Oct. 30, 1928. 1,689,230

H. J. CHRISTOPHER

LOCKING DEVICE FOR SWITCH KEYS

Filed Dec. 27, 1926

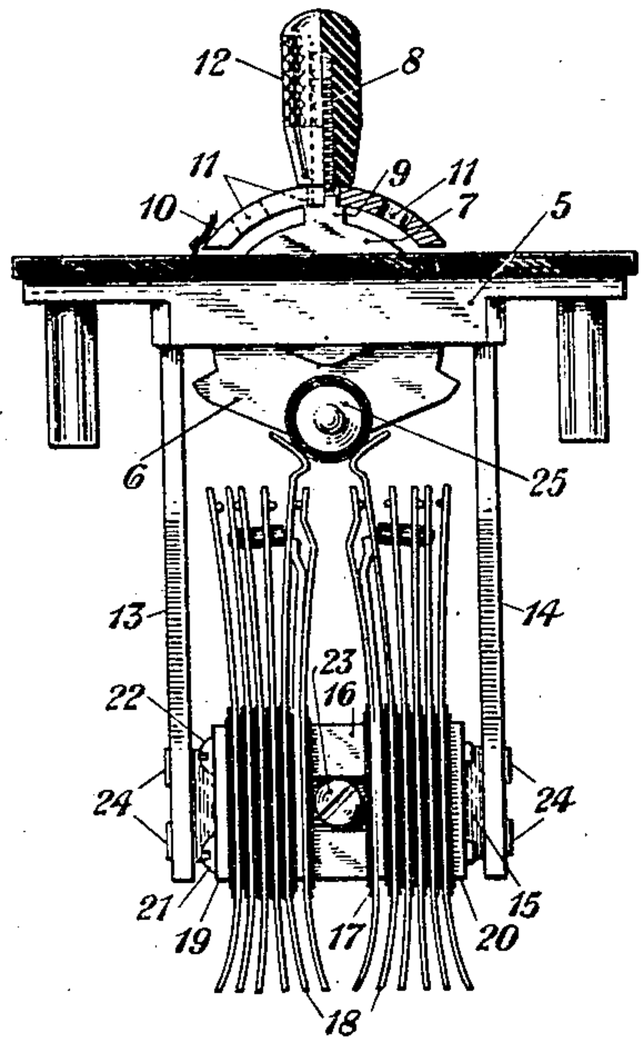

Fig. 1

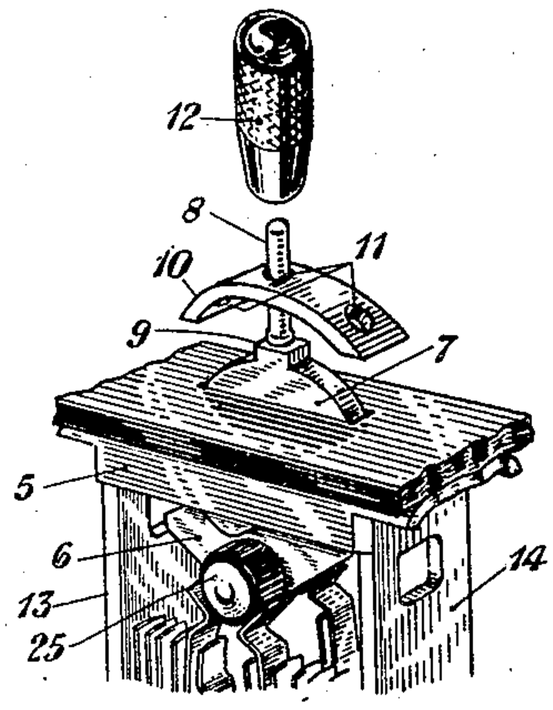

Fig. 2

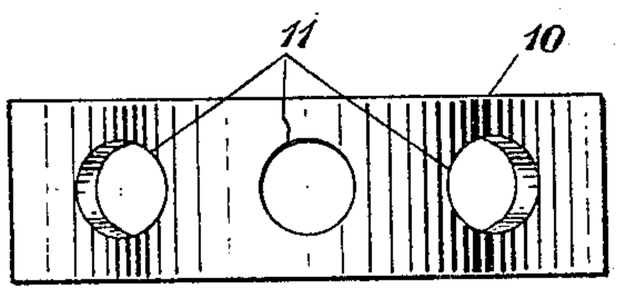

Fig. 3

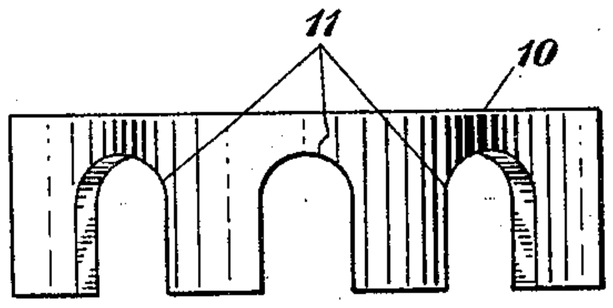

Fig. 4

INVENTOR.
H. J. Christopher
BY
ATTORNEY

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UNITED STATES PATENT OFFICE.

HARRY J. CHRISTOPHER, OF WESTFIELD, NEW JERSEY, ASSIGNOR TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK.

LOCKING DEVICE FOR SWITCH KEYS.

Application filed December 27, 1926. Serial No. 157,328.

This invention relates to locking devices, and more particularly to locking devices adapted for use with switch keys or the like.

An object of the invention is to provide a locking arrangement for confining the range in movement of switch key levers to predetermined contact with desired springs associated with the switch keys.

Another object consists in the provision of an arrangement of the above character which may be readily attached to or detached from any standard type of switch key.

A further object consists in providing a simple and inexpensive locking device which will operate in an efficient and effective manner.

These and further objects will be apparent from the following description, when considered in connection with the accompanying drawing in which certain modifications of the invention are illustrated.

Referring to the drawing, in which like parts are designated by similar reference characters throughout the several views, Figure 1 is a side elevation of a standard switch key with the improved locking device attached thereto; Fig. 2 is a perspective view of the upper portion thereof; and Figs. 3 and 4 are views showing two modifications of the locking device.

In the form of switch key shown in the drawing by way of illustration, the numeral 5 represents a top plate in which is supported or journaled a rocking lever 6. The rocking lever is of the usual cam-shaped type, and has an upper circular portion 7 which is shown as extending above the plate 5. A threaded spindle 8 extends upwardly from the circular portion 7 and is provided with a shoulder 9 which supports a locking plate 10. The locking plate is provided with a series of openings 11 which are spaced longitudinally of the plate. These openings may be circular, as indicated in Fig. 3, or in the form of slots as shown in Fig. 4. The plate 10 is adapted to be attached to the spindle 8 through the medium of the openings 11 which register with the spindle in an obvious manner. When the plate 10 has been applied through one of its openings at the point desired to the spindle 8, an insulated lever knob 12 is screwed on the spindle and this serves to provide pressure to securely clamp the plate in position against the shoulder 9. The rocking lever is confined in its range of movement by the positioning of the plate of the spindle. Thus, if the plate is associated with the spindle by means of the opening at the left side of the plate, contact can be made only with certain springs to complete a circuit thereover. Likewise, if it is desired to limit the range of movement of the rocking lever so that contact will be made with other springs, the plate is associated by means of its central opening, or the opening at the right, with the spindle.

It will be understood that while the plate has been illustrated as being of substantially arcuate shape and having three openings therein, it may be otherwise shaped and provided with additional openings if desired.

The rocking lever is shown as having the plate 10 applied to it in a central position in Fig. 1. In this position it will be apparent that movement to the right or left is limited by contact of the ends of the plate with the upper surface of the plate 5. It will be thus locked in position for contact with certain springs in this position, and cannot be moved to cause contact between other springs. The same is true with respect to the rocking lever when locked in other positions. When it is desired to change the rocking lever from one position to another, it will be necessary to unscrew the clamping knob 12, and move the plate so that its openings will register with the spindle at the desired point. When the plate is in the desired position, the knob is again screwed on the spindle, as previously described.

Although the improved device is adapted to be used in many connections, for the purpose of illustration it will be assumed that it is associated with a switch key of the type shown. The switch key in the present instance has a supporting frame of substantially inverted U-shape. The downwardly extending arms 13 and 14 are united by a bridging member 15 which may be a flat plate lying in a vertical plane upon either side of which switch spring units are mounted. The unit 16 comprises a block, preferably of metal, upon which are piled on both sides alternate insulating strips 17 and metal tongues 18. The latter form the switch con-

tact springs, and the pile is confined between metallic end plates 19 and 20. Bushings extend through alined openings in the parts comprising the unit, and pins 21 and 22, respectively, extend through the end plate 19 and into threaded engagement with the other end plate 20. This arrangement serves to hold the various parts together, and the bushing prevents the pins from short-circuiting the switch springs. The unit 16 is secured by means of a screw 23 to a mounting plate (not shown), which in turn is attached to the arms 13 and 14 by screws 24 which extend through perforations in said arms.

The customary insulated actuating rollers 25 are provided on the lower portion of the rocking lever and on either side thereof. The rollers function in the usual manner to press the various springs together under control of the rocking lever to complete circuits over electric conductors.

While the arrangements of this invention have been illustrated in certain specific forms which have been deemed desirable, it will be understood that they are capable of embodiment in many and widely varied forms without departing from the spirit of the invention as defined in the appended claims.

What is claimed is:

1. The combination with a switching appliance, a supporting frame having springs affixed thereto, a rocking lever journaled in the supporting frame and adapted to be set in different angular positions thereon, means provided with a series of openings in spaced relation from each other adapted to be clamped to the rocking lever through a selected opening and coacting with the frame to confine the range of movement of said lever in accordance with the selected opening in said means to predetermined engagement with desired springs.

2. The combination with a frame, a rocking lever supported by the frame and adapted to be set in different angular positions with respect thereto, and a plate having a series of openings for engaging said lever in any of its positions and coacting with the upper surface of the frame to lock the lever in a predetermined position.

In testimony whereof, I have signed my name to this specification this 24th day of December, 1926.

HARRY J. CHRISTOPHER.