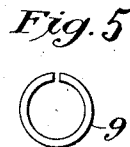
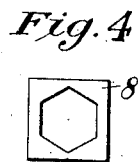
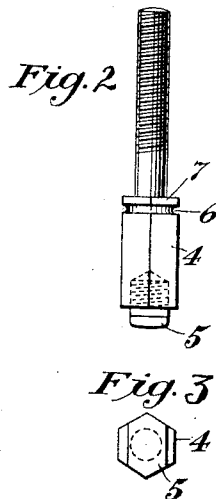
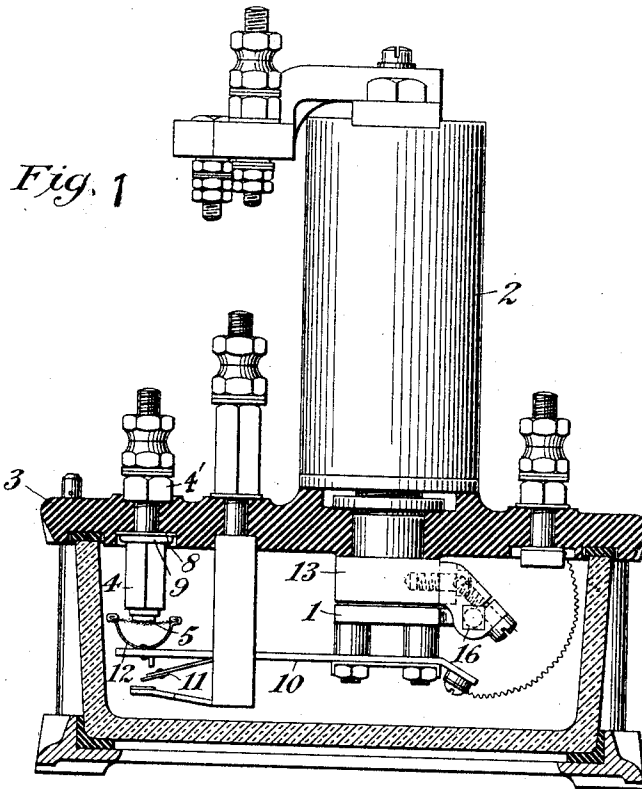


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ELECTRIC CONTACT DEVICE.

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1,024,719.

Patented Apr. 30, 1912.



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ELECTRIC CONTACT DEVICE.

1,024,719.

Specification of Letters Patent.

Patented Apr. 30, 1912.

Application filed September 10, 1910, Serial No. 581,409. Renewed December 19, 1911. Serial No. 666,846.

To all whom it may concern:

Be it known that I, CLARENCE W. COLEMAN, a citizen of the United States of America, residing at Westfield, in the county of Union and State of New Jersey, have invented 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.

My invention relates to electric contact devices and particularly to movable contact closers and their cooperating stops or electric terminals. 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 cooperating parts tend to become loosened and disarranged with the consequent failure to properly perform their function.

One object of my invention is to provide simple and effective means for securing the cooperating contact stops in their support and locking them against becoming accidentally loosened.

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

I shall now describe my invention with reference to the accompanying drawings and shall thereafter point out my invention in claims.

Figure 1 is a side elevation of a relay containing an embodiment of my invention, the side of the casing being removed. Figs. 2 and 3 are detail side and end views, respectively, of the contact-post screw. Fig. 4 is a detail face view of the lock washer used on the contact-post screw. Fig. 5 is a similar view of the washer ring used on the contact-post screw.

The drawings show a relay adapted for electric railway signaling circuits, having a relay magnet 2 with pole pieces 13, of which one only is seen. The armature 1 is pivoted on trunnion pins 16. The pivot or hinge construction forms the subject of a division of this application, Serial Number 603,381, filed January 18, 1911, and therefore is not

fully shown and will not be particularly described. Movable contact closers, side by side, of which only the front one is seen, are carried by the armature, and each contact closer cooperates with a front stop and a back 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 will now be described. Each contact stop consists of a contact-post member or screw 4 of brass or other suitable material, which has a lower part with a flat surface or surfaces, shown as of hexagonal form, to facilitate the application of a wrench, and has the usual carbon contact 5 at its lower end. The upper part of the contact-post screw 4 is of reduced diameter and is screw-threaded, and an upper locking member or nut 4' of hexagonal or other non-circular or locking shape, is threaded on it and fits into a locking recess of corresponding shape on the upper side of the base 3, thereby being held against rotation. It is apparent, therefore, that when the nut 4' is in its locking recess it can become unscrewed only through the rotation of the screw 4. The means for preventing rotation of the screw will now be described.

The lower hexagonal portion of the screw 4 has near its upper end an annular circumferential groove 6 which leaves a hexagonal collar portion 7 between the groove and the shoulder formed at the screw-threaded part of reduced diameter. A lower locking member or lock washer 8, of square or other locking shape, has a hexagonal hole therein so that it will freely slide longitudinally over the hexagonal part of the screw 4 and may be moved upward to embrace the collar portion 7 of the screw 4 and fit into a locking recess in the under side of the base 3, which is shaped to correspond with the external configuration of the lock washer 8 and as shown is a square recess. So long as the lock washer is on the hexagonal part of the screw 4 and in its recess in the base 3 of the relay, the screw is locked against rotation. To hold the lock washer in place on the collar 7, a locking ring 9 is provided. This ring is split and is made of some resilient metal, preferably brass wire, and is sprung into the groove 6 and locks the lock washer in place.

To lock a contact stop or post in place, the screw is inserted upward through a bore communicating with the recesses in the upper and lower sides of the base 3, which bore is of the diameter of the reduced portion of the screw, and the nut 4' is screwed on and inserted in its recess and the screw is turned until it is drawn up with the collar 7 tightly against the bottom of the recess in the lower side of the base 3. The lock washer 8 is then put on and the locking ring 9 is sprung in place, and by holding the lock washer in its counterpart recess, effectually prevents rotation of the contact stop. The parts are taken off in reverse order, the locking ring being first sprung out of its groove 6 by any suitable implement, the lock washer then readily dropping down out of its recess, and the post being now free to be unscrewed out of its nut, it will be noted that they cannot be taken off in any other manner, since both the post screw and its nut are absolutely locked against rotation so long as the lock washer is in place.

Each movable contact closer consists of the usual contact fingers 10 carrying a back-contact closer 11 and a front-contact closer 12, which is of the improved form now used by The Hall Signal Company and invented by Thomas L. Lee, Jr., and forming the subject of his application, Serial Number 569,425, filed June 29, 1910. 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.

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

I claim:

1. A contact stop comprising, in combination with a support having locking portions on opposite sides and having a bore therethrough, a contact-post member extending through the bore, a locking member on the contact-post member releasable by relative rotation between the two members and engaging the locking portion on one side of the support, and a second locking member on the contact-post member engaging the locking portion on the other side of the support and releasable by longitudinal movement relatively to the contact-post member and locking the contact-post member against rotation.

2. A contact stop comprising, in combination with a support having locking recesses in opposite sides thereof and having a bore therethrough communicating with the locking recesses, a contact post member extend-

ing through the bore, a locking member on the contact post member releasable by relative rotation between the two members and engaging in one locking recess in the support, a second locking member on the contact-post member engaging in the other locking recess in the support and releasable by longitudinal movement relatively to the contact-post member and locking the contact-post member against rotation, and means for locking the second member on the contact-post member.

3. A contact stop comprising, in combination with a support having recesses of locking shape in opposite sides thereof and having a bore therethrough communicating with the locking recesses, a contact-post screw extending through the bore, a locking nut on the contact-post screw engaging in one locking recess in the support, a second locking member on the contact-post screw engaging in the other locking recess in the support and releasable by longitudinal movement relatively to the contact post screw in the support and locking the contact post screw against rotation, and a detachable resilient ring for locking the second member on the contact-post screw.

4. A contact stop comprising, in combination with a support having locking portions on opposite sides thereof and having a bore therethrough, a contact-post member extending through the bore, a locking member on the contact-post member releasable by relative rotation between the two members and engaging one locking portion on the supporting member, a lock washer on the contact-post member engaging the other locking portion on the support, and a resilient ring adapted to lock the lock washer on the contact-post member.

5. A contact stop comprising, in combination with a support having recesses of locking shape in opposite sides thereof and a bore therethrough communicating with the two recesses, a contact-post screw extending through the bore and having one projecting end screw-threaded and a non-circular portion on the other end and a circumferential groove interrupting such non-circular portion, a nut of locking shape on the screw threaded end of the contact post screw and engaging in one recess, a lock washer on the non-circular portion of the screw and engaging in the other recess, and a resilient ring encircling the groove of the screw and locking the lock washer in position.

In testimony whereof I have affixed my signature in presence of two witnesses.

CLARENCE W. COLEMAN.

Witnesses:

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