OVERHEAD LINE MATERIAL

SEPARATE SECTIONS OF CATALOGUES.

"Collins" Automatic Point Controller, type "Q" with delayed Action Remote Control relay ...	Leaflet 19.
"Collins" Automatic Point Controller, type "Q" with Trip relay.	Leaflet 18 Q.T.
Electrically Operated "Collins" Automatic Point Controller for Tramcar Depots	Leaflet P.S.O.
Automatically Operated Frog Pull mechanisms	Leaflet 45.
Automatic Tramway and Warning Signals	Leaflet A.T.S.1.
De-wirement Indicator for Trolley Buses	Leaflet 43.
"Motor Bus Stop" signs of various types	Leaflet M.D.2.
Automatic Traffic Signals for road repair work	Leaflet 44.
Traffic Bollards and "STOP" & "GO" road sign	Leaflet 41.
Signal Flashers	Leaflet 42.
A.C. and D.C. Flashers and Spellers	Leaflet F.1.
Pedestrian Signals	Leaflet P.S.3/1.
Automatic Traffic Control Signals	Catalogue No. 23.
Traffic Safety Devices and Signs	Catalogue No. 24.

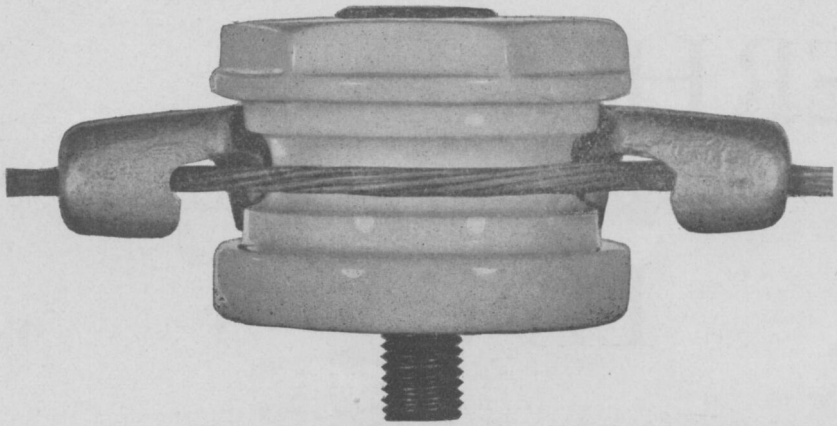
THE FOREST CITY ELECTRIC CO., LIMITED,
4, LONGFORD ROAD, STRETFORD, MANCHESTER.

Telegrams: "ROLLDROP, Manchester." *Telephone: LONgford 2275.*

Type 1. Porcelain Suspensions

Fitted with Forged Steel Bolts. Insulated over the Bolt Head.

High Tension Porcelain Reels. Reg. No. 817646. **Forged Steel Bolts. Sherardized.** $\frac{3}{4}$ in. and $\frac{5}{8}$ in.

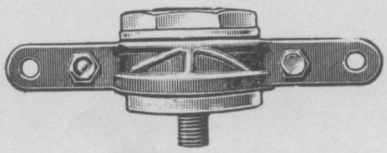


Malleable Iron Yokes. Sherardized.

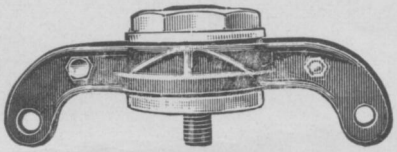
817646

Porcelain Straight Line Hanger. Hexagonal headed reel with single yoke. No. 40·1.

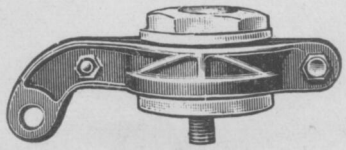
A box spanner fitting the hexagonal head of the reel is supplied with each order.



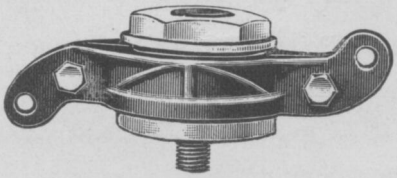
Porcelain Straight Line Hanger, with Double Yokes. 41·1



Porcelain Double Pull off. 42·1



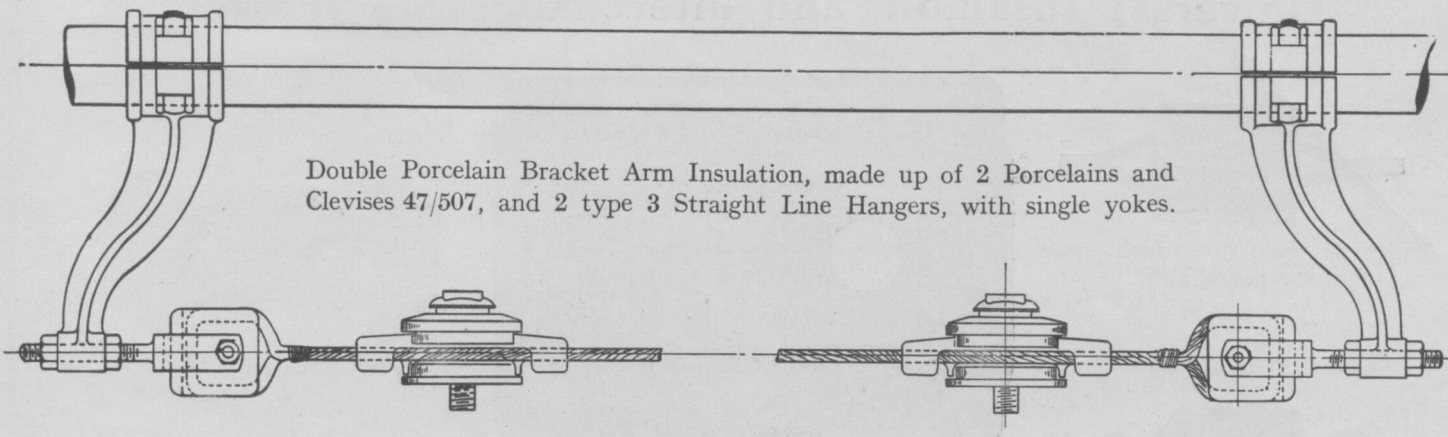
Porcelain Single Pull off. 43·1



42·2

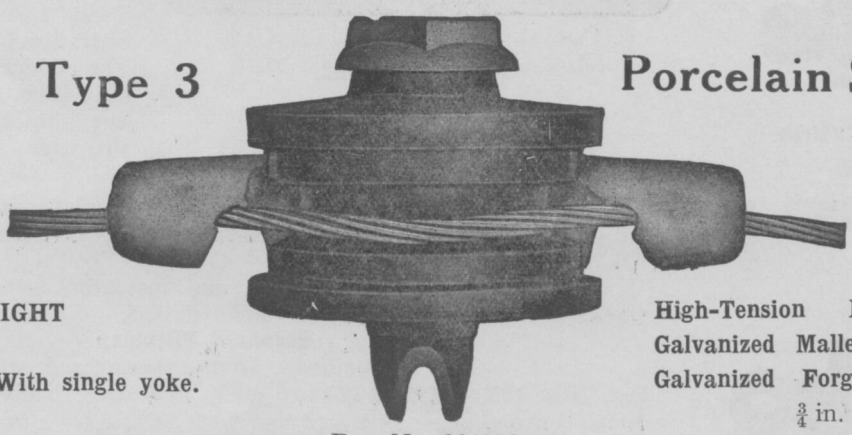
The reel is of high tension porcelain. The bolt is of forged steel and is inserted from the top of the insulator and fixed tightly into position by means of a lock nut below the insulator. The space between the top of the bolt and the top of the insulator is filled in with insulating compound. The insulator has a hexagonal head and by using a box spanner the insulator may be screwed tightly home without damage to either the insulator or the bolt. This insulator is interchangeable with the type 3 insulator and can be used with the single yokes and double yokes of the type 3 suspensions.

The type 3 insulator with a bare bolt shown on the next page is still in general use and giving satisfaction after more than 20 years service. We do not think that an insulated bolt is necessary, but in deference to the wishes of some of our customers we have introduced type 1 insulator with the bolt insulated as described above.



Double Porcelain Bracket Arm Insulation, made up of 2 Porcelains and Clevises 47/507, and 2 type 3 Straight Line Hangers, with single yokes.

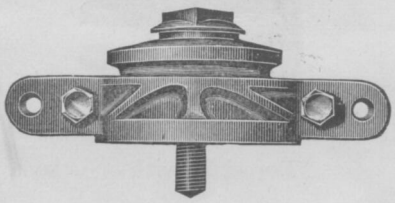
Type 3 Porcelain Suspensions



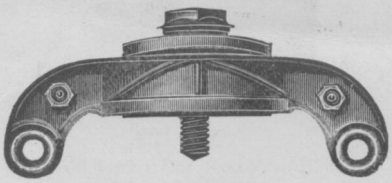
PORCELAIN STRAIGHT LINE HANGER,
With single yoke.

High-Tension Porcelain Reel, Galvanized Malleable Iron Yoke, Galvanized Forged Steel Bolts, $\frac{3}{4}$ in. and $\frac{5}{8}$ in.

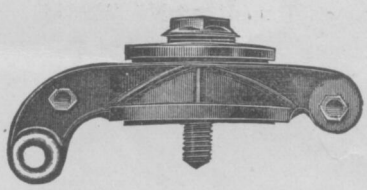
Reg. No. 654916
No. 40



Porcelain Straight Line Hanger, with double yokes
No. 41



Porcelain Double Pull off
Reg. No. 678840
No. 42



Porcelain Single Pull off
No. 43

The type 3 porcelain suspensions illustrated above were first supplied by us in 1916 and the earliest insulators are still in successful operation in Manchester, and other large cities, and giving efficient service with the original equipment after more than 20 years. The reel is of porcelain with a galvanized forged steel bolt. The yokes are of malleable iron sherardized. We supply round necked or square necked bolts as required. The hole through the insulator is round with a square neck and by using a square necked bolt the insulator and bolt are locked and cannot possibly become loose from the ear.

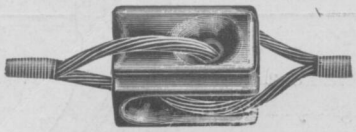
The neck of the insulator through which the bolt passes is raised above the upper surface of the insulator, and when the bolt is in position the washer head completely covers the bolt hole making it impossible for water to pass down the hole.

The insulator reel is tightly gripped round the grooved part, and experiments have proved that when erected it is impossible to break the reel in such a manner as to release the bolt.

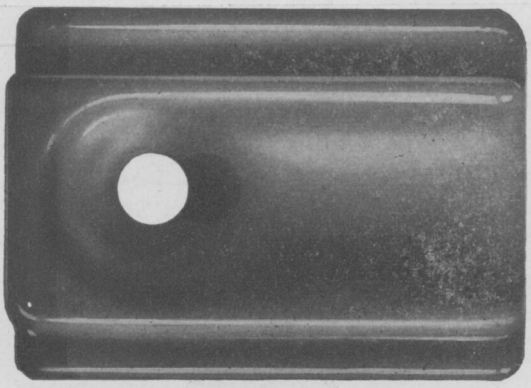
The double and single pull-off suspensions take the same reel and bolt as the straight line hangers. All parts are interchangeable.

These porcelain suspensions are more efficient than any of the various types of mica and compound insulators, and are very much lower in cost. As insulated bolts are not used the cost of maintenance is greatly reduced. These suspensions may be erected more quickly than any other types.

Universal Insulator and interchangeable fittings.



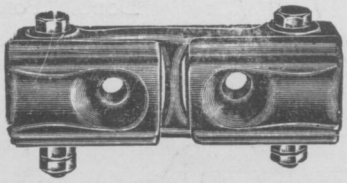
Universal Insulator, with span wires nozzled off.



Cat. No. 122.

3 in. × 2¼ in. ½ in. holes.

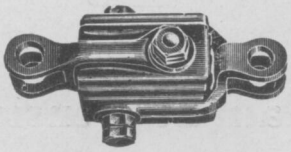
12 ozs. nett.



Registered No. 721173.

Cat. No. 127.

Twin Insulators, connected by Sheradised malleable iron yokes. The outside ends of the Insulators may be nozzled off or fitted with any of the ends shown on this page.



Registered No. 721019.

Cat. No. 123.

Porcelain with two clevis ends.

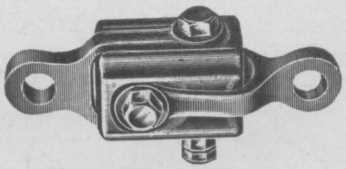
The above high tension brown glazed insulator was designed by us in 1925 to be suitable for either nozzling off, or for fitting with metal ends. All parts are interchangeable.

More than 250,000 fittings and insulators have been supplied to trackless trolley and transport undertakings.

Standard Fittings.

Malleable Iron. Sherardized.

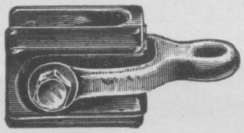
Cat. Nos. 123, 124 and 125 are made in 3 sizes to give 5¼ in., 7½ in., and 10 in. centres.



Registered No. 722211.

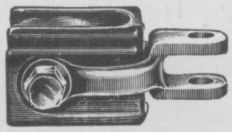
Cat. No. 124.

Porcelain with two eyes.



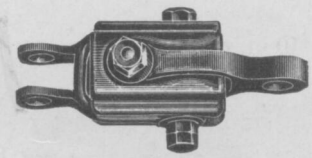
No. 129.

Porcelain with one eye.



No. 130.

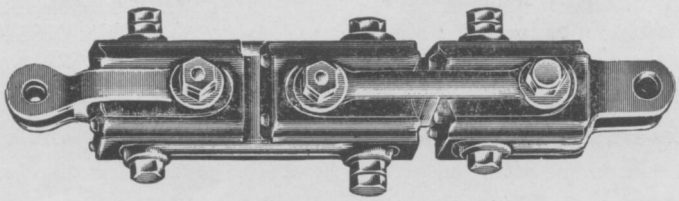
Porcelain with one clevis.



Registered No. 721017.

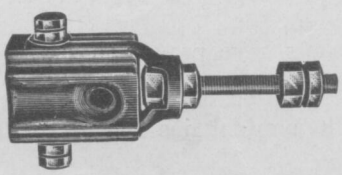
Cat. No. 125.

Porcelain with one eye and one clevis.



Triple Insulation.

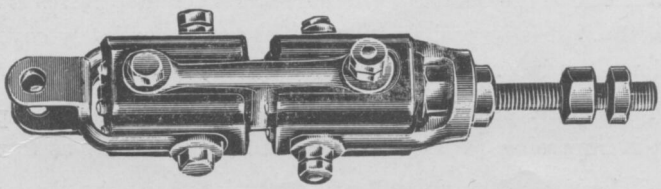
No. 131.	With jaw ends
No. 131A	With eye ends.
No. 131B	One eye, one jaw.



Registered No. 721018.

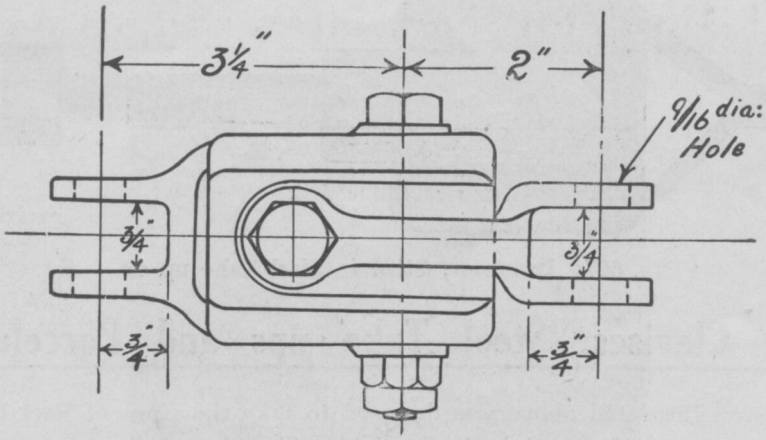
Cat. No. 126.

Porcelain with ⅝ in. steel take up 3 in. long.

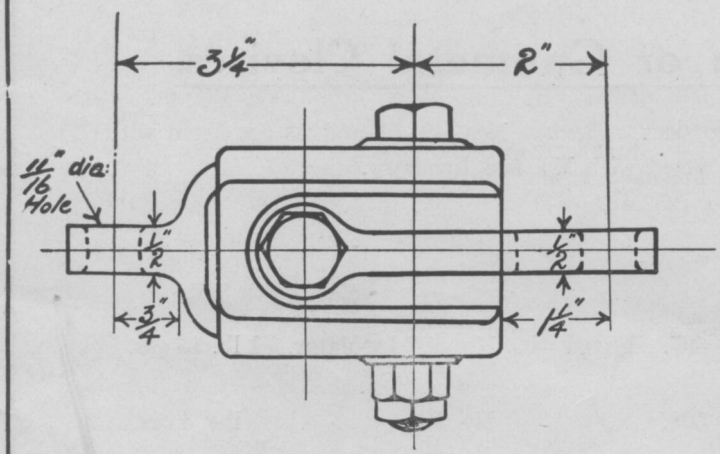


Double Insulation.

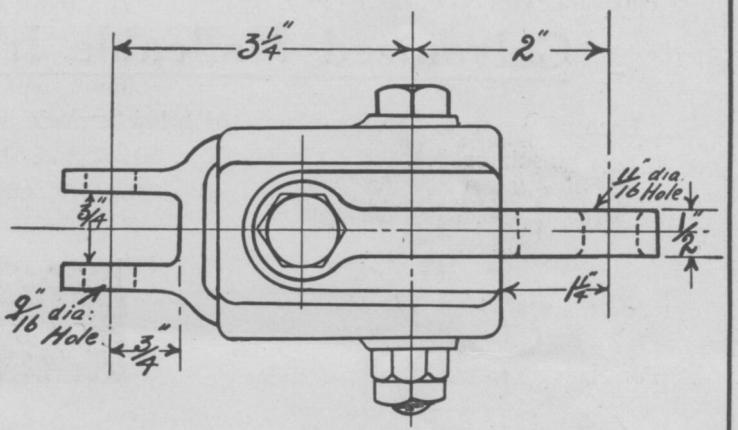
No. 132	One jaw and ⅝ take up.
No. 132A	One eye and ⅝ take up.
No. 132B	One eye and one jaw.
No. 132C	Two eyes.
No. 132D	Two jaws.



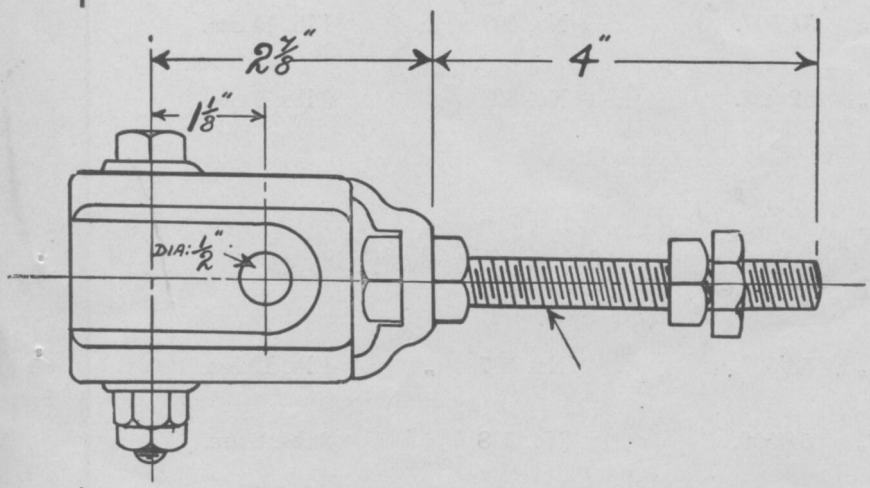
Cat. No. 123. **Porcelain Strain, with Clevis Ends.** Weight 1·9 lbs.
Also 7½ in. and 10 in. centres.



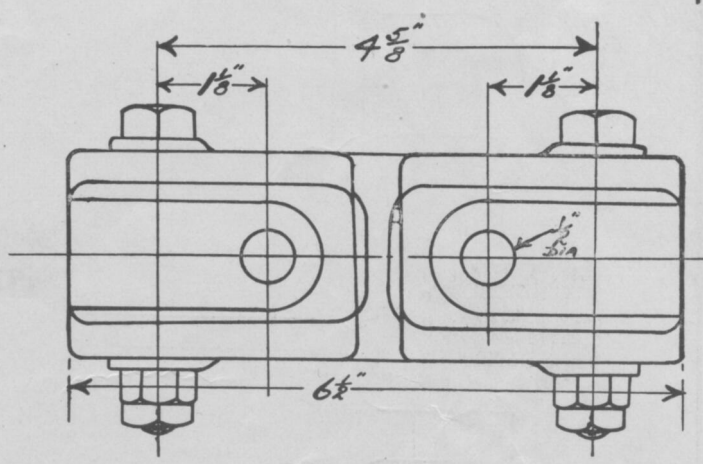
Cat. No. 124. **Porcelain Strain, with Eyes at the Ends.**
Weight 2·05 lbs.
Also 7½ in. and 10 in. centres.



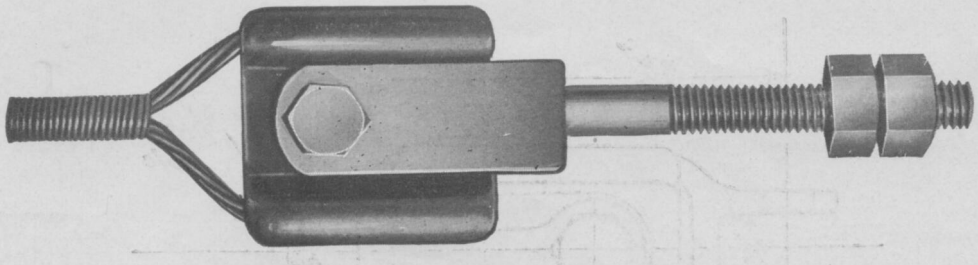
Cat. No. 125. **Porcelain Strain—Clevis one End, Eye the other End.** Weight 2 lbs.
Also 7½ in. and 10 in. centres.



Cat. No. 126. **Porcelain Strain, with 3 in. take up.**
Weight 1·7 lbs.



Cat. No. 127. **Twin Porcelain Strain Insulators.**
Weight 2·5 lbs.



No. 507 **Insulator, fitted to Steel Take up 47.**

Malleable Iron Clevises, Steel Take ups and Porcelain Insulators.

No. 507 Porcelain Insulator illustrated above was designed to take the place of Reel Insulators. It is very much stronger than a Reel and a much better Insulator. Size $2\frac{1}{2} \times 2$ in., with $\frac{1}{2}$ in. holes. Weight 14 ozs.

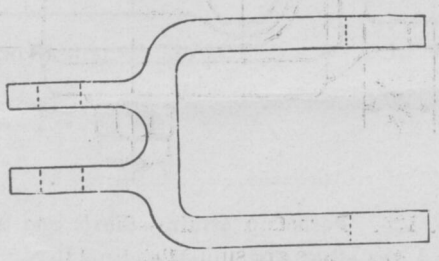
No. 508 is of similar shape but larger for pole bands and long heavy spans, dead ends, etc. Size $3\frac{3}{4}$ in. $\times$ $3\frac{1}{4}$ in., with $\frac{5}{8}$ in. hole for shackle pin and $\frac{3}{4}$ in. hole for wire. Weight 1 lb. 6 ozs.

Cat. No. 47/507. Clevis with $\frac{5}{8}$ in. dia. screwed stem, 3 in. take-up, fitted with No. 507 Insulator. 2 lbs.

Cat. No. 48/508. „ $\frac{5}{8}$ in. „ „ „ „ „ No. 508 „ 2 lbs. 12 ozs.

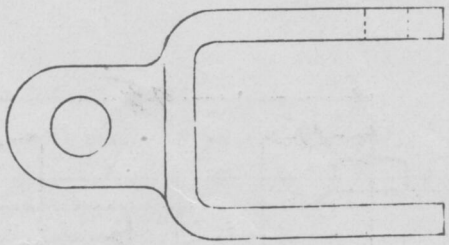
Galvanized Malleable Iron or Gunmetal Clevises.

Each of the three Clevises illustrated below is made in two sizes. Clevises Nos. 49, 51 and 53 are fitted with insulator, No. 507. Clevises Nos. 50, 52 and 54 are fitted with No. 508 Insulator.



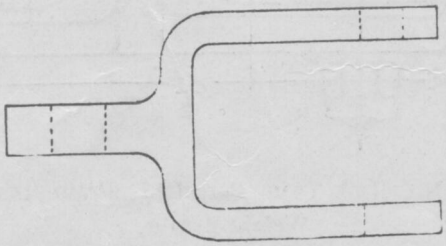
Cat. No. 49/507. Fitted with No. 507 Insulator. 1 lb. 15 ozs.

„ 50/508. „ No. 508 „ 3 lbs. 4 ozs.



„ 51/507. „ No. 507 „ 1 lb. 14 ozs.

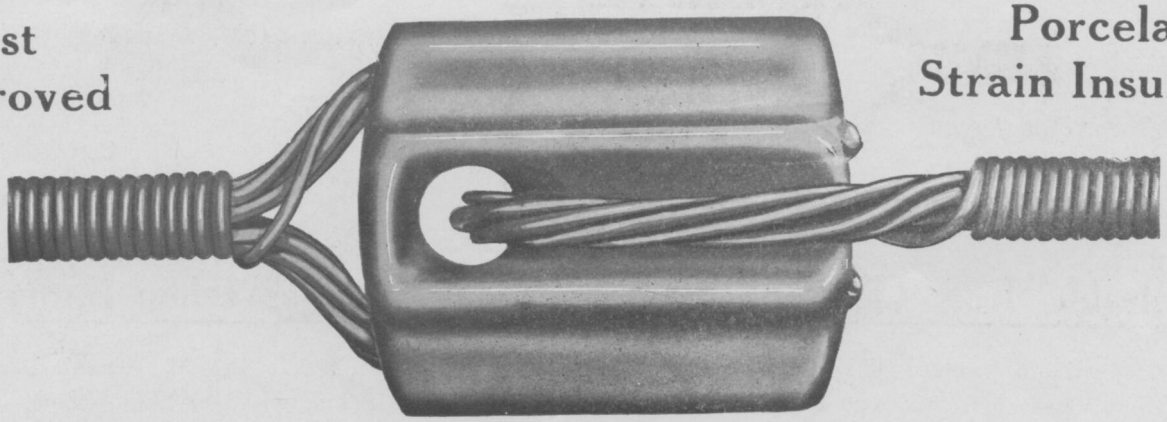
„ 52/508. „ No. 508 „ 3 lbs. 6 ozs.



„ 53/507. „ No. 507 „ 1 lb. 12 ozs.

„ 54/508. „ No. 508 „ 3 lbs. 6 ozs.

Latest Improved Porcelain Strain Insulator.

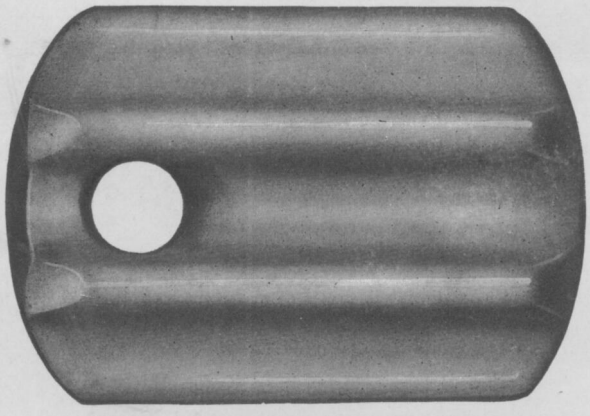


Reg. No. 696688.

No. 44. **Type X.** Size $3\frac{1}{4} \times 2\frac{3}{4}$. Weight 15 ozs. $\frac{5}{8}$ hole.

Chocolate Glaze. Test :—Dry 31,500 Volts. Wet Spray 10,000 Volts.

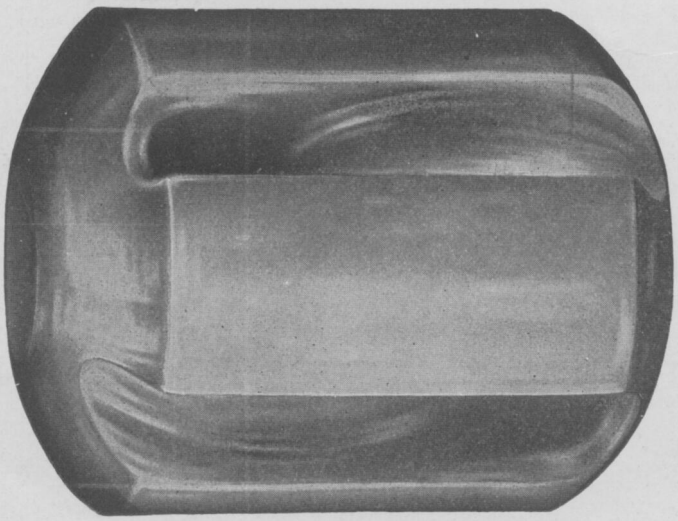
The above Insulator is for use where the climatic conditions are specially severe. The surface area between span wires is so great, owing to the corrugations, that leakage is impossible. Each span wire is surrounded by a wall of porcelain on 3 sides.



No. 45. Type X1. Size 4 in. $\times 3\frac{3}{4}$ in. Weight 18 ozs. $\frac{1}{2}$ hole.

No. 46. Type X2. Size 3 in. $\times 2$ in. Weight $7\frac{1}{2}$ ozs. $\frac{7}{16}$ hole.

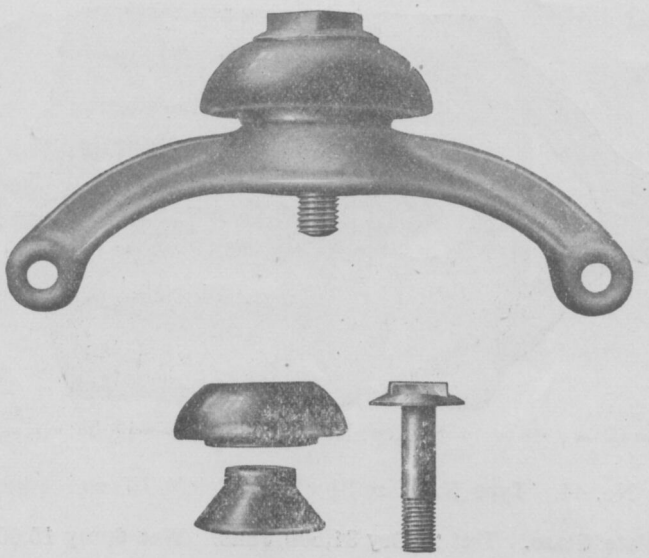
X1 and X2 Insulators are similar in type to No. X, but the wall of porcelain does not continue to the full height at the ends of the span wire grooves.



Types 500. Brown Glaze.

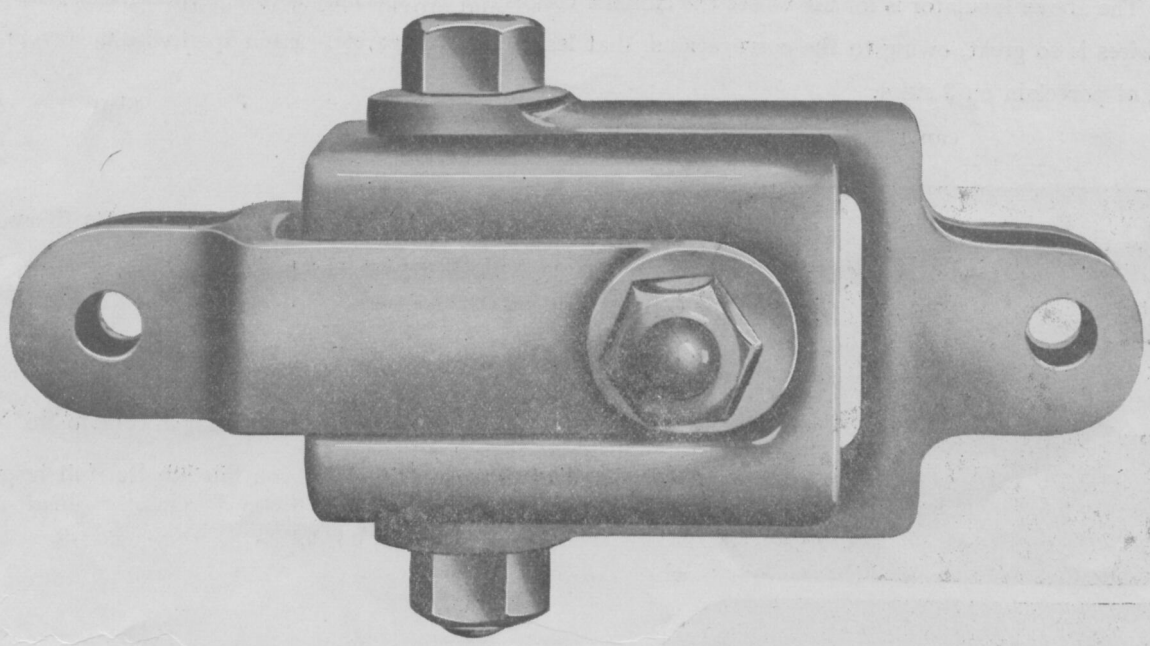
No.	Size	Volts	Hole for Wire
	inch.	Telephone Wire Insulator	
500	$2\frac{1}{4} \times 1\frac{1}{2}$		$\frac{5}{16}$ in.
502	$3 \times 2\frac{3}{8}$	15,000	$\frac{3}{8}$ in.
504	$3\frac{1}{2} \times 2\frac{7}{8}$	18,000	$\frac{1}{2}$ in.
506	$5\frac{1}{2} \times 3\frac{3}{8}$	21,000	$\frac{3}{4}$ in.

Porcelain Cap and Cone Insulators.



Brown Glazed Porcelain Forged Steel Bolt Galvanized $\frac{5}{8}$ in. or $\frac{3}{4}$ in.

If desired the porcelain cap can be supplied with the bolt fixed inside the insulator and with the top insulated.



Strong guy insulator for heavy strains, dead ends, etc. The insulator is shown fitted with double clevises, but it may be used with one clevis, or the span wires may be nozzled off.

No. 509. Insulator $3\frac{5}{8}$ in. $\times 2\frac{1}{2}$ in., 1 lb. 8 ozs., $\frac{1}{2}$ in. holes.

No. 510. Insulator and one clevis. Overall length, $5\frac{5}{8}$ in., 3 lbs. 6 ozs.

No. 511. Insulator and two clevises. Overall length, $7\frac{1}{2}$ in., 5 lbs. 2 ozs.

No. 512. Insulator and one clevis with eye.

No. 513. Insulator and two clevises with eyes.

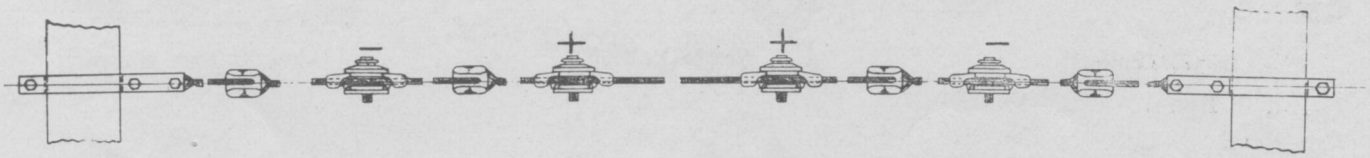
No. 514. Insulator and one end with eye, other end clevis.

All Porcelain Insulation.

FOR TRACKLESS TROLLEY SPANS.

The advantages of porcelain for trolley wire insulation on ordinary rail return tramway systems have been proved beyond doubt, and the advantages are even greater on trackless trolley systems.

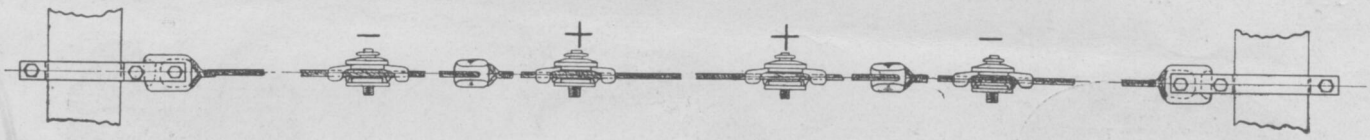
The undernoted three examples shew how all porcelain insulation may be used for trackless trolley systems. Modifications may be made where desired.



EXAMPLE 1. This span is made up with 4 type 3 single yoke Straight Line Hangers (page 3) and 4 Strain Insulators (page 4).

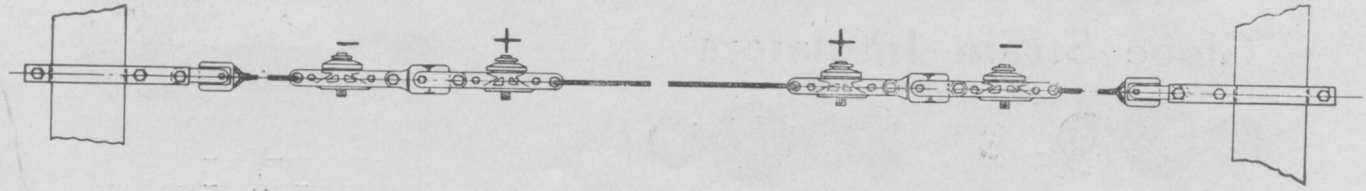
It is simple and easy to erect, low in first cost, and provides double insulation between + and +, treble insulation between + and −, and double insulation between − and pole.

By using this form of construction the weight is kept low and the distance between + and −, wires can be adjusted to suit.



EXAMPLE 2. This span is made up with 4 type 3 single yoke Straight Line Hangers (page 3), 2 Strain Insulators (page 4), and 2 pole strap insulators (page 6).

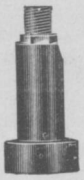
The insulation and cost are the same as in example 1, the only difference being the substitution of the two pole band insulators for the two porcelain strain insulators. The weight is low and the distance between + and − wires can be adjusted to suit.



EXAMPLE 3. This span is made up with 4 type 3 double yoke hangers (page 3) ; 2 double clevis porcelain insulators (page 4) for providing swivelling insulated connections between + and − wires and 2 porcelain insulators with eye to give swivelling connections at the poles.

The insulation provided is similar to examples 1 and 2, but the weight is greater and the cost higher. All spans can be made up to give 13 in. or 18 in. between + and − wires.

Overhead Line Material.



Insulated Bolts.

No. 55 ... $\frac{5}{8}$ in. Standard.
No. 56 ... $\frac{5}{8}$ in. West End.
No. 57 ... $\frac{3}{4}$ in. M.T.A.

Cap and Cone Insulators.

No. 58 ... $\frac{5}{8}$ in. Bolts.
No. 59 ... $\frac{3}{4}$ in. „

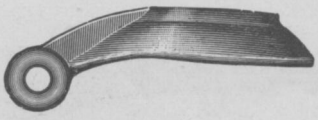


Cap and Cone Suspensions.



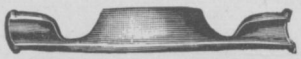
Double Pull-off.

Galv'd M. Iron ... ... No. 60
Gun-Metal ... ... No. 61



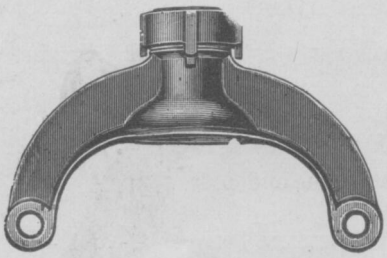
Single Pull-off.

No. 62
No. 63



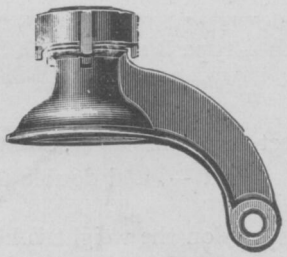
Straight Line Hanger.

No. 64
No. 65



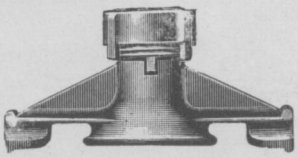
M.T.A. No. 40

Galv'd M. Iron ... ... No. 66
Gun-Metal ... ... No. 67



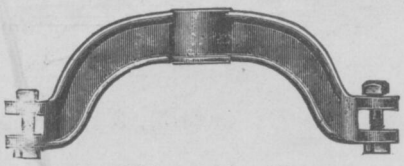
M.T.A. No. 41

No. 68
No. 69



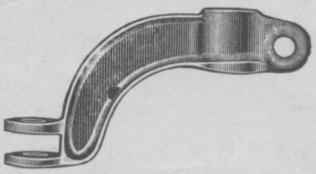
M.T.A. No. 42

No. 70
No. 71



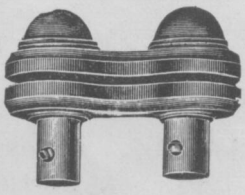
M.T.A. No. 53

Galv'd M. Iron ... ... No. 72
Gun-Metal ... ... No. 73



M.T.A. No. 53

No. 74
No. 75



Galvanized Forged Steel Links.

No. 76 ... $\frac{1}{2}$ Bolts.
No. 77 ... $\frac{5}{8}$ „

Sherardized M. Iron Globe Strain Insulators.



With Eyes.

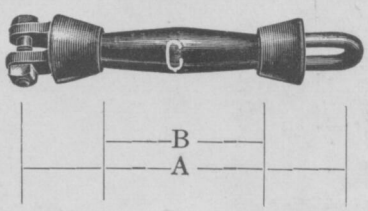


Eyes and Clevis.

No. 79	...	2 in. Diameter.	No. 84	...	2 in. Diameter
„ 80	...	$2\frac{1}{4}$ in. „	„ 85	...	$2\frac{1}{4}$ in. „
„ 81	...	$2\frac{1}{2}$ in. „	„ 86	...	$2\frac{1}{2}$ in. „
„ 82	...	$2\frac{3}{4}$ in. „	„ 87	...	$2\frac{3}{4}$ in. „
„ 83	...	3 in. „	„ 88	...	3 in. „

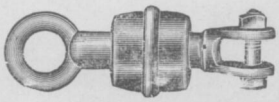
Wood Strain Insulators

With Clevis and Eye, Two Clevises, or Two Eyes.

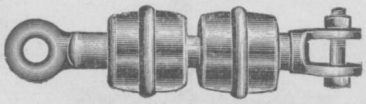


	A	B	C
89	$9\frac{3}{4}$ in.	5 in.	1 in.
90	$19\frac{3}{4}$ in.	15 in.	1 in.
91	$9\frac{3}{4}$ in.	5 in.	$1\frac{1}{4}$ in.
92	$19\frac{3}{4}$ in.	15 in.	$1\frac{1}{4}$ in.

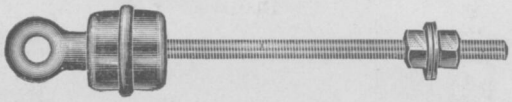
Giant Strain Insulators.



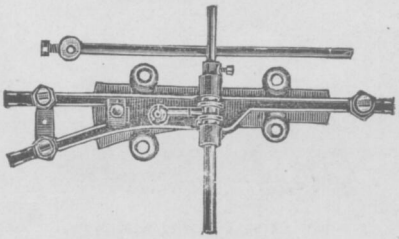
Single



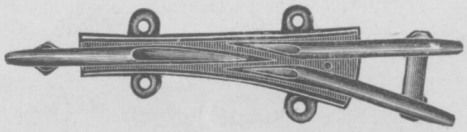
Twin



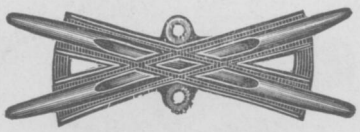
With Screwed Stem



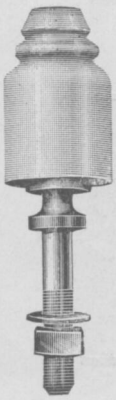
M.T.A. Boom Operated Frogs



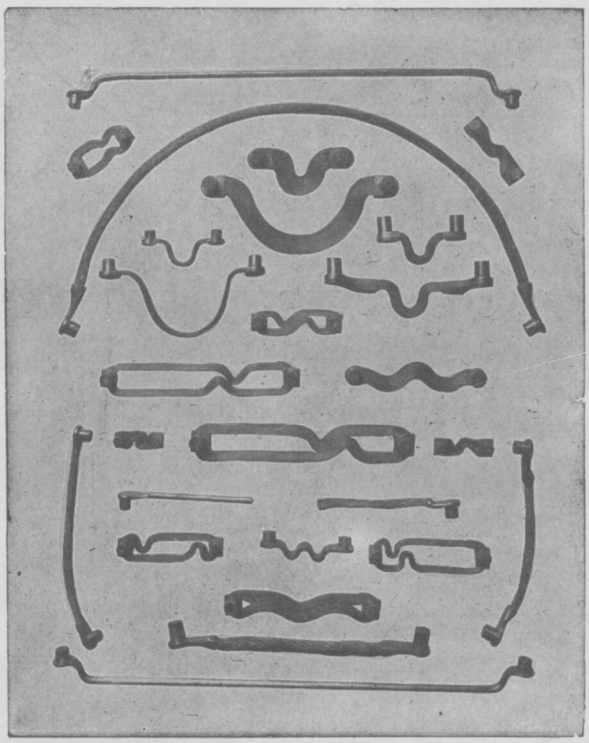
M.T.A. Points



M.T.A. Crossings



Telephone Insulators.

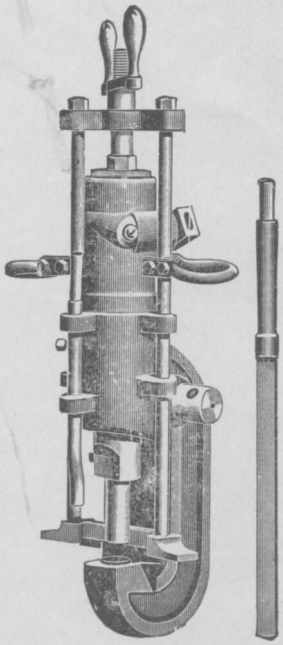


Solid Wire Flexible Cable and "Protected" Railbonds.

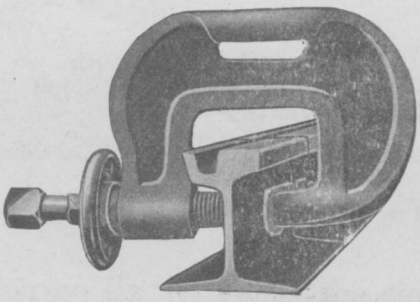


Malleable Iron Hanger.
7 in. long.

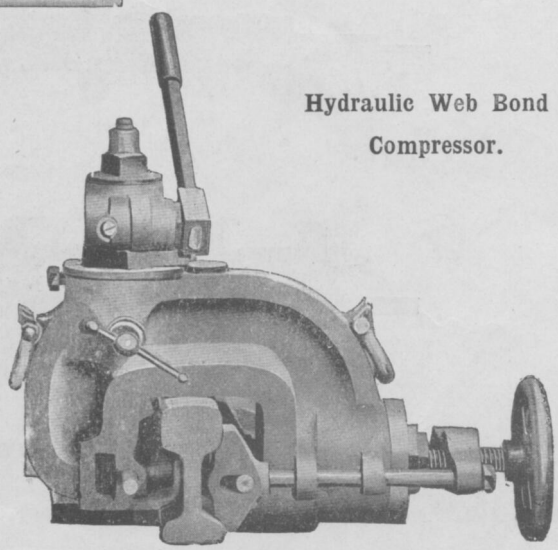
To fit on tube $2\frac{3}{8}$ in. dia. Cap bolts, $\frac{1}{2}$ in. dia. Hole in bottom of Hanger, $\frac{5}{8}$ in. diameter.



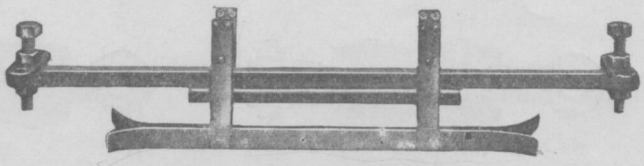
Hydraulic Foot Bond Compressor.



Double Screw Rail Bond Compressor.

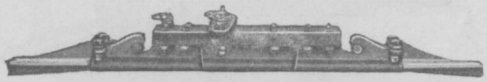


Hydraulic Web Bond Compressor.

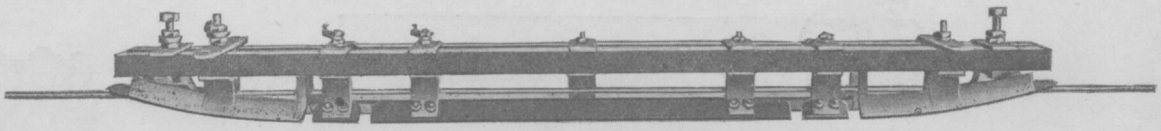


"Nachod" Type Contactors.

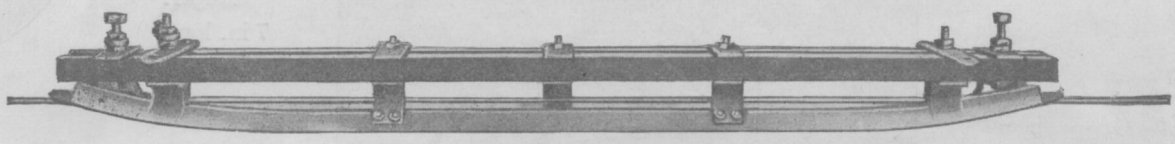
Short for speeds up to 8 miles per hour.
Medium „ „ 15 „
Long „ „ 20 „



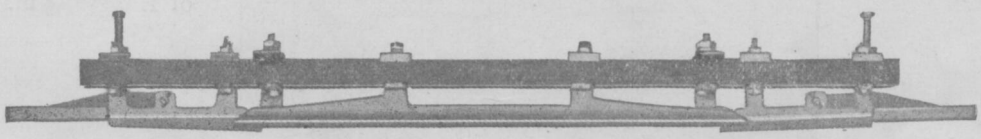
Type 9.—Series Contactor.

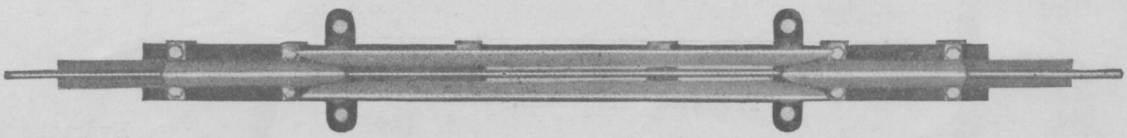


Type 17.—Point Controller Line Contactor with two gaps at each end. To break 5 amps.

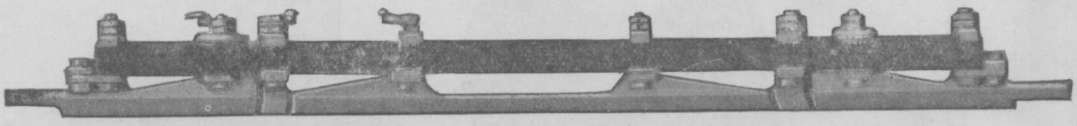


Type 18.—Shunt Line Contactor with one gap at each end. To break 1 amp.





Type 19.—Shunt Line contactor, straight run through. To break $\frac{1}{2}$ amp.



Type 20.—Shunt Line Contactor, straight run through. To break $\frac{1}{4}$ amp.

We manufacture line contactors for all purposes.