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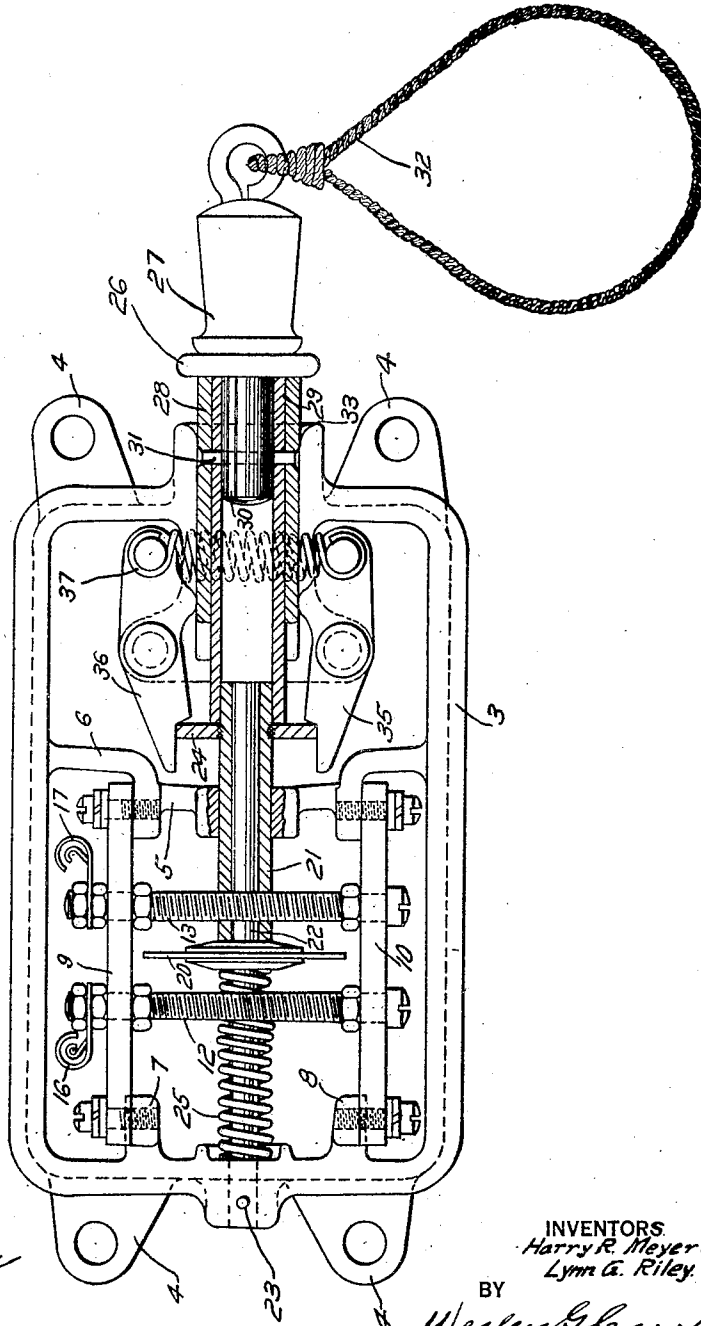
H. R. MEYER ET AL

ELECTRICAL SWITCH FOR CAR DOORS

Filed Sept. 23, 1921

2 Sheets-Sheet 1

Fig. 1.



WITNESSES:

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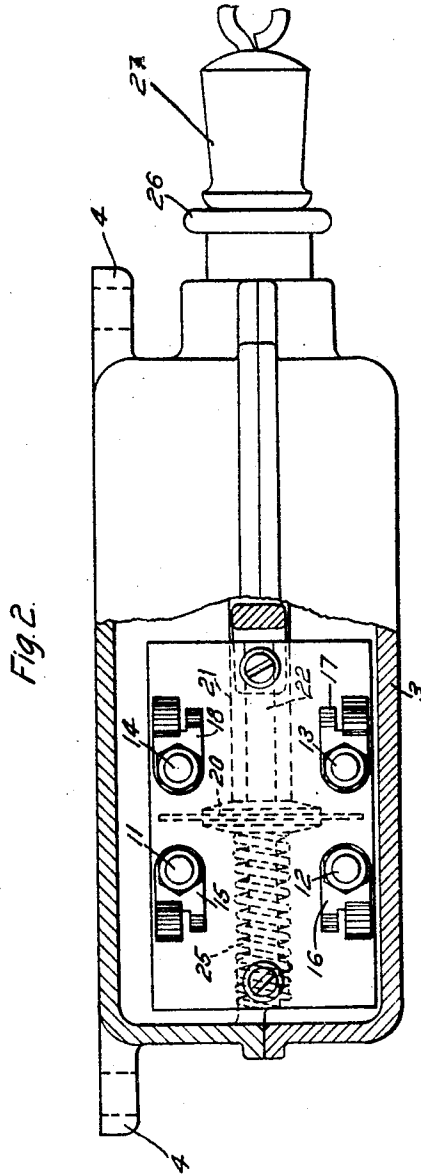
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WITNESSES:

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UNITED STATES PATENT OFFICE.

HARRY R. MEYER AND LYNN G. RILEY, OF WILKINSBURG, PENNSYLVANIA, ASSIGNORS TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRICAL SWITCH FOR CAR DOORS.

Application filed September 23, 1921. Serial No. 502,606.

To all whom it may concern:

Be it known that we, HARRY R. MEYER, a citizen of the United States, and a resident of Wilkesburg, in the county of Allegheny and State of Pennsylvania, and LYNN G. RILEY, a citizen of the United States, and a resident of Wilkesburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electrical Switches for Car Doors, of which the following is a specification.

Our invention relates to electrical switches and particularly to operating mechanism for imparting relative movement to the contact members.

One object of our invention is to provide an improved form of switch wherein provision is made to insure against unauthorized operation of the switch and to insure the effecting of certain movements of the switch apparatus under predetermined conditions.

Another object of our invention is to simplify and improve generally the construction of switches of the character hereinafter described.

Our invention comprises an enclosed switch so constructed as to exclude dirt and moisture from the contacting members, and provides means whereby the switch may be operated only through the use of a handle or lever of peculiar form. Furthermore, the movable contact or bridging member is so mounted that, when the operating handle is in advanced position, a circuit will be closed through one pair of stationary contact members, when the operating handle is released, the movable contact member will be automatically returned to neutral position and, when the handle is removed, the movable contact member will be automatically returned to operative engagement with another pair of stationary contact members.

Our invention is designed to be used, for example, in connection with systems like those employed for opening and closing cars wherein a single operator controls the opening and closing of a plurality of doors.

In the accompanying drawings:

Figure 1 is a view, partially in side elevation and partially in longitudinal section, of our switch, and

Fig. 2 is a view, partially in top plan and partially in section, of the switch of Fig. 1.

The switch proper is supported within a casing 3 that is provided with lugs 4 by means of which it may be attached to a supporting structure. The switch box is also provided with a wall 5 that is secured to an annular projection 6. Projections 7 and 8, together with the projection 6, serve as supports for plates 9 and 10 of insulating material.

Bolts 11, 12, 13 and 14 are secured to the plates 9 and 10 in the manner shown and serve as stationary contact members. Terminal members 15, 16, 17 and 18 are secured to the stationary contact members 11, 12, 13 and 14, respectively, in the manner shown.

A movable contact member 20 is provided for bridging the contact members 11 and 12, and 13 and 14, respectively, to complete circuits therethrough, in a manner hereinafter to be described.

The movable contact or bridging member 20 is secured to a tubular member 21 of insulating material, such as micarta, and the tube 21 is slidably supported upon a bar 22, one end of which is secured at 23 to the casing 3. The tubular member 21 is supported by the partition 5 and, in turn, it supports the other end of the rod 22. The actuation of a disk member 24, which is rigidly secured to the tube 21, causes the tube 21 to slide along the rod 22 and thereby effects engagement between the movable contact member 20 and the contact members 11 and 12 or 13 and 14, as the case may be.

A compression spring 25 is provided for normally maintaining the movable contact member 20 in engagement with the stationary contact members 13 and 14. In order to move the tubular member 21 and the stationary contact member 20 against the compression of the spring 25, a handle 26 is provided.

The handle 26 is composed of a grip portion 27 and two tubular portions 28 and 29. The tubular portions 28 and 29 are secured to the shank 30 of the grip portion by a rivet 31. The grip portion is provided with a wrist cord 32.

The handle extends through an opening 33 in the switch box, and the extended tubular member 29 is adapted to engage the disk member 24 and move the movable contact member 20 against the compression of

the spring 25. When the handle has been depressed to cause the member 20 to bridge the contact members 11 and 12 and is then released, the spring tends to return the movable contact member 20 into bridging engagement with the contact members 13 and 14 but, during the travel to such position, the disk member 24 is engaged by the latches 35 and 36 that are pivoted in the box. Further movement of the bridging member 20 to retracted position is thereby prevented until the handle 26 is removed, and a spring 37 is permitted to bias the outer ends of the latch members toward one another, thus releasing the disk member 24. While the handle is in the position illustrated, the latches cannot be moved to released position by the spring 37, owing to their engagement with the tubular portion 28 of the handle.

When the handle is inserted through the opening 33, the outer ends of the latches 35 and 36 are engaged by the tubular portion 28 and moved to the position shown, and will again move into locking position, to restrain movement of the movable contact member to its retracted position, when the handle is again removed.

The construction of the sleeve member 21 and its location within the casing insures against the switch being readily operated by an unauthorized person.

The principal feature of utility of the apparatus resides in the fact that, when the handle is depressed so as to cause the completion of a circuit through the terminals 15 and 16, the doors of a car or a number of connected cars are opened, by magnetically-operated air valves or otherwise, while, upon release of the handle by the operator, it is returned to neutral position, as illustrated in the drawings. When ready to start, the operator may remove the handle, thus permitting the release of the movable contact member and allowing it to be carried into position to complete the circuit, through terminals 13 and 14, that controls the door closing apparatus.

The frictional engagement of the latch members 35 and 36 with the tubular portion 28 of the handle prevents such handle from being accidentally ejected and the doors closed. The wall 5 serves to exclude moisture and dirt from the contact members, in addition to serving as a support for the member 21.

It will be apparent that various modifications may be made in the details of construction and general arrangement without departing from the spirit of the invention, as defined in the accompanying claims.

We claim as our invention:—

1. An electric switch comprising, in combination, a casing provided with an opening, a plurality of relatively movable contact members, means for normally yieldingly

maintaining two of said contact members in engagement, a removable handle adapted to be inserted through the said opening and to be operated against the yielding means to break the said engagement and to effect an engagement between one of said engaging members and a third engaging member, means for arresting the return movement of the yielding means at a point intermediate its advanced and retracted position, when the handle is released, and means for releasing the yielding member when the handle is removed.

2. An electric switch comprising, in combination, a pair of spaced stationary contact members, a movable contact member, means for normally maintaining the movable contact member in engagement with one of the stationary contact members, means for operating the movable contact member and a movable latch operable by the operating means for releasably maintaining it in neutral position with respect to both of the stationary contact members.

3. An electric switch comprising, in combination, a pair of spaced stationary contact members, a movable contact member, means for biasing the movable contact member into engagement with one of the stationary contact members, means for operating the movable contact member, means for normally yieldingly holding the movable contact member in engagement with the other stationary contact member, and a movable latch operable by the operating means for releasably locking the movable contact member in a neutral position with respect to both of the stationary contact members.

4. An electric switch comprising, in combination, a casing, a pair of spaced stationary contact members mounted therein, a movable contact member also mounted within the casing, means for yieldably maintaining the movable contact member in engagement with one of the stationary contact members, a handle for moving the movable contact member into engagement with the other stationary contact member, and a movable latch operable by the said handle for locking the movable contact member in neutral position with respect to the stationary contact members when the handle is released.

5. An electric switch comprising, in combination, a casing, a pair of spaced stationary contact members mounted therein, a movable contact member also mounted within the casing, means for yieldingly maintaining the movable contact member in engagement with one of the stationary contact members, a handle for moving the movable contact member into engagement with the other stationary contact member, means for locking the movable contact member in neutral position with respect to the stationary

contact members when the handle is released, and means for releasing the locking member when the handle is removed.

6. An electric switch comprising, in combination, a plurality of relatively movable contact members, means for normally maintaining two of said contact members in engagement, means for advancing one of said contact members into engagement with a third contact member, means for arresting its return movement of said one contact member, at an intermediate point in its path of movement, and means for actuating the said means to releasing position when the advancing means is moved relative to the first said contact member.

7. An electric switch, comprising, in combination, a plurality of relatively movable contact members, means for normally maintaining two of said contact members in engagement, means for advancing one of said contact members into engagement with a third contact member, means for arresting the return movement of said one contact member when the advancing means is released, and means for releasing the said arresting means when the advancing means is moved relative to the said one contact member.

8. Switch mechanism comprising a pair

of separate contact members, a movable switch member, means normally biasing the switch member in engagement with one of the contact members, an operating member for moving the switch member into engagement with the other contact member and a latch member operable by the operating member for arresting the switch member in an intermediate position adapted to release the switch member when the operating member is moved a predetermined distance in the direction of movement of the switch member.

9. Switch mechanism comprising a pair of separate contact members, a movable switch member, means normally biasing the switch member in engagement with one of the contact members, a removable operating member for moving the switch member into engagement with the other contact member, and a latch member operable by the operating member for arresting the switch member in an intermediate position adapted to release the switch member when the operating member is removed.

In testimony whereof, we have hereunto subscribed our names this 14th day of September, 1921.

HARRY R. MEYER.
LYNN G. RILEY.