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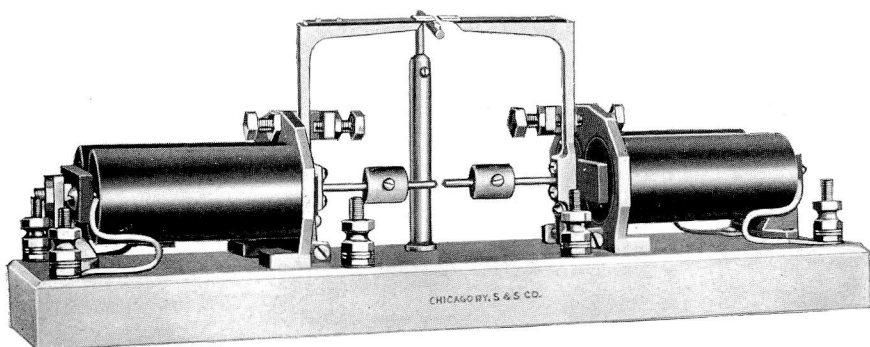
# CATALOGUE AND PRICE LIST

## SECTION B

### RELAYS

Interlocking  
Line  
Neutral  
Neutral High Voltage  
Polarized  
Slow Release  
Time  
Track

## STYLE "A" UNIVERSAL CROSSING BELL RELAY



No. 1500

Style "A" Relay for Normally Closed Track Circuit with One Interlocking Contact

Size,  $15\frac{1}{2}$ " x  $4\frac{1}{2}$ " x 6" High

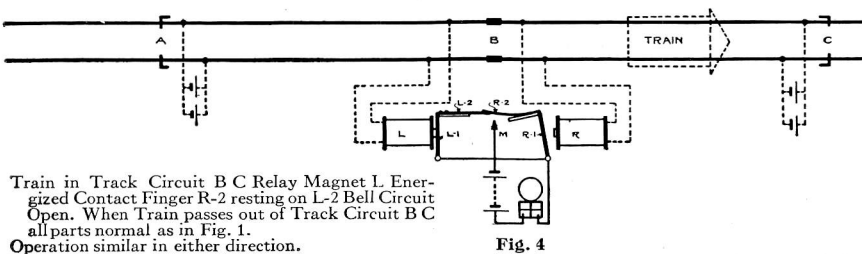
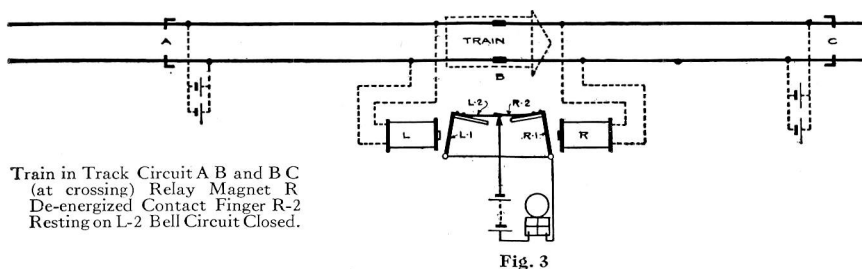
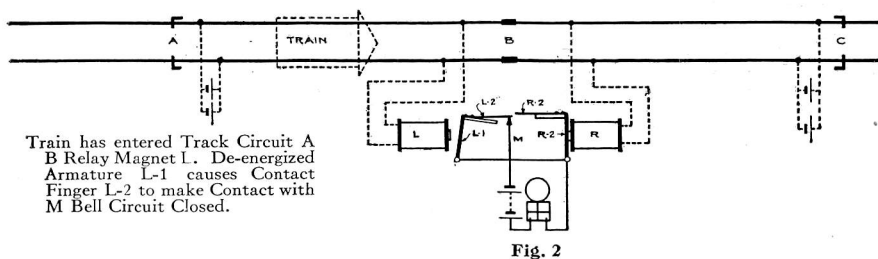
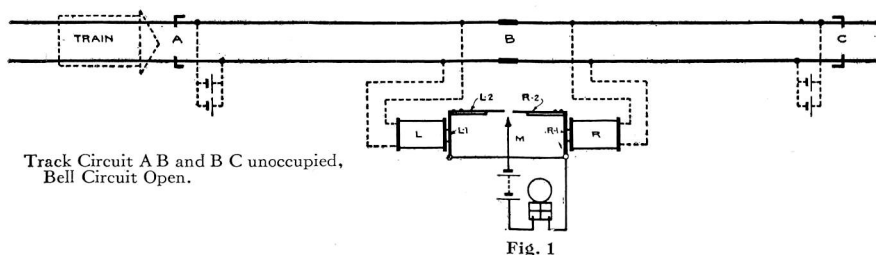
This Relay although low in cost, is warranted to operate equally as well and as efficient as any higher priced Crossing Bell Relay on the market, and has the distinct advantage that by a simple change in Contacts it can be used as "Open" or "Closed" Circuits and extra Front, Back or Interlocking Contacts may be attached easily and quickly.

The Relay is made to R. S. A. Specifications, as far as a non-inclosed type of Relay admits. The Armature and Contacts are gravity operated and the adjustable weights allow of a wide range of adjustments for "Pick up" and "Release". Binding Posts are R. S. A. Standard and entire Relay is mounted upon a very heavy porcelain base.

Each Armature may be equipped with as many as three extra Front or Back Contacts in addition to Interlocking Contact. Relay may also be equipped with as many as four Interlocking Contacts, which may be "Standard" or "One Way" Contacts operating from either "normally closed" or "normally open" track or line circuits. The porcelain base has holes provided for additional Contacts and Binding Posts which may be applied in the field. All parts are interchangeable and warranted to fit.

From above description it will be seen that this Relay is **Universal** in its application, and is especially well adapted as a Standard relay for crossing bells, annunciators, indicators, etc., under all track conditions, same being well adapted for use in Block Signal Territory on single or double track as well as in other locations.

## STYLE "A" UNIVERSAL CROSSING BELL RELAY

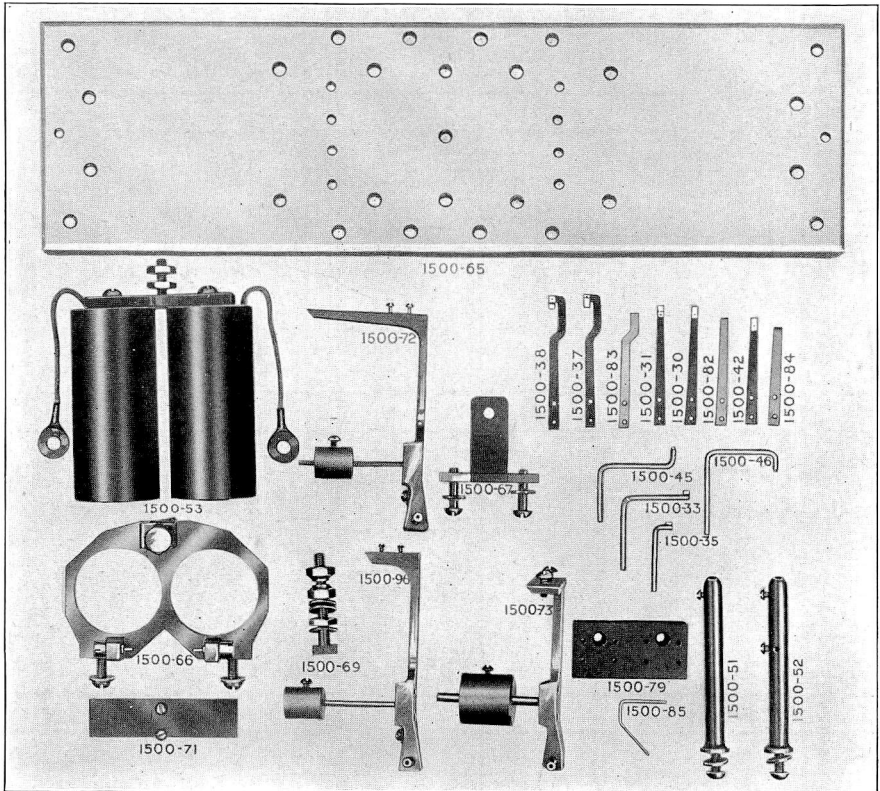


Above diagrammatic sketches illustrate the simplicity of Interlocking feature of Style "A" Relay.

Note that there are no moving parts except armatures, all Contacts being stationary, no "dogs" or "catches" being employed. All Contacts are sliding and self-cleaning.



## STYLE "A" UNIVERSAL CROSSING BELL RELAY



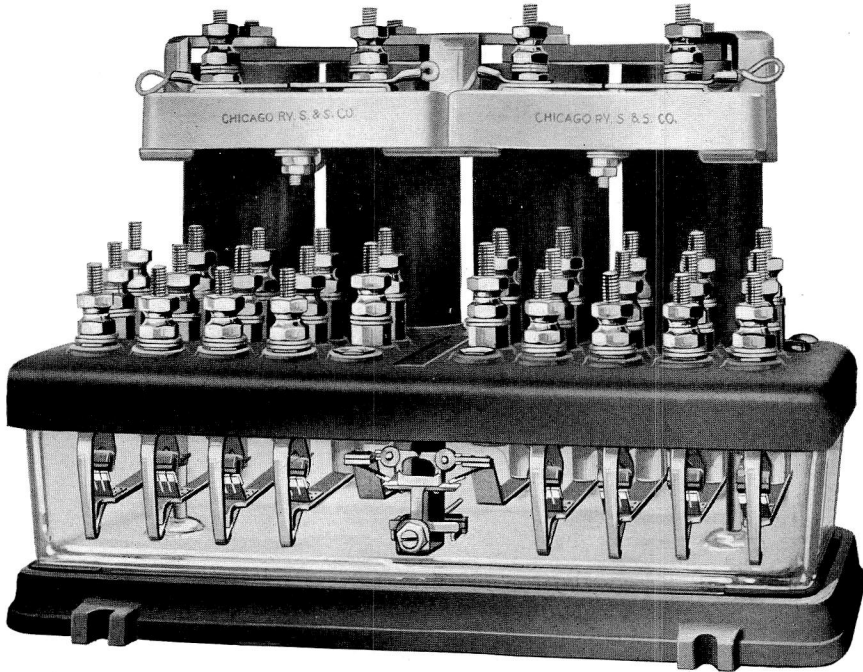
Trade No.	DESCRIPTION	List Price
1500	Style "A" Relay Normally Closed Circuit as shown.....	\$45.00
1500-1	" " " " Open Circuit.....	45.00
1500-2	" " " " Closed Circuit with one "One Way" Contact for Annunciators, etc.....	45.00
1500-3	Same as above except Normally Open Circuit.....	45.00
	For each extra Independent Front or Back Contact, add.....	3.00
	" " " " Combination.....	4.00
	" " " " Interlocking Contact, add.....	5.00
	" " " " "One Way".....	5.00
	For each Magnet Wound between 10 and 150 Ohms, add.....	1.80
	" " " " " 151 " 500 " ".....	3.00
	" " " " " 501 " 1000 " ".....	4.80
1500-65	Porcelain Base.....	6.00
1500-53	Magnets complete as shown (under 10 Ohms).....	12.00
1500-51	Contact Post for No. 1500 complete as shown.....	1.00
1500-52	" " " " with extra Binding Post for Wire Connection.....	1.10
1500-38	Ivory "One Way" Interlocking Contact Spring for 1500-3 and 1500-1 Relay.....	1.10
1500-37	Platinum Interlocking Contact Spring for Relay.....	1.10
1500-83	Aluminum Support for No. 1500-38 and 1500-37.....	.40
1500-31	Ivory "One Way" Contact Spring for 1500 Relay.....	1.10
1500-30	Platinum Interlocking Contact Spring for No. 1500 Relay.....	1.10
1500-82	Aluminum Support for No. 1500-30.....	.20
1500-42	Front or Back Non-interlocking Platinum Contact Spring for No. 1500-79.....	1.10
1500-84	Aluminum Support for No. 1500-42.....	.20
1500-45	Long Contact Bar Platinum Pointed for Extra Contacts.....	.80
1500-33	Standard Contact Bar for No. 1500.....	.10
1500-35	Short Platinum Contact Bar Pointed for Extra Contacts.....	.80
1500-46	Contact Bar for No. 1500-1 Relay or Extra Front Contacts.....	.80





## GLASS ENCLOSED INTERLOCKING RELAY

Style "B"



Style "B" Interlocking Relay, with No. 2 Locking, Shelf Type, with One Interlocking Contact and Four Front and Back Contacts on Each Armature

Size,  $11\frac{1}{2}'' \times 6\frac{3}{4}'' \times 8\frac{1}{2}''$

This Relay employs same parts as our Glass Enclosed Track and Line Relays. The Interlocking feature is extremely simple and positive in action. Each Armature may be equipped with four independent or four Front and Back Contacts.

The construction of Relay is in accordance with R. S. A. Specifications. Coils are form-wound and easily removable without interference with Contacts or Armatures.

All Binding Posts are R. S. A. Standard and are on front of Relay. Binding Posts and Contacts have non-turnable heads and cannot be loosened or interfered with from outside of Relay without breaking seal on glass cover. Extra Front Contacts are Platinum against Graphite and Back Contacts Platinum against Platinum. Silver, Copper or Silver Plated Contacts will be furnished upon request.

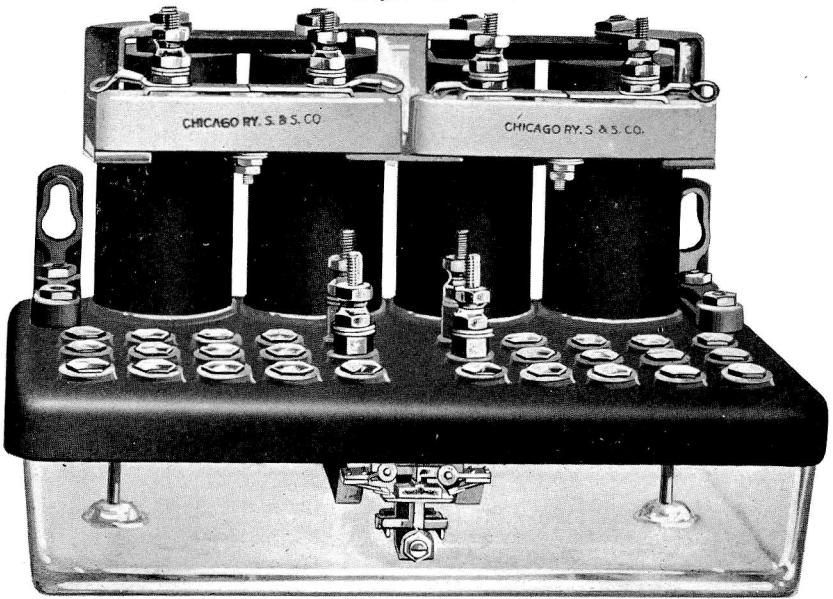
Each Relay is thoroughly tested and calibrated before shipment and provided with Inspector's certificate inside of glass case showing results of tests which we warrant to be accurate and absolutely reliable.

Style "B" Relay can be furnished with two styles of locking, governing the Front and Back Contacts for Signal Circuits, etc. In Locking No. 1 all the functions of an ordinary Relay take place, viz.: all Back Contacts close and all Front Contacts open, on each Armature, this style of Locking will always be furnished unless otherwise specified. In Locking No. 2, Front Contacts open and Back Contacts close on one Armature, but Contacts on the other Armature remain stationary. Locking No. 1 and No. 2 are illustrated on following page.



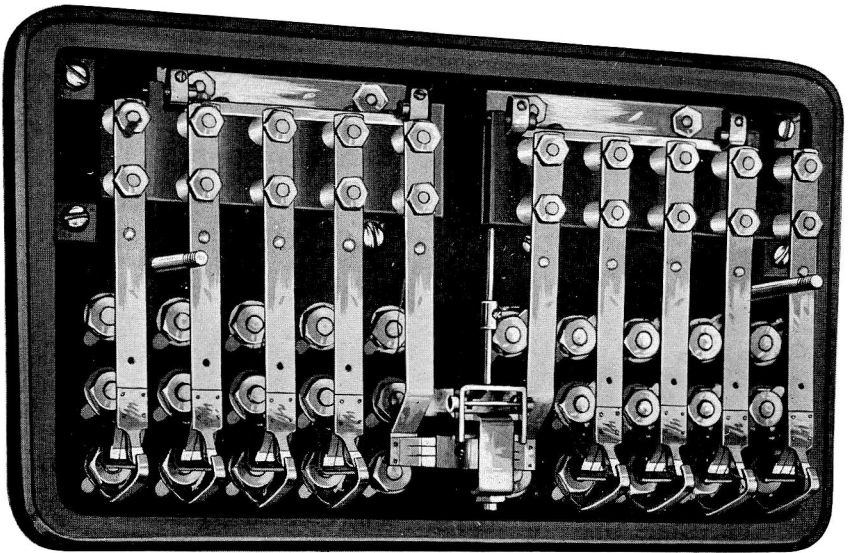
## GLASS ENCLOSED INTERLOCKING RELAY

Style "B"



Style "B" Interlocking Relay. Wall Type, with Interlocking Contact Only.  
(Relay may be Equipped with Four Extra Front and Back  
Contacts on Each Armature)

Size,  $11\frac{1}{2}''$  x  $6\frac{3}{4}''$  x  $7\frac{3}{4}''$



Bottom View Style "B" Interlocking Relay with Full  
Complement of Extra Contacts



## GLASS ENCLOSED INTERLOCKING RELAY

Style "B"

Trade No.	DESCRIPTION	List Price
1524	Style "B" Shelf Type Interlocking Relay with one Interlocking Contact Only.....	\$50.00
1525	Style "B" Wall Type Interlocking Relay with one Interlocking Contact Only.....	50.00
1524-51	Style "B" Shelf Type Relay with one "One Way Only" Interlocking Contact.....	50.00
1525-51	Style "B" Wall Type Relay with one "One Way Only" Interlocking Contact.....	50.00
	Orders should specify whether Locking No. 1 or Locking No. 2 is required.	
	<b>EXTRA CONTACTS</b>	
	For each additional independent PLATINUM to Graphite Front Contact, add.....	2.30
	For each additional independent SILVER to Graphite Front Contact, add.....	1.30
	For each additional independent PLATINUM to Platinum Back Contact, add.....	1.50
	For each additional independent SILVER to Silver Back Contact, add.....	1.00
	For each additional combination Front and Back Contact, PLATINUM to Graphite Front and PLATINUM to Platinum Back, add.....	2.95
	For each additional combination Front and Back Contact, SILVER to Graphite Front and SILVER to Silver Back, add.....	2.05
	Each Armature may be equipped with a maximum of four Front and Back Contacts. Unless otherwise specified extra Front Contacts will be furnished PLATINUM to Graphite and Extra Back Contacts PLATINUM to Platinum.	
	<b>MAGNETS</b>	
	Above prices are for Relays with Magnets 50 Ohms Resistance or less.	
	For Magnets Wound 51 to 150 Ohms, add for each Magnet..	1.80
	"      "      "      151      500      "      "      "      "      "      "	3.00
	"      "      "      501      1000      "      "      "      "      "      "	4.80
	"      "      "      1001      3000      "      "      "      "      "      "	6.50
	Magnets above 1000 Ohms are one inch longer and increase height of Relay 1 7/8".	

When specified, Relay may be furnished with Carbon to Carbon, or, Carbon to Copper Contacts for High Voltages, also with Plain or Silver Plated Carbon or Silver Plated Graphite Front Contacts. Prices upon request.

## GLASS ENCLOSED INTERLOCKING RELAY

Style "B"

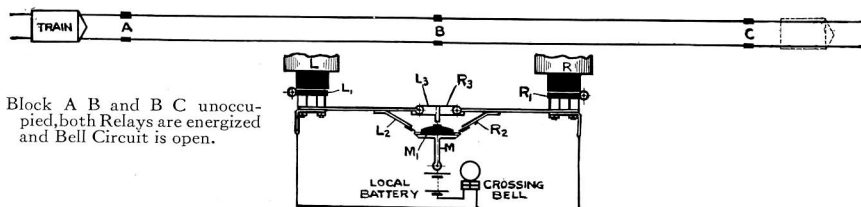


Fig. 1

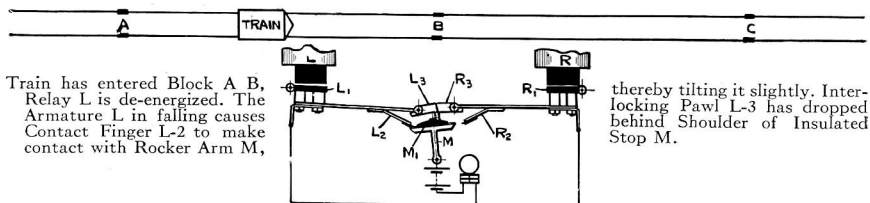


Fig. 2

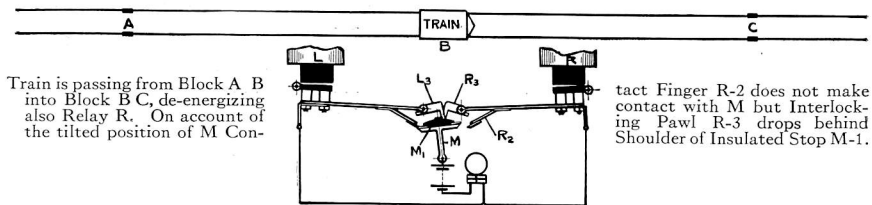


Fig. 3

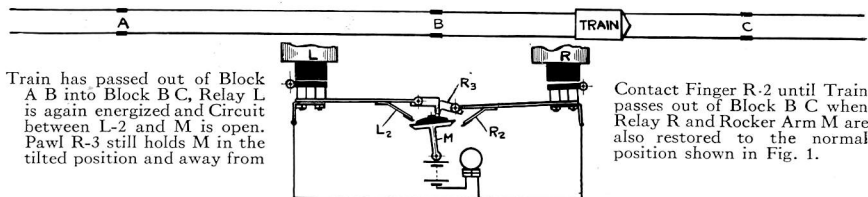


Fig. 4

Diagrammatic illustrations of operations of Interlocking Contact on Style "B" Relay. Entire operation is gravity actuated and not dependent upon springs, etc.

## GLASS ENCLOSED INTERLOCKING RELAY

### Style "B"

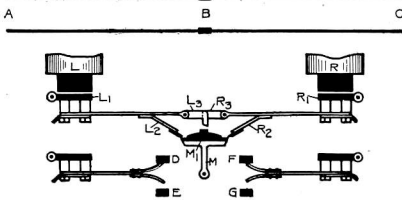


Fig. 1

Block A B and B C unoccupied, both Relays L and R energized.

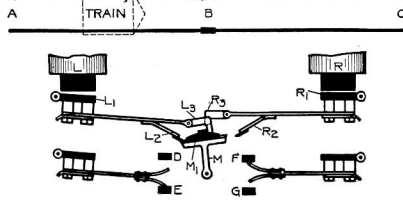


Fig. 2

Train has entered Block A B, Relay L de-energized.

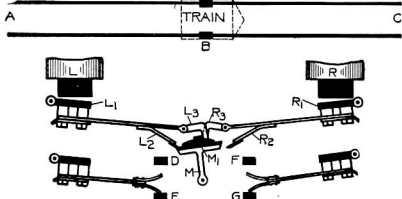


Fig. 3

Train is entering Block B C.  
Both Relays L and R de-energized.

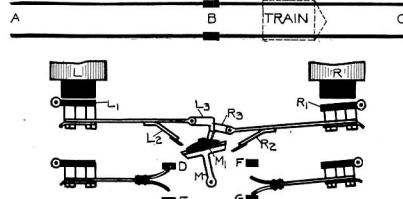


Fig. 4

Train has passed into Block B C, Relay L energized,  
Relay R de-energized, when train passes out of  
Block B C both Relays L and R are energized as  
in Fig. 1.

### Locking No. 1

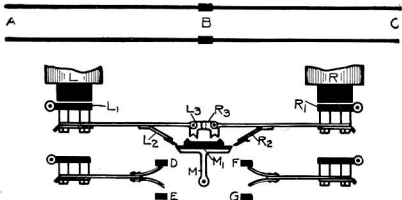


Fig. 1

Blocks A B and B C unoccupied, both Relays L and R energized.

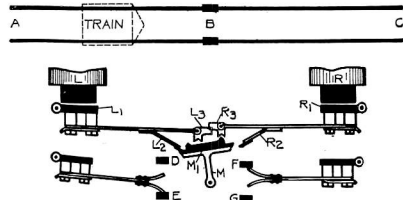


Fig. 2

Train has entered Block A B, Relay L de-energized.

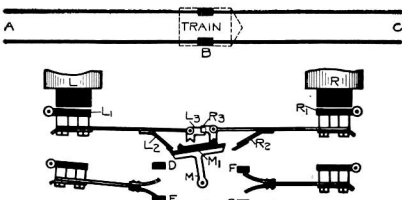


Fig. 3

Train is entering Block B C.  
Both Relays L and R de-energized.

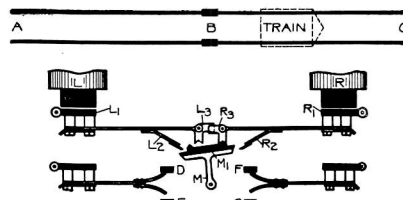


Fig. 4

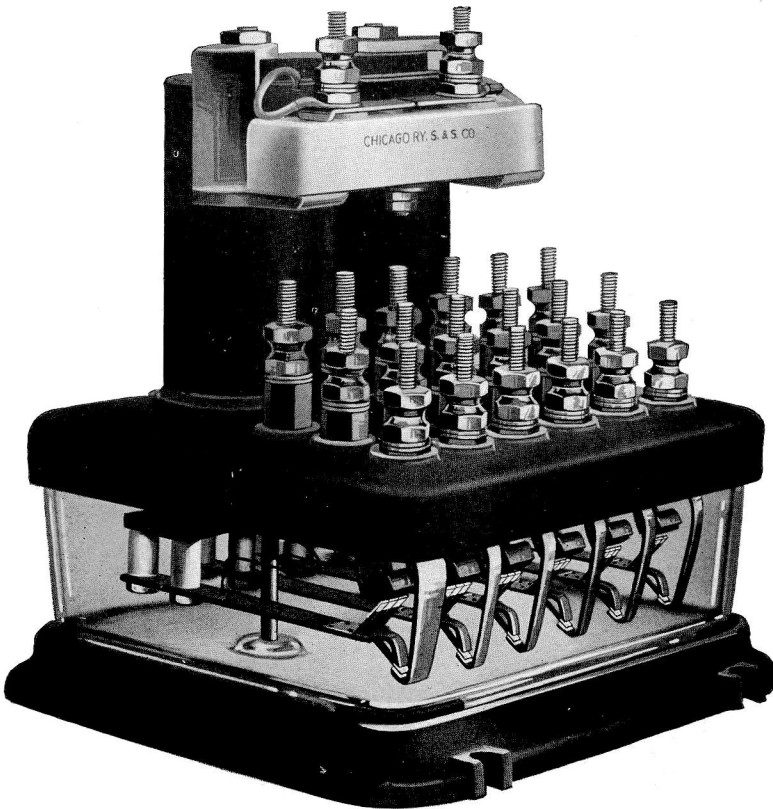
Train has passed into Block B C, Relay L energized,  
Relay R de-energized, when train passes out of  
Block B C both Relays L and R are energized as  
in Fig. 1.

### Locking No. 2

Diagrammatic illustration of operation of Non-independent Front and Back Contacts on Style "B" Relay.



## STYLE "C" NEUTRAL RELAY



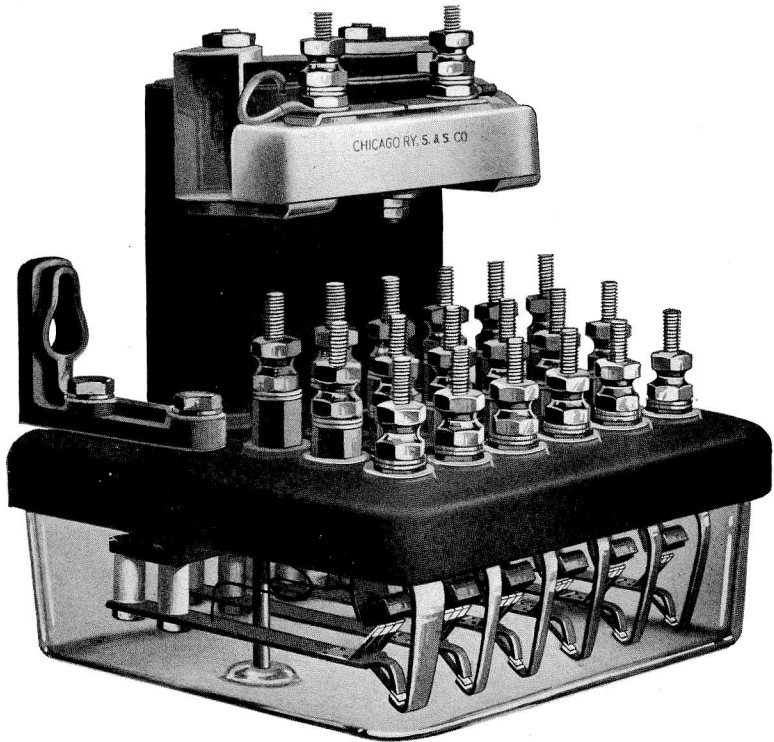
Style "C" Relay, Shelf Type, with Six Front and Back Contacts

Size, 7" Wide,  $6\frac{3}{4}$ " Deep,  $8\frac{1}{2}$ " High

Style "C" Neutral Relay is made in accordance with R. S. A. Specifications, and may be equipped with as many as six Contact Fingers, thus providing for a maximum of six Front and Back Contacts. Unless otherwise specified, Front Contacts are furnished Platinum to Graphite and Back Contacts Platinum to Platinum. Silver, Copper, Carbon or Silver Plated Contacts can be furnished on request.

All Contacts and parts of Relay are interchangeable and warranted to fit accurately.

## STYLE "C" NEUTRAL RELAY



Style "C" Neutral Relay, Wall Type with Six Front and Back Contacts

Size, 7" Wide, 6 $\frac{3}{4}$ " Deep, 8" High

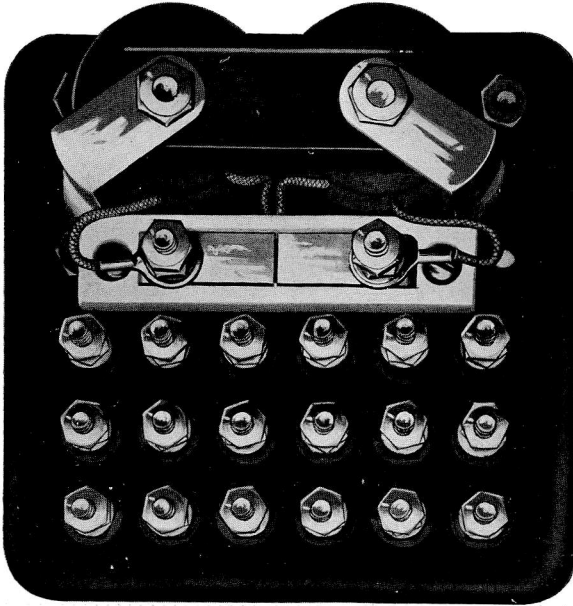
The Magnets are form-wound and removable without interfering with Contacts or breaking seal on glass cover. Magnets are furnished wound any desired resistance up to and including 3,000 Ohms. Magnet Terminals are brought to Binding Posts on a separate porcelain base so each coil may be tested or removed separately. Magnet-Terminals-Base is provided with a spark gap which will prevent magnet coils from burning out by static currents.

Relays are thoroughly tested and calibrated at works and provided with inspector's ticket under the sealed glass cover showing results of tests as called for by R. S. A. Specifications. All Binding Posts and Contacts are provided with non-turnable heads which cannot become loose or be loosened from outside of Relay.

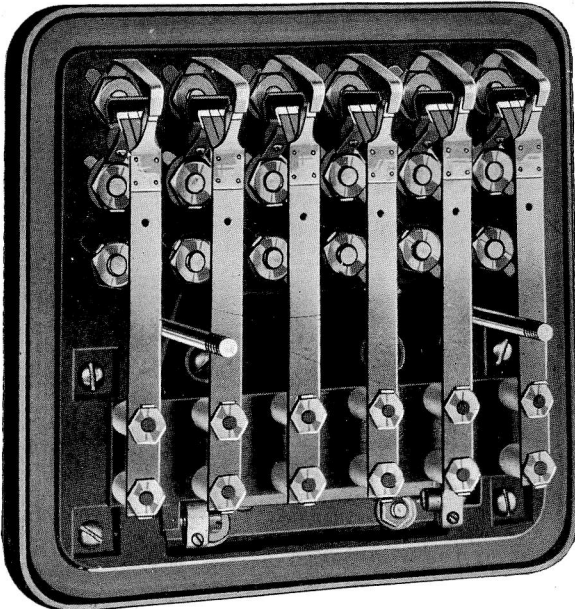




## STYLE "C" NEUTRAL RELAY



Top View Style "C" Neutral Relay with Six Front and Back Contacts

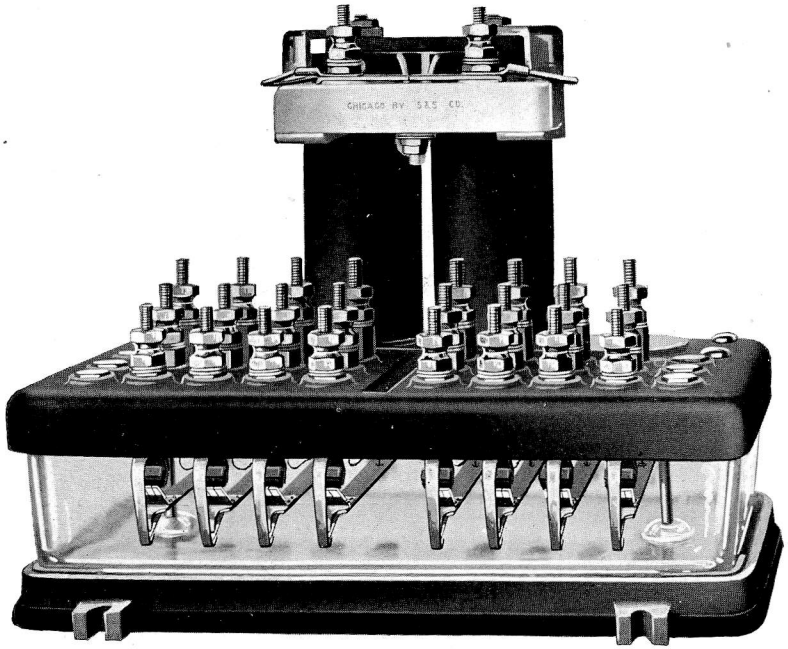


Bottom View Style "C" Neutral Relay with Six Front and Back Contacts





## STYLE "D" NEUTRAL RELAY



Style "D" Relay, Shelf Type, with Eight Front and Back Contacts

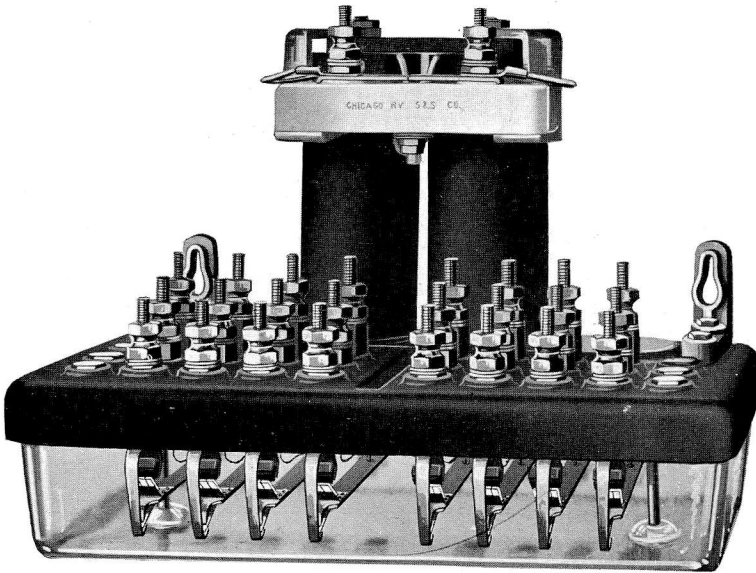
Size,  $11\frac{1}{2}''$  x  $6\frac{3}{4}''$  x  $9\frac{1}{2}''$

This Relay is built to R. S. A. Specifications and is regularly equipped with eight Front and Back Contacts, but may be furnished with ten Front and Back Contacts.

The Magnets are form-wound, extra large and highly efficient and may be wound as high as 3,000 Ohms without using unduly fine wire. Contacts are of the three finger type, Silver or Platinum against Graphite on Front Contacts. Back Contacts Platinum to Platinum or Silver to Silver, as specified.

Contacts are also furnished of Silver Plated Graphite or Carbon as well as Copper to Carbon for High Voltage Circuits.

## STYLE "D" NEUTRAL RELAY

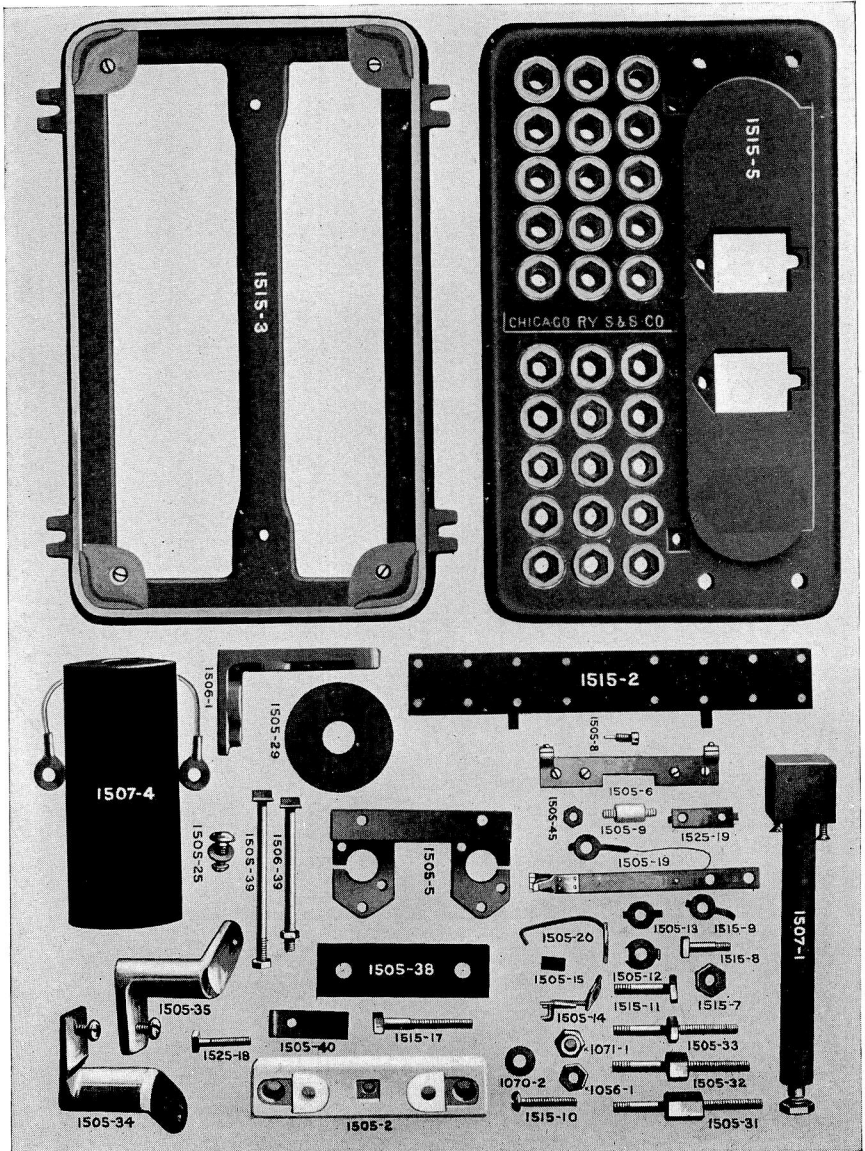


Style "D" Relay, Wall Type, with Eight Front and Back Contacts

Size,  $11\frac{1}{2}'' \times 6\frac{3}{4}'' \times 9''$

All Binding Posts and Contacts are on Front of Relay and are equipped with non-turnable heads. Terminal Binding Posts are on a separate Porcelain Base and are equipped with Spark Gaps which positively prevent the coils from burning out. The Contacts are so located that each may be clearly seen through the clear glass cover which encloses all working parts of Relay. The glass cover has a rubber gasket between it and the base which prevents breakage. Glass covers are sealed at factory and are provided with Inspection Certificate showing results of tests which we warrant to be accurate.

## STYLE "D" NEUTRAL RELAY



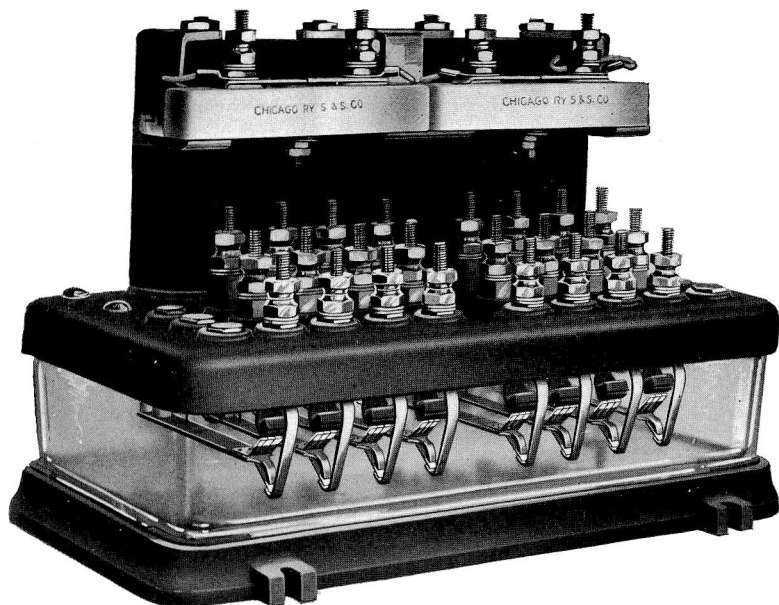
**Parts of Style "D" Neutral Relay**

Repair parts should be ordered as per numbers shown above.



## DOUBLE NEUTRAL RELAY

Style "E"



Double Neutral Relay, Style "E", Shelf Type, with Four Front and Back Contacts on Each Armature

Size, 11½" Wide, 7½" Deep, 8½" High

This type of Relay has been designed to meet the demand of two Relays on one Base, thus economizing in room and wiring connections as well as in price, this Double Relay costing less than two Relays which perform the same functions. It is also used as a series Relay operating both Armatures simultaneously. Relay may be equipped with a maximum of four Front and Back Contacts on each Armature.

Coils are form-wound and removable without interfering with Contacts or Connections. Terminals terminate on separate porcelain bases equipped with spark gaps. All Binding Posts and Contacts are on front of Relay and are equipped with non-turnable heads which prevent interference from outside.

Glass case has ground surfaces between which, and the base a substantial rubber gasket is held in place, sealing all working parts and preventing breakage of glass.

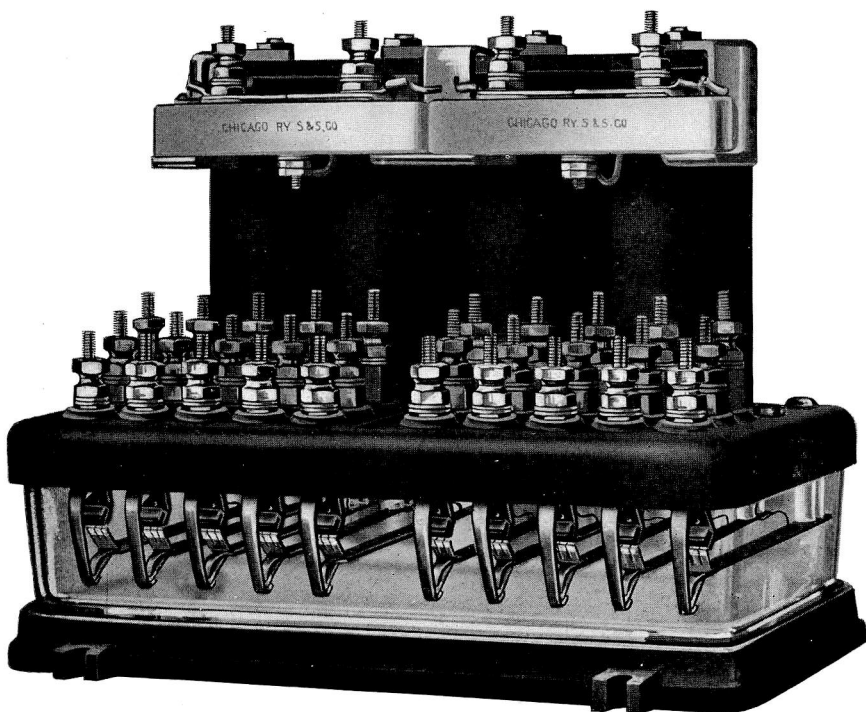
Relay is built according to latest recommendations of the **Railway Signal Association** and is provided, under the glass case, with Inspector's Certificate stating results of all required tests which are fully guaranteed. All parts of Relay are interchangeable with our other Standard Relays.





## DOUBLE NEUTRAL RELAY

Style "F"



**Double Neutral Relay, Style "F", Shelf Type, with Five Front and Back  
Contacts on each Armature**

**Size, 11½" Long, 6¾" Deep, 9" High**

This type of Relay is equipped with two Magnets and two separate Armatures, and may be used in place of two separate Relays or as one Relay by connecting Magnets in series or multiple. Each Armature may be equipped with a maximum of five Front and Back Contacts which may be Silver or Platinum against Graphite, Carbon or Silver Plated Carbon. The Magnets are extra large and highly efficient and allow winding same with a comparatively coarse wire which, together with spark gaps, provided on Magnet Terminals, eliminate the trouble usually experienced from lightning with Magnets having but a small winding space.

All Contacts and Binding Posts are located on front of Relay where they are easily accessible for inspection and repairs. Relay is built in accordance with specifications of the **Railway Signal Association** and is provided with Inspector's Certificate underneath the glass cover showing results of tests which are guaranteed to be accurate and reliable.

All parts of this Relay are interchangeable with our other Relays and repair or extra parts are warranted to fit this Relay.

## DOUBLE NEUTRAL RELAY

### Style “F”

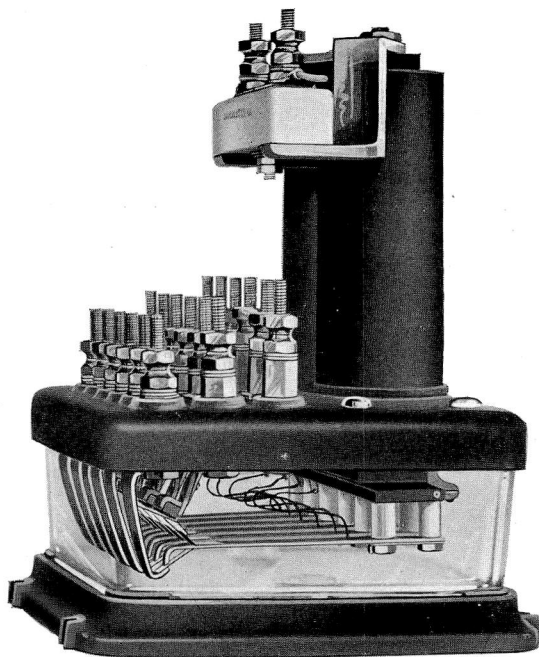
Trade No.	DESCRIPTION	List Price
<b>PLATINUM CONTACTS</b>		
1522-21	Double Neutral Relay, Style "F", Shelf Type, Magnets 50 Ohms or less, with one Front and Back Contact on each Armature.....	\$52.05
1522-22	Same as above but with two Front and Back Contacts.....	55.00
1522-23	" " " " three " " " " .....	57.95
1522-24	" " " " four " " " " .....	60.90
1522-25	" " " " five " " " " .....	63.85
1523-21	Double Neutral Relay, Style "F", Wall Type, Magnets 50 Ohms or less, with one Front and Back Contact on each Armature.....	52.05
1523-22	Same as above but with two Front and Back Contacts.....	55.00
1523-23	" " " " three " " " " .....	57.95
1523-24	" " " " four " " " " .....	60.90
1523-25	" " " " five " " " " .....	63.85
	For each additional independent PLATINUM to Graphite Front Contact, add to list price of Relay.....	2.30
	For each additional independent PLATINUM to Platinum Back Contact, add to list price of Relay.....	1.50
	For each additional combination Front and Back Contact, add to list price of Relay.....	2.95
<b>SILVER CONTACTS</b>		
1522-31	Double Neutral Relay, Style "F", Shelf Type, Magnets 50 Ohms or less, with one Front and Back Contact on each Armature.....	51.15
1522-32	Same as above but with two Front and Back Contacts.....	53.20
1522-33	" " " " three " " " " .....	55.25
1522-34	" " " " four " " " " .....	57.30
1522-35	" " " " five " " " " .....	59.35
1523-31	Double Neutral Relay, Style "F", Wall Type, Magnets 50 Ohms or less, with one Front and Back Contact on each Armature.....	51.15
1523-32	Same as above but with two Front and Back Contacts.....	53.20
1523-33	" " " " three " " " " .....	55.25
1523-34	" " " " four " " " " .....	57.30
1523-35	" " " " five " " " " .....	59.35
	For each additional independent SILVER to Graphite Front Contact, add to list price of Relay.....	1.30
	For each additional independent SILVER to Silver Back Contact, add to list price of Relay.....	1.00
	For each additional combination Front and Back Contact, add to list price of Relay.....	2.05
<b>MAGNETS</b>		
	For Magnets Wound 51 to 150 Ohms, add for each Magnet	1.80
	" " " 151 " 500 " " " " "	3.00
	" " " 501 " 1000 " " " " "	4.80
	" " " 1001 " 3000 " " " " "	5.50

When specified, Relay may be furnished with Carbon to Carbon, or, Carbon to Copper Contacts for High Voltages, also with plain or Silver Plated Carbon or Silver Plated Graphite Front Contacts. Prices upon request.

Repair parts on this Relay are interchangeable with our other Styles of Relays.

## SLOW RELEASE—NEUTRAL RELAY

Style "G"



Slow Release Neutral Relay, Style "G" with Six Front and Back Contacts

Size, Wall Type, 7" x 6 $\frac{3}{4}$ " x 9"

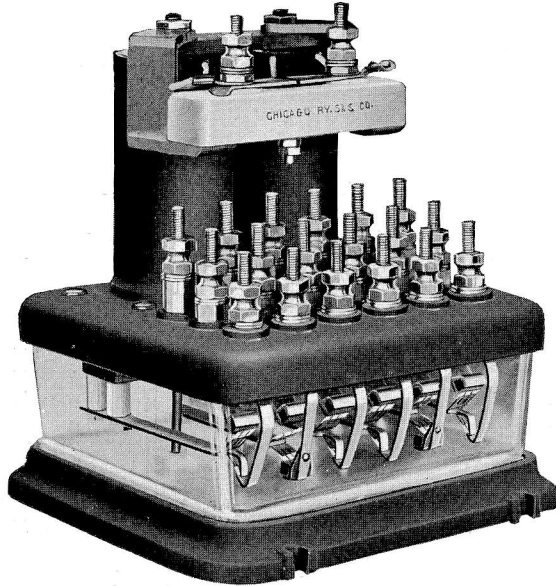
Size, Shelf Type, 7" x 6 $\frac{3}{4}$ " x 9 $\frac{1}{2}$ "

This Relay is similar to our Style "C" Relay excepting that it is equipped with extra large Magnets having the slow release feature added as sometimes required by polarized wireless rail circuits where it is necessary to prevent the opening of signal circuit during the reversal of current through the polarized Track Relay. This Relay is also used where line wire circuits controlling annunciators, indicators, etc., are used with Track Instruments or short rail section to prevent circuit being opened or closed with each car passing over same. All parts on this Relay are interchangeable with our other Relays and Relay is built strictly in accordance with R. S. A. Specifications.

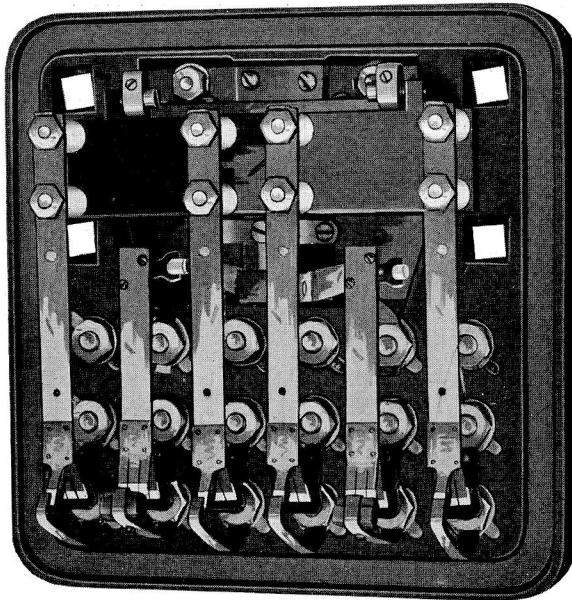




## STYLE "H" POLARIZED RELAY



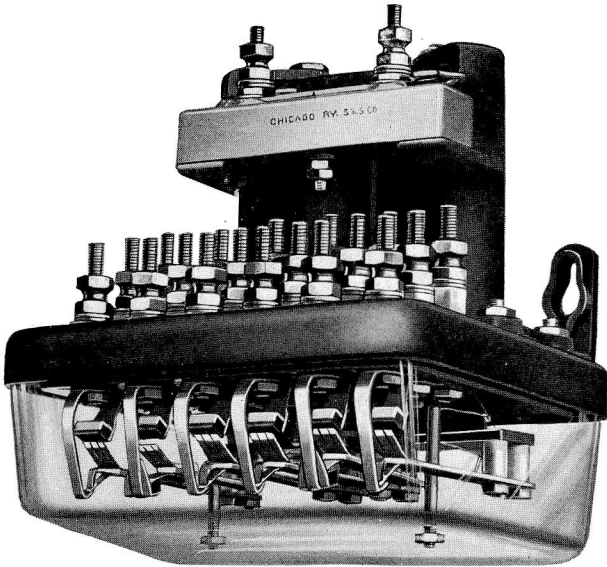
Style "H" Polarized Relay, Shelf Type, with Four Front and Four Back Neutral Contacts and Two Front and Two Back Polar Contacts  
Size, 7" x 6 $\frac{3}{4}$ " x 8 $\frac{1}{2}$ "



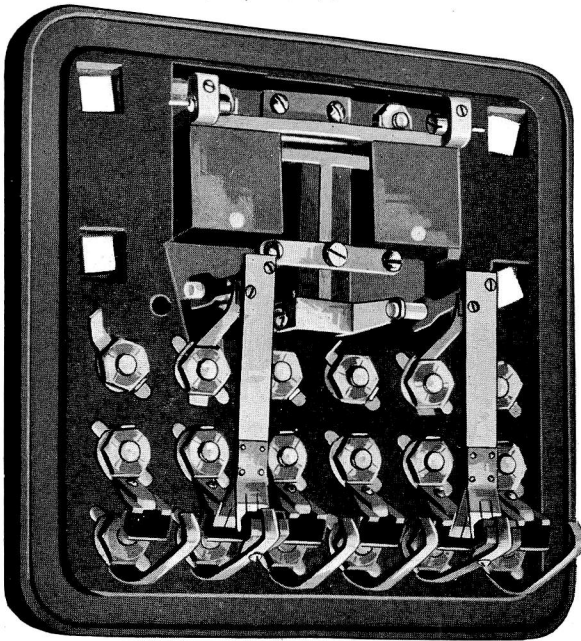
Inverted View of Style "H" Polarized Relay Showing Arrangement of Armatures and Polar Contacts



## STYLE "H" POLARIZED RELAY



Style "H" Polarized Relay, Wall Type, with Four Front and Four Back Neutral Contacts and Two Front and Two Back Polar Contacts  
Size, 7" x 6 $\frac{3}{4}$ " x 8"



Inverted View Style "H" Polarized Relay Showing Arrangement of Polarized Armatures and Contacts. (Neutral Armature and Neutral Contact Fingers removed)



## STYLE "H" POLARIZED RELAY

This Relay corresponds in general to our Style "C" Relay except that Polarized Armatures and Contacts are added. The Relay is built within the specifications of the **Railway Signal Association**, is provided with Binding Posts and Contacts having non-turnable heads, spark gap, form-wound removable coils with terminals on a separate Base. Relays are tested, properly adjusted and sealed before leaving our works. An inspector's inspection certificate accompanies each Relay showing results of tests which we warrant to be accurate.

The Contacts and Binding Posts are all on Front of Relay where they may be easily inspected and tested. Reversal of permanent magnets by lightning is entirely overcome in the design of this Relay as shown by exhaustive long time tests under most severe conditions. Relay is guaranteed to be fully as or more efficient than any polarized relay on the market, the "pick-up" and drop-away" of the Neutral Armature being entirely within **R. S. A.** Specifications.

Relay is furnished in Shelf or Wall Type and only with two Polarized Contact Fingers but with as many as four Front and Back Neutral Contacts.





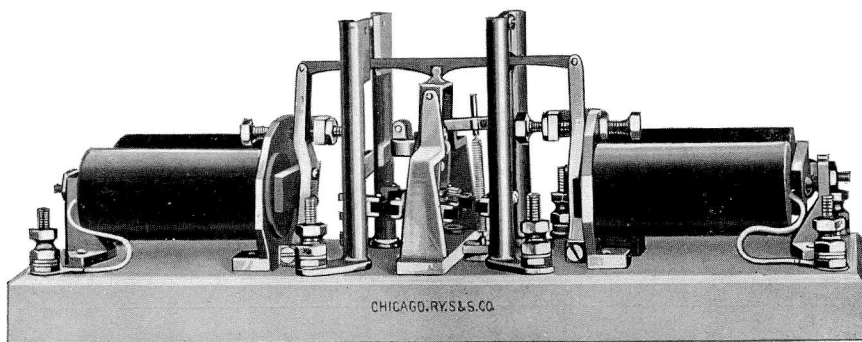
## STYLE "H" POLARIZED RELAY

Trade No.	DESCRIPTION	List Price
PLATINUM CONTACTS		
1510-22	Style "H" Shelf Type Polarized Relay with two Front and Back Neutral Contacts and two Front and Back (both Platinum to Graphite) Polarized Contacts, Magnet resistance 50 Ohms or less.....	\$45.60
1511-22	Same as above, except Wall Type Relay.....	45.60
	For each additional independent PLATINUM to Graphite Front Contact, add to list price of Relay.....	2.30
	For each additional independent PLATINUM to Platinum Back Contact, add to list price of Relay.....	1.50
	For each additional combination Front and Back Contact, add to list price of Relay.....	2.95
SILVER CONTACTS		
1510-32	Style "H" Shelf Type Polarized Relay with two Front and Back Neutral Contacts and two Front and Back (both Silver to Graphite) Polarized Contacts, Magnet resistance 50 Ohms or less.....	42.00
1511-32	Same as above, except Wall Type Relay.....	42.00
	For each additional independent SILVER to Graphite Front Contact, add to list price of Relay.....	1.30
	For each additional independent SILVER to Silver Back Contact, add to list price of Relay.....	1.00
	For each additional combination Front and Back Contact, add to list price of Relay.....	2.05
MAGNETS		
	For Magnets wound 51 to 150 Ohms, add.....	1.80
	" " " 151 " 500 " " .....	3.00
	" " " 501 " 1000 " " .....	4.80
	" " " 1001 " 3000 " " .....	6.50

When specified, Relay may be furnished with Carbon to Carbon, or, Carbon to Copper Contacts for High Voltages, also with plain or Silver Plated Carbon or Silver Plated Graphite Front Contacts.

Prices upon request.

## STYLE "K" HIGH VOLTAGE RELAY



Style "K" No. 1503-2 Relay

Size,  $15\frac{1}{2}"$  x  $4\frac{1}{2}"$  x  $5\frac{3}{4}"$  High

Style "K" Relay is designed especially for Electric Street Railway Signal Service, where a voltage of from 450 to 650 is maintained. It operates with a quick snap action, making it possible to break the high potentials on Contacts without excessive arcing. Although low in price, it is a highly efficient Relay with simplicity a feature, and when once adjusted to the proper working condition, it will operate continuously without any further attention.

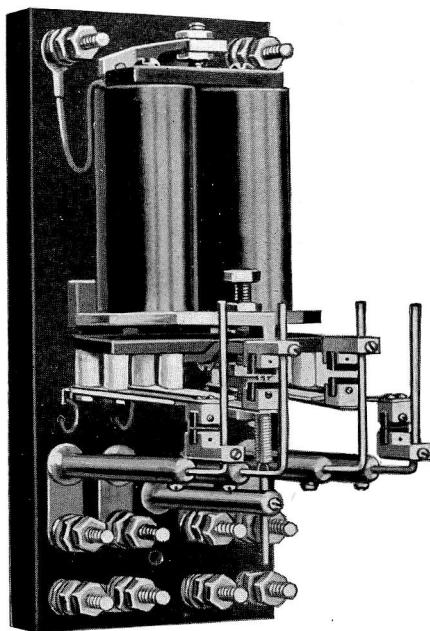
All parts are mounted on a heavy Porcelain Base, Binding Posts are **R. S. A.** with non-turnable heads, and **R. S. A.** Specifications are followed where possible. Contacts are of ample proportion for large carrying capacity and mechanically strong to insure heavy and continuous duty. Relay No. 1503-1 is equipped with one Contact. Relay 1503-2 is equipped with one Front and one Back Contact. All parts are machined and jig drilled to insure accuracy and interchangeability. Base, Magnets, etc., are interchangeable with our Style "A" Relay.

Style "K" Relay is used for controlling Block Signal Circuits, also for turning on and off Electric Lamps in Stations, Electrical Illuminated Semaphores, Flag Station Signals, etc., which are located in remote places where traffic does not warrant the constant attendance of a man and for numerous other purposes.

Relay is furnished wound to 50 Ohms, but may be wound to any resistance up to 1,000 Ohms at an additional price.



## STYLE "J" NEUTRAL RELAY



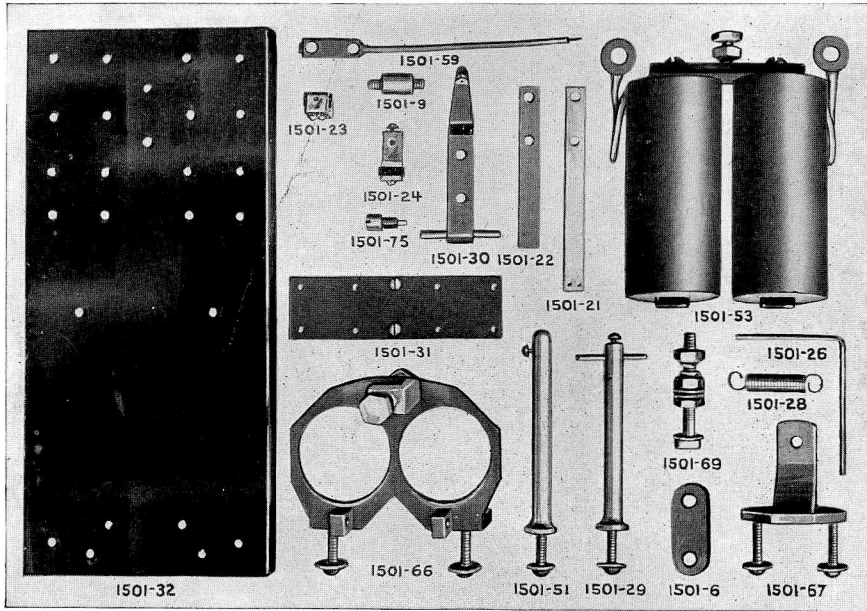
Style "J" Neutral Relay

Size,  $9\frac{1}{2}$ " Long,  $4\frac{1}{2}$ " Wide, 6" High

This Relay may be used as a Wall or Shelf Type Relay. Armature is gravity actuated, but is also equipped with an adjustable Tension Spring, for quick make or break contacts when used on high voltage. Relay is furnished with Magnets of any desired resistance up to 8,000 Ohms for operation on Electric Railways. Contacts may be "Carbon to Carbon", "Silver to Graphite" or "Platinum to Platinum", and are interchangeable for Front or Back Contacts. The Contacts are large and mechanically strong for heavy and continuous duty, and may be adjusted to give large breaks for high voltage circuits as required on Highway Crossing Bells on Electric Street Railways.

Orders should state resistance of Magnets, kind and number of Contacts required.

## STYLE "J" NEUTRAL RELAY



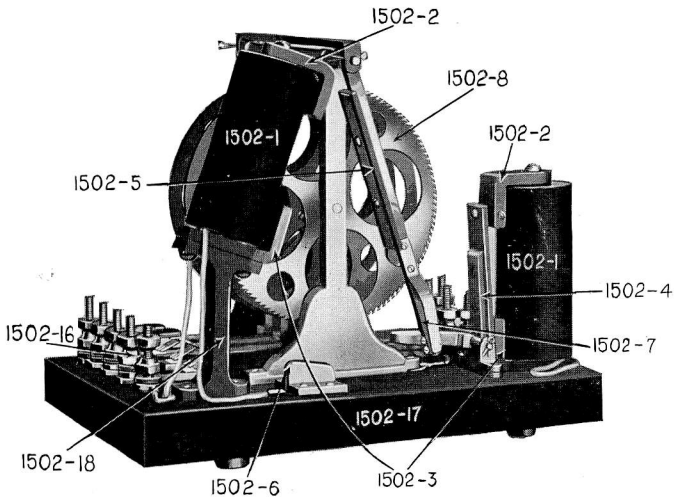
**Parts of Style "J" Neutral Relay**

Trade No.	DESCRIPTION	List Price
1501-1	Style "J" Neutral Relay, Magnets 9 Ohms or less with one Carbon to Carbon Contact.....	\$22.00
1501-2	Same as above but with two Contacts.....	24.00
1501-3	“ “ “ “ three “.....	26.00
1501-4	“ “ “ “ four “.....	28.00
1501-53	Magnets complete as shown, 10 Ohms or under.....	12.00
1501-21	Contact Spring.....	.40
1501-22	“ Support.....	.20
1501-26	“ Bar.....	.50
1501-24	Graphite Contact for Contact Bar.....	.70
1501-23	“ Spring.....	.70
1501-51	Contact Post.....	1.00
	For Silver to Graphite Contacts, add to list price, each....	1.00
	For Platinum to Platinum Contacts, add to list price, each..	1.50
	For Magnets wound 10 to 150 Ohms, add to list price....	1.80
	“ “ “ 151 “ 500 “ “ “ “ “.....	3.00
	“ “ “ 501 “ 1000 “ “ “ “ “.....	4.80
	“ “ “ 1001 “ 8000 “ “ “ “ “.....	6.00

Order should specify whether “Carbon to Carbon”, “Silver to Graphite” or “Platinum to Platinum” Contacts are wanted.

Repair part orders should give part numbers as shown above.

## TIME RELAY

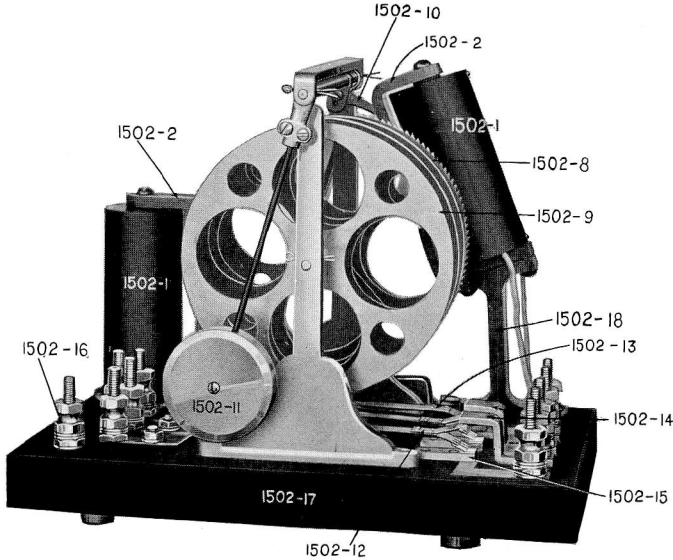


**Front View No. 1502 Time Relay**

This Relay is intended for use at all places where an electrically controlled time element is required, as with line wire operated Crossing Bells, Locking and Release Circuits, etc. Upon current being sent through the high resistance releasing magnet, Armature is attracted and this allows pendulum to swing towards the other side of Relay. When pendulum is nearly across, the operating Magnet attracts same and completes the movement. The operation is continued with the expenditure of but very little current and pendulum continues to swing forward and backward as reliably as on approved electrically operated clocks.

At the first stroke of the pendulum, two front Contacts are closed and two back Contacts are opened. These Contacts are restored to their normal position at the end of the predetermined time for which the Relay may be set, the time being one and one-half minutes or any fraction thereof. From this it will be self evident that a single impulse of current through the releasing magnet will keep the front Contacts closed and back Contacts open for any predetermined time to operate Crossing Bells, Locking Circuits, etc., or whenever it is desired to have certain Circuits closed or opened for any predetermined time.

## TIME RELAY



**Rear View No. 1502 Time Relay**

There are no springs or delicate parts to become disarranged. Entire Relay is mounted upon a heavy slate base, Magnets are encased in hard rubber shells, standard clearance of  $\frac{3}{8}$ " is provided between all contact springs and current carrying parts. Binding Posts are R. S. A. Standard, and Relay will fit into Standard Relay Boxes. Size,  $10\frac{1}{2}$ " wide,  $8\frac{1}{2}$ " high and  $6\frac{1}{2}$ " deep.

Trade No.	DESCRIPTION	List Price
1502-1	Time Relay complete as shown with two Normally Open and two Normally Closed Contacts for Operation on Low Voltage (6 to 10 Volts) . . . . .	\$80.00
1502-2	Time Relay complete with one Normally Closed and one Normally Open Contact with Magnets for Operation on Low Voltage (6 to 10 Volts) . . . . .	70.00
	For Relays to operate on 110 Volts, add to list price . . . . .	4.00
	“ “ including Standard Resistance to Operate Relays on 550 Volts, add to list price . . . . .	8.00