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ELECTRIC CONTACT DEVICE.

APPLICATION FILED JAN. 14, 1911. RENEWED DEC. 19, 1911.

1,024,718.

Patented Apr. 30, 1912.

2 SHEETS—SHEET 1.

Fig. 1

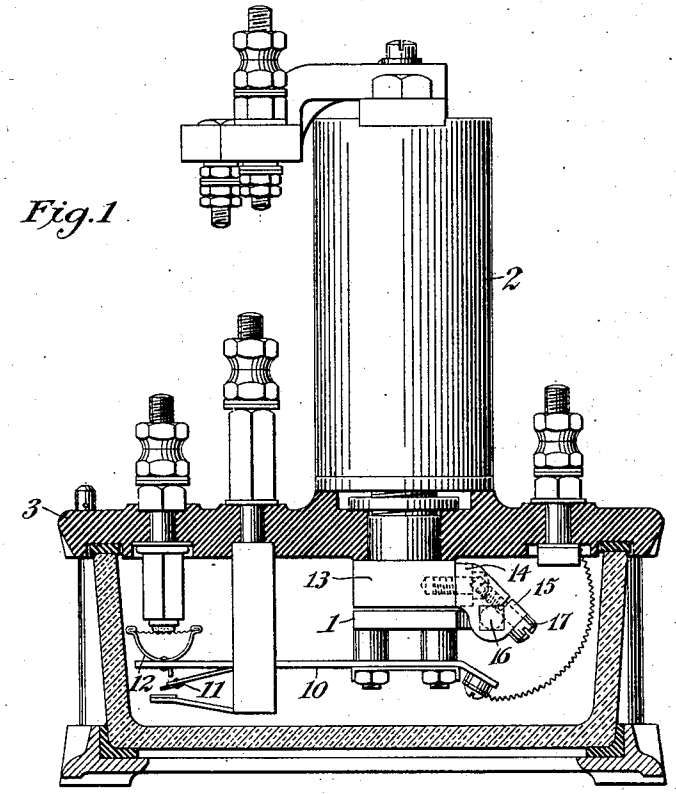

Fig. 6.

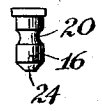

Fig. 5

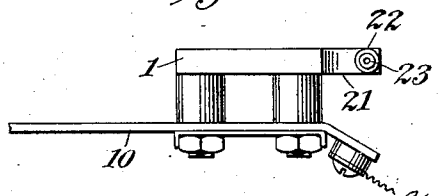

Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 2

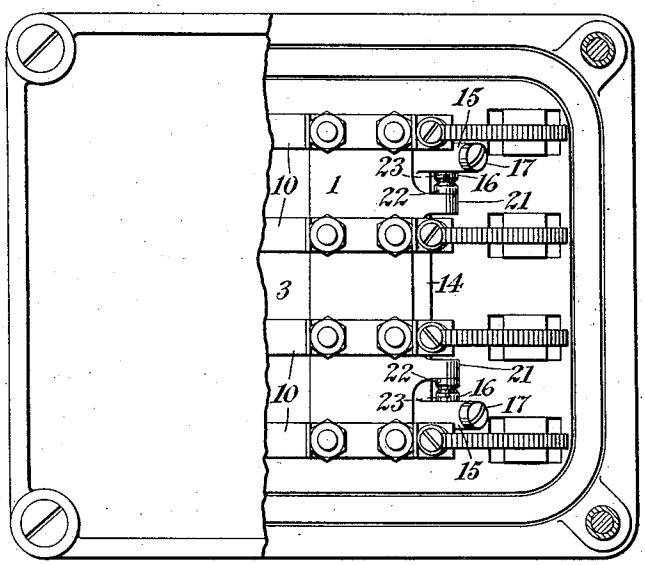


Fig. 3

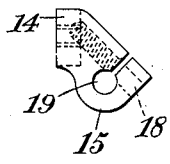
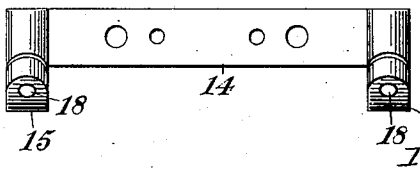


Fig. 4



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CLARENCE W. COLEMAN, DECEASED, LATE OF WESTFIELD, NEW JERSEY, BY KATHARINE COLEMAN, ADMINISTRATRIX, OF WESTFIELD, NEW JERSEY, ASSIGNOR TO THE HALL SIGNAL COMPANY, A CORPORATION OF MAINE.

ELECTRIC CONTACT DEVICE.

1,024,718. Specification of Letters Patent. **Patented Apr. 30, 1912.**

Original application filed September 10, 1910, Serial No 581,409. Divided and this application filed January 14, 1911, Serial No. 603,381. Renewed December 19, 1911. Serial No. 666,845.

To all whom it may concern:

Be it known that CLARENCE W. COLEMAN, deceased, late a citizen of the United States, residing at Westfield, in the county of Union and State of New Jersey, did invent certain new and useful Improvements in Electric Contact Devices, of which the following is a specification, reference being had therein to the accompanying drawings, forming part thereof.

The invention relates to electric contact devices and particularly to movable contact closers, this application being divisional of the previous application for Letters Patent of the United States, filed September 10, 1910, Serial No. 581,409.

In many uses to which such devices are put, the safety of life and property depends upon the reliability of their operation, as in railway signaling systems, in which their failure to open or close the circuit at the proper time may result in giving a wrong signal indication. In such uses the movable contact closer is under the automatic control of a relay magnet, and after continued use the coöperating parts tend to become loosened and disarranged with the consequent failure to properly perform their function.

One object of the invention is to provide a simple and effective pivotal or hinge support for securing movable contact closers to a stationary member which, while permitting freedom of movement of the contact closers, is secured against accidental loosening or separation of the two parts.

Other objects and advantages of the invention will appear from the following description.

The invention will now be described with reference to the accompanying drawings and will thereafter be pointed out in claims.

Figure 1 is a side elevation of a relay containing an embodiment of the invention, the side of the casing being removed. Fig. 2 is a bottom view of the same, a portion of the bottom of the casing being broken away. Figs. 3 and 4 are details of the trunnion bracket used in the hinge device, showing an end view and front elevation, respectively. Fig. 5 is a detail end view of the hinges and of the movable contact closer. Figs. 6 and 7 are details of the trunnion pin in elevation and end view.

The drawing shows a relay adapted for electric railway signal circuits, having a relay magnet 2 with pole-pieces 13, of which only one is seen. Movable contact closers, side by side, are secured to the armature in the usual way. There are four contact closers shown, each of which coöperates with a front and back contact stop. The front contact stops are held in a support consisting of the upper base 3 of the relay casing in such a manner as to be securely locked against accidental loosening, and the means for thus securing these stops in the base are described and claimed in the previous application above referred to.

Each movable contact closer consists of the usual contact fingers 10 carrying a back-contact closer 11 and a front-contact closer 12, the latter of which is of the improved form now used by The Hall Signal Company and invented by Thomas L. Lee, Jr. The front contact is closed when the magnet 2 is energized and the armature which carries the contact fingers 10 is attracted, and the back contact is closed when the armature is released and falls by gravity, in these particulars operating in the usual way. To prevent the armature pivot from becoming loosened, there is used the improved hinge device which will now be described.

On the rear of the pole-piece 13 is attached, by screws or otherwise, a bracket 14 which is termed the trunnion bracket. This bracket has on each end a split clamp 15 and these split clamps serve as supports for two pins 16. These pins are used as trunnion pins, though other pivotal connections could be employed. Clamping screws 17 engage in the bores 18 through the jaws of the split clamps, the portions of the bores which are in the inner jaws being screw-threaded, as is usual. These bores 18 are drilled at substantially right angles to the clamping bores 19 for the pins 16 and partially intersect them as shown. Each of the pins 16 has a circumferential groove 20 so situated that when the pins 16 are in the clamps these grooves complete the portions of the bores 18 cut out by intersection with the bores 19, and the clamping screws 17, when inserted, engage in the grooves 20 and lock the pins against escaping from the clamps. The clamping screws 17 also, when screwed up,

tighten the clamps about the pins and thus further secure the pins.

The armature 1 has two rearwardly extending projections 21 on the outer side of each of which is a round projection 22 of substantially the diameter of the pins 16 and extending outwardly toward such pins, and from the end of each of these projects a trunnion 23 adapted to enter into a hole 24 drilled into the end of each of the pins 16, which holes thus serve as bearings for the trunnions 23. The parts are so designed that when the armature is mounted with the trunnions in their bearings, the ends of the pins 16 and rounded projections 22 abut, as shown in Fig. 2. To mount the armature, it is placed in the proper position, with the trunnions in line with the bores 19, and when the pins 16 are inserted in the clamps, the trunnions enter their bearings 24. The clamping screws 17 are then inserted and the clamps tightened and the pins 16 locked in their supports. It is evident that the clamping screws 17 must be substantially wholly withdrawn before the pins 16 can escape, and thus accidental loosening of the hinge is avoided, while at the same time a freely movable joint is afforded.

It is obvious that various modifications may be made in the construction shown and above particularly described within the principle and scope of the invention.

What is claimed is:

1. In a movable contact closer, a hinge device comprising two relatively movable parts, one of the parts having two communicating bores substantially at right angles to each other, a pin having a circumferential groove therein and situated in one bore, and a locking member in the other bore in engagement with the recess in the pin, the other part having pivotal engagement with the pin.

2. In a movable contact closer, a hinge device comprising two relatively movable parts, one of the parts having a split clamp, a pin held in the split clamp and having a circumferential groove therein, and a clamping member for the split clamp arranged to engage in the groove in the pin, the other part having pivotal engagement with the pin.

3. In a movable contact closer, a hinge device comprising two relatively movable parts, one of the parts having two pairs of communicating bores, the bores of each pair being substantially at right angles to each other, and for each pair of communicating bores a pin having a circumferential groove therein and situated in one bore, and a locking member in the other bore in engagement with the recess in the pin, the pins pivotally engaging the other part at opposite ends thereof.

4. In a movable contact closer, a hinge device comprising two relatively movable parts, one of the parts having two split clamps, and for each split clamp a pin held therein and having a circumferential groove therein and a clamping member arranged to engage in the groove in the pin, the pins pivotally engaging the other part at opposite ends thereof.

5. In a movable contact closer, a hinge device comprising a removable trunnion pin having a circumferential groove therein, a support for the trunnion pin, a movable trunnion-pin-locking member in the support adapted to engage in the groove of the trunnion pin, and a trunnion journaled in the trunnion pin.

6. In a movable contact closer, a hinge device comprising a trunnion pin having a circumferential groove therein, a split clamp support for the trunnion pin, a clamping member for the split clamp arranged to engage in the groove of the trunnion pin, and a trunnion journaled in the trunnion pin.

7. In a movable contact closer, a hinge device comprising two removable trunnion pins each having a circumferential groove therein, a support for each trunnion pin, a removable trunnion-pin-locking member in each support adapted to engage in the groove of its trunnion pin, and two trunnions, one journaled in each trunnion pin.

8. In a movable contact closer, a hinge device comprising a removable trunnion pin having a circumferential groove therein, a split clamp support for each trunnion pin, a clamping member for each split clamp arranged to engage in the groove of its trunnion pin, and two trunnions, one journaled in each trunnion pin.

9. In a movable contact closer, a hinge device comprising a bracket, two split clamps on the bracket, a trunnion pin in each split clamp having a circumferential groove therein, a clamping screw for each split clamp arranged to engage in the groove of the trunnion pin, and two trunnions, one journaled in each trunnion pin.

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