch Ring.....	235 lbs.
No. 2½ 2½-inch Ring.....	200 lbs.	No. 3½ 3½-inch Ring.....	270 lbs.

### SPRING-ON CABLE RINGS

Cameron spring-on cable rings are made in sizes same as Cameron Cable Rings and while not so wide are much thicker. They are oval, having a flat bearing surface for riding cable and are not easily affected by the elements. They are strong and durable. No tools required for their installation.

### ENAMELED AND HOT GALVANIZED BRIDLE RINGS

For Carrying and Distributing Wires

	Style	Eye Inches	Opening Inches	Length Inches	Shank Size	Steel	Wt. per M
<p>Bridle Ring</p>	A	1½	¾	1½	¾		160
	B	1¾	¾	¾	¾		160
	C	1¾	¾	1½	¾		140
	D	1¾	¾	¾	¾		130
	E	¾	¾	¾	¾		48
	F	3	¾	1¼	¾		540
	G	3	¾	1¼	¾		540

### DIAMOND DRIVE RINGS

A convenient and easily installed bridle ring for use in buildings where it is desirable to carry or group the telephone wires.

These rings are driven into the wall with a hammer or hand ax and the wire looped in afterwards—the work of a few seconds.

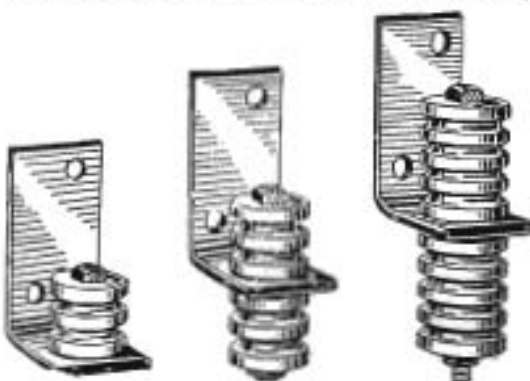
Diamond drive rings are galvanized and come in two sizes,  $\frac{1}{2}$ -inch and  $1\frac{1}{4}$ -inch.



# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POLE LINE HARDWARE TELEPHONE HOUSE AND POLE BRACKETS

This cut illustrates manner in which these brackets are usually assembled, although Brackets, Bolts and Porcelain Knobs are always shipped unassembled.

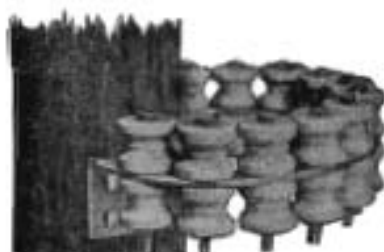


Bolts and Brackets are always furnished hot galvanized.

House Brackets are made from  $\frac{3}{8}$  x  $1\frac{1}{4}$  inch steel with three holes  $\frac{5}{8}$ -inch diameter provided for mounting to wall. A  $\frac{3}{8}$  x 2-inch machine or stove bolt is used for mounting one Double Groove Knob or a  $\frac{3}{8}$  x  $3\frac{1}{2}$ -inch for mounting two Double Groove Knobs.

Pole Brackets are made from  $\frac{3}{4}$  x 2-inch steel with two holes  $\frac{5}{8}$ -inch diameter provided for mounting to pole. A  $\frac{3}{4}$  x 3-inch machine or stove bolt is used for mounting one Four Groove Knob or a  $\frac{3}{4}$  x  $5\frac{1}{2}$ -inch for mounting two Four Groove Knobs.

Size Bracket	Wt. per C	Size Bolt	Flat Head Stove Bolts Wt. per C	Square Head Machine Bolts Wt. per C
$\frac{3}{8}$ x $1\frac{1}{4}$ House	37	$\frac{3}{8}$ x 2	6	7
		$\frac{3}{8}$ x $3\frac{1}{2}$	9	10
$\frac{3}{4}$ x 2 Pole	100	$\frac{3}{4}$ x 3	12	15
		$\frac{3}{4}$ x $5\frac{1}{2}$	19	22



11 Knobs

### HORSE SHOE KNOB RACK

Hot Galvanized

Rack made of  $1\frac{1}{2}$  x  $\frac{3}{4}$ -inch flat steel, hot forged.  
11 knobs.....7 $\frac{1}{4}$  lbs. 22 knobs.....11 lbs.

### DISTRIBUTING CIRCLE AND SEAT

Hot Galvanized

Circle is 41 inches in diameter, made of 1 $\frac{1}{4}$ -inch channel. 24 single brackets are furnished with the 24 pair. 24 double brackets are furnished with the 48 pair. Seat,  $\frac{3}{8}$ -inch maple creosoted.

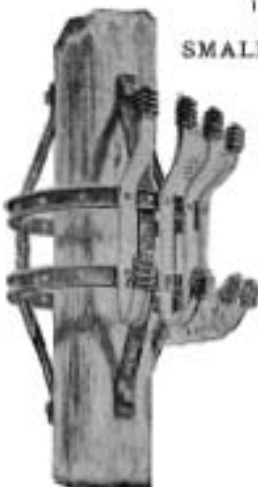
24 pair.....65 lbs. 48 pair.....77 lbs.

### SMALL DISTRIBUTING CIRCLE

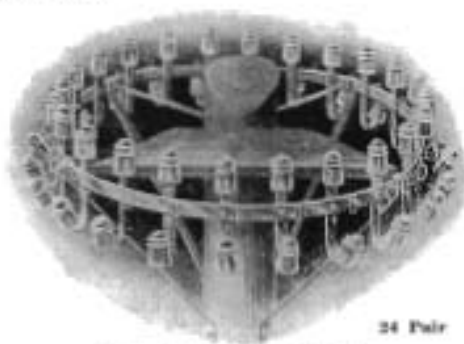
Hot Galvanized

Rings are 14 inches in diameter, split to allow erection below existing cross-arms, etc. Rings and braces made of 1-inch channel. Takes 15 No. 20 brackets, which are attached only as needed.

Circle complete ..... 22 lbs.  
Circle and braces, only ..... 10 lbs.  
Brackets and bolts, only ..... 7 $\frac{1}{2}$  lb.



Small Distributing Circle



24 Pair

Distributing Circle and Seat

POLE LINE HARDWARE



4 Knobs

PEIRCE VERTICAL KNOB RACK

Hot Galvanized

Has solid drop forged eye bolts. Very secure fastening for twisted pair telephone wires.

4 knobs.....2½ lbs.      6 knobs.....3 lbs.      8 knobs.....4¾ lbs.

DOUBLE TUBE WIRE CONNECTORS

Telephone Electric Light and Power Transmission Sizes



For splicing Electric Light, Power Transmission and Telephone Wires.  
Use Copper Sleeves for Copper Wire. For Iron Wire we recommend Tinned Copper Sleeves to produce best results.

Double Tube Sleeves are manufactured accurately to size of the best grade of pure copper. They are guaranteed both as to quality and workmanship.



This cut shows a Copper Sleeve after being twisted, sleeve and wires forming one solid piece, producing practically a welded joint.

All sleeves to be twisted with two pairs of Lineman's Connectors.

COPPER SLEEVES FOR COPPER WIRE

Size Wire	Length Inches	Approx. Ship. Wt. in Lbs. per 1000 Sleeves	Size Wire	Length Inches	Approx. Ship. Wt. in Lbs. per 1000 Sleeves
0000 B. & S.....	20	1580	4 B. & S.....	6	130
000 B. & S.....	18	910	6 B. & S.....	6	100
00 B. & S.....	16	570	8 B. & S.....	5½	60
0 B. & S.....	14	450	9 B. & S.....	5¼	50
1 B. & S.....	12	295	10 B. & S.....	4¾	35
2 B. & S.....	9¾	188	12 B. & S.....	4½	25
3 B. & S.....	8¾	165	14 B. & S.....	4	22
4 B. & S.....	8	100	17 B. & S.....	4	17

TINNED COPPER SLEEVES FOR IRON WIRE

10 B. W. G....	5½	65	14 B. W. G....	4½	30
12 B. W. G....	4¾	45			

TINNED STEEL SLEEVES FOR IRON WIRE

10 B. W. G....	5½	55	14 B. W. G....	4½	30
12 B. W. G....	4¾	35			

B. & S.—Brown & Sharpe.

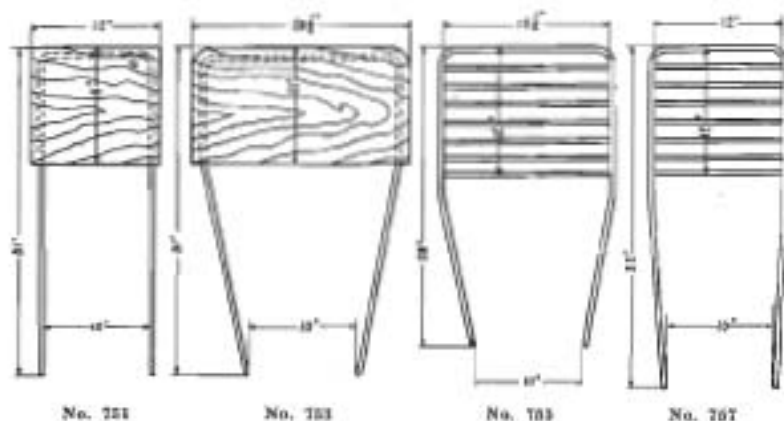
B. W. G.—Birmingham wire gauge.

POLE LINE HARDWARE  
POLE SEATS



These Seats, in a competitive test, held a dead load of 1,740 pounds without deflection. A  $1\frac{1}{4}$ -inch angle iron seat, weighing 50 per cent more, collapsed with 960 pounds load.

The frames and braces of all styles are of  $1 \times \frac{3}{8}$ -inch channel steel. The wood seats are  $1\frac{1}{4}$ -inch cypress, boiled in creosote. The bars of the all-steel seats are  $\frac{3}{8}$ -inch square steel, let into the frame in such manner as to leave no projecting ends. There is no strain on the riveted joints. The bars are placed with corners up to prevent slipping. They are shipped completely assembled in bundles of five.



Detail Dimensions

Stock No.	Old No.	Finish	Wt. Lbs. Per 100
750	1	Painted	1260
751	1	Galvanized	1260
752	2	Painted	1400
753	2	Galvanized	1400
754	3	Painted	1400
755	3	Galvanized	1400
756	4	Painted	1260
757	4	Galvanized	1260



POLE LINE HARDWARE

THE NEVER-CREEP ANCHOR



The reason why the "Never-Creep" is so powerful is because it actually bolts through the solid earth and it is just as easy to understand why it holds as it is to understand why a cross-arm bolted to a pole is more secure than one lagged on. Isn't that plain?

The hole made for the "Never-Creep" anchor plate can be left open and the holding power will be just the same—or, it may be filled with water and still the holding power is not affected.

The "Never-Creep" is quicker and easier installed than any other anchor that requires the boring of a hole to set.

NOTE HOW SIMPLE

Bore the hole; drive the rod and hang on the plate—simple, isn't it? It is easier done than explained.



Never-Creep Anchor Rod and Plate

NEVER-CREEP INSTALLING BAR



WOOD INSERT CAST MAUL  
Has 2 Wooden Faces and 2 Iron Faces



14-lb. Maul, for 1/2, 3/4 and 1 rods.  
18-lb. Maul, for 1-inch rods.

"NEVER-CREEP" ANCHORS

Complete with Galvanized Rod's

Code	No	Size of Plate	Size of Rod	Wt. in Lbs.
Baby	314 1/2	1 1/2 x 10	1/2 x 1	7
			1/2 x 3	9
Junior	315 1/2	4 1/2 x 15	3/4 x 1	16
			3/4 x 5	21
Juniorty	316 1/2	4 1/2 x 15	3/4 x 6	22 1/2
			3/4 x 7	24 1/2
Youth	319 1/2	4 1/2 x 20	3/4 x 6	26
			3/4 x 7	27
			3/4 x 8	28
Interme- diate	320 1/2	4 1/2 x 20	3/4 x 7	29
			3/4 x 8	32
Interme- diately	321 1/2	4 1/2 x 20	3/4 x 8	33
			3/4 x 9	35
Adult	325 1/2	4 1/2 x 25	3/4 x 9	36
			3/4 x 10	39
Aduly	326 1/2	4 1/2 x 25	3/4 x 10	40
			3/4 x 11	42
Senior	328 1/2	4 1/2 x 28	3/4 x 11	44
			3/4 x 12	47
Grant	332 1/2	4 1/2 x 33	3/4 x 12	50
			3/4 x 13	53
Giantly	333-1	4 1/2 x 33	1 x 7	64
			1 x 9	67
			1 x 9	69
Mogul	344-1	11 x 48	1 1/2 x 9	97
			1 1/2 x 11	104
			1 1/2 x 12	111

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POLE LINE HARDWARE

### MATTHEWS SCRULIX ANCHORS

#### Scrulix

The name SCRULIX is a coined trade name which has been registered in the United States Patent Office and Canada. It is a protection to you and to us against "The Just-as-Goods." If you don't find SCRULIX on the anchor head, don't accept the anchors.

**General**—The 5, 6 and 7 inch Matthews Scrulix Anchors will be furnished with Matthews Armo Rods.

There has been no change in the wrench or ratchet handle except to make them stronger. If you have a 567 wrench it can be used on them.

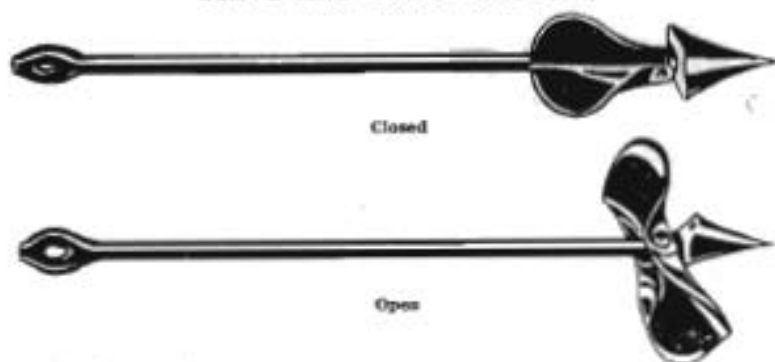


Mfrs. No.	Diameter of Anchor	Weight Pounds per 100	Size of Rods
502R	5 in.	650	3/8 in. round
603R	6 in.	1000	3/8 in. round
704R	7 in.	1500	3/8 in. round
800	8 in.	3800	1 1/4 in. square
1000	10 in.	5000	1 1/4 in. square
1200	12 in.	8000	1 1/4 in. square
567	Wrench	2500	
*765	Ratchet	700	
1332	Above Comb.	3200	

All anchors are 6 feet long over all. A number 567 wrench must be used with all anchors smaller than 800; no wrench is needed for the 800, 1000 and 1200 anchors.

\*The 765 ratchet handle is for use with the 567 wrench, and is very useful where it is desirable to screw the anchors down next to walls, fences, etc.

### DRIVE AND TWIST ANCHORS



Drive and twist anchors are so well known that very little mention is necessary.

A Maul is all that is needed for their installation. They are driven into the ground and by simply twisting the wings are opened and the anchor made secure.

Trade No.	Span of Blades	Diam. of Rod	Weight	Length of Rod
1	8 in.	3/4 in.	8 lbs.	4 ft.
2	10 in.	3/4 in.	12 lbs.	5 ft.
3	12 in.	3/4 in.	15 lbs.	6 ft.

POLE LINE HARDWARE

THE HIAWATHA GUY ANCHOR



Open

Used to Bore Hole No. 1, 4-in., No. 2, 5-in., No. 3, 6-in., No. 4, 8-in., No. 5, 10-in.



Closed

Directions for Setting

Bore hole with proper size auger, place anchor in closed position (do not remove wire holding wings). Chug anchor into bottom of hole to imbed studs on bottom in earth. Turn rod round and round to the left with a stick. This will break wire and expand the wings. When wings have been fully expanded rod will stop turning. Tamp dirt back into hole.

The holding power of this anchor is remarkable. It can be set in the hardest ground and we can recommend it as being well adapted for use on any strains where patent anchors can be employed.

For 50 or over, write for special prices.

Trade No.	Size Expanded	Length Rod	Size of Auger Required	Galv. Rod List No.
1	4x 7 in.	6 ft.	4 in.	1605A
2	5x 9 in.	6 ft.	5 in.	1606A
3	6x11 in.	6 ft.	6 in.	1607A
4	8x15 in.	6 ft.	8 in.	1608A
5	10x19 in.	6 ft.	10 in.	1609A



Two-Way, Closed

TWO-WAY ANCHORS, WITHOUT RODS

Size Inches	Weight Pounds	Size, In. Anchor Expanded	Sq. In. of Holding Surface
5	4	5x 9	45
6	7	6x11	66
8	12	8x15	120



Two-Way, Expanded



Four-Way Anchor Closed

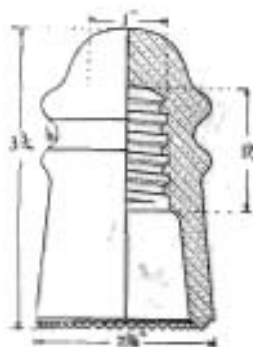
FOUR-WAY ANCHORS, WITHOUT RODS

Size Inches	Weight Pounds	Size, In. Anchor Expanded	Sq. In. of Holding Surface
6	10	11x11	121
8	16	15x15	225
10	27	19x19	361

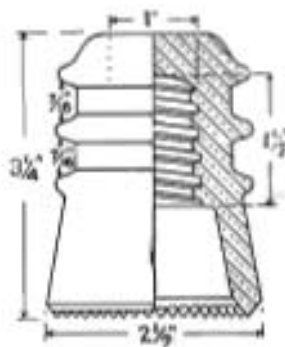


Four-Way Anchor Expanded

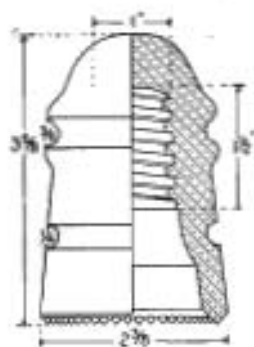
GLASS INSULATORS



No. 9

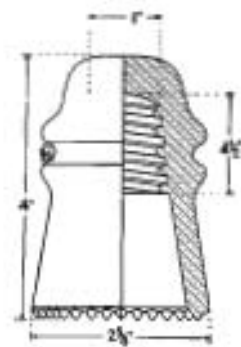


No. 10

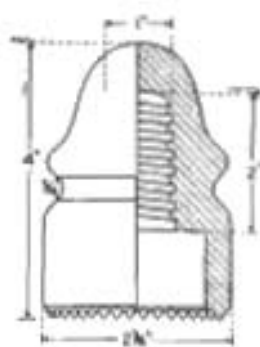


No. 12

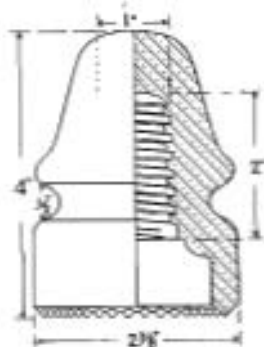
Mfr. No.	Description	Diam. Groove	Weight Each	Wt. per 1000 Packed	Std. Pkg. Quantity
9	Pony	3/8 in.	9 oz.	675 lbs.	400
10	Exchange Line	3/4 in.	10 oz.	720 lbs.	350
12	Double Groove Pony	3/8 in.	10 1/2 oz.	750 lbs.	400



No. 16



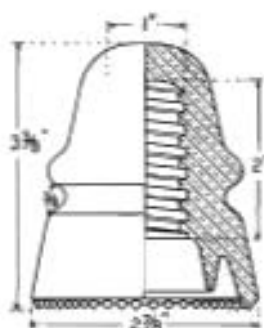
No. 17  
(Old No. 3)



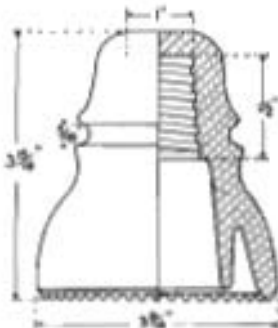
No. 18

16	Long Distance	3/8 in.	14 oz.	970 lbs.	300
17	Regular	3/4 in.	15 1/2 oz.	1120 lbs.	250
18	Deep Groove	1/2 in.	17 oz.	1200 lbs.	250

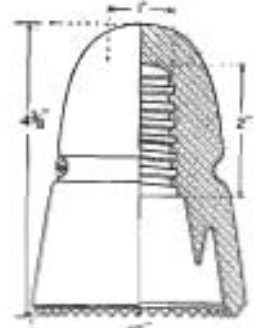
Weights given are approximate.



No. 14



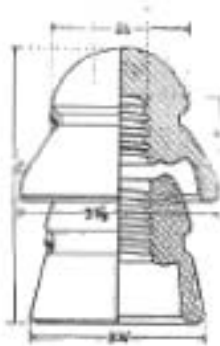
No. 40



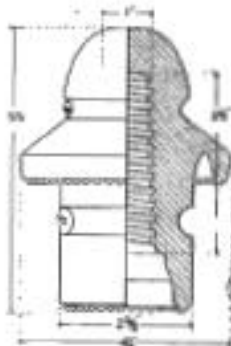
No. 21

14	Deep Groove, Double Petticoat Pony	3/8 in.	11 1/2 oz.	865 lbs.	300
40	Double Petticoat, new W. U. standard	3/8 in.	22 oz.	1550 lbs.	200
21	Standard W. U. Double Petticoat	3/8 in.	22 oz.	1550 lbs.	200

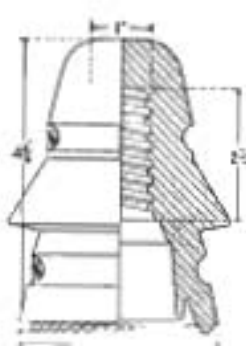
GLASS INSULATORS



No. 50



No. 51  
(Old No. 1)



No. 52  
(Old No. 2)

Mfr. No.	Description	Diam. Groove	Weight Each	Wt. per 1000 Packed	Std. Pkg. Quantity
50	Two-piece Transposition	1/4 in.	27 oz.	2000 lbs.	125 prs.
51	Perfect Transposition	1/2 in.	34 oz.	2500 lbs.	100
52	Transposition	3/8 in.	28 oz.	2100 lbs.	125

We also handle electric light insulators; transposition insulators and "long distance regular," which is an extra heavy glass insulator for long distance telephone work.



No. 1011  
Porcelain Insulator

PORCELAIN INSULATORS

No. 1011 and 1012. These insulators are similar in shape to the No. 9 and No. 12 glass insulators previously shown. These have been on the market but a comparatively short time, but they have won many friends.



No. 1012  
Porcelain Insulator

CIRCUIT BREAKER



No. 16—Glass Insulator  
(Current Breaker Type)

Very useful in "dead ending" wires on bracket lines. When brackets are used for this work, they are liable to pull off, unless 5 or 6 are used to form a circle and let the wire pass clear around the pole. With this device the wire is passed around the pole and dead ended like a guy wire would be, and a neat and substantial job is secured at small expense. Packed in barrels of 500 each. Carefully packed in boxes when less than 500 are ordered. Weight per 100, packed, about 75 pounds.

PORCELAIN KNOBS



1 Gr. Tel.

Standard 2 Groove Telephone

Height ..... 1 1/2 in.  
 Diameter ..... 1 3/4 in.  
 Hole ..... 3/8 in.  
 Grooves ..... 1/8 in.  
 No. per bbl. .... 1900  
 Wgt. per bbl. .... 430 lbs.



4 Gr. Tel.

Standard 4 Groove Telephone

Height ..... 2 1/4 in.  
 Diameter ..... 1 3/4 in.  
 Hole ..... 1/8 in.  
 Grooves ..... 1/8 in.  
 No. per bbl. .... 1000  
 Wgt. per bbl. .... 410 lbs.



No. 1

Number	1
Height	3 in.
Diameter	2 1/4 in.
Hole	1/8 in.
Groove	3/4 in.
No. per bbl.	600
Wgt. per bbl.	425 lbs.



No. 2

Number	2
Height	2 in.
Diameter	2 in.
Hole	1/2 in.
Groove	1/2 in.
No. per bbl.	850
Wgt. per bbl.	450 lbs.



No. 3, 3 1/2

Number	3	3 1/2
Height	1 3/4 in.	2 in.
Diameter	2 in.	2 in.
Hole	1/8 in.	1/8 in.
Groove	1/8 in.	1/8 in.
No. per bbl.	1100	900
Wgt. per bbl.	400 lbs.	410 lbs.



No. 4, 2 1/2

Number	4	2 Groove
Height	1 1/2 in.	1 1/2 in.
Diameter	1 3/4 in.	1 3/4 in.
Hole	1/8 in.	1/8 in.
Groove	1/8 in.	1/8 in.
No. per bbl.	2000	2000
Wgt. per bbl.	425 lbs.	425 lbs.



No. 5, 2 1/2

Number	4	4 1/2
Height	1 1/2 in.	1 3/4 in.
Diameter	1 1/2 in.	1 1/2 in.
Hole	1/8 in.	1/8 in.
Groove	1/8 in.	1/8 in.
No. per bbl.	2000	1800
Wgt. per bbl.	440 lbs.	420 lbs.



No. 4, 4 1/2

Number	5	5 1/2
Height	1 3/4 in.	1 5/8 in.
Diameter	1 in.	1 in.
Hole	1/8 in.	1/8 in.
Groove	1/8 in.	1/8 in.
No. per bbl.	6000	6000
Wgt. per bbl.	450 lbs.	440 lbs.

PORCELAIN KNOBS



No. 22

Number 22 Victor

Height ..... 1 1/4 in.  
 Diameter ..... 2 1/4 in.  
 Hole ..... 1 in.  
 Groove ..... 5/8 in.  
 No. per bbl. .... 1200  
 Wgt. per bbl. .... 410 lbs.



Self-Tying Knobs  
Side View

PARAGON SELF-TYING KNOBS

For Telephone Drop Wires

Last for years, afford perfect insulation by having wires separated and each in its own groove. The drop from the pole pulls directly against the screw or bolt. So there is no leverage as there is with brackets. No pulling out of screws or bolts, no marring of walls.

Weight per 1000.....450 lbs.



To fit wires on Paragon Self-Tying Knobs just spread and slip them over head of knob, fitting each into its own separate groove. Then screw tight.



DROP WIRE INSULATORS

List No. 208A. This is a convenient and practical insulator for supporting drop wires.

PEIRCE KNOB SCREWS

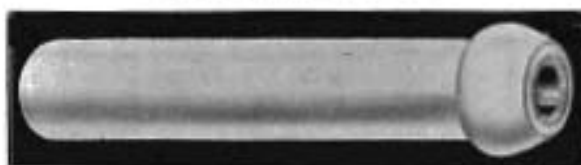
Hot Galvanized

A 5/8-inch screw eye with knob attached in eye.

Weight per 100.....30 lbs.



PORCELAIN TUBES



Number in Standard Barrel of Tubes  
4 Inches to 16 Inches Long

Length inches outside diam.	5/8 hole, 5/8 outside diam.	5/8 hole, 1 1/8 outside diam.	1/2 hole, 1 1/8 outside diam.	5/8 hole, 1 1/8 outside diam.	3/4 hole, 1 5/8 outside diam.
4	3,400	2,700	1,800	1,450	850
5	2,600	2,400	1,600	1,200	700
6	2,200	2,150	1,400	1,000	600
8	1,800	1,500	1,100	700	450
10	1,500	1,200	800	500	350
12	1,000	800	525	375	325
14	700	550	400	310	250
16	550	435	325	250	185

Standard Barrel Gross Weights of Tubes  
4 Inches to 16 Inches Long

Length inches under head	5/8 hole, 5/8 outside diam.	5/8 hole, 1 1/8 outside diam.	1/2 hole, 1 1/8 outside diam.	5/8 hole, 1 1/8 outside diam.	3/4 hole, 1 5/8 outside diam.
4	250	290	275	325	250
5	235	315	295	320	255
6	225	315	305	305	255
8	275	310	300	275	245
10	330	295	265	255	240
12	260	235	225	220	240
14	215	205	205	215	230
16	215	190	200	205	205

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## PAPER INSULATED LEAD ENCASED TELEPHONE CABLE

For Aerial and Underground Use



Following are the more common sizes of cable. Any number of pairs of any sized wire with any kind of insulation and lead sheath will be made to order. The following cable is double paper wrapped with pure lead sheath. Cable with 3 per cent tin in sheath can be furnished with equal promptness and we recommend it wherever long lengths of cable are to be pulled underground.

Ordinarily all telephone cable is made up of No. 22 B. & S. Ga. copper wires with a double paper wrapping applied in reverse directions. The average electrostatic capacity of this cable is 12 M. F. per mile, one wire being measured against the remaining wires grounded to the sheath. The following table gives the standard thickness of the sheath, diameter and shipping weight of the commonly used sizes.

### No. 22 B. & S. Gauge Double Reverse Paper Wrap, .12 E. C.

No. Pairs	Lead Sheath	Approx. Outside Diameter	Shipping Weight per M. ft.	No. Pairs	Lead Sheath	Approx. Outside Diameter	Shipping Weight per M. ft.
5	$\frac{1}{8}$ in.	$\frac{11}{16}$ in.	290	150	$\frac{1}{4}$ in.	$1\frac{1}{8}$ in.	3510
5	$\frac{3}{16}$ in.	$\frac{3}{4}$ in.	340	150	$\frac{3}{16}$ in.	$1\frac{1}{8}$ in.	3795
10	$\frac{1}{8}$ in.	$\frac{5}{8}$ in.	415	175	$\frac{1}{4}$ in.	$1\frac{1}{8}$ in.	3880
10	$\frac{3}{16}$ in.	$\frac{11}{16}$ in.	475	175	$\frac{3}{16}$ in.	$1\frac{1}{8}$ in.	4195
15	$\frac{1}{8}$ in.	$\frac{11}{16}$ in.	710	200	$\frac{1}{8}$ in.	$1\frac{1}{8}$ in.	4565
25	$\frac{1}{8}$ in.	$\frac{3}{4}$ in.	890	225	$\frac{1}{8}$ in.	$1\frac{1}{8}$ in.	5125
25	$\frac{3}{16}$ in.	$\frac{11}{16}$ in.	1010	250	$\frac{3}{16}$ in.	$1\frac{1}{8}$ in.	5465
50	$\frac{1}{8}$ in.	$\frac{11}{16}$ in.	1450	275	$\frac{1}{8}$ in.	$1\frac{1}{8}$ in.	5770
50	$\frac{3}{16}$ in.	$\frac{3}{4}$ in.	1595	300	$\frac{3}{16}$ in.	$1\frac{1}{8}$ in.	6270
75	$\frac{1}{8}$ in.	1 in.	1830	350	$\frac{1}{8}$ in.	$2\frac{1}{8}$ in.	7435
75	$\frac{3}{16}$ in.	$1\frac{1}{16}$ in.	2040	400	$\frac{1}{8}$ in.	$2\frac{1}{8}$ in.	7980
75	$\frac{1}{4}$ in.	$1\frac{1}{16}$ in.	2255	500	$\frac{1}{8}$ in.	$2\frac{3}{8}$ in.	8920
100	$\frac{1}{8}$ in.	$1\frac{1}{8}$ in.	2400	600	$\frac{1}{8}$ in.	$2\frac{3}{8}$ in.	9960
100	$\frac{3}{16}$ in.	$1\frac{1}{8}$ in.	2635	600	$\frac{3}{16}$ in.	$2\frac{3}{8}$ in.	10537
125	$\frac{1}{8}$ in.	$1\frac{1}{8}$ in.	3075				

We can also furnish telephone cable in Nos. 10 and 20 B. & S. Ga. Single paper wrapped cable will be furnished if so ordered.

### SWITCHBOARD CABLE

Switchboard cable as regularly carried in stock is made up of No. 22 B. and S. Switchboard wire with one silk and one cotton insulation. Each cable is protected by two heavy wrappings of manila paper in reverse directions, and a polished beeswax braid over all. Gray fireproof paint furnished at same price.

No. of Pairs	B. & S. Ga.	Feet per lb.	No. of Pairs	B. & S. Ga.	Feet per lb.
11	22	14.2	51	22	3.7
21	22	8	102	22	1.1
26	22	5.5			

We have here listed only a few of the sizes more commonly used. We can furnish the above cable with enameled insulation and also with  $\frac{1}{16}$ -inch lead sheath. These sizes are carried in stock.

### RURAL TELEPHONE CABLE

This cable is used in place of the old type, unsightly hand-made cables of twisted wires. It is made of No. 18 or No. 19 B. & S. Ga. copper wires, rubber insulated and lead encased. For small exchanges it is an ideal cable. When sending in inquiries state size in pairs, gauge and number of feet required.

**GALVANIZED STEEL STRAND**

Galvanized Steel Strand is regularly offered in four grades, regular, Siemens-Martin Strand, high strength and extra high strength strand. Regular strand can be obtained either single or double galvanized. The first two grades only should be used for regular exchange, farm line and toll construction, as the extra cost and difficulty of handling the high strength or extra high strength strand renders its use inadvisable in small exchanges.



Single galvanized regular strand should be used in country line construction only, where there is no possibility of deterioration from smoke conditions. The size and grade of strand necessary, whether for guying or the suspension of cable, can be determined from the following table.

Its double galvanizing insures long life under smoky conditions, it is tempered highly enough to be strong but is not so highly tempered as to prevent its being tough, and when not convenient to use clamps it can be successfully "made up" in the old-fashioned way, provided the twist is made in the direction which increases the twist in the body of the strand and, in country line construction, a substantial saving can be effected through using old-fashioned "make ups" in place of guy clamps.

All grades are formed by twisting seven single wires into a single strand.

Diameter	Size of Wire	Approx. Wt. per 100 ft.	Strength in Lbs.			
			Regular	S. M.	H. S.	E. H. S.
$\frac{3}{8}$ in.	16 B.W.B.	8 lbs.	1400	2000	3300	4900
$\frac{1}{2}$ in.	14	13	2300	3060	5100	7600
$\frac{5}{8}$ in.	12	22	3800	4860	8100	12100
$\frac{3}{4}$ in.	11	30	5000	6800	11500	17200
$\frac{7}{8}$ in.	10	40	6500	9000	15000	22500
$\frac{1}{2}$ in.	8	52	8500	11000	18000	27000



**EXTRA GALVANIZED TELEPHONE AND TELEGRAPH WIRE**

This wire is made in three grades, Extra B. B., B. B. and Steel. Extra B. B. is made from the very best material and has the highest conductivity of any galvanized wire. Mile Ohm 4700 to 5000.

B. B. wire is somewhat stronger than extra B. B., but has a lower conductivity. It is used mostly on medium distance circuits by telephone companies and for railroad work. Mile Ohm 5600 to 6000.

Steel wire is made from a special grade of material of greater strength, but less conductivity than the other grades. Mile Ohm 6500 to 7000.

Size B. W. G. No.	Diameter in Inches	—Breaking Strain in Lbs.—			Put up in Bundles of	Approx. Wt. in Lbs. per Mile
		E. B. B.	B. B.	Steel		
4	.238	2433	2676	3000	$\frac{1}{4}$ mile	811
6	.203	1770	1947	2183	$\frac{1}{2}$ mile	590
8	.165	1170	1287	1443	$\frac{3}{4}$ mile	390
9	.148	942	1036	1162	$\frac{1}{2}$ mile	314
10	.134	774	851	955	$\frac{1}{2}$ mile	258
11	.120	618	680	762	$\frac{1}{2}$ mile	206
12	.109	510	561	629	$\frac{1}{2}$ mile	170
14	.083	297	327	366	$\frac{1}{2}$ mile	99

No. 12 B. B. should be used exclusively for country line service, including spurs. No. 14 B. B. should be used exclusively in city exchange work except where heavier wire may be required by law for railway crossings. No. 10 B. B. was formerly used for short length toll lines but it is becoming increasingly popular to string four No. 12 wires instead and form the toll circuit from a phantom composed of two No. 12 wires on each side which gives two No. 12 physical circuits to be used for "short haul" conversations, so that it begins to look like iron wire for telephone purposes would settle down to No. 12 B. B. and No. 14 B. B. almost exclusively.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## HARD DRAWN BARE COPPER WIRE

This wire is designed especially for Telephone, Telegraph and Railway signal work. Put up in approximately one-half or one mile coils, thoroughly burlapped for protection in shipment.

## WEATHERPROOF INSULATED COPPER WIRE

Double and Triple Braid Insulation

B. & S. Gauge	Double Braid				Triple Braid		
	Approx. Diam. Mills	Per 1,000 Ft.	Per Mile	Weights	Approx. Diam. Mills	Per 1,000 Ft.	Per Mile
8	.255	66	349		.305	75	395
9	.235	54	283		.265	62	325
10	.190	46	241		.225	53	280
12	.168	39	158		.185	35	185
14	.138	29	107		.165	25	130
16	.123	16	83		.155	20	105
18	.113	12	64		.145	16	85

Weights will be within 3 per cent of figures given in this table.

## WEATHERPROOF INSULATED IRON WIRE

Double or Triple Braid "Tree Wire"

(No Rubber)



Weights Per Mile

B. W. Gauge	Double Braid	Triple Braid
10	350	400
12	225	260
14	145	175

10, 12, 14 shipped in 1/2 Mile Coils.

Weights will run within 3 per cent of the figures given in the table.

## RUBBER INSULATED, WEATHERPROOF COPPER WIRE

SINGLE CONDUCTOR



Size B. & S.	Diam. Over Rubber In.		Wt. per 1000 ft.
18	1/4"	Single conductor black saturated braid.....	12 1/2 lbs.
19	3/16"	Single conductor black saturated braid.....	11 lbs.

DUPLEX



18	3/16"	Black saturated heavy weatherproof braid.....	24 lbs.
19	1/8"	Black saturated heavy weatherproof braid.....	22 1/2 lbs.
16	3/16"	Black saturated heavy weatherproof braid.....	44 lbs.
14	1/4"	Black saturated heavy weatherproof braid.....	55 lbs.

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### RUBBER INSULATED, WEATHERPROOF IRON DROP WIRE



The insulation of this wire is the very best rubber compound that can be used and will show 100 megohms test. It is protected by a closely woven braid of tough selected cotton which is well saturated with a weatherproof compound. The conductor has greater tensile strength than copper and will not stretch, draw down or sag under the most extreme weather conditions and can be drawn up tight without danger of breaking so that there is no swaying in the wind, which is apt to cause chafing and break the conductor and wear out the insulation. The conductor is a specially drawn open hearth steel wire, thoroughly tinned for protection against rust, and the difference in conductivity of this conductor and pure copper is not over one ohm on the average drop wire length, so small as to be absolutely negligible, and in all other ways it is a more serviceable wire for drop wire use than pure drawn copper and much cheaper.

		Wt. per 1000 ft.
No. 19 B. W. G. i. e. No. 18 B. & S.,	7/64 in.	27 lbs.
No. 18 B. W. G. i. e. No. 16 B. & S.,	4/32 in.	39 lbs.
No. 16 B. W. G. i. e. No. 14 B. & S.,	5/32 in.	65 lbs.
No. 14 B. W. G. i. e. No. 12 B. & S.,	11/64 in.	80 lbs.

### RUBBER INSULATED, WEATHERPROOF, COPPER CLAD, STEEL DROP WIRE

Copper clad twisted pair steel wire listed below has approximately the same breaking strength as No. 14 hard-drawn copper. It has ample carrying capacity for telephone requirements. It is cheaper, smaller and weighs less than copper wire. The insulation will last longer, as the wire will not stretch.

Size	Diameter Over Rubber	No Test	Weight per M Ft.	
			100 Megohm Test	Over 100 Megohm Test
17 B. & S. Ga.	7/64 in.	40 lbs.	40 lbs.	40 lbs.

### RUBBER INSULATED INTERIOR WIRE

Copper Conductor Rubber and Dry Braid Insulation—Green or Oak Braid



Size	Diam. Over Rubber	Description	Wt. per 1000 Ft.
18 B. & S.	7/64	Twisted pr. glazed braid	30 lbs.
19 B. & S.	3/32	Twisted pr. glazed braid	25 lbs.

Can also be furnished in single conductor or triplex conductors.

### RUBBER INSULATED BRIDLE WIRE

Copper Conductor, Rubber and Saturated Braid Insulation

Size	Diam. Over Rubber	Description	Wt. per 1000 Ft.
18	7/64	Twisted pair saturated	32 lbs.
19	3/32	Twisted pair saturated	28 lbs.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## POT HEAD WIRE



Plain Rubber Covered "Pot Head" Wire. Weight per 1,000 feet, 18 lbs.

Size	Diam. Over Rubber	Description	Wt. per 1000 Ft.
19	3/32	Twisted pair, plain rubber.....	25 lbs.
20	3/32	Twisted pair, no braid.....	23 lbs.
22	3/32	Twisted pair.....	22 lbs.

## SWITCHBOARD WIRE

Switchboard wire is made up of tinned copper wire and is insulated with one or more wrappings of silk next the wire and one wrapping of cotton on the outside. Its principal use is in forming switchboard key cables and for general switchboard repair work. The double conductor switchboard wire listed hereafter is carried in stock in the following color combinations: Blue and blue-white, orange and orange-white, green and green-white, black and black-white, slate and slate-white, and red and red-white. Be sure to state colors desired or preferred. The single conductor switchboard wires listed below are carried in stock in red only, although any color can be furnished on short notice.



No. B. & S. Gauge	Insulation		Approximate Feet Per Lb. Single
	Silk	Cotton	
18	2	1	200
20	1	1	292
20	1	2	269
20	2	1	280
22	1	1	466
22	1	2	412
22	2	1	437
24	1	1	700
24	1	2	583
24	2	1	636

## SPECIAL 5, 7 AND 9 WIRE TWIST

Code No. 101-5 wire twist, made up of five No. 20 B. & S., 1 silk and 1 cotton covered wires with a cotton braid over all.

Code No. 102-7 wire twist, made up of seven No. 20 B. & S., 1 silk and 1 cotton covered wires with a cotton braid over all.

Code No. 103-9 wire twist, made up of nine No. 20 B. & S., 1 silk and 1 cotton covered wires with a cotton braid over all.

All wires in above color coded. Splendid for rewiring old telephones.

## KELLOGG FLAME-PROOF JUMPER WIRE

### Tinned or Enameled Copper Wire

This is a No. 22 B. & S. gauge copper wire with a covering having the very highest flameproof qualities.

It can be furnished either tinned or enameled.

The enameled insulation makes it particularly desirable in localities subject to extreme moisture, or for plants operating on high voltage.

It is easy to skin, has small overall diameter and has no inflammable rubber insulation. The moisture proof qualities have been tested by being under 170 hours' continuous 95 per cent humidity test, and showing over 150 per cent factor of safety in insulation resistance.

Can be furnished in single, duplex and triplex conductors.

Standard colors: Single conductor, white; duplex conductors, red and white; triplex conductors, red, white and slate.



# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## FLAME-PROOF JUMPER WIRE, RUBBER INSULATED



Duplex Flame-Proof Jumper Wire. Put up in 500-ft. rolls.

This wire consists of either No. 20 or 22 B. & S. gauge tinned copper wire with a rubber insulation and a flame-proof covering over all.

Can be furnished in single, duplex and triplex conductors. Standard colors. Single conductor, white; duplex conductors, red and white; triplex conductors, red, white and slate.

## REGULAR ANNUNCIATOR WIRE

Two-Cotton Insulation, Plain Copper, Single Conductor.

Size	Approx. Ft. per Lb.
18	155
20	230
22	340

Single Conductor, Tinned Copper.  
Two Cotton Wraps, Red, White.

List No.	Size	Approx. Ft. per Lb.
145	18	165
146	20	225
147	22	245

Double Conductor, Tinned Copper, Twisted.  
Two Cotton Wraps, Red and Red-White.

Size	Approx. Ft. per Lb.
18	78
20	110
22	160



## COMPARISON OF WIRE GAUGES

No.	Brown & Sharpe—B. & S. G. Millimeters	Decimal of an inch	Stub's or Birmingham B. W. G.	Washburn & Moen W. & M.	Old English or London O. E. G.	New British Standard E. S. G.
0000	11.684	.4600	454	393	404	400
000	10.404	.4064	425	362	423	371
00	9.268	.3645	388	331	399	344
0	8.252	.3249	348	307	344	304
1	7.341	.2882	308	283	309	269
2	6.561	.2574	264	263	284	228
3	5.929	.2324	229	244	269	202
4	5.319	.2094	198	229	244	172
5	4.731	.1879	168	217	229	142
6	4.164	.1678	142	207	219	112
7	3.628	.1483	120	197	209	82
8	3.124	.1305	100	187	199	52
9	2.654	.1144	84	178	189	22
10	2.218	.1000	70	170	184	12
11	1.814	.0875	60	162	179	2
12	1.441	.0769	50	155	174	
13	1.098	.0680	42	148	169	
14	.785	.0604	36	142	164	
15	.500	.0540	30	137	159	
16	.234	.0487	24	132	154	
17	.188	.0444	20	127	149	
18	.150	.0408	16	122	144	
19	.118	.0378	14	117	139	
20	.091	.0354	12	112	134	
21	.069	.0335	10	107	129	
22	.053	.0319	8	102	124	
23	.041	.0306	7	97	119	
24	.032	.0294	6	92	114	
25	.025	.0283	5	87	109	
26	.020	.0274	4	82	104	
27	.016	.0266	3	77	99	
28	.013	.0259	2	72	94	
29	.010	.0253	1	67	89	
30	.008	.0248		62	84	
31	.006	.0244		57	79	
32	.005	.0240		52	74	
33	.004	.0237		47	69	
34	.003	.0234		42	64	
35	.002	.0231		37	59	
36	.001	.0228		32	54	
37	.001	.0225		27	49	
38	.001	.0222		22	44	
39	.001	.0219		17	39	
40	.001	.0216		12	34	

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## DAMP-PROOF OFFICE WIRE



Double cotton serving and one cotton braid paraffined.

Single Conductor.

Double Conductor.

B. & S. Gauge	Approx. Ft. per Lb.	B. & S. Gauge	Approx. Ft. per Lb.
14	52	14	30
16	72	16	42
18	100	18	52

## KELLOGG MAGNET WIRE



The conductor in Kellogg magnet wire is drawn from pure copper having conductivity of 98.5 per cent; is smooth, round, free from splinters, thoroughly and evenly annealed and cleaned.

Our wire is tested constantly and our statements are based on actual results.

Only the best quality of boiled-off Italian tram silk is used for insulating and is firmly and evenly applied, being free from knots and irregularities.

Wire No. 30 and larger does not vary from the diameter specified more than one per cent, over and under; wire smaller than No. 30 does not vary from the diameter specified more than one ten-thousandth (.0001) inch over and under.

## KELLOGG ENAMELED MAGNET WIRE

This wire contains the same pure copper conductor previously described and is coated with a lasting enamel.

The Kellogg enameled wire department is one of the best and most completely equipped. Kellogg enameled wire in service proves its superior qualities.

Size B. & S. Gauge	Diam. Bare 10 Ins.	Diam. Enameled 10 Ins.	Feet per lb. Bare	Feet per lb. Enameled	Turns per Line or In.	Turns per Square In.	Wt. of Wire per Spool Lbs.	Type of Spool	Spool No.
16	.4608	.4632	127.2	126.1	13.7	249			
17	.4463	.4478	142.1	141.1	51.	441			
18	.4323	.4325	161.4	161.	33.5	552			
19	.4223	.4226	176.5	175.	26.5	691			
20	.4123	.4125	193.4	193.	21.5	879	7 to 10	Wood	1
21	.4024	.4025	212.3	212.	18.	1093	7 to 10	Wood	1
22	.3924	.3925	234.2	234.	15.3	1363	7 to 10	Wood	1
23	.3824	.3825	258.2	258.	12.2	1697	5 to 8	Wood	1
24	.3725	.3727	287.4	287.	10.	2114	5 to 8	Wood	4
25	.3625	.3624	322.	321.	8.2	2652	4 to 6	Wood	4
26	.3525	.3524	364.	363.	6.8	3341	4 to 6	Wood	4
27	.3425	.3424	414.	413.	5.8	4193	4 to 5	Wood	4
28	.3325	.3324	472.	471.	5.2	5224	4 to 5	Wood	4
29	.3225	.3224	538.	537.	4.8	6499	3 to 4	Metal	2
30	.3125	.3124	612.	611.	4.5	8022	3 to 4	Metal	2
31	.3025	.3024	694.	693.	4.2	9802	3	Metal	2
32	.2925	.2924	786.	785.	4.	11852	3	Metal	2
33	.2825	.2824	890.	889.	3.8	14192	2 1/2	Metal	2
34	.2725	.2724	1008.	1007.	3.6	16842	2 1/2	Metal	2
35	.2625	.2624	1142.	1141.	3.4	19822	2 1/2	Metal	2
36	.2525	.2524	1294.	1293.	3.2	23162	2 1/2	Metal	2
37	.2425	.2424	1466.	1465.	3.	26982	2 1/2	Metal	2
38	.2325	.2324	1660.	1659.	2.8	32242	2 1/2	Metal	2
39	.2225	.2224	1878.	1877.	2.6	39062	2 1/2	Metal	2
40	.2125	.2124	2122.	2121.	2.4	47582	2 1/2	Metal	2

MAIN DISTRIBUTING FRAMES

TYPE L MAIN DISTRIBUTING FRAME



Type L Main Distributing Frame Standard Construction

A combined sectional distributing and protector frame consisting of an angle iron frame built in vertical sections of 100 to 200 pairs. New vertical frame sections can be added at any time. The protectors can be readily attached to the frame as needed.

At the back end of the horizontal bars, directly opposite the protectors, are the cable terminal blocks, mounted vertically in strips of twenty or twenty-five pairs each.

For distributing the cross connecting wires, a small insulated ring is placed directly back of each cable block and larger ones are secured to the vertical angle irons.

Mfrs. No.	Description
1000	Type L main frame, standard construction, ironwork only.
1001	Type L main frame, single floor angle, ironwork only.
1002	Terminal blocks only (2 clip).
1003	Terminal blocks only (3 clip).
1004	Terminal blocks only (4 clip).

Shipping weights—Frame knocked down, per 100 pairs, 50 pounds; frame packed ready to set up, per 100 pairs, 70 pounds.

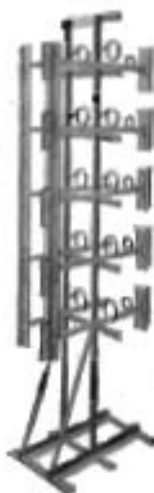
TYPE L-2 INTERMEDIATE DISTRIBUTING FRAME

The Intermediate Distributing Frame should be used in multiple system exchanges, as it is advantageous in distributing the amount of work equally between the various operators on the board.

In a multiple switchboard the answering jacks and line signals generally branch off from the main line circuits, which include the multiple jacks. By using an intermediate frame these branches to the answering jacks and line signals may be interchanged between the lines, so that any line may be answered at any position on the switchboard. In this manner the total number of very busy lines may be distributed between the various operators so as to divide the work equally between them.

The intermediate distributing frame is made in the unit type of construction, so additional sections can be added without disturbing existing equipment. It has distributing blocks on one side, which is very advantageous in making the cross connections from one side of the frame to the other. There is considerable space between the distributing blocks, so that a person's arm may be inserted into the frame and then moved either vertically or horizontally throughout the entire extent of the frame.

In ordering Type L-2 intermediate distributing frame, please specify the ultimate capacity in lines of multiple which the frame may be called upon to serve. The reason for this is that it is necessary for us to provide space for the required ultimate number of jumper wires, making the width of the frame shelves sufficient to accommodate them. The intermediate distributing frames are made in three standard widths from front to back, each width suitable for one ultimate capacity.



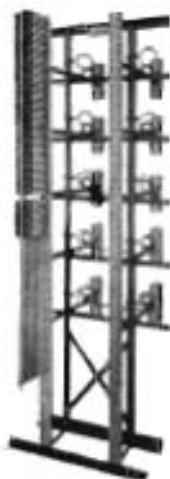
Type L-2 Intermediate Distributing Frame

Mfrs. No.	Description
1010	Type L-2 intermediate frame, ironwork only.
1002	Terminal blocks only (2 clip).
1003	Terminal blocks only (3 clip).
1004	Terminal blocks only (4 clip).
1014	Fanning strip for multiple side.
1015	Maple fanning strips only, for terminal blocks.
1016	Frame with terminal blocks and fanning strips.

Shipping weights—Frame knocked down, per 100 pairs, 55 pounds; frame ready to set up, per 100 pairs, 75 pounds.

MAIN DISTRIBUTING FRAMES

TYPE L-6 MAIN DISTRIBUTING FRAME



Type L-6 Main Distributing Frame

This frame is designed to carry the H-25 fuse and carbon protectors only.

The H-25 consists of No. A-7 wood fuse and standard carbons, mounted on maple panels, fuse clips being set in hard rubber.

Standard terminal blocks and distributing rings are furnished.

This frame is similar to Type L, except that the spacing between verticals is 12 inches instead of 7½ inches.

H-25 protectors are made in 50 pair sections and will be suitable for mounting on L-6 main distributing frame.

Special mounting bar is necessary when heat coil protectors are to be mounted on this type of frame.

Mfrs. No.	Description
1030	L-6 main frame, ironwork only.
1002	Terminal blocks only (2 clip).
1190	H-25 switchboard protectors with A-7 wood fuse, 50 pair bank.

Shipping weights—Frame knocked down, per 100 pairs, 50 pounds; frame ready to set up, per 100 pairs, 70 pounds.

TYPE L-3 WALL FRAME



Type L-3 Wall Frame

For small installations of 100 lines or less, a special distributing board (Type L-3) is furnished. This board can be made up for either 50 or 100 pairs ultimate capacity, and supplied with heat coil protectors.

The protectors and line cable terminals are mounted in sectional banks of 10 pairs each. An initial capacity of only 10 pairs can thus be secured, and the capacity may be increased at any time by additions of 10 pair banks of protectors or terminals.

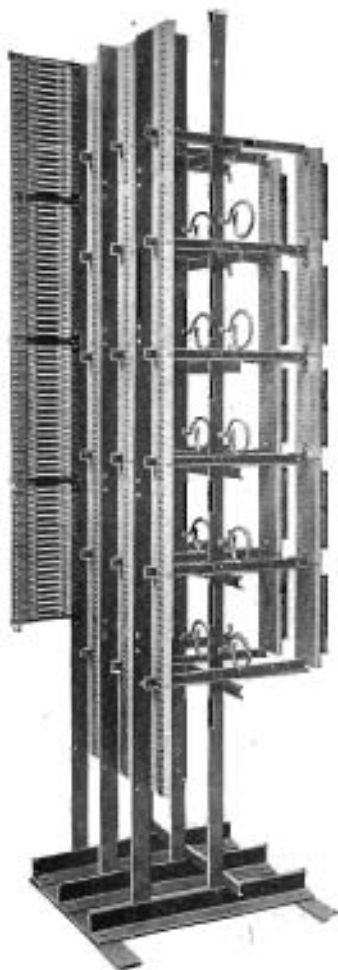
This board combines all the desirable features of the large distributing frame (Type L) but it is intended to be fastened to the wall.

Mfrs. No.	Description
1020	Type L-3 wall frame only.
1021	Terminal blocks only (2 clip, 10 pairs per strip).

Shipping Weights—50 pairs, 35 pounds; 100 pairs, 70 pounds.

MAIN DISTRIBUTING FRAMES

No. 101 MAIN DISTRIBUTING FRAME



The No. 101 Main Distributing Frame is designed for use in large and small telephone exchanges where a substantial floor type frame is required. Mild steel angles, channels and bars of ample strength are used, and all uprights are bolted to the floor angles to give the frame proper footing. The jumper rings are of generous size and well insulated. The cable fanning strips and jumper wire facilities permit a neat cable layout with plenty of space and convenient terminals for running jumper wires.

The switchboard protectors are designed to protect the central office plant from lightning, from sneak currents and from crosses with electric light and power wires. The flat fuses are lined with Blow-Rite fuse wire of one-half ampere carrying capacity, which blows with uniform accuracy, and the fuses have the advantage over ordinary switchboard protection of leaving a wide air gap between the trouble and the switchboard apparatus. The fuses are made so that opens can be detected at a glance and the old fuse wire easily removed. When new Blow-Rite fuse wire is inserted the refilled fuse is as accurate as a new one.

The protectors are mounted in banks of twenty pairs on mild steel mounting plates with rigid supports for attaching to the frame. The mounting plates are covered with sheet mica to prevent the possibility of contact between mounting plates and wiring. Heavy phosphor-bronze fuse clips hold the fuse terminals in a firm grip and the wire terminals and fuse clip are riveted together to insure permanent electrical contact. The screws which hold the insulating strips on the mounting plate are threaded into miniature strain insulators, and this substantial

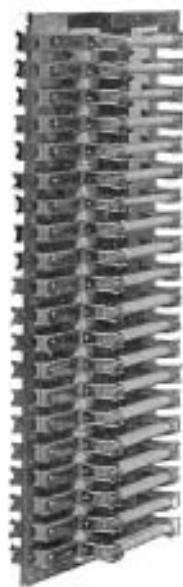
construction has made it possible to do away with all insulating bushings and washers, which are an ever-present source of trouble in many types of switchboard protectors.

The cable terminals are made with German silver soldering terminals, embedded in hard rubber mounted on maple blocks. Twenty pair blocks are standard. Single rows, pairs, triples or quads can be supplied in sets of twenty or twenty-five per terminal block.

The test plugs slip into the fuse clips as easily as a fuse.

Standard Frames are built with verticals on 9-inch centers unless otherwise specified. All frames are made for growth in either direction.

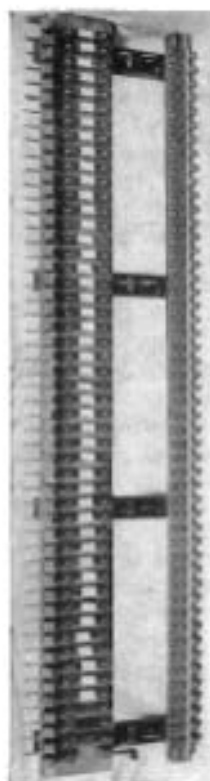
Uses No. 44 Flat Fuse.



CENTRAL OFFICE PROTECTORS

No. 6 TYPE ARRESTER AND CROSS CONNECTING EQUIPMENT

Combination lightning arrester, fuse and cross connecting rack is so arranged that any line can be cross connected to any switchboard drop. This arrester is equipped with No. 11 fuses and carbon arresters. Particularly adapted to small magneto exchanges.



No. 6.

Code No.	Mounting Centers	No. of Pairs	Code No. of Terminal Strips	Length
6.....	3/8 in.	25	43	32 1/2 in.
15.....	3/8 in.	20	48	26 1/4 in.
13.....	3/8 in.	15	47	20 in.
9.....	3/8 in.	10	42	13 3/4 in.
8.....	3/8 in.	5	41	7 1/4 in.

No. 7 TYPE ARRESTER ONLY

Same as No. 6 but without the cross connecting strips. For use in wood pole houses.

Code No.	Mounting Centers	No. of Pairs	Length
7.....	3/8 in.	25	32 1/2 in.
12.....	3/8 in.	10	13 3/4 in.

TERMINAL STRIPS

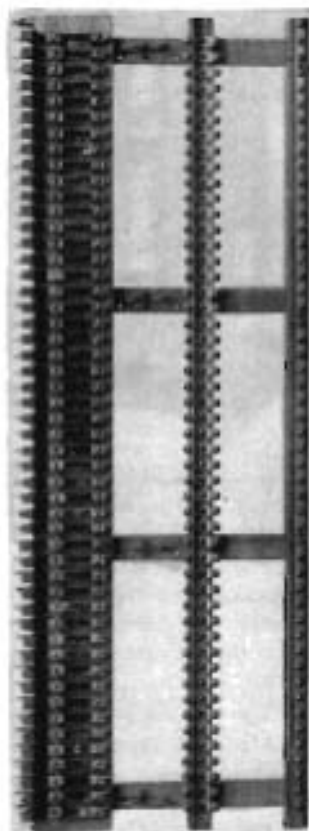
These strips are the same as used on the No. 6 Type Arrester.

Code No.	Mounting Centers	No. of Pairs	Length
43.....	3/8 in.	25	32 1/2 in.
48.....	3/8 in.	20	26 1/4 in.
47.....	3/8 in.	15	20 in.
42.....	3/8 in.	10	13 3/4 in.
41.....	3/8 in.	5	7 1/4 in.

No. 14 TYPE ARRESTER AND CROSS CONNECTING EQUIPMENT

For terminal racks in grounded line exchanges. This arrester is of the same construction as the No. 6 with the addition of a brass grounding strip to ground one side of lines from the switchboard.

Code No.	Mounting Centers	No. of Pairs	Length
14.....	3/8 in.	25	32 1/2 in.



No. 14.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## CENTRAL OFFICE PROTECTORS

### TYPE 10

Type 10 will absolutely protect itself, as well as the delicate apparatus back of it. The following features should recommend this protector to every telephone engineer:

1. Composition heat coils of low resistance can be furnished. They will not burn out, and will operate within very satisfactory limits.
2. All contacts are positive and cannot become loose.
3. All conductors are well insulated.
4. The heat coils are resoldering, and thus the protector can be promptly and easily reset.
5. In resetting this protector, by the use of resoldering plug made for the purpose, the circuit is tested through the heat coil at the time of resoldering.

Except when otherwise specified the No. 10 protector is equipped with composition heat coils of fourteen (14) ohms resistance. Carrying one-half (1/2) ampere these coils will operate in approximately eleven (11) seconds, and they will carry two-tenths (2/10) ampere indefinitely.

For special installations the protector will be furnished equipped with heat coils of seven (7) ohms resistance. Carrying one-half (1/2) ampere, such coils will operate in approximately thirty (30) seconds, and will carry three-tenths (3/10) ampere indefinitely.

Wire-wound heat coils will be furnished for this protector when ordered.

A test plug and switch is available which will permit testing of every circuit by inserting the plug.

The resoldering plug, designed to test and reset the protector, is very simple and easily operated. This should have a long cord with permanent battery connections, ready for instant use for resetting a protector which has operated.

No.	Description
1190	No. 10 switchboard protector, 10 pair bank
1191	No. 10 switchboard protector, 20 pair bank
1192	No. 10 composition heat coils
1193	No. 10 wire-wound heat coils
1194	Test switch, 10 point
1195	Test cord for above
1196	Test plug for No. 10 switchboard protector
1197	Resoldering tool for No. 10 switchboard protector

Shipping Weight—200 pairs protectors, 40 pounds

### TYPE 10-W

Same as No. 10 Protector on a deeper mounting plate, which also carries a composition tubular fuse. Designed to meet the demand of customers seeking the highest protection, as well as all the requirements of the National Board of Fire Underwriters. No. 10-W has all the advantages of the No. 10 Protector, with the additional advantage of the composition fuse.

This protector is especially recommended for use with Municipal Fire Alarm and Police Telephone and Telegraph Circuits. Can also be used for central office protection where there is no fuse protection for lines as they enter the exchange or cable leading to the exchange.

1119	No. 10-W switchboard protector, 10 pair bank
1121	No. 10-W switchboard protector, 20 pair bank
1192	No. 10 composition heat coils
1193	No. 10 wire-wound heat coils
1124	No. A-22 magnets line fuse
1194	Test switch, 10 point
1195	Test cord for above
1196	Test plug for No. 10-W switchboard protector
1197	Resoldering tool for No. 10-W switchboard protector

Shipping Weight—180 pairs complete, 60 pounds

### TYPES 50 AND 60

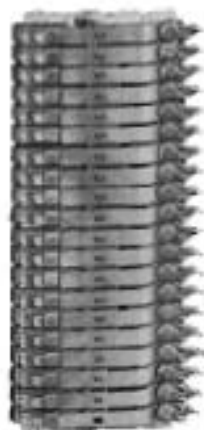
These are our newest types of protectors. They are simple and efficient, cheap and durable. The self-soldering coil can be obtained in low resistance, and will operate within satisfactory limits. This coil never requires new or additional solder, is self-soldering, and the operated protector only requires pushing in the spring to be reset. The No. 60 is exactly like the No. 50, with the addition of an alarm spring.

The mounting plate provides unusual spacing of contacts, making removal easy.

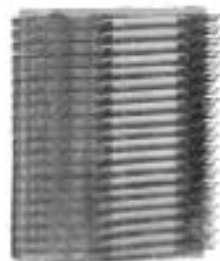
Except when otherwise specified, furnished with composition heat coils of 7 ohms resistance. Under 1/2 ampere load, these coils will operate in approximately thirty seconds and will carry 2/10 of an ampere indefinitely.

1129	No. 50 switchboard protector, 10 pair bank
1131	No. 50 switchboard protector, 20 pair bank
1133	No. 60 switchboard protector, 10 pair bank
1135	No. 60 switchboard protector, 20 pair bank
1136	No. 50-60 composition heat coils
1137	No. 50-60 wire-wound heat coils
1194	Test switch, 10 point
1195	Test cord for above
1196	Test plug for No. 50 or No. 60 switchboard protector

Shipping Weight—180 pairs protectors, 25 pounds



Type 10



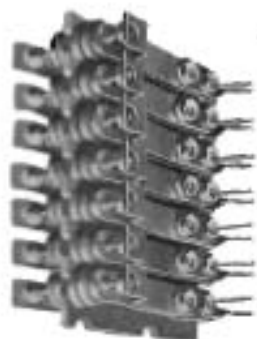
Type 10-W



Types 50 and 60

CENTRAL OFFICE PROTECTORS

TYPE 21



Type 21

Furnished with test plug and switch especially designed for this protector, also resoldering plug.

Mfrs. No.	Description
1130	Type 21 switchboard protector, 10 pair bank.
1131	Type 21 switchboard protector, 20 pair bank.
1132	Type 21 composition heat coils.
1104	Test switch, 10 point.
1105	Test cord for above.
1135	Test plug for Type 21 switchboard protector.
1136	Resoldering tool for No. 21 switchboard protector.

Shipping weight—100 pairs, 30 pounds.

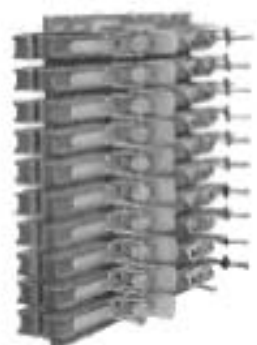
TYPES 8 AND 8-1

Types 8 and 8-1 protectors differ only in their mounting plates.

The composition heat coil is made with resistances of approximately 7 and 14 ohms.

Special test plug and test switch furnished.

In ordering banks of protectors, be careful to specify whether Type 8 or Type 8-1 is desired. Coils and other parts are the same for both.



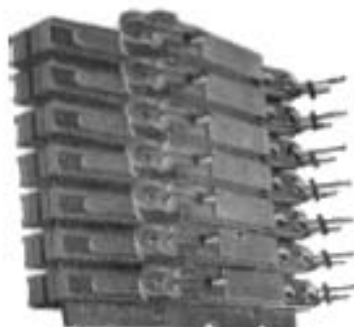
Type 8-1

Mfrs. No.	Description
1140	Type 8 switchboard protector, 10 pair bank.
1141	Type 8 switchboard protector, 20 pair bank.
1142	Type 8-1 switchboard protector, 10 pair bank.
1143	Type 8-1 switchboard protector, 20 pair bank.
1144	Type 8 composition heat coils.
1145	Type 8 wire wound heat coils.
1104	Test switch, 10 point.
1105	Test cord for above.
1148	Test plug for Type 8 or Type 8-1 switchboard protector.

Shipping weight—100 pairs, 45 pounds.

TYPE 14

Recommended only for extensions.



Type 14

Mfrs. No.	Description
1150	Type 14 switchboard protector, 10 pair bank.
1151	Type 14 switchboard protector, 20 pair bank.
1152	Type 14 composition heat coils.
1104	Test switch, 10 point.
1105	Test cord for above.
1155	Test plug for Type 14 switchboard protector.

Shipping weight—100 pairs, 40 pounds.

CENTRAL OFFICE PROTECTORS

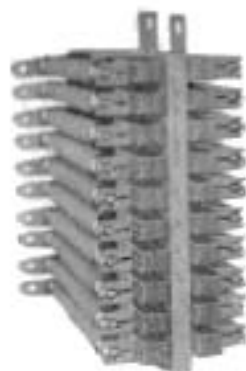
TYPE H-25

Type H-25 is a fuse and carbon protector made for use where no protection is required against sneak currents. It is generally sold for use on L-6 main distributing frame, but may be mounted on L-2 frame or L-5 wall frame. Fuses are held securely and with good contact by patented clips. Clips are of German silver and are well insulated by being set in hard rubber, mounted on hard maple panels.

Made in 50-pair sections, and is always furnished with standard A-7 wooden tubular fuse of 1 ampere capacity, unless otherwise ordered. Carbons and dielectrics are standard.

Units with mountings of 10 pairs or more will be furnished when desired at an extra charge for unequipped pairs. These will be set on standard maple panels with ground strip for 50 pairs.

Description	Weight
H-25 protector, 50 pair bank.....	35 lbs.



Type H-25

TYPE H-36

Protector is furnished with wood or composition fuses, the latter being necessary where it is desired to meet the Underwriters' requirements. Unless otherwise ordered, furnished with A-45 fuse of 1-ampere capacity. Fuses are held securely and with good contact by patented German silver clips, which are well insulated by hard rubber. Carbons and dielectrics furnished are standard.

Shipping weight—100 pair bank, 38 pounds



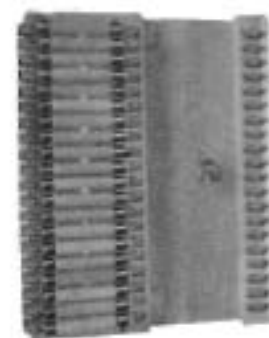
Type H-36

TYPE H-40

Type H-40 is a fuse and carbon protector with distributing rack, for use in small exchanges where something simple and inexpensive is required. Furnished with a common ground, where grounded circuits are used. Screw and washer connections are furnished for jumper circuits; wooden tubular fuses, Type A-44, are secured by patented clips; lightning arrester carbons and dielectrics are of standard type.

Mfrs. No.	Description
1210	H-40 protector, any size, 5 to 50 pairs.
1211	H-40 protector, when furnished with common line ground.

Shipping weights—10 pair bank, 10 pounds; 20 pair bank, 16 pounds; 50 pair bank, 30 pounds.



Type H-40

TELEPHONE PROTECTOR STRIPS



Type No. 132

No. 132 SWITCHBOARD PROTECTOR AND DISTRIBUTING BOARD

(Economical Flat Wood Fuse)

A switchboard protector and distributing board arranged for mounting on the wall and binged so that all wiring is accessible. To be used for protection against lightning, high potential and sneak currents.

Consists of: No. 44 Blow-Rite flat wood fuses, 1 ampere, 3½ inches tip to tip, held in place by phosphor bronze contact springs which grip the flat tips of the fuses. Jumper wire rings and screw terminals are provided for making cross connections.



Type No. 992

No. 992 PROTECTOR

The No. 992 Protector is mounted on an oxidized steel panel ¼ inch thick and all parts are insulated with heavy rubber blocks. The solder terminals pass through the holes in the mounting plate with wide clearance between terminals and plate. A heavy fibre strip riveted to the mounting plate holds the terminals in position. The fuse clips and tension springs are very heavy.

The No. 992 Protector is the standard of many large telephone companies for protecting long important lines in cable boxes and terminal rooms. Equipped with either No. 36 Fibre or No. 4 Wood Fuse.

Size	Length	Width	Weight
5 pair.....	12¼ in.	7 in.	7½ lbs.
10 pair.....	25 in.	7 in.	15 lbs.
15 pair.....	37½ in.	7 in.	22½ lbs.
20 pair.....	50 in.	7 in.	30 lbs.
25 pair.....	62½ in.	7 in.	37½ lbs.



Type No. 900

No. 900 PROTECTOR

The No. 900 Protector is mounted on a treated maple panel and is provided with an angle iron for mounting in cable box or on the wall with both sides accessible for wiring and testing. The fuse clips are substantial and the No. 4 wood fuses are 4 inches from shoulder to shoulder.

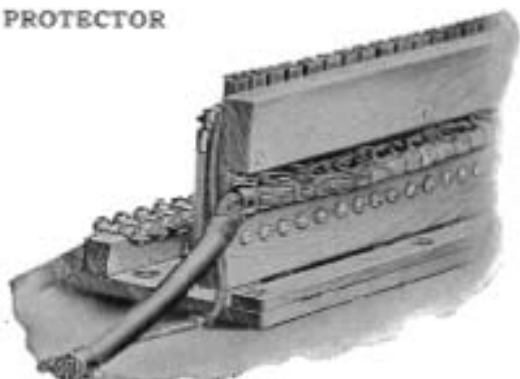
Size	Length	Width	Weight
12½ pair.....	19 in.	6½ in.	3½ lbs.
25 pair.....	38 in.	6½ in.	6½ lbs.

TELEPHONE PROTECTOR STRIPS

No. 13 PROTECTOR



Type No. 13



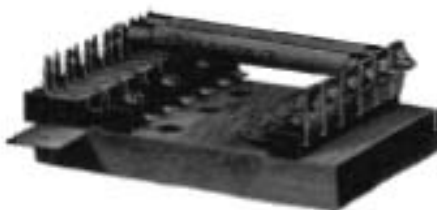
No. 13 Protector hinged to give access to wiring in back.

No.	Size	Width	Length	Weight
12	12 pr.	10 1/2 in.	13 1/2 in.	8 1/2 lbs.
13	24 pr.	10 1/2 in.	17 1/2 in.	11 1/2 lbs.
14	52 pr.	10 1/2 in.	21 in.	23 lbs.

The No. 13 Protector is arranged for use with No. 19 Western Union Mica Fuses.

TELEPHONE PROTECTOR STRIPS

TYPE H-14



Type H-14

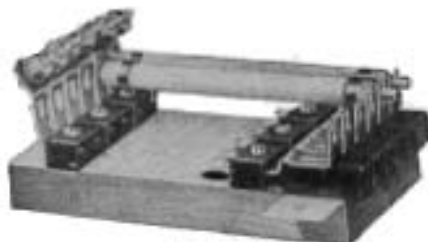
Type H-14 strip is designed to be mounted in the ordinary wooden pole house. It has the combination of the standard 5-ampere type A-7 line fuse and specially treated carbon lightning arresters. The clips are mounted in individual hard rubber blocks, which in turn are fastened to the hard maple strips. These strips are drilled to admit the cable or jumper wires, or both, as required. A new type of spring fuse

contact clip insures positive contacts and prevents loose connections at the fuse. A heavy metal ground plate runs the entire length of the strip.

The construction of this strip insures especially high insulation between the pairs, as the springs are all forced through the rubber blocks, and surface leakage is prevented.

The clips are made for soldered contacts at both the cable and jumper end, but the jumper end also has screw and washer connection provided.

TYPE H-19

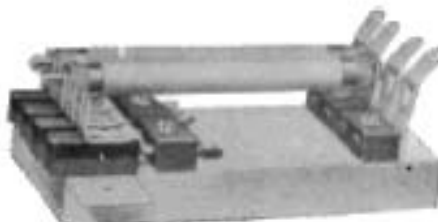


Type H-19

This protector strip differs from H-14 only in the connectors at the jumper end. These have no provision for soldered connection, but have lock-nuts for fastening the wire. The difference in location of the jumper connections between these two protector strips is clearly shown by our illustration. Equipped with A-7 fuse, 5 ampere.

TYPE H-20

This protector strip is exactly like the H-19, except that it has soldered connection at the jumper end, in place of the lock-nut. Equipped with 5-ampere A-7 line fuse, standard carbons and dielectrics.



Type H-20

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

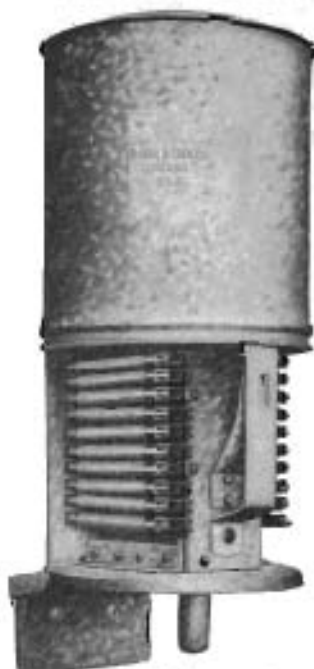
## TELEPHONE PROTECTOR STRIPS

### TYPE W-4

This is designed to be mounted in a pole house, and consists of a hard maple base equipped with standard 3-ampere A-7 line fuse, without carbons. Clips are provided for soldered contacts and also for screw and washer contact on jumper side. Maple base is drilled to admit wires through the base at both cable and jumper side.



Type W-4



Type S-6 (Cover up)

### TYPE S-6 CABLE TERMINALS—PROTECTED

#### No Pothead Necessary

Type S-6 is an improved all metal terminal.

The cable wires, when formed, are led through hollow rivets to the outside of the box where they are soldered, thus doing away with the necessity for opening the box to inspect a connection. The drop wires are insulated from fanning strips and bracket by specially treated fibre. Copper tipped tubular fuses (Type A-7, 5 ampere, Standard), and specially treated carbons and celluloids, are furnished with this terminal. Equipped with self-soldering nozzle. A galvanized steel cover makes the terminal weatherproof.

Capacity	Weight
10 pair complete with fuses.....	20 lbs.
15 pair complete with fuses.....	25 lbs.
26 pair complete with fuses.....	30 lbs.
51 pair complete with fuses.....	53 lbs.

### TYPE S-16 UNIT MOUNT

#### No Pothead Necessary

Is of all steel construction and furnished without protectors but with connecting posts only, enabling the complete installation of the cable with the terminal, yet permitting the protection of such cable pairs as are connected with subscribers' stations when the initial installation is made. Equipped with self-soldering nozzle.

connected with subscribers' stations when the initial installation is made. Equipped with self-soldering nozzle.



Type H-29-D Unit Protector Mount  
for Types S-16-D, S-18-D and T-30-D Cable Terminals

Protectors (Type H-29-D) are in units, and attach to connecting posts or studs by means of split German silver contacts.

Tubular line fuses (Type A-7, 5 ampere, Standard), specially treated self-cleaning carbons and celluloid dielectrics are used with the H-29-D protector mountings.

Capacity	Weight
10 pair without protectors.....	15 lbs.
15 pair without protectors.....	20 lbs.
25 pair without protectors.....	25 lbs.
51 pair without protectors.....	48 lbs.



Type S-16-D (Cover up)

CABLE TERMINALS—PROTECTED



Type S-19

TYPE S-19

No Pothead Required

Type S-19 terminals are equipped with standard carbons and Style A-44 tubular fuses.

Capacity	Weight
10	15
15	20
26	25
51	45



Type T-4

TYPE T-4

For Use with Pothead

Particularly recommended for multiple tap cable work, and is priced without protectors. The protectors (Type H-5) are arranged in individual mountings, so that one pair can be added at a time. Any initial capacity can thus be secured, and the capacity can be increased as desired, by simply adding protector mounts.

Capacity	Weight
10	15
15	15
26	25
51	50

Use A-7 Fuse



Type AG

TYPE AG

The terminal is compact, simple and inexpensive and is built on a well-known principle which has been used successfully for many years. Installation is quickly made without pothead.

This terminal can be ordered either with or without a six foot cable stub, and for telephone companies who are handicapped by lack of good cable splicers this terminal is recommended as it is complete in every detail.

It is equipped with No. 44 flat fuses.

Capacity	Weight
11 pair	15 lbs.
16 pair	17 lbs.
26 pair	20 lbs.
50 pair	33 lbs.

TYPE A2

The A2 cable terminal, for use without pothead, is recommended to those seeking an inexpensive terminal which will give full protection and which can be installed by the ordinary lineman.

The installation is made by loosening the bolts holding the panels and spreading the panels to give plenty of room to solder in the cable. After connecting the cable, the bolts are tightened, the slides slipped in place and cable compartment filled with cable compound.

The terminal is solidly built and of neat appearance, enclosed in a round galvanized iron cover. The heavy goose neck fuse clips and stiff, wide German silver carbon springs are mounted on kiln dried and treated maple panels. A 6-foot No. 22 B. & S. gauge cable stub will be furnished attached to the assembled terminal, if specified, at small additional cost.

Equipped with No. 5 fuse.

Size	Shipping Weight
11 pair	15 lbs.
16 pair	18 lbs.
26 pair	21 lbs.



Type A2

CABLE TERMINALS—PROTECTED



Type F

TYPE F

The Type "F" is a mica fuse and a carbon lightning arrester cable terminal, made for use without a pothead. The fuse mountings are on moisture proof wood base, and cable is clamped between blocks at the bottom of terminal, thus making it unnecessary to use self soldering nozzles.

The Type F is designed to meet the wide demand for fully protected cable terminals, combining very low cost with substantial construction. The construction is identical with the Type A2, and if used with Reliable Enclosed Mica Fuses—5 amperes capacity, designed for this terminal—will give efficient service without the continual annoyance incident to the use of ordinary mica fuses.

May be secured with or without a 6-foot cable stud.

Size	Shipping Weight
11 pair	10 lbs.
16 pair	13 lbs.
26 pair	18 lbs.

Equipped with No. 19 Western Union fuses.

TYPE S

The Type S cable terminal is designed to meet the demand for a terminal which can be installed partially equipped at small initial expense and to which equipment can be added from time to time as needed. The construction of the Type S unit mount will recommend itself instantly to those who are looking for something better in a cable terminal with unit mounts.

The Type S terminal is built for use with pothead as shown in illustration. It is also made for use without pothead with the units mounted on maple panels. When partially equipped, the cable is sealed in with all wires brought out for ready insertion of additional units.



Type S Unit Mount  
for Type S Cable Terminals

Equipped with Type S unit mounts and No. 37 fuse.

Capacity	Weight
10 pair	18 lbs.
15 pair	20 lbs.
25 pair	23 lbs.
50 pair	40 lbs.



Type S

CABLE TERMINALS—UNPROTECTED



Type R—11 Pair

TYPE R

The Type R is an unprotected porcelain cable terminal for use without pothead. It is recommended for multiple tap distribution where the drops are short and no protection seems necessary.

The cable is brought in through a lead nipple and the wires distributed through hollow binding posts. Soldering the cable wires seals the openings in the binding posts. Compound is poured in at the top of the terminal to exclude air and moisture. The bridge wires are fastened to the binding posts under lock-nuts, and the base is slotted for the entrance of the bridles. The surface of the porcelain between the binding posts is glazed to prevent the accumulation of dirt and moisture and the binding posts are embedded in the porcelain to prevent twisting and breaking of cable wires.

The terminal is compact and neat in appearance and is supplied with galvanized iron cover.

Capacity	Height	Diameter	Weight
11 pair	7 $\frac{3}{4}$ in.	4 $\frac{1}{2}$ in.	6 lbs.
16 pair	10 in.	5 $\frac{1}{2}$ in.	7 $\frac{1}{2}$ lbs.
21 pair	10 in.	5 $\frac{1}{2}$ in.	8 $\frac{1}{2}$ lbs.
26 pair	11 in.	5 $\frac{1}{2}$ in.	10 lbs.

TYPE M-8

The M-8 is small and compact, simple and convenient, and when properly installed will last indefinitely.

The cable is brought in through the base, and after the wires are distributed through the hollow hexagon head bolts and soldered, the core of the terminal should be filled with compound. The drop wires are taken out through side openings in the base, as shown in cut. Furnished with galvanized cover.

No pothead required with this terminal.

Capacity	Height	Diameter	Weight
5 pair	4 $\frac{1}{2}$ in.	3 $\frac{1}{2}$ in.	5 lbs.
10 pair	4 $\frac{1}{2}$ in.	3 $\frac{1}{2}$ in.	6 lbs.
16 pair	4 $\frac{1}{2}$ in.	4 $\frac{1}{2}$ in.	7 lbs.
21 pair	5 $\frac{1}{2}$ in.	4 $\frac{1}{2}$ in.	9 lbs.
26 pair	6 in.	4 $\frac{1}{2}$ in.	10 lbs.



Type M-8—10 Pair

CABLE TERMINALS—UNPROTECTED

TYPE M-10

No Pothead Required



Type M-10

This is an unprotected porcelain terminal, enclosed in an iron box. Unlike the ordinary circular type of unprotected terminal, this is designed to lie flat against a wall or pole, while the hinged cover swings upward, exposing the terminal connecting posts for the purpose of inspection or for making connections.

The connecting posts, which are hollow, extend through the porcelain block and are provided with hexagon heads, which fit into similarly shaped recesses on the rear side of the mounting panel. This construction prevents the annoying and expensive form of trouble, due to the turning of the bolts when drop wires are being connected. The design of the terminal has been worked out with the object in view of economizing to the greatest possible extent in the amount of insulating compound required.

After the cable conductors have been connected to the hollow posts, the terminal may be filled through the opening provided in the top for the purpose. This opening is of the same size and thread as the opening in the bottom for the cable. This makes it possible to transpose the position of the plug, if for any reason it is desirable to bring the cable into the top of the terminal instead of the bottom.

When properly filled with compound, this terminal affords the highest conductor insulation possible to obtain, and the use of porcelain for the supporting panel not only preserves the high insulation, but also renders the terminal absolutely fireproof.

The entire construction of the terminal is such as will afford the greatest possible mechanical strength and rigidity. Openings at the bottom of the iron box permit the entrance of the drop wires, while screw holes of ample size afford a means of securing the terminal firmly in its place. The inside of the cover is provided with a conductor chart having a space for listing all the conductors terminated in the box.

Capacity
11 pair
16 pair
21 pair
26 pair

Weight
15 lbs.
17 lbs.
20 lbs.
25 lbs.

TYPE D

The Type D is an unprotected terminal for use without pothead, similar in construction to the Type A2. It is designed for use in multiple tap distribution where drops to instruments are short and protection is not necessary. It is enclosed in a round, galvanized iron cover with safety chain attached. A 6-foot No. 22 B. & S. gauge cable stud is attached to the assembled terminal, if desired, at small additional cost.

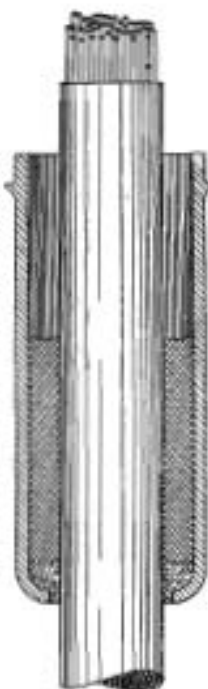
Size
11 pair
16 pair
26 pair

Shipping Weight
9 lbs.
10 lbs.
12 lbs.



Type D

**SELF-SOLDERING NOZZLES**



The value of the self-soldering nozzle has been thoroughly demonstrated by years of service with innumerable terminals. By its use, the expense of the expert cable man has been eliminated in numberless cases, without in any way lowering the standard of workmanship required for satisfactory cable construction. The self-soldering nozzles are regularly furnished containing the necessary solder sleeves with the flux applied, and with the asbestos plug in place.

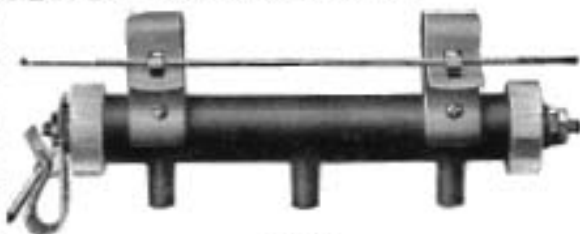
The process of installing a cable end in one of the self-soldering nozzles is very simple. After scraping the lead sheath of the cable bright and clean, it should be inserted in the nozzle in its final position. The asbestos packing is then carefully packed around the cable sheath inside the nozzle, to prevent the escape of the solder. Immediately above the asbestos packing the solder sleeve is inserted and pressed firmly down. When these parts have all been properly assembled, the blow torch is applied around the outside of the nozzle until the solder begins to flow, when the torch should be instantly withdrawn.

The self-soldering nozzles are listed for the purpose of affording a means of arriving at the list prices of equipped junction boxes, but it is necessary for all self-soldering nozzles to be installed at the factory.

No.	Size	Outside Diam. of Nozzle Open- ing In.	No.	Size	Outside Diam. of Nozzle Open- ing In.
1894	16 pair	1 1/4	1894	40 to 75 pair	1 3/4
1891	17 to 20 pair	1 1/4	1895	Over 75 to 100 pair	2
1892	25 pair	1 3/4	1896	120 pair	2 1/4
1893	30 to 50 pair	1 3/4	1897	200 pair	2 3/4

**LIGHTNING ARRESTER—EXTERIOR TYPE**

The No. 700 Aerial Line Arrester is extensively used for protecting toll line and farmer line telephones, especially at isolated stations. Its efficiency has been proven by seven years' service. A carbon rod, with a Fahnestock clip bolted to one end for attaching the ground wire, is insulated from the brass shell, which is suspended from the line wire by means of two Fahnestock clips.



No. 700

**THE I. G. ARRESTER**

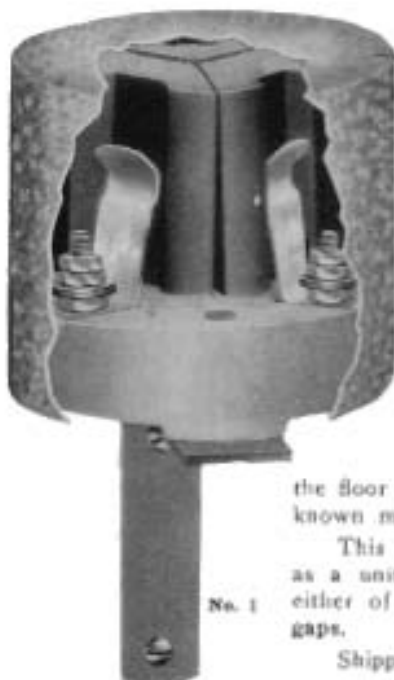
It is a well known fact that lightning will invariably follow the path of least impedance rather than that of the least ohmic resistance. In other words, lightning will take the short straight path to the ground rather than the long roundabout way, even though the latter has the least ohmic resistance. For this reason the I. G. Arrester with its 3/32 of an inch gap, placed directly on the line, with its ground wire run straight down the side of the pole, is more efficient than the average inside carbon arrester with its very small gap, and its necessarily crooked ground wire. Furthermore, although the latter gives much trouble from dirty carbons, etc., the former with its 3/32 inch gap between metallic electrodes of proper design is practically trouble-proof.



The I. G. Arrester is simple and very rugged. Two rust-proof metallic electrodes, one connected to the line and the other to the ground, properly separated by four porcelain studs which insulate and hold the plates together as a unit, giving a uniform gap of 3/32 inch, and a very large surface. The petticoat design of the outer or line electrode furnishes a perfect cover and water drip which protects, from moisture, both the inner or ground electrode and the porcelain separators, thus giving perfect insulation under all weather conditions. Any number of I. G.'s on a line will not decrease its insulation.

LIGHTNING ARRESTERS—EXTERIOR TYPE

No. 1



This is an individual arrester designed for one pair of wires and for exterior work only. It is our old No. 1 re-designed after years of service, and is an excellent device. It is mounted on a galvanized iron bracket, has a strong porcelain base, clips of heavy German silver, and galvanized can cover, held securely by a spring. All connections are accessible without removal of carbons. The carbons are large and are treated by our special process to make them practically self-cleaning.

The carbons are separated at the top by a thin celluloid, and at the bottom are held about  $\frac{1}{8}$  inch apart by glass studs, which forms a wedge-shaped air space. There is also an air space under the carbons, as they are held above the floor of the porcelain. These air spaces form the best known mechanical design for self-cleaning.

This arrester, having three carbons grouped together as a unit, provides for discharges from one terminal to either of the others without having to pass through two gaps.

Shipping weight,  $1\frac{1}{2}$  lbs. each.

No. 2

Designed especially for lightning or toll line use on the pole or outside of buildings. Cover is held in place under spring tension; line and ground connections are of the old-time and well-tried lock-nut type, making an efficient and durable arrester for use in exposed places.

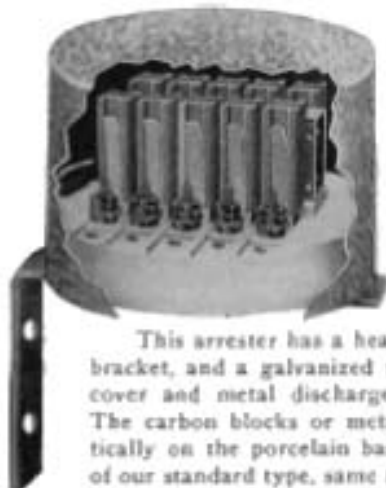
Shipping weight,  $1\frac{1}{2}$  lbs. each.



No. 2 Arrester

No. 5

This is a multiple type arrester of 10 line capacity, designed for outdoor or indoor use. It can be quickly arranged for carbon or metal discharge surfaces, and therefore where this arrester is standard it has a large field of service.



No. 5

This arrester has a heavy porcelain base, mounted on a strong galvanized bracket, and a galvanized metal cover securely held by a spring. Cast iron cover and metal discharge surfaces recommended for exterior installation. The carbon blocks or metal discharge strips and dielectrics are set up vertically on the porcelain base with ample air space underneath. Carbons are of our standard type, same as used on nearly all forms of protective equipment. All connections to this arrester are accessible. Shipping weight, 1 lb. each.

LIGHTNING ARRESTERS—EXTERIOR TYPE

No. 202



No. 202

Weight, 5½ pounds. Size, 7x2½x3¼ inches.

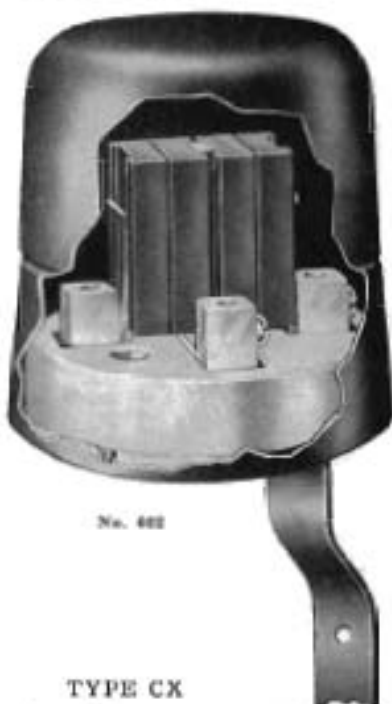
No. 402

The No. 402 Arrester is usually mounted on the pole or outside of building. Its use has been steadily increasing during the last eight years as the importance of keeping lightning out of doors is brought home to the operating man. Large discharge area is of maximum importance in arresters of this character and we fit the No. 402 with specially treated carbon blocks 1½ inches long and ¾ inch wide. The carbons are mounted on a heavy porcelain base 3 inches in diameter and are held in place by wide, heavy retaining springs.

The wire terminals are a unique feature. We have omitted the conventional screw and nut binding post, and equipped the arresters with heavy square posts with hollow shanks extending through the porcelain base. To attach wires it is only necessary to slip them into the posts from below and tighten the set screws. Heavy iron wire is easy to attach as light, soft copper.

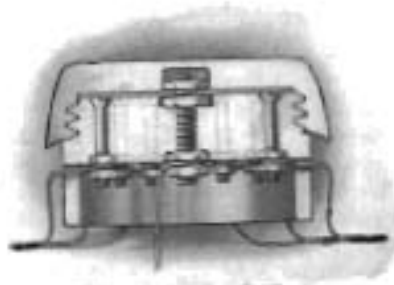
A close-fitting, galvanized iron cover extending two inches below the top of the porcelain base makes the arrester dust and weatherproof.

Weight, 1 pound.



No. 402

TYPE CX



Type CX

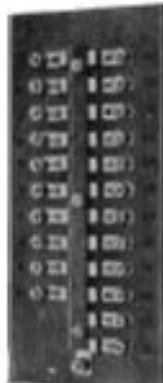
A self-cleaning, saw-tooth air gap lightning arrester with capacity for ten wires, to be used out of doors and for draining lines of lightning at the cross-arm without grounding the lines. All five pairs of lightning arresters can be connected to one pair of wires if desired. The lightning arresters are mounted in a cast-iron case to protect them from the weather and from sharpshooters and rock throwers. The arresters should be mounted on the cross-arm out of the lineman's way.

Consists of ten saw-tooth metal discharge plates normally placed .010 inch from the carbon ground. Spring washers are provided on all bolts and screws to keep arrester parts and screw connections from working loose.

A small, simple, efficient arrester 2¼ inches in diameter and 1¼ inches high, made of brown glazed porcelain, to install on the cross-arm. Through the body of the arrester the 10 binding posts extend, terminating flush on a plane surface, over which lies a thin dielectric of mica or some other insulating material, perforated so that each binding post has an air gap leading to a common ground plate of brass which connects with the ground by a No. 10 copper wire. Over the entire arrester a heavy lid with petticoat rim makes it moistureproof.

Each arrester protects 10 lines and one dozen arresters will protect 100 to 150 telephones.

LIGHTNING ARRESTERS—INTERIOR TYPE



No. 185

No. 185

A self-cleaning, saw-tooth air gap group lightning arrester for protection against lightning only, for mounting in pole house or in buildings where a number of wires enter.

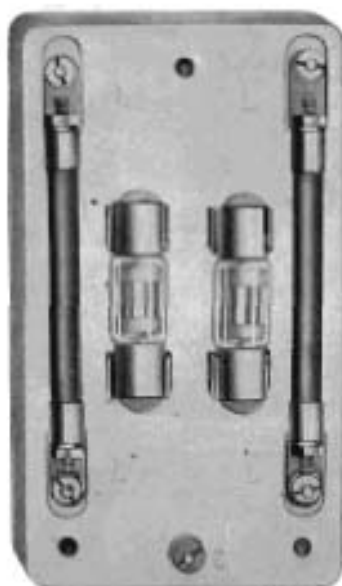
Consists of saw-tooth metal discharge plates normally placed .010 inch from the carbon ground. Parts are mounted on treated maple panel.

Standard Sizes:

11 pairs—Weight, 1½ pounds. Size, 10¾x4½x1¾ inches.

16 pairs—Weight, 1¾ pounds. Size, 10¾x4½x1¾ inches.

VACUUM TYPE



Type 40B  
Not End Fuse

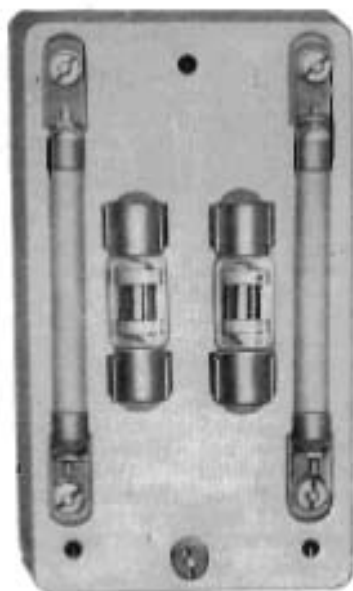
When ordering specify

**Type 40A  
Vacuum  
Arrester**

(if spring held fuse is desired);

**Type 40B  
Vacuum  
Arrester**

(if not held fuse is desired).



Type 40A  
Spring End Fuse

It is well known that thin air or partial vacuum is a free conductor to static or high frequency currents.

VACUUM ARRESTERS have an equivalent of one one-thousandth part of an inch of air gap, although the metal separations are two hundred and fifty times that distance inside of the vacuum cartridge, by comparison with the carbon, mica or carbon metal arrester; the vacuum will be found at least five times as sensitive and at the same time for all normal operating currents and for ohmic resistance tests, insulation is maintained. The distance between electrodes insures perfect safety from grounded or leaky lines. The degree of vacuum regulates the discharge voltage of direct or alternating current.

LIGHTNING ARRESTERS—INTERIOR TYPE



No. 1

No. 2

Designed especially for an efficient lightning or toll line arrester. Is enclosed in brass cap, fibre insulated and perforated to allow for the expansion of heated air.

It is especially recommended for use on long country lines, as it requires practically no attention when once installed and properly "grounded."

Weight, 1 lb.

Nos. 66, 67 and 68—MULTI-DISCHARGE ARRESTERS  
(Mason Patents)



No. 67 Arrester  
(Mason Patent)



No. 66 Arrester  
(Mason Patent)



No. 68 Arrester  
(Mason Patent)

These arresters are provided with a multiple air discharge gap and reactance coil, which is connected in series with the telephone circuit. Each turn of the reactance coil winding forms a short air discharge gap to earth from each side of the line. The reactance of the arrester to sudden rushes of current or to discharges due to lightning is so great, owing to the winding of the choker coils around the carbon ground, that the destructive current is shunted harmlessly to earth without operating the fuse.

Particularly adapted for use with rural line telephones and rural switchboards which cannot be given continual expert attention. All connections can be made to the arrester without soldering, and since the air gaps are in multiple each individual gap is much wider than would otherwise be possible, making the retention of dirt or foreign matter extremely unlikely.

No. 66, intended for use with lines not exposed to cross with high potential circuits. No. 67 and No. 68, designed for use on circuits requiring complete protection. They both comprise a lightning arrester and heavy current protecting fuse.

No. 204—LIGHTNING ARRESTER



Weight per 100, 100 lbs.

No. 89—FUSE BLOCK AND LIGHTNING ARRESTER



(Use No. 11 Fuse.)  
Weight per 100, 50 lbs.

LIGHTNING PROTECTION—INTERIOR TYPE

No. 57—FUSE BLOCK AND LIGHTNING ARRESTER



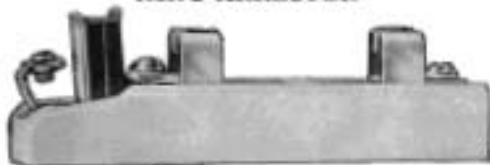
(Use No. 8 Fuse.)  
Weight per 100, 50 lbs.

No. 41—FUSE BLOCK AND LIGHTNING ARRESTER



(Use No. 19 Fuse.)  
Weight per 100, 38 lbs.

No. 42—FUSE BLOCK AND LIGHTNING ARRESTER



(Use No. 8 Fuse.)  
Weight per 100, 25 lbs.

No. 18—FUSE BLOCK SINGLE POLE  
No. 45—FUSE BLOCK DOUBLE POLE



(Use No. 19 Fuse.)  
Weight per 100, No. 18, 25 lbs.  
No. 45, 50 lbs.



No. 406

**No. 406**  
The No. 406 Combination Baby-Knife Switch and Carbon Lightning Arrester is designed especially for farmer line protection. Its use enables the farmer to disconnect his telephone during a storm and at the same time fully protect the telephone line. The heavy knife switch blades are riveted to the hinge posts with hollow rivets, and two phosphor bronze spring washers under the rivet heads on each hinge post insure perfect contact for the talking circuit. The large arrester carbons are separated by specially treated insulating cloth. The No. 406 Lightning Arrester is a neat-appearing, efficient protector for farmers' telephones.

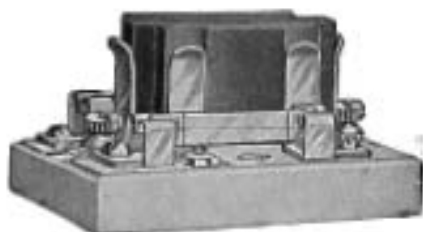
Standard package, 50.  
Weight,  $\frac{3}{4}$  lb. each.  
Size,  $4\frac{1}{2}$  in. x  $2\frac{3}{4}$  in. x 2 in.



No. 400

**No. 400**  
The No. 400 Lightning Arrester is considered standard for farm lines and toll lines protection. This arrester is strongly built with heavy porcelain base, substantial brass mountings, large thumb nuts and three very large carbons. The arrester carbons are sufficiently large to carry off exceptionally heavy discharges of lightning. Insulating cloth dielectrics are used unless otherwise specified.

Weight per 100, 125 lbs.  
Size of arrester,  $3\frac{3}{8}$  in. x 2 in. x  $1\frac{3}{4}$  in.



No. 401

**No. 401—Use No. 8 Fuse**  
The No. 401 Fuse and Lightning Arrester is the same as the No. 400, except that it is equipped with Western Union Fuses.

Weight per 100, 160 lbs.  
Size of arrester, 4 in. x  $2\frac{1}{2}$  in. x  $2\frac{3}{4}$  in.

INDIVIDUAL STATION PROTECTORS



Type B-5

TYPE B-5

Equipped with A-12 three-ampere composition tubular fuses, 3 inches long and with specially treated carbon lightning arrester blocks, mounted upon a substantial porcelain base, furnished with Fahnestock spring binding posts.

Weight, 1½ lbs.



Type B-6

TYPE B-6

Equipped with three-ampere A-12 composition tubular fuses, 3 inches long. Has specially treated carbon lightning arrester, is mounted upon a substantial porcelain base and has lock-nut binding posts for wire connections.

Weight, 1½ lbs.



Type B-7

TYPE B-7

Equipped with Type A-9 standard three-ampere tubular fuses, 4¼ inches long, and with self-cleaning carbon lightning arresters. The carbons are set into the porcelain base and are covered by a brass cap. The cap is perforated to allow for the expansion of heated air, and insulated from all parts of the protector.

Weight, 2 lbs.



Type B-9

TYPE B-9

Designed to be used either for indoor or outdoor protection; is absolutely weatherproof under the most severe conditions. Heavy weatherproof cover included with each protector.

Equipped with Type A-9 standard three-ampere tubular fuses, and specially treated carbon lightning arresters.

Weight, 4 lbs.



Type B-12

TYPE B-12

Designed for use where there are no long aerial lines. Consists of a heavy porcelain base, with strong fuse clips and wire connections, and is equipped with 3-ampere A-12 composition tubular fuses.

Weight, 1 lb.



Type B-15

TYPE B-15

A two-piece porcelain base protector, with two lightning arresters, one at each end of the fuses.

Three-ampere, A-9 composition fuses are furnished unless otherwise specified.

Weight, 2 lbs.

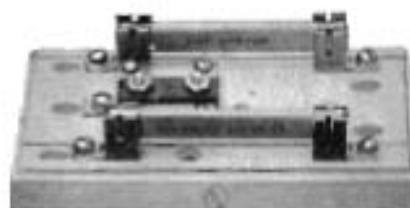
INDIVIDUAL STATION PROTECTORS



Type B-13



Type B-14



No. 976 without cover

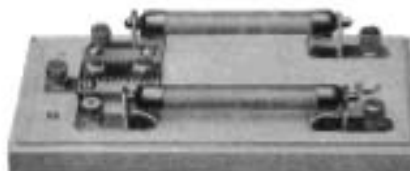
Approved by the National Board of Fire Underwriters



No. 976 with "all over" cover



No. 998C



No. 998

Approved by the National Board of Fire Underwriters

TYPE B-13

Designed to carry either a long or a short fuse, the porcelain being in two pieces, one carrying clips for the line end of the fuses only, and the other carrying clips for the instrument end of the fuses, and also carbons. Carbons are standard type, chemically treated, and are practically self-cleaning.

Regularly furnished with 3-ampere A-9 composition tubular fuse, 4 $\frac{1}{4}$  inches long between shoulders.

Weight, 1 $\frac{3}{4}$  lbs

TYPE B-14

A two-piece porcelain base protector to carry fuses only. Furnished with 3-ampere A-9 composition tubular fuse, 4 $\frac{1}{4}$  inches long between shoulders, unless otherwise specified. Weight, 10 oz.

No. 976

A self-cleaning, saw-tooth air gap protector to be used for protection against lightning and crosses with electric circuits. Can be supplied with or without "all over" metal cover which encloses the fuses as well as the lightning arresters.

Consists of two No. 44 Blow-Rite flat wood fuses—3 amperes, 3 $\frac{1}{2}$  inches tip to tip, held in place by phosphor bronze contact springs which grip the flat tips of the fuse, and two adjustable, saw-tooth metal discharge plates normally placed .005 inch from the carbon ground.

No. 52 tubular fibre fuses with flat tips supplied when specified.

No. 976B is the same protector equipped with fuses only.

Weight, 1 $\frac{3}{4}$  lbs. Size, 5 $\frac{7}{8}$ x3x2 in.

No. 998C

A self-cleaning, saw-tooth air gap protector to be used for protection against lightning and crosses with electric circuits.

Consists of two No. 27 Blow-Rite tubular wood fuses—3 amperes, 4 $\frac{1}{4}$  inches shoulder to shoulder,  $\frac{3}{8}$ -inch tip, held in place by phosphor bronze contact springs with four projections which bite into the fuse tips, and two adjustable, saw-tooth metal discharge plates normally placed .005 inch from the carbon ground.

No. 77 tubular fibre or No. 28 magnesia fuses supplied when specified.

Weight, 1 $\frac{3}{4}$  lbs. Size, 6 $\frac{5}{8}$ x3x1 $\frac{3}{4}$  in.

No. 998

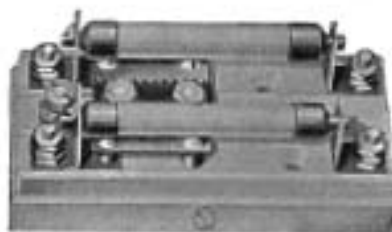
A self-cleaning, saw-tooth air gap protector to be used for protection against lightning and crosses with electric circuits. Can be supplied with or without "all over" metal cover which encloses fuses as well as lightning arresters.

Consists of two No. 6 Blow-Rite tubular wood fuses—3 amperes, 3 $\frac{3}{4}$  inches shoulder to shoulder, held in place by goose neck contacts with phosphor bronze tension springs, and two adjustable saw-tooth metal discharge plates normally placed .005 inch from the carbon ground.

No. 75 tubular fibre or No. 35 magnesia fuses supplied when specified.

Weight, 2 lbs. Size, 7 $\frac{3}{8}$ x3 $\frac{3}{4}$ x1 $\frac{1}{2}$  in.

INDIVIDUAL STATION PROTECTORS



No. 975

**No. 975**  
A self-cleaning, saw-tooth air gap protector to be used for protection against lightning and crosses with electric circuits. Can be supplied with or without "all over" metal cover which encloses fuses as well as lightning arresters.

Consists of two No. 29 Blow-Rite tubular wood fuses—3 ampere, 3 inches shoulder to shoulder,  $\frac{1}{8}$ -inch tip, held in place by phosphor bronze contact springs with four projections which bite into the fuse tips, and two adjustable saw-tooth metal discharge plates normally placed .005 inch from the carbon ground.

No. 48 tubular fibre or No. 30 magnesia fuses supplied when specified.

Weight, 1 lb. Size, 5x2x2 in.



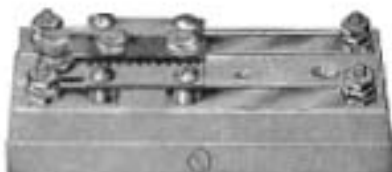
No. 975A

**No. 975A**  
Provided with ground binding post mounted in center of projector to facilitate wiring. A number of these protectors which are only 2 inches wide can be mounted side by side on the wall or in a pole house and a straight ground wire used to strap all of the grounds. This keeps the line wires away from the ground wire. Can be furnished with or without "all over" metal cover.

A self-cleaning, saw-tooth air gap protector to be used for protection against lightning, particularly at rural and other isolated stations where it is desirable to be free from the annoyance of cleaning carbons, and where crosses with electric circuits are not likely to occur.

Consists of two adjustable saw-tooth metal discharge plates normally placed .005 inch from the carbon ground. Can be supplied with or without "all over" metal cover.

Weight, 13 oz. Size, 5x2x1 $\frac{1}{2}$  in.



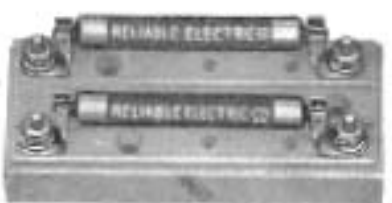
No. 975B

**No. 975D**  
A fuse protector to be used for protection against crosses with electric circuits. Can be supplied with or without "all over" metal cover which encloses fuses.

Consists of two No. 48 Blow-Rite tubular fibre fuses—3 ampere, 3 inches shoulder to shoulder,  $\frac{1}{8}$ -inch tip, held in place by phosphor bronze contact springs with four projections which bite into the fuse tips.

No. 29 tubular wood or No. 30 porcelain fuses supplied when specified.

Weight,  $\frac{3}{4}$  lb. Size, 5x2x1 $\frac{1}{4}$  in.

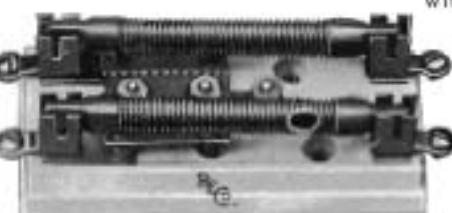


No. 975D

**No. 975E**  
A self-cleaning, saw-tooth air gap protector, with choke coil fuses, to be used for protection against lightning, crosses with electric circuits and sneak currents. Provided with ground binding post mounted in center of protector to facilitate wiring.

A number of these protectors which are only 2 inches wide can be mounted side by side on the wall or in a pole house and a straight ground wire used to strap all of the grounds. This keeps the line wires away from the ground wire.

Consists of two No. 66 Blow-Rite choke coil fuses—1 ampere,  $4\frac{1}{4}$  inches tip to tip, held in place by phosphor bronze contact springs which grip the flat tips of the fuses.



No. 975E

No. 975F is the same protector equipped with two No. 76 flat wood fuses—3 ampere,  $4\frac{1}{2}$  inches tip to tip. Weight,  $\frac{3}{4}$  lb. Size, 5 $\frac{1}{2}$ x2x1 $\frac{1}{4}$  in.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## INDIVIDUAL STATION PROTECTORS

Listed and Approved by National Board of Underwriters



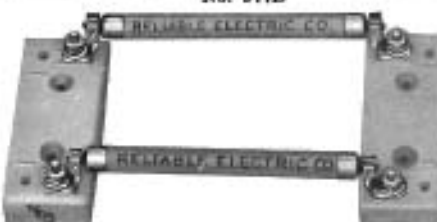
No. 977B



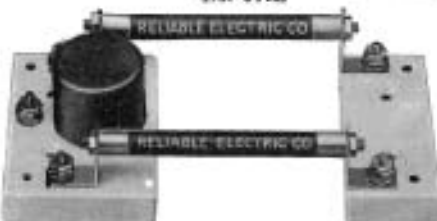
No. 977C



No. 977D



No. 977E



No. 977H



No. 977K

### No. 977B

A carbon block air gap protector to be used for protection against lightning and crosses with electric circuits. The lightning arresters are enclosed by a brass screw cover.

Consists of two No. 49 Blow-Rite tubular fibre fuses with flat tips—7 amperes, 5 inches tip to tip, held in place by phosphor bronze contact springs which grip the flat tips of the fuses; and four P367 carbon blocks with two P312 "U" shaped mica dielectrics.

No. 977BB is the same protector equipped with two P305 copper blocks.

Weight, 1½ pounds. Size, 6¼x3¼x2¼ inches.

### No. 977C

A fuse protector to be used for protection against crosses with electric circuits.

Consists of two No. 49 Blow-Rite tubular fibre fuses with flat tips—7 amperes, 5 inches tip to tip, held in place by phosphor bronze contact springs which grip the flat tips of the fuses.

No. 977J is the same protector equipped with No. 54 choke coil fuses—1 ampere, 4½ inches tip to tip.

Weight, ¾ pound. Size, 6¼x2¼x1½ inches.

### No. 977D

A copper block air gap protector to be used for protection against lightning and crosses with electric circuits. The lightning arresters are enclosed by a brass screw cover.

Consists of two No. 27 Blow-Rite tubular wood fuses—3 amperes, 4½ inches shoulder to shoulder, 1/16-inch tip, held in place by phosphor bronze contact springs with four projections which bite into the fuse tips; and four P367 carbon blocks with two P312 "U" shaped mica dielectrics.

No. 977DD is the same protector equipped with two P305 copper blocks.

Weight, 1½ pounds. Size, 7¼x3¼x2¼ inches.

### No. 977E

A fuse protector to be used for protection against crosses with electric circuits.

Consists of two No. 27 Blow-Rite tubular wood fuses—3 amperes, 4½ inches shoulder to shoulder, 1/16-inch tip, held in place by phosphor bronze contact springs with four projections which bite into the fuse tips.

No. 77 tubular fibre or No. 55 magnesia fuses supplied when specified.

Weight, ¾ pound. Size, 7¼x2¼x1½ inches.

### No. 977H

A carbon block air gap protector to be used for protection against lightning and crosses with electric circuits. The lightning arresters are enclosed by a brass screw cover.

Consists of two No. 55 Blow-Rite tubular fibre fuses with lock nut tips—7 amperes, 4 inches shoulder to shoulder, and four P367 carbon blocks with two P312 "U" shaped mica dielectrics.

No. 977HH is the same protector equipped with two P305 copper blocks.

Weight, 1½ pounds. Size, 7x2¼x2¼ inches.

### No. 977K

A fuse protector to be used for protection against crosses with electric circuits.

Consists of two No. 55 Blow-Rite tubular fibre fuses with lock nut tips—7 amperes, 4 inches shoulder to shoulder.

Weight, ¾ pound. Size, 7x1½x1½ inches.

INDIVIDUAL STATION PROTECTORS



No. 977A

No. 977A

A carbon block air gap protector to be used for protection against lightning where crosses with electric circuits are not likely to occur. The lightning arresters are enclosed by a brass screw cover.

Consists of four P367 carbon blocks with two P312 "U" shaped mica dielectrics.

No. 977AA is the same protector equipped with two P303 copper blocks.

Weight,  $\frac{3}{4}$  lb. Size,  $3\frac{1}{2} \times 2\frac{3}{4} \times 2\frac{3}{4}$  in.

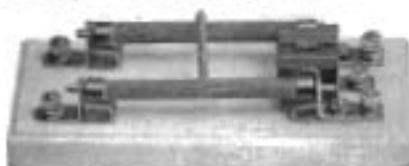
No. 991

A large carbon block air gap protector to be used for protection against lightning and crosses with electric circuits. Can be supplied with or without "all over" metal cover which encloses fuses as well as lightning arresters.

Consists of two No. 3 Blow-Rite tubular wood fuses—3 amperes,  $4\frac{1}{2}$  inches shoulder to shoulder, held in place by goose neck contacts with phosphor bronze tension springs, and four P376 large carbon blocks with two P375 "U" shaped mica dielectrics.

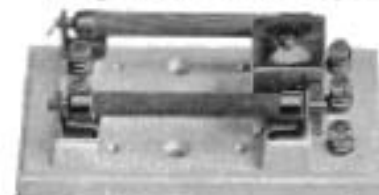
Tubular fibre or magnesia fuses supplied when specified.

Weight,  $1\frac{1}{4}$  lbs. Size,  $7\frac{1}{2} \times 2\frac{3}{4} \times 1\frac{3}{4}$  inches.



No. 991

Approved by the National Board of Fire Underwriters



No. 880

No. 880

A large carbon block air gap protector to be used for protection against lightning and crosses with electric circuits. Can be supplied with "all over" glass cover or with metal cover enclosing lightning arresters only.

Consists of two No. 6 Blow-Rite tubular wood fuses—3 amperes,  $3\frac{1}{2}$  inches shoulder to shoulder, held in place by goose neck contacts with phosphor bronze tension springs, and four P12 large carbon blocks with two P11 "U" shaped mica dielectrics.

No. 75 tubular fibre or No. 35 magnesia fuses supplied when specified.

Weight,  $1\frac{1}{4}$  lbs. Size,  $6 \times 3 \times 2$  in.



No. 997 Closed

No. 997

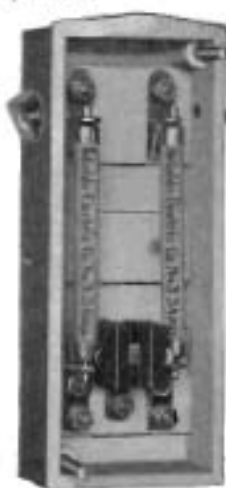
Approved by the National Board of Fire Underwriters

A perfectly waterproof large carbon air gap protector for outdoor mounting, to be used for protection against lightning and crosses with electric circuits. It is mounted in a vitrified porcelain box with the top shaped to shed water away from the cover and with protected vents under the eaves to insure ventilation and prevent sweating. A smooth cast-iron cover, red enameled, is fitted with a pure rubber gasket and locked in place by means of two wing nuts.

Consists of two No. 3 Blow-Rite tubular wood fuses—3 amperes,  $4\frac{1}{2}$  inches shoulder to shoulder, held in place by goose neck contacts with phosphor bronze tension springs, and four P376 large carbon blocks with two P375 "U" shaped mica dielectrics.

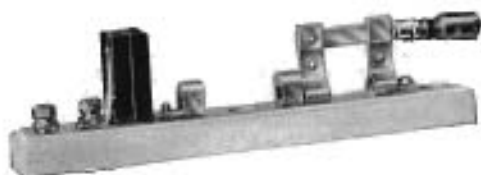
Tubular fibre or magnesia fuses supplied when specified.

Weight,  $3\frac{1}{4}$  lbs. Size,  $8\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$  in.



No. 997 Open

KNIFE AND SWITCH ARRESTERS



No. 501 Protector



No. 500 Protector

The desirability of installing Knife Switches in connection with carbon arresters and fuses on rural lines and at railroad way stations is generally recognized. The installation of switches and arresters mounted separately necessitates extra wiring, which sometimes causes loose connections and frequently does not present a good appearance.

The Combination Baby-Knife Switch and Arresters shown on this page eliminate the necessity of installing two separate pieces of apparatus to accomplish the desired results. The Knife Switches are of heavy copper, nickel-plated, with phosphor-bronze spring washers under the hinge post rivet heads to insure good contact in the talking circuit. The large carbon blocks and the mica fuses afford ample protection from

lightning and high tension circuits. The heavy glazed porcelain base and high polished, nickel-plated metal parts give the arresters a very attractive appearance.

On long telephone lines, especially where a large number of telephones are installed on the same line, these combination arresters are indispensable. The opening of switches at the various stations enables the maintainer to locate trouble without the expense of going over the entire line. Opening switches during electrical storms prevents burning out fuses with consequent loss of service and troublesome replacement of fuses.

Combination Baby-Knife Switches are made for metallic and grounded lines with and without fuses.

No. 500 Double Pole. Weight, 1 1/4 lbs. each. 8x3 x2 1/4 in.

No. 501 Single Pole. Weight, 1 lb. each. 8x1 1/2 x2 1/4 in.

No. 19 W. U. Mica Fuses used with above.

BLOW-RITE FUSE WIRE



Blow-Rite Fuse Wire is a copper alloy made especially for lining telephone fuses. It has great tensile strength and can be soldered without fear of burning the wire. It is rated at its exact blowing point and does not corrode or crystallize as ordinary fuse wire does.

Blow-Rite Fuse Wire is put up on 300-foot spools for use in relining telephone fuses.

Made in 1, 2, 3, 4, 5, 7 and 10 amperes blowing point.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY



**TESTED FUSE WIRE**

From 1-8 to 200 Amperes

Size Carrying Capacity Amperes	Best Lengths for Use and Fusing Currents for Such Lengths		Length Per Spool	Millimeters Diameter	One Package Contains	Price Per Foot	List Price Per Spool
	Feet	Amperes					
1/4	1	1/4	40725 ft.	2 1/2	250 feet	1 cent	\$95.00
1/2	1	1/2	12550 ft.	4 1/2	250 feet	1 cent	\$50.00
3/4	1	3/4	2550 ft.	10	8 2-oz. spools	1 cent	\$2.75
1	1	2 1/4	1516 ft.	12	2 8-oz. spools	1 cent	\$2.75
1	1 1/4	3	993 ft.	16	2 8-oz. spools	1 cent	\$1.10
2	1 1/2	5	407 ft.	25	2 8-oz. spools	1 cent	\$1.05
3	1 3/4	7	265 ft.	31	2 8-oz. spools	1 cent	\$1.00
4	1 3/4	9	207 ft.	35	1 1-lb. spool	1 cent	\$1.00
5	1 3/4	10	167 ft.	39	1 1-lb. spool	1 1/2 cents	\$1.00
6	2	12	144 ft.	42	1 1-lb. spool	1 1/2 cents	\$0.85
7	2	13	120 ft.	46	1 1-lb. spool	1 1/2 cents	\$0.85
8	2	15	106 ft.	49	1 1-lb. spool	1 1/2 cents	\$0.80
9	2	16	94 ft.	52	1 1-lb. spool	1 1/2 cents	\$0.80
10	2 1/4	17	84 ft.	55	1 1-lb. spool	1 1/2 cents	\$0.80
12	2 1/4	20	68 ft.	61	1 1-lb. spool	2 cents	\$0.80
14	2 1/4	23	58 ft.	66	1 1-lb. spool	2 cents	\$0.80
15	2 1/4	24	55 ft.	68	1 1-lb. spool	2 1/2 cents	\$0.75
16	2 1/4	25	49 ft.	72	1 1-lb. spool	2 1/2 cents	\$0.75
18	2 1/4	28	46 ft.	77	1 1-lb. spool	3 cents	\$0.75
20	2 1/2	30	37 ft. 10 in.	82	1 1-lb. spool	3 cents	\$0.75
25	2 1/2	37	28 ft. 9 in.	94	1 1-lb. spool	4 cents	\$0.75
30	2 1/2	43	24 ft.	103	1 1-lb. spool	5 cents	\$0.75
35	3	49	20 ft.	113	1 1-lb. spool	5 cents	\$0.75
40	3	56	17 ft. 2 in.	122	1 1-lb. spool	6 cents	\$0.75
45	3	62	15 ft. 4 in.	129	1 1-lb. spool	7 cents	\$0.75
50	3	69	13 ft. 6 in.	137	1 1-lb. spool	8 cents	\$0.75
60	3 1/4	81	10 ft. 8 in.	158	1 5-lb. spool	8 cents	\$0.70
70	3 1/4	93	8 ft. 10 in.	170	1 5-lb. spool	9 cents	\$0.70
75	3 1/2	95	7 ft. 9 in.	182	1 5-lb. spool	9 cents	\$0.70
80	3 1/2	106	7 ft. 2 in.	189	1 5-lb. spool	10 cents	\$0.70
90	3 1/2	118	5 ft. 8 in.	212	1 5-lb. spool	10 cents	\$0.70
100	4	129	5 ft.	226	1 5-lb. spool	12 cents	\$0.70
110	4	140	4 ft. 6 in.	234	1 5-lb. spool	15 cents	\$0.50
125	4	155	4 ft.	259	1 5-lb. spool	15 cents	\$0.50
150	4	187	3 ft. 6 in.	291	1 5-lb. spool	15 cents	\$0.50
175	5	205	3 ft.	320	1 5-lb. spool	18 cents	\$0.50
200	5	235	2 ft. 8 in.	346	1 5-lb. spool	18 cents	\$0.50

Persons using Fuse Wire should take into consideration the length of wire between binding posts, since this length has an important bearing on the fusing point. The most advisable length for each particular size of wire will be found in the table. If wire is used in shorter pieces than those given, its carrying capacity will be raised. Persons entrusted with the replacing of fuses should have their attention called to this point.

Put up on Wood Spools and Packed in Tin Boxes. (Packed in Wood Boxes if preferred.)

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## MICA FUSES AND FUSE BLOCKS

### MICA FUSES



No. 10



No. 21



No. 8



No. 11



No. 22



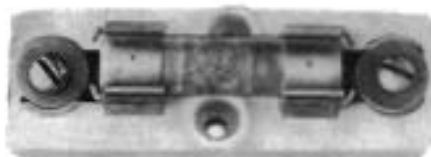
No. 25



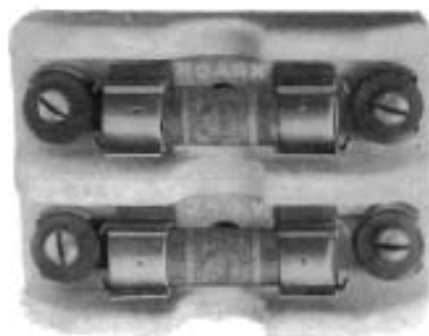
No. 107

Our standard mica fuses are made the exact size of the cuts on this page and are made with copper terminals. The workmanship is excellent, insuring 100 per cent good fuses. We make special mica and fibre fuses of every description and ship promptly. Uncovered fuses are shipped unless enclosed fuses are specified.

### FUSES AND FUSE BLOCKS FOR SMALL POWER BOARDS



Single Fuse Block fitted with 5-amperes to 30-amperes fuses. Furnished without fuses, unless specified.



Double Fuse Block fitted with 5-amperes to 30-amperes fuses.

A small power panel systematically arranged is rapidly becoming a necessary part of well regulated magneto exchanges, especially where storage battery is used for transmitters, transfer and pilot lamps or for operating ringing transformers. Such a power board need not be elaborate or expensive; a panel of hardwood with porcelain base switches and these fuses is all that is required.



Fuses for use with above, 5 to 30 amperes. In ordering state ampereage desired.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## TUBULAR AND FLAT FUSES

### TUBULAR FUSES



No.	Length Between Shoulders	Used with	Tips	Material
3	4 1/8 in.	991, 997; Protectors	Plain	Wood
5	2 3/4 in.	A-2 Terminals	Plain	Wood
6	3 3/8 in.	998; 999; 880	Plain	Wood
35	3 3/8 in.	880; 888	Plain	Porcelain
27	4 1/4 in.	998C; 977D; 977E	Plain	Wood
28	4 3/4 in.	998C; 977D; 977E	Plain	Porcelain
29	3 in.	975; 975A; 975D	Plain	Wood
30	3 in.	975; 975A; 975D	Plain	Porcelain
48	3 in.	975; 975A; 975D	Plain	Fibre
37	4 1/8 in.	S Terminal	Plain	Wood
43	2 3/8 in.	247G; 246I Fuse Strips, No. 900 Strip	Plain	Wood
4	4 in.	J; A-1 Terminal	Plain	Wood
36	4 in.	992 Strip	Plain	Fibre
9	3 1/8 in.	131 Strip	Plain	Wood
55	4 in.	977H; 977K	Threaded	Fibre
44		A. G. Terminal	Flat	Wood
A-2	4 5/8 in.	Old type protectors	Plain	Wood
A-3	4 5/8 in.	Old type protectors	Threaded	Wood
A-7	4 3/4 in.	Standard Protector Strips, B-15 Prot	Plain	Composition
A-9	4 3/4 in.	B-4, B-7, B-9, B-13, B-14	Plain	Wood
A-11	3 1/4 in.		Plain	Composition
A-12	3 in.	B-5, B-6, Protectors	Plain	Wood
A-13	4 in.	Sterling types	Plain, extra long	Composition
A-44	3 7/8 in.	H-40, S-19	Plain	Wood
A-45	3 7/8 in.	H-36	Plain	Wood
A-46	3 7/8 in.	H-36	Plain	Wood

### FLAT FUSES



No. 44 Flat Fuse

The ideal fuse for telephone protection. Blows accurately at rated capacity; can be rewired easily by anyone; blows accurately after rewiring; insures good contact in telephone circuit; can be replaced without tools.

The flat fuse fulfills every one of the ideal requirements: It blows accurately when new because wired with Blow-Rite fuse wire. It is constructed so that anyone can rewire it in a moment. The flat fuse is as good as new when the blown fuse wire is replaced, because all the old wire is removed. When other types of fuses are rewired, the old fuse wire stays inside in contact with the new, which makes the blowing point uncertain and the fuse unsafe to use. The heavy phosphor bronze fuse clips grip the flat fuse terminals in a way that insures good contact. The flat fuse slips in and out of the phosphor bronze fuse clips, brightening the contact surfaces and insuring good contact without screw connections.

CABLE JUNCTION BOXES

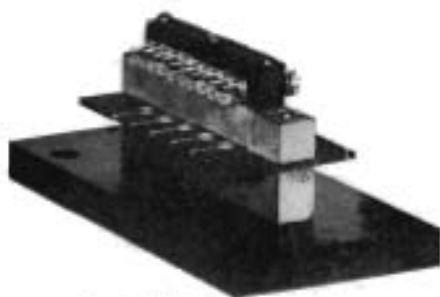
Previous methods of forming cable junctions for office building distribution and intercommunicating systems have always presented the problem of finding a satisfactory terminal from a maintenance and testing standpoint.

This condition has been met by the Kellogg Company with their "A" and "B" type junction boxes, which can be located at any point where it is necessary to multiple a house cable.

They are a compact, neat terminal, arranged so that the cables can be easily dressed into the terminals without the necessity of lacing. They can be furnished in any number of pairs and have the advantage of a four point connection on each terminal.

The "A" type is intended for use where all wires are to be soldered. The "B" type is universal, being provided with a screw connection on each side of the terminal, in addition to having provision for soldering. This really makes possible the connection of six wires on the "B" type terminal, four of which can be soldered and two fastened under the screws.

The telephone man who has worried over the old methods of forming and distributing cables will welcome this type of terminal for the advantages it gives him in terminating and distributing wires and cables.



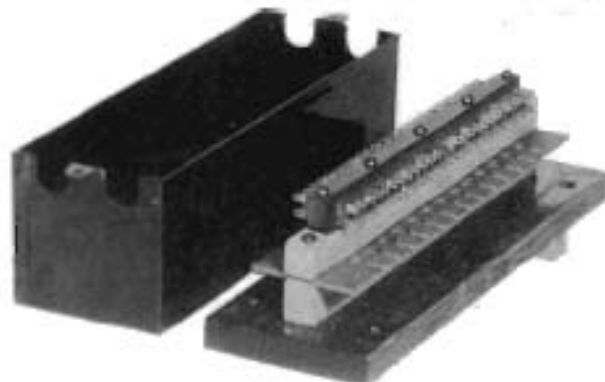
No. 2505B with Base for Cover



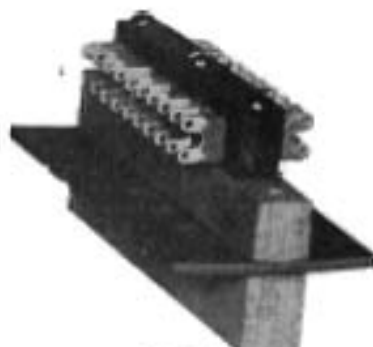
Cover for No. 2505B Junction Box

Code No. Solder terminals, Both sides.	Code No. Combination solder terminal one side, screw terminal on other.	No. of pairs
2505A	2505B	5
2507A	2507B	7
2509A	2509B	9
2511A	2511B	11
2515A	2515B	15

Code No. Solder terminals, Both sides.	Code No. Combination solder terminal one side, screw terminal on other.	No. of pairs
2517A	2517B	17
2519A	2519B	19
2521A	2521B	21
2523A	2523B	23

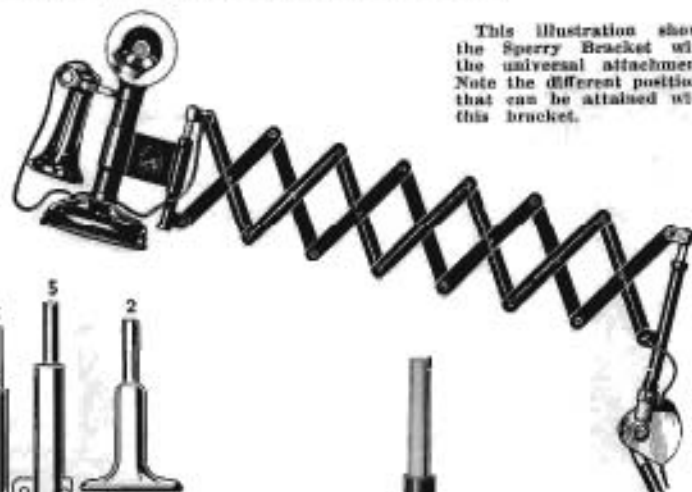


No. 2515A  
Junction Box, Complete with Base and Cover

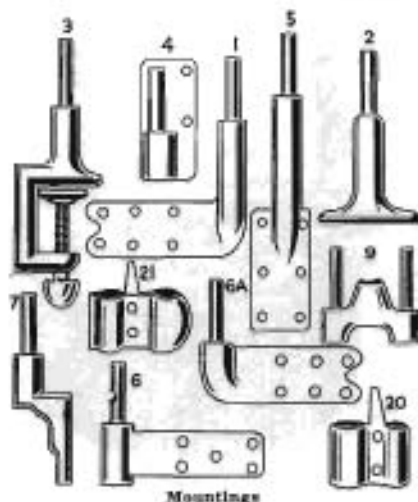


No. 2505A

THE SPERRY TELEPHONE BRACKET



This illustration shows the Sperry Bracket with the universal attachment. Note the different positions that can be attained with this bracket.



Mountings

A durable telephone bracket that combines every feature into the one bracket. It is a strong, high class bracket furnished in black enamel, oxidized copper or nickel plated finish.



Invisible Screw Mounting



New Minute Clamp

No.	Number of Crossbars	Length When Extended	Approx. Shipping Weight
8	8	24 in.	5
10	10	28 in.	5½
12	12	32 in.	6
14	14	36 in.	6½
16	16	40 in.	7

MOUNTINGS

- No. 1 is used on side of flat or roll top desk.
- No. 2 is used on the top of the desk.
- No. 3 clamps on edge of a flat top desk.
- No. 4 is used on a wall or partition.
- No. 5 is used on side of flat top desk.
- No. 6 is used on side of roll top desk.
- No. 7 is used on side of flat top desk.
- No. 9 attachment fits any mounting and holds two arms

CLAMPS

- No. 20 Clamp fits all phones with a cylindrical barrel.
- No. 21 Clamp fits all phones with a convex shaped barrel.

The Sperry Minute Clamp (Patent applied for) enables anyone to put the telephone on the bracket, or take it off, in less than a minute, without screws, bolts, nuts or tools of any kind.

The Sperry Universal Attachment (Patent applied for) converts in a moment any Sperry standard bracket into a Universal bracket. Simply slip the attachment on the regular mounting and the bracket on the attachment. Add "U" to the code number when desiring bracket with this attachment.

The Sperry invisible screw mounting may be fastened to the finest furniture without marring the finish. It is screwed to the bottom of the desk or table top, and may be removed without leaving the slightest visible trace.

THE CALCULAGRAPH



Calculagraph Model 4, Case A, Mounted on Pedestal

Pedestal adjustable in height from 24 to 42 inches, floor to top of card plate.

Its function is to calculate and record by mechanical means the time, in minutes and quarter minutes, which elapses during a toll conversation. It definitely fixes the charge for the same and effectively stops a serious leak in the revenue of the telephone company employing it.

It makes no clerical errors. It is operated by pulling a lever, which can be accomplished without mental effort on the part of the operator and while she is attending to the switching of some other line.

The case of this machine has a nickel-plated flange at the top, and is designed to sink in the switchboard so that the ticket plate of the calculagraph is practically flush with the top of the switchboard.

Since aniline dyes destroy the stamping pads, only mineral dyes should be used. The calculagraph mineral ink ribbons should be used if satisfactory results are to be obtained.



Calculagraph Model 6, Case C For Mounting Flush with Top of Key-shelf.

ELAPSED TIME.		A.M.	TIME CONNECTED.
No. _____	DATE _____		
FROM _____			
AT _____			
TO _____			
AT _____			

Record of Calculagraph Model 6, showing that connection was completed at 9:45 A. M. and that the circuit was in actual use six and one-quarter minutes.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## KELLOGG TEST SETS



Code No. 1016 Closed



Code No. 1014 Open

These lineman's test sets are of the Kellogg Company's own manufacture. They are fitted with standard Kellogg apparatus throughout.

We recommend for telephone companies the complete set with transmitter coil and batteries, and carry in stock the following:

Code No.	Series or Bridging	Generator	Ringer
1016	Bridging	4 bar	1600 ohm
1002	Series	3 bar	80 ohm

Any combination of generators and ringers, either series or bridging, furnished promptly to order.



Code No. 1020 Closed



Code No. 1020 Open

Code No.	Series or Bridging	Generator	Ringer
1020	Series	3 bar	80 ohm
1021	Bridging	3 bar	1000 ohm

This set measures 8½ inches in height, is 6¾ inches wide and 5 inches deep, and weighs 12 pounds 13 ounces.

The depth being but 5 inches, enables the lineman to carry the instrument close to his side, so that it is not caught on wires when climbing. It is easier for a man to carry a fairly heavy instrument, proportioned properly, than to carry a lighter one which is inconvenient to handle.

A No. 3 push button is mounted on the right side of the box near the top, convenient for the hand. This is to cut in the battery when the user wishes to talk.

A No. 103 Ever-Ready battery is used. The set is furnished in quarter-sawed oak, and the ringer is our No. 33 without gongs.

STEWART TEST SETS



Midcot Stewart Test Set

The "STEWART" Test Set is the only test set that tells which way and how far trouble is from the tester. It also has a powerful generator, receiver, transmitter, induction coil. It comes complete with all cords and clips, shoulder strap and leather top cover.



Stewart Test Cabinet

The "STEWART" Direct Reading Test Cabinet is the only test cabinet made that reads resistance to trouble directly in ohms. No figuring necessary. Read the resistance off the dial and look on card to find distance to trouble. Any telephone man can install it in one hour, and anyone can use it. A special adjuster takes care of the voltage float.

The "STEWART" Resistance Meter measures resistance to trouble direct with current from a hand generator for power. No batteries are necessary. It is to be used with a 5-bar bridging telephone. It makes an efficient test outfit for small exchanges. The resistance to trouble is read direct from the scale. Distance for each reading can be found on a card sent with each instrument. Sent on trial.



Stewart Resistance Meter

Locates shorts, crosses, grounds and wet spots in an inch in telephone or power cables.

The "STEWART" Cable Tester locates shorts, crosses, grounds, and wet spots to an inch. It is the only cable tester that has an exploring coil that is neutral to the tone on the armor, so that the tone will not go by on grounds and wet spots. The tone is very distinct, and the voltage on the line is only about 6 volts, so it will not noise up other pairs.



Stewart Cable Tester

Reads non-inductive resistances direct in ohms. Tells in miles how far trouble is from office.

Case large enough to hold exploring coil and receiver, when not in use. Also batteries necessary to operate.

AMPEREMETERS (OR AMMETERS) AND VOLTMETERS

EVER-READY

Ever-Ready Ammeter. Range 0 to 30 amperes, for testing amperage of dry batteries.



Ammeter

Ever-Ready Voltammeter. Ranges 0 to 11 volts, 0 to 35 amperes, for testing voltage and amperage of dry batteries.

THOMPSON  
A. C. VOLTMETER

Invaluable for testing generators, pole changers and Harmonic Ringing Sets, which tests cannot be made with direct current meters. Illustrated on following page.



Voltmeter

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### AMPEREMETERS (OR AMMETERS) AND VOLTMETERS

#### WESTON METERS



Weston Portable



Pignolet Portable

The new Weston Miniature Precision Direct Current instruments, either switchboard or portable, are especially adapted for use where a small, reliable, low priced article is desired. The type is the same as the large Weston D. C. instruments which have been standard for years. They are strictly high grade, extremely sensitive, accurate and dead beat. The dust-proof case is made of special steel which shields the magnetic system from reasonable disturbing action of external fields. We will gladly send catalog describing in detail Voltmeters, Milli Voltmeters, Voltammeters, Ammeters, Milli Ammeters and Battery Testers. We will also supply catalog of Standard Weston Meters for any service desired.



Thompson A. C. Voltmeter  
0 to 100 Volts



Weston Switchboard



Pignolet Switchboard

#### PIGNOLET METERS

We illustrate here two new portable and switchboard meters. These are constructed in a most thorough manner, electrically and mechanically. Each meter is calibrated individually to insure the highest accuracy, and is fully guaranteed. Send for folder giving further particulars.

#### SOUND-PROOF TELEPHONE BOOTHS

The doors are made to swing either to right or left, as ordered. (Please specify.) This booth is double throughout with air spaces between inside and outside walls, which are fastened together and to the floor of booth with felt blocks between. The floor is on rubber cushions. Durable varnish finish without gloss.



Sound-Proof Type—Closed View

#### Type No. 25

Outside dimensions, 30x36 in.  
Inside dimensions, 25½x31½ in.  
Packing weight, crated, 475 lbs.

#### UNIT TELEPHONE BOOTHS

##### 25-Folding Door

Outside dimensions:

Height, 88¼ in.  
Width, 29 in.  
Depth, 30¼ in.

Inside dimensions:

Height, 77¼ in.  
Width, 27¼ in.  
Depth, 27¼ in.

Packing weight, crated, 375 lbs.

Made in units so that as many booths as desired can be placed side by side.

Special catalog showing more elaborate booths will be sent on request.



Unit Type—Closed View

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

SWITCHBOARD CHAIRS



No. 1100

Golden Oak or Int. Mahogany. Dull.  
Height, 18 to 22 in.



No. 1100W

Golden Oak or Int. Mahogany. Dull.  
Height, 18 to 22 in.



No. 1101—Cane Seat

No. 1101PL—Same with perforated  
Leather Seat over Cane. Golden Oak  
or Int. Mahogany. Dull. Height, 24  
to 28 in.



No. 1103—Cane Seat

No. 1103PL—Same with perforated  
Leather Seat over Cane. Golden Oak  
or Int. Mahogany. Dull. Height, 28  
to 32 in.

Steel chairs can be furnished when desired,

GRAY PAY STATIONS



No. 11

Trade No. 11—Used in connection with wall set. Attached by means of a mounting plate. Slots for nickels, dimes and quarters.



No. 14

Trade No. 14—Used for general portable business. Slots for nickels, dimes and quarters.



No. 7

Trade No. 7—Free from levers and springs. gives rapid and satisfactory service.



No. 23D

Gray Register—For measured service on private or party line. No electrical connection, but is entirely mechanical, and can be attached to either wall or desk set.



Gray Register

No. 23D—A complete telephone in itself. Very compact and attractive.

Inspector and repair man confined entirely to upper compartment, while the collector has the lower.



No. 8A

No. 24—Very neat and compact. Inspector's and collector's locks are entirely different.



No. 24

No. 8A—A nickel slot only. Large coin capacity and loud positive signal. No electrical connections. For common battery or magneto systems.

BAIRD PAY STATIONS



Type No. 60

Height of machine, 10 $\frac{1}{2}$  in.; width, 3 $\frac{1}{4}$  in.

This machine can be attached to any type of magneto or common battery telephone by means of a mounting plate, which is included in the price.

BAIRD No. 63—Wall Type Pay Station with Special War Tax Signal for 1c

Height of machine, 10 $\frac{1}{2}$  in.; width, 3 $\frac{1}{4}$  in.

This machine can be attached to any type of magneto or common battery telephone by means of a mounting plate, which is included in the price.

No. 63—3 slot with signals for 1c, 5c, 10c and 25c coins.

No. 64—4 slot with signals for 1c, 5c, 10c, 25c and 50c coins.

No. 62—2 slot with signals for 1c and 5c coins.

Baird pay stations are made under our own patents and do not infringe the rights of others.

BAIRD No. 55 PORTABLE SET—Also Used as Fixed Booth Set  
Sheet Steel Construction

Price includes pay station, handle and base board. (Desk set not included.)

No. 53—3 slot for 1c, 5c, 10c and 25c coins.

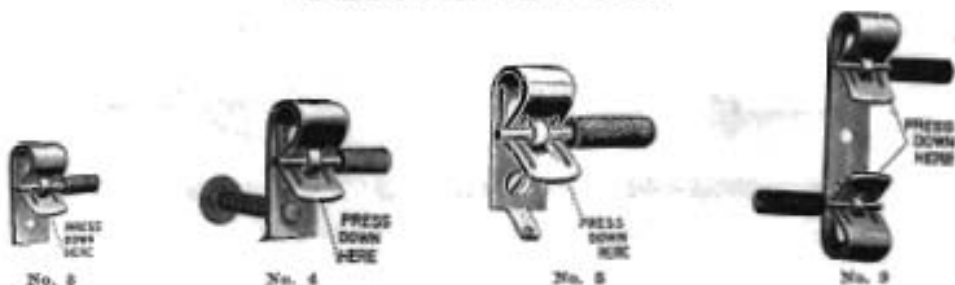
No. 54—3 slot for 1c, 5c, 10c, 25c and 50c coins.



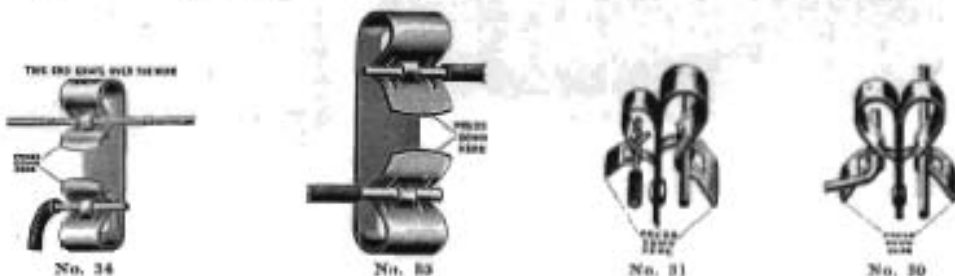
Type No. 55

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## SPRING BINDING POSTS



Number	Takes B. & S. Wire Number	Length Over All	Width	Screw Length
3	10	1 1/8 inch	3/8 inch	8/32 inch screw
4	10	1 inch	3/8 inch	8/32 inch screw
5	10	1 1/8 inch	3/8 inch	8/32 inch screw
9	10	2 1/8 inch	3/8 inch	8/32 inch screw
30	14	1 1/8 inch	3/8 inch	8/32 inch screw
31	..	1 1/8 inch	3/8 inch	bronze only
34	10	2 3/4 inch	3/8 inch	bronze only
35	9 BWG.	2 3/4 inch	3/8 inch	bronze only



## CONNECTING BLOCKS

Length over all, 2 1/2 in.

Width, 1 3/8 in.

Thickness of base, 3/8 in.

## BATTERY CONNECTORS



No. 155 Columbia Fahnestock Connector

Special type Fahnestock spring clips attached to both ends of a length of standard flexible insulated wire makes this a neat, quick connector, which may be used over and over again.



Columbia Bull Dog Connector

This is one of the best and most easily attached connectors made. It consists of a length of flexible insulated wire with special spring terminals. It can be easily attached or detached from cells with one hand.

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### COLUMBIA QUICK ACTION CONNECTOR

These connectors are stamped from soft copper ribbon taped with white adhesive tape. They are of high conductivity.



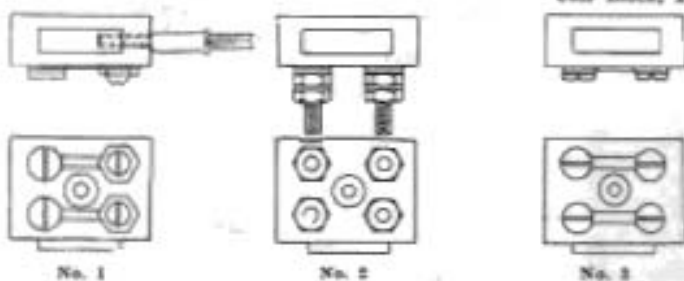
No. 93-B COLUMBIA CONNECTOR

This style is made up with punched copper tips, a length of standard flexible insulated wire.

No. 1 COLUMBIA BATTERY CONNECTOR

This type connector is made from  $4\frac{1}{2}$  inch length of standard flexible insulated wire. The ends are tinned.

### MURDOCK INTERLOCKING CONNECTION BLOCKS



### MURDOCK INTERLOCKING BLOCKS

#### Half Size

Standard size,  $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$  in.

- No. 1—Has four binding head screws with one  $\frac{3}{8}$ -inch washer under each, and two detachable links connecting screws.
- No. 2—Has four  $8/32$  screws projecting  $\frac{3}{8}$  inch with two nuts and three washers on each, two under lower nut and one under upper. Links furnished if desired.
- No. 3—Has two binding head screws and two round head with check nuts. Holes in side for entering wire or cord tips.

### UNIVERSAL TEST CLIP

Indestructible, made of steel, thin nose, wide-spreading jaws, teeth that mesh for fine wires, side jaws.

These clips make it unnecessary to skin the wire and then tape it. It has a pin which pierces the insulation and rests on the bare wire.



# KELLOGG SWITCHBOARD AND SUPPLY COMPANY



No. 100 Test Connector  
Wt. per C. 7½ lbs.

## TEST CONNECTORS

These full size cuts show our line of Copper Test Connectors. They are easily installed (several without the use of tools) and are sufficiently heavy to insure good, permanent contact.



No. 000 Test Connector  
Wt. per C. 16 lbs.



Cork Type 00 Connector

## TYPE OO

For Wires from No. 6 to No. 22  
For Either Copper or Iron Wire

Mfg. No. Weight  
OO—1 bolt, 3½ lbs.  
OO—2 bolt, 7 lbs.

## TELEPHONE CABLE SUPPLIES

### WAXED LACING TWINE



Made of pure fax. Saturated in beeswax ready for use. In 1-lb. balls.

### PAPER SLEEVES



For splicing paper insulated telephone cables.

Dimen. Inches	Wt. per 1000	Std. Pkg.	Used for
½x3	1	150	22 Ga. str. splice
¾x3	1	110	19 Ga. str. splice
¾x2½	1	...	22 Ga. str. splice

### PLUMBERS' CANDLES

Mfrs. No.	Length Inches	Diameter Inches
3	7½	1½
5	5½	1¼

### CABLE PASTERS

Used to limit the length of wiped joints. 2 in. wide, 1 ft. long.

### METAL RIM TAGS

For numbering ends of conductors in cables. Metal rim tags, 1 in. diameter.

### MARLIN

2-ply In 1-lb. balls. In 5-lb. balls.  
J-ply In 1-lb. balls. In 5-lb. balls.

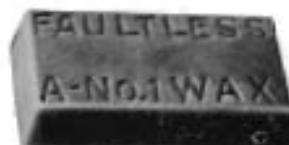
### KELLOGG CABLE COMPOUND

For potheads and cable splicing. 8 lb. cans.

### REFINED PARAFFINE

In 1-lb. cakes.

### A-1 BEESWAX



Especially adapted for electrical work. In 1-lb. cakes.

### LEAD SLEEVES

Sleeve should measure about 2 inches larger in diameter than the cable.

Size Cable	Inside Diameter Sleeve	Length	Approx. Wt. & In. Wall
10-15 pt.	1 ¼ in.	22 in.	2.5 lbs.
15-20 pt.	1 ½ in.	22 in.	4.25 lbs.
20-25 pt.	2 in.	22 in.	7.0 lbs.
25 pt.	2 ½ in.	22 in.	9.25 lbs.

Size Cable	Inside Diameter Sleeve	Length	Approx. Wt. & In. Wall
100-200 pt.	3 in.	22 in.	14.5 lbs.
210-250 pt.	3 ½ in.	22 in.	17.25 lbs.
400 pt.	4 in.	22 in.	19.75 lbs.
450 pt.	4 ½ in.	22 in.	22.5 lbs.

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### TELEPHONE CABLE SUPPLIES

#### KELLOGG ROSIN CORE SOLDER

Put up in 1, 5 and 10-lb. spools.



Kellogg Rosin Core Solder

None other than rosin core solder should ever be used in switchboard and telephone instrument work. The flux in this solder is pulverized rosin contained inside of the flat ribbon. This solder is superior to the ordinary round rosin core solder, in that it contains just the right amount of rosin (not too much). Also the ribbon form holds the rosin in place and prevents its running out in too great quantities ahead of the solder. All rosin core solder must be worked with a very hot, clean, copper for best results.

#### PLAIN WIRE SOLDER

This is used for general line work, such as soldering spider wires to bare line wires, etc. Some form of paste or soldering stick must be used in connection with plain wire solder. We recommend Burnley's soldering paste (elsewhere listed) for such work.

#### ORDINARY BAR SOLDER "Half and Half" for Cable Splicing



#### NATIONAL WIPING SOLDER Preferred by Many for Cable Splicing



### PUBLIC PAY STATION SIGNS



No. 1

No. 1—Size, 17x18 in. In 3 colors.



No. 4

No. 4—Size, 8x18 in. In 2 colors.



No. 2

No. 2—Size, 8x18 in. In 3 colors.

### ALLEN SOLDERING SALTS

Allen's Soldering Salts are supplied in 1/4-lb. and 5-lb. bottles. We illustrate the 5-lb. bottle on this page.



#### ALLEN'S SOLDERING STICK

Allen's Soldering Stick works equally well on tin, lead, zinc, copper, brass, cast iron, steel, nickel, galvanized iron, phosphor bronze, German silver, and will unite any combination of the above metals.



#### ALLEN'S SOLDERING PASTE

Allen's Soldering Paste furnished in 2-oz., 4-oz., 1/4-lb., 1-lb. and 5-lb. cans. Will not corrode or injure surfaces to which it is applied. Solder dipped into this paste is self-fluxing.



KELLOGG SWITCHBOARD AND SUPPLY COMPANY



SOLDERALL

This material will join all metals except aluminum. Strength and durability are equal to regular solder; contains pure pulverized solder, combined with non-corrosive flux. Ready for instant use.

BURNLEY'S SOLDERING PASTE

For use with plain wire solder on outside work. Burnley's paste is put up in 2, 4, 8 and 16-oz. boxes.

BLACK FRICTION TAPE



Okonite Rubber Tape



Manson Friction Tape



Kellogg Friction Tape

Okonite Tapes

56174 Okonite tape, pure Para rubber.

56175 Manson Black tape.

Kellogg Black Friction Tape—An excellent low-priced tape, with adhesive qualities second to none.

WOOD BASE SWITCHES

Round, Well Made and Durable Switch



Wood Base Switch made with 1, 2, 3, 4 and 5 points



Wood Push Button



Copper Brush metal Push Button



Faraday Vibrating Bell



F. N. XXX Small Buzzer Bell—suitable for All Household Uses

LOUD RINGING POLARIZED EXTENSION BELLS

These bells, while primarily intended for telephone work, are equally well adapted for use as call systems in factories, schools, mines and buildings under construction, etc. The cases are of stamped steel heavily enameled; the coils are treated with insulating varnish, and the bells are to all intents and purposes water-proof and suitable for installation in exposed places.

They are equipped with 6-inch gongs and a special polarized ringer movement, operating on any alternating current telephone generator or commercial alternating current of 110 or 220 volts at 60 cycles or less. (For 110 volt, 60 cycle current, use the 160 ohm bell. For 220 volt, 60 cycle current, use the 300 ohm bell.)

Furnished for either common battery or magneto telephone systems.



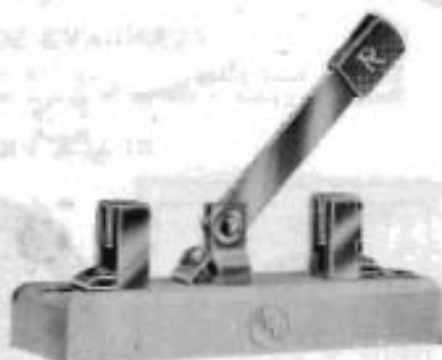
## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### BABY-KNIFE SWITCHES

Our Baby-Knife Switches are unusually well made. The glazed porcelain base is extra heavy. The blades make splendid contact in the spring copper jaws. Tubular rivets, with spring washers to insure good contact, hold the blades in the hinge posts.



No. 430 Switch  
Standard Pkg., 150.  
Weight, 38 lbs.



No. 432 Switch  
Standard Pkg., 75.  
Weight, 33 lbs.



No. 434 Switch  
Standard Pkg., 150.  
Weight, 60 lbs.



No. 436 Switch  
Standard Pkg., 75.  
Weight, 58 lbs.

Railroad Type Baby-Knife Switches are made so that loose connections cannot develop in the switches and are sold at a slight advance over the above prices.

### PHONE METER

#### A Toll Timer for the Small Exchange

The PHONOMETER is a practical device for timing toll calls in the small exchange. It is simple, accurate, and inexpensive.

The PHONOMETER gives you and the subscriber a square deal. It strengthens the cordials and increases toll earnings.

An expensive timing device is not necessary in the small exchange, as the PHONOMETER costs little and gives satisfaction.



**J-M FIRE EXTINGUISHER**



Always keep a J-M Fire Extinguisher within easy reach. It is the simplest, yet most effectual snuffer out of electrical and other incipient fires ever devised. It affords positive protection.

1. It will instantly put out any incipient fire, also burning oil and gasoline. The fluid is a non-conductor of electricity. Moreover, the fluid won't harm any part of your switchboard, wiring, machinery, fabrics, furniture, skin, etc.

2. You don't have to keep pumping while aiming. Simply give a few quick strokes with the handle, open the nozzle, and shoot a powerful stream straight at the flames. You can use the J-M in cramped, hard-to-get-at places.

3. Every machine is sealed at both ends. This prevents tampering and shows you at a glance that it is fully charged and ready for action.

4. The J-M is inspected, approved and labeled by the Underwriters' Laboratories, Inc. Prompt shipments.

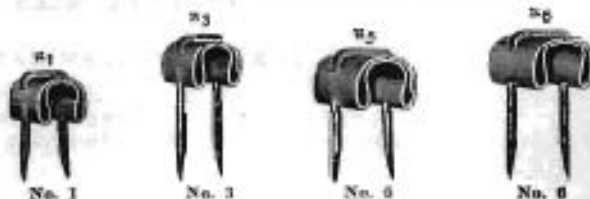
**TELEPHONE COUNTERS**

This counter is placed in socket screws in front of each operator, and the operator is instructed to press the button on end of lever for each call received. Every time the button is pressed the counter registers, and thus a total for each operator is secured.



Feeder Counter

**BLAKE INSULATED STAPLES**



Mfrs. No.	Description	Size Inches
1	For hardwood	1/2
3	For general use	3/4
5	For hardwood	5/8
6	For general use	3/4

Nos. 1 and 3 are for twisted pair and single wires. Nos. 5, 6 and 7 are for three-conductor and extra heavy twisted pair wire.

**BLAKE CLEATS**



Std. Pkg.

For duplex wire... 100  
Made of compressed wood. The center partition protects the wire from the nail or screw.

**INSULATED NAILS**

Type	Color	Fibre	Length Inches	Type	Color	Fibre	Length Inches
52	Gray		3/4	62	Black		3/8
52	Black		3/4	72	Gray		1
62	Gray		3/4	72	Black		1

**Small Flat Head**

31	Gray	3/8	32	Gray	3/8
31	Black	3/8	32	Black	3/8

The rubber bushing bulges when nail is driven.



Perfection Nail

Insulated Nails

**PERFECTION INSULATED NAILS, PLAIN TOP**

Mfrs. No.	Size of Shank Inches
18	1/2
18	3/8
18	3/4

Furnished in light oak, dark oak, dark green and black.

**EUREKA FIBRE INSULATORS Large Round Head**

Type	Color	Fibre	Length inches
1	Gray		3/8
1	Black		3/8
101	Gray		1/2
102	Black		1/2

No. 1 types have polished brass heads, No. 101 type has oxidized head, and No. 102 type has black head.



Round Head Insulators

**BLACKBURN ADJUSTABLE GROUND CLAMP**

Approved for Telephone Circuits



No. 0

No. 0 fits  $\frac{3}{8}$  and  $\frac{1}{2}$  in. ground rods. For rural exchanges.

No. A1 fits  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$ , 1 and  $1\frac{1}{4}$  in. pipe. Improved style.

No. 2 fits  $1\frac{1}{2}$ , 2,  $2\frac{1}{2}$  and 3 in. pipe.

Standard packages, 100



No. A1

Shipping Weight Per Thousand

No. 0.....30 lbs.

No. A1.....50 lbs.

No. 2.....60 lbs.

**DRY BATTERIES**

**COLUMBIA REGULAR BATTERY**

Is designed for general open circuit service including ignition and especially adapted to telephone service on account of the uniformity of its current discharge and its long life.



No. 6

Type	Size Inches	No. per Bbl.
6	$2\frac{1}{2} \times 6$	125
7	$3 \times 7$	50
8	$3\frac{1}{2} \times 8$	50



No. 8

**COLUMBIA IGNITION BATTERY**

This battery produces an efficient spark for a remarkably long period and is especially adapted to such severe service as ignition on gas and gasoline engines; also for electric lighting on autos and motor boats.

Type	Size Inches	No. per Bbl.
6	$2\frac{1}{2} \times 6$	125
7	$3 \times 7$	50
8	$3\frac{1}{2} \times 8$	50

Furnished in Square Cartons if Desired.  
Fahnestock Spring Binding Posts Without Extra Charge

125 No. 6 cells weigh 300 lbs. packed.  
100 No. 6 cells weigh 240 lbs. packed.  
100 No. 7 cells weigh 410 lbs. packed.  
100 No. 8 cells weigh 630 lbs. packed.



No. 4 Oval Battery for Test Sets

**OVAL POCKET BATTERY**

This cell is designed for testing instruments, telephone test sets, and all service where an efficient battery of small size is required.

No.	Size, Inches
4	$2\frac{1}{2} \times 1\frac{1}{2} \times 4\frac{1}{2}$

We also carry 1900, Blue Seal and Red Seal Dry Batteries.

**GRAVITY BATTERIES**

Gravity batteries should not be used about a telephone exchange for any other purpose except to supply operators' transmitters when shortage batteries are not available. Sizes 5x7 and 6x8.



3-7-inch Gravity Battery Complete



"BSCO" Type 400

**EDISON "BSCO" AND PRIMARY BATTERIES**

The Edison-BSCO Primary Battery is the latest development of, and embodies all of the good features and many improvements over, the class of cells formerly known as Edison La Lande and latterly as the Edison Primary Battery. The elements, or active materials, of Edison-BSCO cells are the same as in the earlier types, but a remarkable gain in efficiency and effective capacity has been secured by better proportioning and increased conductivity, made possible by the improved method of suspension.

Type 502 Edison—With rectangular heat-resisting glass jar. Now becoming very popular for telephone work. Capacity 500 ampere hours.

- Type 502 Complete Cell.
- 500 Complete Renewal.
- Type 500 Renewal Parts
- 500 Elements Assembled.
- 500 Can Caustic Soda.
- 500 Bottle Special Battery Oil.

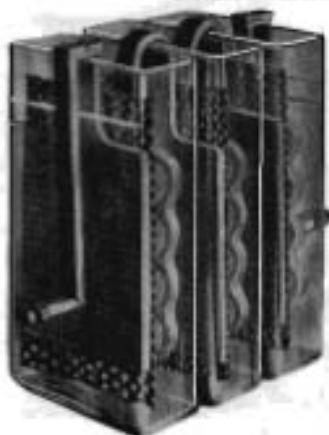


"BSCO" Type B. B.

**STORAGE BATTERIES FOR MAGNETO PLANTS**

In large magneto exchanges we recommend the use of storage batteries for operating switchboard transmitters, transfer and pilot lamps, and for operating transformer ringing sets. The cost of such installation is not as great as would be supposed. When only alternating current is available, it is necessary to install a rectifier set in order to charge the storage batteries, but in large magneto exchanges the installation of storage batteries will be found profitable. In many cases 110 or 220 volt direct current is available, or when not available directly it can be had by stringing wires to the electric light plant exciter.

In such cases the cost of installing storage battery is extremely small, and every exchange having such facilities for charging should not be without it. We recommend the installation of twenty-two small storage cells in two banks of eleven cells each which permits of talking and ringing from separate sets of batteries, and of cutting batteries off of the talking circuit while charging.



Type B. Y. 2 Cells of Storage Battery

Our customers will kindly write for further information, stating fully the work to be done in their exchange, and all the current supplies available.

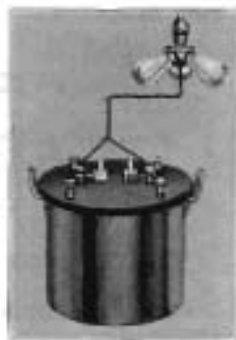
**RECTIFIERS**

**For Charging Small Storage Batteries in Magneto Exchanges**

The perfection of this chemical rectifier makes it possible for even the smallest exchanges to enjoy the advantages of storage batteries whenever electric lighting current is available during even a few hours each day. The first cost and cost of operating one of these outfits is so small that no exchange having lighting current available should attempt to get along without one.

Rectifier No. 21:

Capacity two amperes complete, including attachment and lamps, for 110-volt circuit only.



Rectifier No. 21

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

LONG NOSED PLIERS

OVAL



No. 203-5 to No. 203-7

OVAL, PLAIN

No.	Length
201-5	5 in.
201-6	6 in.
201-7	7 in.

OVAL, SIDE CUTTING

No.	Length
203-5	5 in.
203-6	6 in.
203-7	7 in.

FLAT, SIDE CUTTING



No. 206-5 to No. 206-7

No.	Length	No.	Length
206-5	5 in.	206-6	6 in.
206-7	7 in.		

DUCK BILL, SIDE CUTTING



No. 205-5 to No. 205-7

No.	Length	No.	Length
205-5	5 in.	205-6	6 in.
205-7	7 in.		

CURVED



No. 202-6

No.	Length
202-6	6 in.

FLAT, PLAIN



No. 205-5 to No. 205-7

No.	Length	No.	Length
205-5	5 in.	205-6	6 in.
205-7	7 in.		

DUCK BILL



No. 204-5 to No. 204-7

No.	Length	No.	Length
204-5	5 in.	204-6	6 in.
204-7	7 in.		

LONG NEEDLE NOSE PLIERS

No.	Length	No.	Length
203-5	5 in.	203-6	6 in.
203-7	7 in.		

SIDE CUTTING PLIERS



No. 200-5 to No. 200-10

No.	Length	No.	Length
200-5	5 in.	200-6	6 in.
200-7	7 in.	200-8	8 in.
200-9	9 in.	200-10	10 in.

WITH SLEEVE TWISTER



No. 212-7 to No. 213-9

No.	Length	No.	Length
212-7	7 in.	212-8	8 in.
212-9	9 in.	213-7	7 in.
213-8	8 in.	213-9	9 in.



No. 201-5 to No. 201-10

No.	Length	No.	Length
201-5	5 in.	201-6	6 in.
201-7	7 in.	201-8	8 in.
201-9	9 in.	201-10	10 in.

COMBINATION SIDE CUTTING PLIERS



No. 228-7 to No. 228-8

No.	Length	No.	Length
228-7	7 in.	228-8	8 in.

SIDE CUTTING PLIERS

OBLIQUE CUTTING PLIERS



No. 202-4½ to No. 202-6

No. 202-4½ 4½ in. No. 202-5½ 5½ in.  
No. 202-5 5 in. No. 202-6 6 in.

RUBBER INSULATING SLEEVES



No. 2400-6 to No. 2400-8

No. 2400-6 For 6 in. Pliers.  
No. 2400-7 For 7 in. Pliers.  
No. 2400-8 For 8 in. Pliers.

SPLICING CLAMPS



No. 102-1

No. 102-1 7 in.

Baby pattern. For Nos. 10, 12, 14 and 16 copper wire.



No. 102-3

No. 102-3 10½ in.

For Nos. 6, 8, 10, 12 and 14 iron wire; Nos. 4, 6, 8, 10 and 12 copper wire.



No. 102-2

No. 102-2 10¼ in.

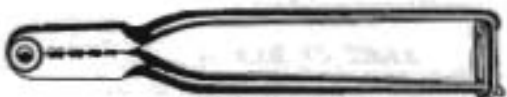
For Nos. 2, 4, 6 and 12 copper wire.



No. 102-4

No. 102-4 10¾ in.

For Nos. 0, 2 and 4 copper wire.



No. 105-6 and 105-7

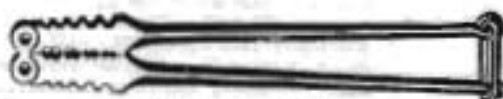
No. 105-6 10½ in.

For Nos. 8, 10, 12, and 14 B. & S. gauge sleeves.

No. 105-7 10¾ in.

Same as above, for Nos. 6, 8, 10 and 12 B. & S. gauge sleeves.

COMBINATION WIRE AND SLEEVE CLAMPS



No. 132-3 and 132-4

No. 132-3 10¼ in.

Five holes for Nos. 6, 8, 10, 12 and 14 iron wire; Nos. 4, 6, 8, 10 and 12 copper wire; Nos. 8, 10, 12 and 14 B. & S. gauge sleeves.

No. 132-4 10¾ in.

Five holes for Nos. 6, 8, 10, 12 and 14 iron wire; Nos. 4, 6, 8, 10 and 12 copper wire, and Nos. 6, 8, 10 and 12 B. & S. gauge sleeves.

COMBINATION WIRE AND SLEEVE CLAMPS



No. 132-2

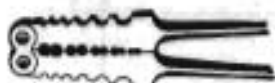
No. 132-2 9 in.

Four holes for Nos. 8, 10, 12 and 14 iron wire; Nos. 6, 8, 10 and 12 copper wire; Nos. 10, 12 and 14 B. & S. gauge sleeves.



No. 132-5 11 3/4 in.

For Nos. 6, 8, 9, 10, 12, 14 and 16 iron wire, or Nos. 4, 6, 8, 9, 10, 11, 12 and 14 copper wire; five double holes for twisting sleeve joints; Nos. 6, 8, 9, 10, 11, 12 and 14 copper sleeves, or Nos. 8, 9, 10, 11, 12, 14 and 16 iron sleeves.



No. 132-5

LINEMAN'S REELS

WASSON REELS

Made of steel, is strong, light and always ready. Carries tools, pins, insulators and other material. Has brake to retain wire; can be anchored to ground.



Common Pay-Out Reel  
No. 4600-1

No. 4607-1. Single reel and cart.  
No. 4607-2. Double reel and cart.

LINEMEN'S CARTS

No. 160. Complete with reel.  
No. 159. Without reel.

COMMON PAY-OUT REELS

No. 4600-1. Weight, 40 lbs.  
Complete with guard irons.



Barrow Reel  
No. 4601-2

BARROW REELS

No. 4601-1. Light weight.  
No. 4601-2. Heavy weight.

TAKE-UP REELS

No. 4608-1. For 18-in. coil, weight 62 lbs.  
No. 4608-2. For 21-in. coil, weight 65 lbs.



Take-Up Reel  
No. 4608-2

FOLDING TAKE-UP REELS

An invention that will absolutely save its cost on the first big job attempted. It makes a neater coil and throws it off in one-fourth the time taken by the old reel. The reel part collapses and automatically throws off the coil at the same time and in an instant is ready for another coil. The frame, made of heavy hardwood, is strong and heavily reinforced throughout and folds up like a hinge.

Description	Weight Lbs.
For 12-in. coil.....	42
For 18-in. coil.....	42
For 21-in. coil.....	42
For 24-in. coil.....	42

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## EICHHOFF COMBINED TAKE-UP AND PAY-OUT WIRE REELS



No. 4609-104 Reel Applied to an Auto Truck

For Electric Light, Telephone and  
Telegraph Line Work



No. 4609-104

### THE "EICHHOFF" 4609-104 COMBINED TAKE-UP AND PAY-OUT AUTO TRUCK WIRE REEL

This combination reel is made with No. 12 galvanized sheet steel disc, 28 inches in diameter and has the same labor-saving features as the combination reel 4609-102. By simply reversing the ends of the T axle in the socket of the base the reel is changed from a horizontal to a perpendicular position for either taking up or paying out wire.

The T axle turns in the socket of the base so that the reel will take up wire in any direction without turning the auto truck. The 4609-104 combination reel is especially valuable for emergency work of this kind as it requires but little room and can be used for either taking up or paying out wire.



4609-102

Catalog Number	Size Reel Disc	Weight Each
4609-104	28 inches	57 lbs.



4609-104



4609-108

These combination reels are made to save time and labor in handling wire. Heretofore most telephone, telegraph and electric light companies used separate reels; one to pay out and one to take up wire. These new combination reels will fill both of these requirements and will do it better and in less time; besides will save you two or three men's labor in coiling up wire.

The reel disc proper, instead of being made of wood, is of No. 10 galvanized sheet steel; is 34 inches in diameter and has a 1-inch flange turned around the edge. The disc being smooth there are no spokes or rim to cut through the copper coating or the insulation on wire and for this reason is also excellent for coiling up barbed wire.

No matter how hilly or mountainous the country it will never be necessary to level off a place to stand the reel for taking up wire as it can be clamped to a telephone pole, tree or any convenient post.

The reel has an adjustable wire guide and one man can coil up wire without assistance. It has a brake around the hub which can be set to operate at any tension. It also has a stop-pin which will absolutely hold the reel disc stationary. The reel arms are adjustable and a coil of wire can be removed from the reel without the least trouble.

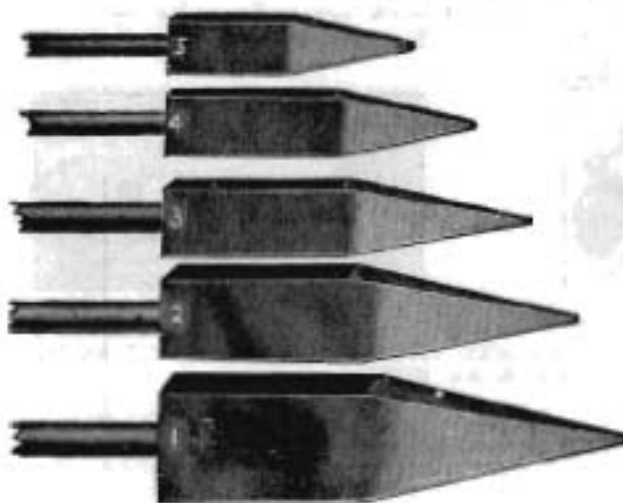
4609-108 reel has the same labor-saving features as the 4609-102 and has the added advantage of being mounted on wheels, making it very convenient for one man to handle.

Catalog Number	Size	Weight Each
4609-102	Reel disc, 34 inches.....	91 lbs.
4609-108	Reel disc, 34 inches.....	129 lbs.

Large Wire Guide for Barbed Wire (extra).

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### PONY SOLDERING IRONS



### PONY SOLDERING COPPERS

Fitted with black lacquered handles. Cuts show actual size of copper.

Trade No. 1. Length, 12 inches over all. Wt., 1 $\frac{3}{4}$  oz.

Trade No. 2. Length, 11 $\frac{1}{2}$  inches over all. Wt., 1 $\frac{1}{2}$  oz.

Trade No. 3. Length, 10 $\frac{3}{4}$  inches over all. Wt., 1 $\frac{1}{4}$  oz.

Trade No. 4. Length, 9 inches over all. Wt., 2 oz.

Trade No. 5. Length, 8 $\frac{1}{4}$  inches over all. Wt., 3 oz.

### ELECTRIC SOLDERING IRON



This Electric Soldering Iron was produced in response to a well-defined industrial need.

Study the method of a man using an externally heated soldering iron and the reason for the introduction of the Electric Soldering Iron at once becomes apparent.

He inserts the iron in the heating furnace, waits for it to heat, takes it out, cleans the tip—sometimes, tins it, and then begins to solder. In a few seconds the temperature of the iron has fallen to such a degree that the iron must be reheated. Then the inefficient process is repeated.

This heating again and again, this cleaning, this waiting—all this consumes time for which the man must be paid at a rate dictated by his skill when the iron is hot and clean. The whole process is inefficient and wherever skilled labor is employed efficiency is of great importance.

An Electric Soldering Iron will save money in your plant by saving high-priced time. The operating cost, unit for unit, is much less than that of an externally heated iron.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## ELECTRIC SOLDERING IRONS

An Electric Soldering Iron is excellent for soldering in small and awkward corners. The exterior is smooth, there are no projecting edges, and the tip is hot at the very extreme point. This iron may be used on the roof, in the wind, on a shipping platform—wherever there is an electric light socket. The absence of open flame minimizes the fire risk.

There is an iron for every purpose. They are all the same type with the exception of the No. 2½. This number is designed for the same service as the No. 2, the great difference being that the tip can be adjusted as natural wear occurs, which is not possible in the No. 2. In all irons the winding is free from any kinks or sharp turns. This is extremely important in windings designed to liberate energy in the form of heat.

Additional heating units and copper tips can be furnished for all irons.

Mfrs. No.	Weight Ounces	Tip Diam. Inches	Length Inches	Watts
2	10	3/8	13 3/4	85
2½	13	3/8	14	95
3	15	3/8	15 1/4	170
5	32	1 1/8	16	275

## DRILLS

### STAR DRILLS For Stone Drilling

Diam., Cut Inches
3/8
3/8
3/8
3/8
3/8
1
1 1/8
1 1/4
1 5/8
1 3/4
12, 18 or 24 inches long



### STAR DRILL POINTS

For Use with Drill Holders	Diam., Cut Inches
3/8	
3/8	
3/8	
3/8	
3/8	
3/8	
3/8	
3/8	
3/8	
3/8	
3/8	

### EXTENSION DRILL HEADS



Size Pipe for Handle Inches	Diam. of Cutting Edge Inches	Drills for Expansion of Shield for Bolts Following
3/8	3/8	3/8
3/8	3/8	3/8
3/8	3/8	3/8
1/2	1	3/4
1/2	1 1/8	..
3/4	1 1/4	..
3/4	1 3/8	..
1	1 5/8	1
1	1 3/4	..
1	2	..
1	2 1/4	..
1	2 3/4	..
1	2 3/4	..
1	3	..



### STAR DRILL HOLDERS



Description

Made of 3/8-inch octagon steel, 6 inches long

### SPRING STAR HAMMER DRILL

This drill is made for hard, steady work. It not only looks good, but is a drill that bites into concrete and stone with six times the speed that is possible with a hand drill and hammer.

The drill-point turns automatically in the hole, the operator having only to hold the drill in place and turn the crank handle.

Net weight, 11 lbs.; shipping weight, 18 lbs.

DRILLS AND DRILL HOLDERS

Our Combination Hammer Drill is a light, highly efficient, rapid and inexpensive outfit especially adapted for the quick installation of expansion bolts. The spring action aids the act of drilling.

When used in connection with our patented self clearing bits the one tool does both drilling and setting of the bolt.

Our drill holders and drill handles are for use where it is not necessary to go to the expense of our Combination Drill Hammer and they will be found extremely useful and convenient as well as low priced.

The drill holder is for use with our short drills. The drill handle can be used with our 1/2x12-inch drills only.

	Wt., Each
Hammer Drill only .....	2 3/4 lbs.
Drill Holder .....	18 oz.
Drill Handle .....	4 oz.



Hammer Drill



1/2x4 inch Star Drill

1/2x4 inch Combination Drill



1/2x8 inch Combination Drill

Our Combination Drill Bits have patented cross cut teeth with self clearing slots which are great advantages in the quick drilling of holes. These drills are also used to set expansion bolts in hole. Star drills, if desired, can be furnished at same price. When 1/2x12 drills are desired for use with drill holder, order should so specify.

	Approx. Wt., Each
1/2x 4-inch Combination Drills.....	3 oz.
1/2x 6-inch Combination Drills.....	6 oz.
1/2x12-inch Combination Drills.....	10 oz.
3/4x 6-inch Combination Drills.....	8 oz.
3/4x12-inch Combination Drills.....	18 oz.
1x 6-inch Combination Drills.....	12 oz.
1x12-inch Combination Drills.....	20 oz.

EXPANSION BOLTS



Method of Setting Bolt

This bolt consists of lead sleeve, hard metal cone, bolt and nut. They are shipped assembled ready for installation.

Drill hole of the size shown in the table following and of the required depth. Remove the nut and place the bolt head first in the hole with the cylinder and cone on the shank. Then, with a hollow punch, or our combination drill and punch, drive the cone into the cylinder. The hard metal cone expands the lead, making it embed into every crevice of the brick or stone into which it is set. They are guaranteed to hold fast under all conditions.

Size	Dia. of Hole to be Drilled	Min. Depth of Hole to be Drilled	Approx. Wt. per 100	Size	Dia. of Hole to be Drilled	Min. Depth of Hole to be Drilled	Approx. Wt. per 100
3/8x1	3/8	3/4	2 1/2	3/4x1 3/4	3/4	1	6
3/8x2 1/2	3/8	3/4	3	3/4x2	3/4	1	7
3/8x1	3/8	3/4	3	3/4x2 1/2	3/4	1	8
3/8x1 1/2	3/8	3/4	3 1/2	3/4x2 3/4	3/4	1 1/2	18
3/8x2	3/8	1	4	3/4x3	3/4	1 1/2	19
3/4x1 1/2	3/4	1	6	3/4x3	1	2	55

COMBINATION STEEL LAG SCREW WRENCHES



No. 3109-20

Size	Weight
13½-inch .....	20 lbs.

These wrenches are forged from select bar steel. The slot is formed in a cross shape, and will fit machine bolts, nuts or lag screws from ¼-inch to ¾-inch. The small end of the

wrench is arranged for ½-inch machine bolts or lag screws. The round hole allows the end of a bolt to come through as the nut is run on.

The jaw is wider at its upper portion, and when this wrench is put on a nut or bolt the tendency is to draw the bolt-head or nut into the wrench and prevent slipping off. The extra work in attaining the inward taper is what makes the No. 3109-20 wrench cost more than the 3112-20.

STEEL LAG SCREW WRENCHES



No. 3110-20

Size	Weight per Dozen
11½-inch .....	20 lbs.

This wrench is forged from select bar steel. The jaw is made tapering,

allowing it to take any ordinary size machine bolts, nuts or lag screws from ¼-inch to ¾-inch. The hook is a means of attaching the wrench to the tool belt and it serves to keep the heads of bolts within the jaws of the wrench when in use.

TERMINAL WRENCH



No. 3111-20

Size	Weight per Dozen
2½-inch .....	¾ lb.

This wrench is especially adapted for use in terminal nuts, receivers, transmitters, binding posts, etc. There are three different sizes of openings, with dimensions as follows: ¾-inch, ¾-inch and 1½-inch, which will engage either square or hexagon nuts. One end is bent at an angle of 45 degrees to allow its use in confined places. It costs so little and its usefulness is so great that every mechanic should be supplied with one.

CABLE SHEATH SPLITTING KNIVES

- |  |              |
|--|--------------|
|  | Weight Dozen |
| No. 1515-1 Tool steel blade with wood handle ..... | 6¾ lbs.      |
| No. 1515-2 All steel .....                         | 5½ lbs.      |



No. 1515-2



No. 1500-2

CABLE STRIPPERS

- Mfrs. No.  
1500-2 For insulated wire.

## KELLOGG SWITCHBOARD AND SUPPLY COMPANY

### ELECTRICIAN'S POCKET TOOL KITS

	Weight Each
No. 1304-1 Case only .....	$\frac{1}{2}$ lb.
No. 1304-2 Case with tools .....	$1\frac{1}{2}$ lbs.

Genuine leather case, durable and compact, 8 inches long,  $3\frac{1}{2}$  inches in width and 2 inches high when closed. Furnished in either russet or black leather.

The kit contains seven tools, all of which are in constant use. Each one is of superior quality and will give excellent service. They are Klein's 7-inch special side cutting pliers, hand forged, with knives of guaranteed quality; 5-inch nickel plated Xela scissors; double-bladed knife screwdriver and wire scraper combined; 3-inch half round mill file and handle;  $2\frac{1}{2}$ -inch "Xela" screwdriver,  $3\frac{1}{2}$ -inch nickel plated tweezers and 2-foot 4-fold boxwood rule.



No. 1304-2

No. 1301-1 Case only .....	$\frac{1}{2}$ lb.
No. 1301-2 Case with tools .....	$1\frac{1}{2}$ lbs.

Genuine leather case, contains a selection of Klein tools such as have been found particularly desirable by electricians and wire men on switchboard and telephone work. It is of convenient pocket book style, with firm metallic clasp and measures 4x9 inches. It contains the following tools, one single blade "Xela" electrician's knife, one 5-inch Klein special side cutting pliers, one 5-inch Klein oblique diagonal pliers, one 6-inch Klein long nose side cutting pliers, and  $3\frac{1}{2}$ -inch blade nickel plated screwdriver and one pair  $5\frac{1}{2}$ -inch "Xela" electrician's scissors, and one  $3\frac{1}{2}$ -inch file and handle.



No. 1301-2

### TELEFAULT

Will locate faults of all kinds except opens in telephone or power cables and open wire circuits.

Guaranteed to locate grounds, shorts, crosses and wet spots of either high or low resistance.

Will also locate underground pipes, water and gas mains, conduits and concealed wiring that is less than 12 feet underground or in walls, floors, etc.

Operates on one dry battery. Weight, complete, 12 pounds.



**BENJAMIN SCREWDRIVERS AND TOOL SETS**



Friction Drive



Insulated Blade



Screwdriver Set



Tool Set

**FRICTION DRIVE SCREWDRIVERS**

The Benjamin Friction Drive Cap revolves freely, transferring friction from palm of hand to friction clutch, preventing chafing or blistering. The ordinary pressure of driving screw causes friction clutch to instantly engage handle without any loss of motion. Spring releases clutch on reverse motion and holds blade firmly in screw slot while driving. The Benjamin Locking Device permanently locks the handle, ferrule and blade into an inseparable mass, making any movement of the blade or ferrule impossible and the setting permanent. Each blade is well finished and is individually tested to split a screw head.

Mfrs. No.	3/16-inch Diameter		Wt., Lbs. per Doz.
	Length of Blade, In.	Std. Pkg.	
A-22.....	4	100	1 13/16
A-24.....	4	100	2 1/2
A-25.....	5	100	2 3/4
A-26.....	6	100	2 3/4
A-28.....	8	100	2 3/4
1/4-inch Diameter			
B-42.....	4	100	2 1/2
B-44.....	4	100	2 13/16
B-45.....	5	100	2 3/4
B-46.....	6	100	2 3/4
B-48.....	8	100	2 3/4
5/16-inch Diameter			
C-52.....	4	100	2 3/4
C-54.....	4	100	2 3/4
C-56.....	5	100	3 1/4
C-58.....	6	100	3 1/4
C-59.....	8	100	4 1/2

**INSULATED FRICTION DRIVE SCREWDRIVERS**

The entire blade, with the exception of the tip, is covered with hard rubber tubing molded securely into the handle. Reliable breakdown tests show first rupture of insulation at 11,000 volts. The insulated covering of blade is 3/16-inch diameter, and the blade is 5/16-inch diameter with cabinet end.

Mfrs. No.	Length of Blade, In.	Std. Pkg.	Wt., Lbs. per Doz.
B-32.....	4	100	2 1/2
B-34.....	6	100	2 3/4

**SCREWDRIVER SET, No. 1**

Set No. 1 consists of one friction drive handle with four-jaw screw chuck and four screwdriver blades put up in a box. The four blades are of different lengths, diameters and shapes and cover a large range of work.

Mfrs. No.	No. of Blades	Std. Pkg.	Wt., Lbs. per Doz.
S-1.....	4	12	4 1/2

**TOOL SET, No. 4**

Tool Set No. 4 consists of one friction drive handle with four-jaw screw chuck and the five screwdriver blades and six additional tools, also a tap holder and threading die holder.

The threading die holder No. 12 holds 5/16-inch round threading dies and has set screws for adjusting the dies as well as holding die and holder.

Tap holder No. 13 has a four-jaw screw chuck which holds all sizes of taps from No. 2 to No. 10, inclusive.

Mfrs. No.	No. of Blades	Std. Pkg.	Wt., Lbs. per Doz.
T-4.....	13	12	16

**KELLOGG SWITCHBOARD AND SUPPLY COMPANY**

**IRON MELTING POTS**

Diameter, 6-inch.



**IRON SOLDERING LADLES**

Diameter of Bowl, 2½-inch and 3-inch.

**BOXWOOD TURN PIN**



For expanding ends of lead sleeves.

**MOLESKIN WIPING CLOTH FOR CABLE SPLICING**



**SHAVE HOOK**

For Scraping Lead Sleeves



Can be furnished either in oval or triangle.

**BOXWOOD DRESSER**

For Shaping Lead Sleeves



**GEM WIRE GRIPS**

For Pulling Cable



Made in ½-inch, 1-inch, 2-inch and 3-inch, and in lengths of 24-inch, 36-inch and 48-inch.

Give size and length when ordering, also if single or double eye is desired.



No. 1550-2

**ELECTRICIANS' KNIVES**

1550-1 Single blade.

1550-2 Double blade.

**UNIVERSAL DUSTERS**

No metal mountings. The nozzle as well as the body is made of wood, precluding short circuits or injury of any kind.



Universal Duster



Showing Torch Suspended on the Line Above

Mfrs. No.	Length Inches	Weight Ounces
1.....	20	10½
2.....	22½	13½
3.....	24½	16½
4.....	25½	23

**"STAYSALITE" LINEMAN'S TORCH**

Mfrs. No. 3420.

It stays lighted in a wind.

It is lighted and extinguished in a moment, as wanted.

It burns alcohol without odor or noise.

It has no adjusting parts, therefore it cannot get out of order.

It is carried in the lineman's belt and does away with the ground man.

It is provided with a cup for holding soldering paste.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## AMERICAN STANDARD WIRE GAUGE



This gauge is made of the best steel; tempered, adjusted and warranted accurate.

Mfrs. No.	Range
688.....	0 to 36
690.....	5 to 36

## SIMPLEX JACK



No. 310



No. 312

The cape oscillates, permitting chain being operated in a circle of 180°. It is recessed to hold chain in any length or angle. The hinged base centers, and distributes the load. This provides for the operation of the jack at any angle from 0° to 60°. It has calks or ridges which sink into the foundation and prevent slipping.

### Specifications

Capacity in tons.....	15
Lift in inches.....	12½
Height, closed, inches.....	22
Height, extended, inches.....	34½

Weight of jack, 58 lbs. Chain, 14 lbs. Bar, 16 lbs.—space required to stow jack and chain, 24½ in. x 11 in. x 7 in.

Mfg. No.	Total Weight
310.....	88 lbs.

Chain and Pinch Bar included in price.

## CABLE CAR



Cable Car, with adjustable wood seat and table.

Cable Car, with adjustable wood seat, no table.



Trolley, with wood rollers.  
Trolley, with iron rollers.  
Weight, each, 4½ lbs.

## CABLE TROLLEY OR ROLLERS

By the use of the "Matlock" Cable Roller, the work of running Aerial Cable is greatly expedited. A suitable number of "Matlock" rollers are attached to the messenger wire, in the simple manner shown in the cut, fastened in place by the T handle screws. The cable is then placed on the maple rollers and carried on to any required distance.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## CONSTRUCTION TOOLS



No. 322

No. 323

### WOOD POLE SUPPORTS

#### Jenny Pattern

Mfrs. No.	Height Feet
322	6
323	7 $\frac{1}{2}$

#### Deadman Pattern

Mfrs. No.	Height Feet
324	4 $\frac{1}{2}$
325	6
326	7 $\frac{1}{2}$

### GUARDED PIKES

Mfrs. No.	Height Feet
317	12
318	14
319	16
320	18
321	20



Swivel Carrying Hook

### SWIVEL CARRYING HOOKS

Mfrs. No.	Ship. Wt., Lbs.	Length Handle, Ft.
273	8	4



Guarded Pike

### CANT HOOKS

Mfrs. No.	Length Feet	Weight Pounds
328	4 $\frac{1}{2}$	8
399A	Extra handles	



Cant Hook

### CURVED SHOVEL HANDLES

Mfrs. No.	Length Feet	Weight Pounds
451	8	3



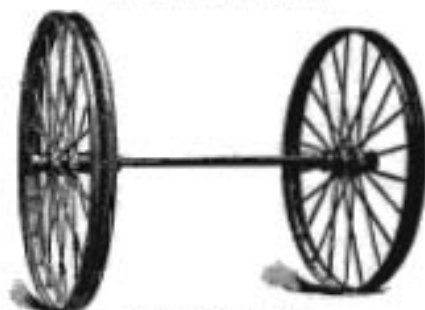
Curved Shovel Handle



Shovel and Spout Handle

### STRAIGHT SHOVEL AND SPOON HANDLES

Mfrs. No.	Length Feet	Weight Pounds
456	8	5



Cable Reel Truck

### CABLE REEL TRUCK

Is composed of two 72-inch metal wheels and a heavy axle.

# KELLOGG SWITCHBOARD AND SUPPLY COMPANY

## LINEMEN'S GRIPS



No. 1



No. 1613-20



No. 1613-40



No. 1610-20



No. 1605-20

### BUFFALO GRIPS

Mfrs. No.	For Use with
1	No. 6 wire and smaller.
2	No. 0 wire and smaller.
3	No. 0000 wire and smaller.

### BUFFALO GRIPS, WITH PULLEYS

1	No. 6 wire and smaller.
2	No. 0 wire and smaller.
3	No. 0000 wire and smaller. Pulleys for $\frac{3}{16}$ -inch rope.

### BUFFALO GRIPS, FOR INSULATED WIRE

4	.52 inch opening.
4	With pulley.
5	.68 inch opening.
5	With pulley.

### BUFFALO LINEMEN'S TOOLS

#### Single Purchase

1	No. 6 wire and smaller.
2	No. 0 wire and smaller.
4	For insulated wire.

### CHICAGO GRIPS

1613-20	No. 10 wire and smaller.
1613-30	No. 6 wire and smaller.
1613-40	No. 0 wire and smaller.
1613-50	No. 0000 wire and smaller.

### CHICAGO GRIPS, WITH PULLEYS

1612-20	No. 10 wire and smaller.
1612-30	No. 6 wire and smaller.
1612-40	No. 0 wire and smaller.
1612-50	No. 0000 wire and smaller.

### CHICAGO GRIPS, FOR INSULATED WIRE

1611-10	No. 10 wire and smaller.
1610-10	With pulley.
1611-20	No. 6 wire and smaller.
1610-20	With pulley.
1611-30	No. 0 wire and smaller.
1610-30	With pulley.
1611-40	No. 0000 wire and smaller.
1610-40	With pulley.

### CHICAGO LINEMEN'S TOOLS

#### Single Purchase

1700-20	No. 10 wire and smaller.
1700-30	No. 6 wire and smaller.
1700-40	No. 0 wire and smaller.

### STYLE A CLAMPS

1605-10	No. 8 wire and finer; weight, 1 $\frac{1}{4}$ lbs.; polished brass.
1605-20	$\frac{3}{8}$ -in. wire and finer; weight, 2 $\frac{3}{4}$ lbs.; polished steel.

LINEMEN'S TOOLS



- Mfrs. AMERICAN GRIPS**  
 No.  
 1602-10 For No. 6 wire and smaller  
 N. P.  
 1602-20 For No. 0 wire and smaller  
 N. P.



- SAMSON WEDGE CLAMPS**  
 Mfrs. For Messenger Wire  
 No.  
 1618-20 For  $\frac{1}{4}$  to  $\frac{3}{8}$ -inch.  
 1618-30 For  $\frac{3}{8}$  to  $\frac{1}{2}$ -inch.  
 1618-40 For  $\frac{1}{2}$  to  $\frac{5}{8}$ -inch.  
 For Trolley Wire  
 1619-20 For 6 to 2-0 B. & S.  
 1619-30 For 2 to 4-0 B. & S.  
 1619-40 For  $\frac{3}{8}$ -inch and smaller.



- HAVEN'S STEEL CLAMPS**  
 1604-10 For No. 8 wire and finer, galvanized.  
 1604-20 For  $\frac{3}{8}$ -inch wire and finer, galvanized.  
 Very efficient for all-round work.



- COME-ALONG ECCENTRIC CLAMPS**  
 1609-20 For No. 8 wire and finer, galvanized.  
 1609-30 For No. 6 wire and finer, galvanized.  
 1609-40 For No. 0 wire and finer, galvanized.

LINEMEN'S TACKLE



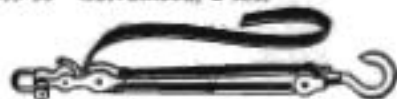
- LINEMEN'S SLACK TACKLE**  
 Has steel blocks with anchor hook at one end and spring snap hook for attaching grip on the other end with locking device.

Mfrs. No.	Size Blocks	Weight
1801-30	2 in.	1 $\frac{1}{4}$ lbs.

Furnished with 25 feet  $\frac{3}{8}$ -inch rope.

**SELF-LOCKING LINEMEN'S EYE BLOCKS**

- This set is similar to above, but has an eye at each end for attaching grips.  
 1803-30 Galvanized, 2 lbs.



- Mfrs. Without Vise**  
 No.  
 1702-20 Single purchase.  
 1702-30 Double purchase.



- LINEMEN'S BLOCKS, WITH STRAPS**  
 4904-12 With 12-foot strap 2 $\frac{3}{4}$ .

**HOWE'S WIRE TOOLS**

The swivel hook is steel, with an opening large enough to go over an insulator pin or other convenient object to which to anchor. The forward end has a locking device to hold the load at any distance.

- Mfrs. With  $\frac{5}{8}$ -Inch Vise**  
 No.  
 1703-20 Single purchase.  
 1703-30 Double purchase.

**SELF-LOCKING TROUBLEMEN'S BLOCKS**

This set is similar to above, but has a snap hook at each end for attaching grips.

- Mfrs. No.**  
 1802-30 Galvanized.  
 Furnished with 25 feet  $\frac{3}{8}$ -inch rope.

**KELLOGG SWITCHBOARD AND SUPPLY COMPANY**

**CONSTRUCTION TOOLS**

**COMMON CROWBARS**

Weight, Pounds	Weight, Pounds
10	16
12	18
14	20

**OCTAGONAL STEEL CROW AND DIGGING BARS**



Diameter, Inches	Size, Feet	Weight, Pounds
1 1/4	8	30
1 1/4	7	27
1 1/4	6	23

**OCTAGONAL STEEL TAMPING AND DIGGING BARS**



Diameter, Inches	Size, Feet	Weight, Pounds
1 1/4	8	31
1 1/4	7	27
1 1/4	6	23

**WOODEN HANDLE, IRON SHOD TAMPING BARS**



Length, Feet	Weight, Pounds
8	13 1/2

**DIGGING SPUDS AND TAMPING BARS**



Length, Feet	Weight, Pounds
9	19

**ELECTRIC TAMPING BARS**



Length, Feet	Weight, Pounds
8	17

**LOY DIGGING TOOLS**



Length, Feet	Weight, Pounds
8	15

**PLAIN PIKES**



Length, Feet	Length, Feet
10	16
12	18
14	20

Can be secured in either 1 1/4-inch or 2 3/8-inch diameter. Specify in ordering.

DIGGING TOOLS



Universal Digger

UNIVERSAL DIGGER

The Universal Digger is a favorite with Telephone, Telegraph, and Railroad companies. When the locking handle is down the two blades are closed together, which secures the material to be raised in an easy manner. Made in three sizes.

Mfrs. No.		Weight Lbs.
1	Digs hole 2 ft. 10 in. deep.	14
2	Digs hole 3 ft. 8 in. deep.	18
3	Digs hole 5 ft. 11 in. deep.	20

HERCULES POST HOLE DIGGER

Length, Feet

5  
7

POST HOLE AUGERS

Mfrs. No.	Diameter Inches	
396F	10	6-ft. stem
396	12	6-ft. stem
396A	14	6-ft. stem
396B	16	6-ft. stem

IWAN'S PATENT POST HOLE AUGERS

Diameter Inches	
8	4-ft. stem
10	4-ft. stem
12	6-ft. stem
14	6-ft. stem
16	6-ft. stem

D HANDLE SHOVELS, ROUND POINT

D HANDLE SHOVELS, SQUARE POINT

POST HOLE SPOONS

Length, Feet	Weight, Pounds
8	9
9	9½

The above spoons have long straps and straight handles.

POST HOLE SHOVELS

Weight, Pounds	Length, Feet
9	8

The above shovels have long straps and straight handles.



No. 396F



No. 67771



No. 67769



No. 67774



No. 67773

TOOLS



No. 1394



No. 1395



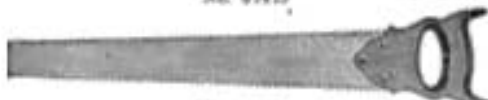
No. 50A



No. 87408



No. 87473



No. 87478



No. 87480



No. 400



No. 49

FAVORITE TREE TRIMMERS

Mfrs. No.	Length Inches
1394	19
1395	21

No. 1395 is the same size as No. 1394, only arranged with saw.

Saw Only

1393	12
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TRIMMER HANDLES

18-foot length.

Two 9-foot handles, joined with ferrule.

HACK SAW FRAMES

Adjustable

No. 50A, nickel plated.

HACK SAW BLADES

Length Inches	Length Inches
8	11
9	12
10	

COMPASS SAWS

Length Inches	Length Inches
10	16
12	18
14	

CABLEMEN'S SAWS

Length Inches

14 Double edge.

HAND, PANEL AND RIPSAWS

Crucible steel, apple wood handle, skew or straight back.

Length Inches	Length Inches
16	22
18	24
20	26

ELECTRICIAN'S SCISSORS

Mfrs. No.

400 5¼ inches long, N. P.

ELECTRICIAN'S SHEARS

49 12¼ in. long, 3 in. cut.  
48 14 in. long, 3½ in. cut.

C. & L. TORCHES AND FIRE POTS—FOR GASOLINE



No. 20 Torch



No. 21 Torch



No. 22 Torch



No. 108 Torch

C. & L. GASOLINE TORCHES

The No. 20 TORCH HAS NO EQUAL WHERE INTENSE HEAT IS DESIRED. Produces a perfect blue flame indoors or out, in hard wind or extreme cold. Bronze metal burner has separating chamber, super-heating the gas and produces an intensely hot blue flame, burning perfectly in stormy weather or extreme cold.

The No. 21 is exactly like No. 20, except that it has no hook and support for holding a soldering copper.

The No. 22 Torch is the same as No. 20, but one pint capacity.

The No. 27 Torch is the same as No. 20, but one pint capacity.

Mfrs. No.	Capacity Pints	Shipping Wt., Each
20.....	2	4½
21.....	2	4½
22.....	1	2½
27.....	1	2½

The No. 30 Torch is a popular priced torch unsurpassed by any other make sold at the price. The heavy gauge brass tank is thoroughly braced. Burner is of improved type, producing a perfect blue flame of intense heat.

30.....	2	4
---------	---	---

The No. 29 Torch is exactly the same as No. 30 except without hook and support for soldering copper.

29.....	2	4
---------	---	---

The No. 108 is sold at a moderate price and while not so effective as the better grades is a good torch and is offered to meet an occasional request for a cheaper quart torch.

108.....	2	1
----------	---	---

The No. 127 Torch is exactly the same as No. 101 except the burner is not equipped for holding soldering copper.

127.....	2	4
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The No. 48 Torch is oblong, 1½ inches thick, strongly made of heavy gauge brass and has hook and support to hold soldering copper—a great convenience to the repair man. Hinged supports at the base prevent tipping over.

48.....	1	2½
---------	---	----

The No. 47 is exactly like No. 48 except without hook and support for holding soldering copper.

47.....	1	2½
---------	---	----

C. & L. GASOLINE FIRE POTS

The No. 1 Fire Pot is adapted to a greater variety of uses than any other fire pot made. Tank is made of heavy gauge welded steel with inner-shaped liner. Bottom and fittings are welded in, which enables it to withstand hard usage. Burner is made of special generator metal which holds the heat longer and works perfectly in windy or cold weather. Swivelled burner permits moving the flame up or down. No. 1 will easily heat a pair of 15-pound coppers and melt a pot of lead at the same time.

1.....	7	11
--------	---	----

The No. 5 Fire Pot is one size smaller than the No. 1. Top section accommodates 5-pound coppers and is removable.

5.....	5	10½
--------	---	-----

The No. 71 Fire Pot is Smokeless, Smokeless and Odorless. Sub-flame for the generator permits flames to be turned very low when not in use. Burner has double heating surfaces and the gas is superheated before it is burned, producing intensely hot blue flames which burn from each side to the center. A pot of lead can be melted and a pair of 15-pound coppers heated at the same time.

71.....	7	14½
---------	---	-----

The No. 72 Fire Pot is exactly like No. 71 except smaller. A pot of lead can be melted and a pair of 5-pound coppers heated at the same time.

72.....	5	12½
---------	---	-----



No. 25 Torch



No. 37 Torch



No. 1 Fire Pot



No. 71 Fire Pot

TURNER TORCHES



Trade No. 212



Trade No. 31-32



Trade No. 481



Trade No. 112



Baby Torch

Baby Torch—Small, simple and effective, can be carried in fireman's pocket to top of pole. Takes up little room and is always useful.

No. 212 is a medium priced torch, with air valve located at base of pump barrel. Well made, strong, durable and very hot. The tank is of heavy No. 18 gauge brass with brass funnel shaped bottom for filling, fitted with the Turner non-leaking filler plug. The burner is the improved closed generator type designed for either outdoor or inside use.

For pint size of corresponding type, specify Trade No. 312.

No. 31-32 is equipped with improved closed under generator, back flow burner, and will give its maximum efficiency in extreme cold and under the severest weather conditions. The tank is of heavy No. 18 gauge brass, with brass funnel shaped bottom for filling, fitted with the Turner non-leaking filler plug.

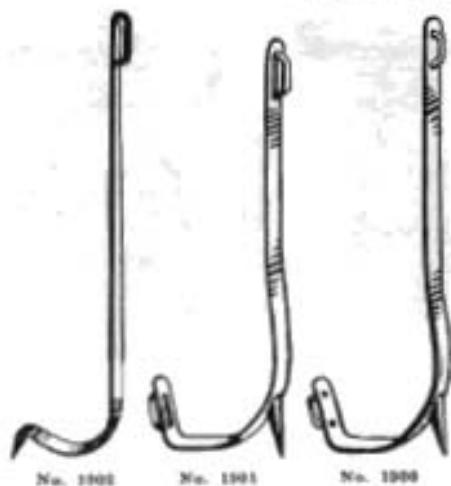
For pint size torch of corresponding type specify Trade No. 37-38.

No. 481. This torch, of the "Auto" type, is furnished with our improved closed under generator back flow burner. An automatic spring valve pump is in the handle.

No. 112. This combination furnace and torch is without an equal for all-round convenience. The top section can be removed and furnace used as a common blow torch. The furnace is suitable for outdoor or inside use and will heat a pair of soldering coppers up to five pounds, a pot of metal being melted at the same time.

Trade No.	Capacity	Height Over All	Diameter	Net Weight	Shipping Weight	Consumption
212	1 qt.	9 $\frac{1}{4}$	4	3 $\frac{1}{4}$	5 $\frac{1}{2}$	$\frac{1}{2}$ pt. per hr.
31-32	1 qt.	9 $\frac{1}{4}$	4	3 $\frac{1}{4}$	5 $\frac{1}{2}$	$\frac{1}{2}$ pt. per hr.
112	2 qt.	13 $\frac{1}{2}$	7 $\frac{1}{2}$	7 $\frac{1}{2}$	13 $\frac{1}{2}$	1 pt. per hr.
481	1 pt.	8 $\frac{1}{2}$	3 $\frac{1}{4}$	2 $\frac{1}{4}$	3 $\frac{1}{4}$	$\frac{1}{4}$ pt. per hr.

CLIMBERS AND BELTS



No. 1902

No. 1901

No. 1903

KLEIN'S WESTERN CLIMBERS

Mfrs.

No. Description

1902 Without straps.

Made in lengths from 15 to 18 inches by 1/2-inch variations.

KLEIN'S EASTERN CLIMBERS

Riveted Loop

1900 Without straps.

1903 Light weight, without straps.

Punched Loop

1901 Without straps.

Nos. 1900 and 1901 made in lengths from 14 to 19 inches by 1/2-inch variations.

No. 1903 made in sizes from 14 to 16 1/2 inches by 1/2-inch variations.



No. 5300-1

STRAPS FOR WESTERN CLIMBERS

Mfrs.

No. Description

5300-1 Set consists of two upper and two lower straps.



No. 5301-1-2-3

STRAPS FOR EASTERN CLIMBERS

5301-1 Set consists of two upper straps, with 4x4 plain leather pads and two lower straps.

5301-2 With sheep-lined pads.

5301-3 With felt-lined pads.

PADS FOR EASTERN CLIMBERS

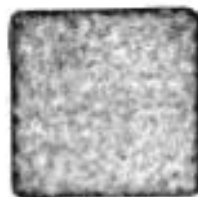
Mfrs.

No. Description

8200 Sheep-lined.

8201 Felt lined.

8202 Plain



No. 8100



No. 8200

LEATHER POUCHES

Mfrs.

No. Description

5106 Weight, 6 ounces.

Has loops for belt.

State for what size belt pouch is wanted.



No. 5202 and 5204

TOOL BELTS

Mfrs.

No. Description

5202 Plain, 2 1/4-inch, with rings for safety strap.

5204 3 1/2 inches wide.

5205 2 1/4 inches wide, double back.

When ordering belts, state if wanted for 38, 40, 42, 44 or 46-inch waist.

LINEMEN'S TOOL BELTS AND BAGS



No. 5200-1



No. 5201



No. 5206-1A



No. 5108-20



No. 5105-18



Linemen's Gloves

JACK COME-ALONG OR VISE STRAPS

Made of select harness leather.

Mfrs.

No.	Description
5303-1	Jack or vise strap, 1 3/4 in. x 5 1/2 ft.

COMBINED SAFETY AND JACK STRAPS

5308 1 3/4-inch strap with fixed snap on one end and roller snap at other end. It is adjustable and may be used for either safety or jack strap.

BELT AND SAFETY STRAPS

The safety strap is 1 3/4 inches wide, 6 feet long, and provided with strong snap at each end. Strap may be shortened or lengthened by adjusting buckle, or it may be detached entirely from the belt.

5206-1A Belt and safety strap.

5250 Safety strap only.

SAFETY STRAPS WITH ROLLER SNAPS

No. 5251 1 1/4-inch by 6-inch.

No. 5253 2-inch by 6-inch.

State if tool belt is wanted for 38, 40, 42 or 44-inch waist.

INSPECTORS' LEATHER TOOL BAGS

Made entirely of leather, have tongue and buckle fastenings and shoulder straps.

5108-20 Size, 8x20 inches.

LINEMEN'S CANVAS TOOL BAGS

Equipped with leather handles, sides and bottom, W. U. pattern.

Mfrs. No.	Size Inches
5102-18	18
5102-20	20

LINEMEN'S RUBBER GLOVES

Standard Weight for 4,000 Volts, with Gauntlet

Length Inches	Size Glove	Size Hand
12	13	9
12	15	10

Heavy Weight, for 10,000 Volts, with Gauntlet

12	13	9
12	15	10

YANKEE AUTOMATIC DRILLS



No. 41



No. 42



No. 44



No. 50



No. 75



Drill Points



Chucks



Countersinks



Screw Eye Holder



Screw Holder

AUTOMATIC DRILLS

No. 41

Size Drill Inches	Length Inches
$\frac{1}{8}$ - $\frac{1}{4}$	11 $\frac{1}{4}$

Has N. P. brass magazine head and handle. 8 drill points furnished with drill.

No. 42

$\frac{1}{8}$ - $\frac{1}{4}$	11 $\frac{1}{4}$
-------------------------------	------------------

No. 42 is of the same construction as No. 41 except is without magazine in head and has wood instead of metal handle. 8 drill points furnished with drill.

No. 44

$\frac{1}{8}$ - $\frac{1}{4}$	11 $\frac{1}{4}$
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No. 44 is provided with adjustable tension for the adjustment of different sizes of drills. Has N. P. brass magazine head and handle. 8 drill points furnished with drill.

RECIPROCATING DRILLS

No. 50

16
----

No. 50 is designed for drilling in steel, iron, brass and other metals as well as wood. Will hold any drill with straight shank.  $\frac{1}{8}$ -inch or smaller. Traverse, 8 $\frac{1}{2}$  inches. Length of drill, 16 inches.

PUSH BRACES

No. 75

16 $\frac{1}{4}$	23 $\frac{1}{4}$
------------------	------------------

An ideal tool for all around use. It excels a bit brace in its greater rapidity and convenience. All working parts protected by sleeves. The chuck will hold squares up to  $\frac{1}{2}$ -inch wood bit.

DRILL POINTS

Complete set of 8 points,  $\frac{1}{8}$ - $\frac{1}{4}$  inch.

ATTACHMENTS FOR SPIRAL RATCHET SCREWDRIVERS

For No. 30 screwdriver, have shanks  $\frac{1}{8}$  in. diam. and fit No. 20 size 2.

For No. 31, have shanks  $\frac{1}{8}$  in. diam. and fit No. 20 size 1.

For No. 35, have shanks  $\frac{1}{8}$  in. diam. and fit No. 20 size 1.

The shanks are same diameter as regular bit where it fits in chuck and spiral driver.

CHUCKS

To fit automatic screwdrivers are furnished with 8 drill points  $\frac{1}{8}$  to  $\frac{1}{4}$ , inclusive.

COUNTERSINKS

Sizes for Nos. 30 and 35 screwdrivers.

BIT WITH SCREW EYE HOLDER ATTACHMENT

Sizes for Nos. 30 and 35 screwdrivers.

BIT WITH SCREW HOLDER ATTACHMENT

For No. 30, size 2, screwdrivers.

For No. 31, size 3, screwdrivers.

For No. 35, size 1, screwdrivers.

YANKEE SCREWDRIVERS



No. 10



No. 13



No. 11



No. 60



No. 30



No. 31



No. 35



No. 100

RATCHET SCREWDRIVERS

No. 10

Shifter moves in direction of length of blade for right or left movement.

Length Blade, Inches	Length Blade, Inches
2	6
3	8
4	10
5	12

No. 15

Similar to No. 10, but all sizes have  $\frac{1}{8}$ -inch diameter blade and differ only in length.

2	4
3	5

No. 12

Made for special use of mechanics requiring a strong, substantial screwdriver with a short blade. Blade,  $\frac{1}{8}$  inch diameter; length over all,  $5\frac{1}{4}$  inches.

No. 60

Pocket screwdriver; four different sizes of blades kept in magazine handle.

No. 30

Regular pattern, right and left hand, and rigid.

Length, Inches	Length, Inches
Closed	Extended
13 $\frac{1}{2}$	19 $\frac{1}{2}$

No. 31

Same as No. 30, but heavier and stronger.

17 $\frac{1}{2}$	26 $\frac{1}{4}$
------------------	------------------

No. 35

Similar to No. 30, but lighter, for small screws and to carry in pocket.

9 $\frac{1}{4}$	12 $\frac{3}{4}$
-----------------	------------------

No. 130

Quick return, same as No. 30, with spring in handle, causing handle to automatically come back for the next push.

Mfrs. No.	Size, Box Inches
15	20 $\frac{1}{2}$

TOOL SETS

100	12 $\frac{1}{2}$ x4 $\frac{1}{4}$ x2 $\frac{3}{4}$
-----	--

No. 100 tool set contains the following: One No. 30 spiral ratchet screwdriver. Chuck with drill points, eight sizes— $\frac{1}{16}$ ,  $\frac{1}{8}$ ,  $\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$  and  $\frac{11}{16}$ -inch and countersink. No. 11 ratchet screwdriver, with 6-inch blade. No. 15 ratchet screwdriver with finger turn on blade, with blade 3 inches long. Box is made of oak.

Secrets of Service is an exceptionally helpful, well illustrated bulletin on practical methods of line construction. Write for it.

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# A Partial List of What We Make

## USE IS THE TEST

Farm Line Telephones	Transmitters
Magneto Switchboards	Impedance Coils
High Efficiency Common Battery Telephones	Kellogg Bakelite Mouthpieces
Universal Telephones	Kellogg Bakelite Operators' Receivers
Portable Telephones	Kellogg Bakelite Receivers
Weatherproof Telephones	Cordage
Special Insulated Telephones	Generators
Convertible Telephones	Condensers
Railway Telephones	Switchboard Lamps
Mine Telephones	Lamp Caps
Booth Telephones	Plugs
Microphones	Ringers
Cut-in Stations	Retardation Coils
Intercommunicating Systems	Induction Coils
Test Sets	High Efficiency Repeating Coils
Howlers	Relays
Universal Switchboards	Drops and Jacks
Cord Weights	Order Wire Keys
Instantaneous Recall Switchboards	Plug Seat Switches
P. B. X. Equipment	Buzzers
Toll Boards	Switchboard Cable, Silk and Enamel
Wire Chief's Desks	Magnet Wire, Silk and Enamel
Chief Operator's Desks	Flameproof Jumper Wire
Monitor's Desks	Terminal Blocks
Supervisor's Desks	Resin Core Solder
Cordless P. B. X. Switchboards	Lightning Arresters
Harmonic Systems	Heat Coils
Harmonic Converters	Main Frames
Multiple Switchboards	Lacing Twine
Automatic Ringing Relay Interrupters	Switchboard Tools
Test Panels	Loud Ringing Extension Bells
Power Boards	Transformer Sets
Pole Changers	Transformers
Police and Fire Alarm Systems	Ring and Listening Keys
Marine Telephone and Switchboard Equipment	Switching Keys
Despatching Systems	Switches
Toll Test Panels	Cabinets for Telephone Requirements
	Electric Light Current Converters

**Kellogg Switchboard and Supply Company**  
Chicago, Illinois

