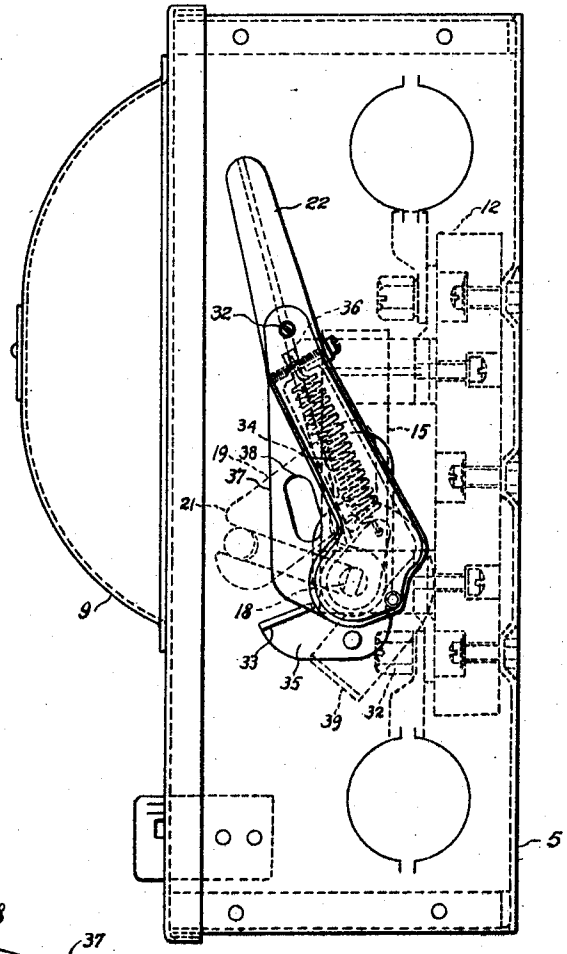
Dec. 15, 1925. 1,565,470

H. K. KRANTZ

SWITCH MECHANISM

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Fig. 1.



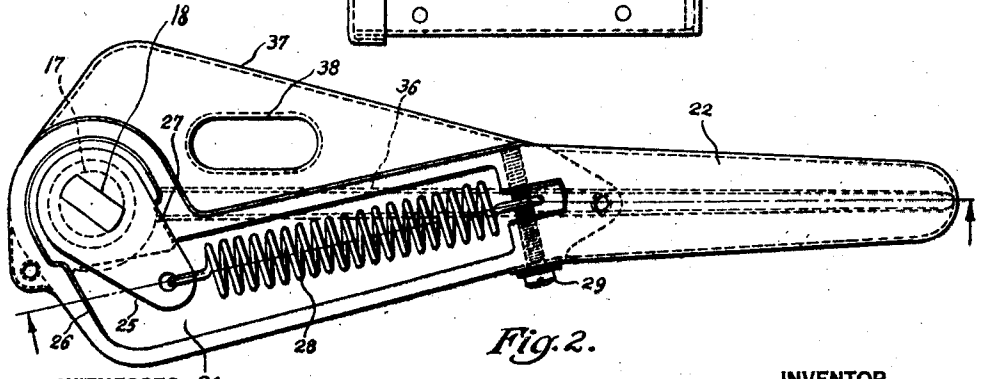


Fig. 2.

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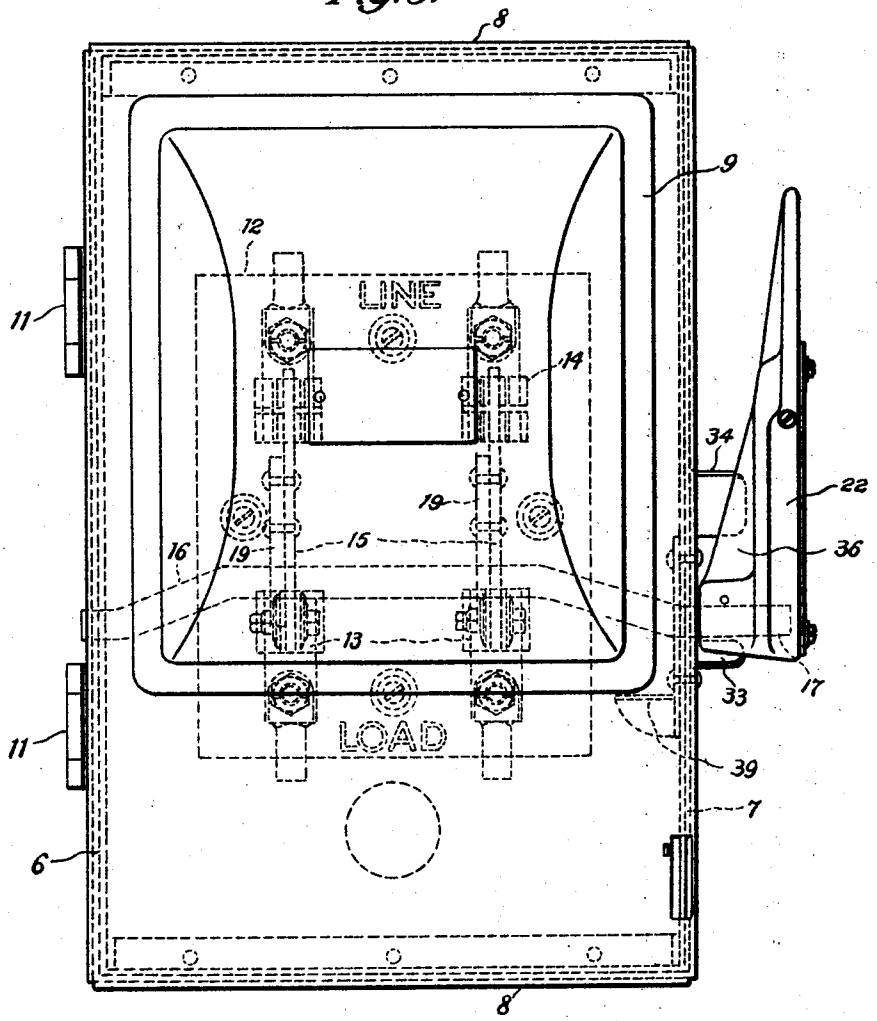
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SWITCH MECHANISM

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Fig. 3.



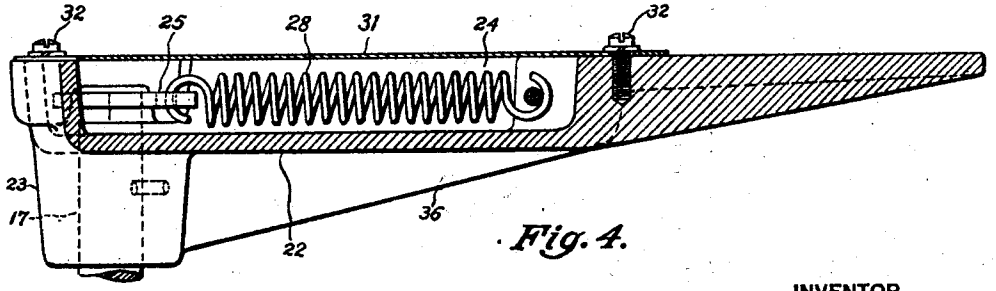


Fig. 4.

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UNITED STATES PATENT OFFICE.

HUBERT K. KRANTZ, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

SWITCH MECHANISM.

Application filed August 25, 1923. Serial No. 659,258.

To all whom it may concern:

Be it known that I, HUBERT K. KRANTZ, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Switch Mechanisms, of which the following is a specification.

My invention relates to switch mechanism and particularly to enclosed switch mechanism used in controlling the lighting circuits of residences and similar buildings.

One object of my invention is to provide a simple enclosed service switch wherein the switch blades are withdrawn from engagement with the contact jaws by a snap action when the friction of the contact jaws is overcome.

Another object of my invention is to provide a switch box having the above characteristics wherein the mechanism for actuating the switch with a snap action is confined within a hollow operating handle disposed exteriorly of the housing.

Another object of my invention is to provide a quick opening service switch that is simple in construction and which contains a minimum number of inexpensive parts that may be readily assembled or inspected or repaired.

These and other objects that will be made apparent throughout the further description of my invention are attained by the switch mechanism hereinafter described and illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevational view of the improved switch mechanism;

Fig. 2 is an elevational view of the operating handle with the cover removed;

Fig. 3 is a plan view of the improved switch mechanism; and

Fig. 4 is a longitudinal sectional view through the operating handle.

Referring to the drawings the apparatus includes a metal switch housing having a bottom wall 5, side walls 6 and 7, end walls 8 and a cover 9 that is pivoted to the housing by means of hinges 11. The housing is of the usual sheet metal construction and serves to enclose a standard service switch which comprises an insulating base 12 upon which pivot jaw members 13 and contact jaw members 14 are mounted in the usual manner. Switch blades 15 are pivoted within pivot jaw members 13 and are adapted to be moved into engagement with the contact jaw members 14 to close the circuit through the switch mechanism.

The switch blade members 15 are actuated by means of an operating crank rod 16 that is pivoted to the side walls 6 and 7 of the housing and which is provided with a portion 17 that extends exteriorly of the housing and which is provided with a flattened extension 18 as indicated in Figs. 1 and 2. The crank rod 16 is attached to the switch blades 15 by means of insulating plates 19 that are riveted to the blade members and which are provided with notches 21 for receiving the crank rod 16. When the crank rod is rotated counter clockwise, the switch blade members are moved to open position.

A hollow operating handle 22 is pivotally mounted upon the extended portion 17 of the operating rod 16, the handle being provided with a hub portion 23 into which the portion 17 of the operating rod extends. The handle is of hollow construction and is provided with a recess 24 in which a crank arm 25 is disposed and which is provided with a rectangular opening which snugly fits the flattened extension 18 of the crank rod 16. The end of the rod is peened over to securely fasten the crank arm to the crank rod as indicated in Fig. 4.

The handle 22 is so designed that contact faces 26 and 27 are provided within the recess and between which the crank arm 25 is free to oscillate within fixed limits, thus providing a lost-motion connection of the handle to the crank arm. The helical spring 28 is disposed in the recess 24 of the handle and is attached at one end to the free end of the crank arm 25 and, at the other end, to the handle 22 by means of a screw 29. The spring normally holds the crank arm 25 in engagement with the contact surface 27 and when the switch is in either its open or its closed position, the crank arm and the handle occupy the relative positions indicated in Fig. 2. As shown in Fig. 1, the switch is in closed position and the operating handle and parts associated therewith, occupy the positions shown in Fig. 1.

When the operating handle is rotated in a counter clockwise direction to open the

switch, the friction of the contact jaws, which press against the sides of the switch blade members, prevents movement of the blade members until the contact surfaces 26 of the operating handle engages the crank arm 25. When the surface 26 engages the crank arm 25, the latter is moved positively by the handle out of engagement with the contact jaw members and the spring 28 then instantly draws the blade members out of engagement with the contact jaw members with a snap action, thus interrupting the arc incident to the separation of the switch blade members from the contact jaw members and preventing the usual destruction of such members incident to slow separation of the blade members from the contact jaw members. The recess 24 is closed by a sheet metal cover 31 that is attached to the operating handle 22 by means of screws 32.

It will be apparent that the switch operating mechanism is of simple construction and that the spring and crank arm are confined within the handle in such manner that they cannot be interfered with by external objects. Movement of the operating handle in either direction is limited by stop members 33 and 34, respectively, that are integral with a plate 35 that is secured to the exterior of the side wall 7, the stop members being engaged by a flange 36 that is formed integral with the handle 22. A flange 37 also formed integral with the handle is provided with an oblong opening 38, for the purpose of receiving the hasp of a lock (not shown) which is inserted for the purpose of locking the switch in open position. Closing movement of the switch is prevented by reason of the engagement of the hasp of the lock with the outer face with the stop member 33. Opening movement of the switch is limited by means of a stop member 39 that is secured to the inner side of the side wall 7, and which engages the operating crank rod 16.

While I have illustrated but one embodiment of my invention it will be apparent to those skilled in the art that various changes, modifications, substitutions, additions and omissions may be made in the apparatus illustrated without departing from the spirit and scope of my invention, as set forth in the appended claims.

I claim as my invention:

1. Switch mechanism comprising a movable switch member, a contact member therefor, a rotatable operating member for the switch member, a hollow operating handle mounted for rotation about the axis of rotation of the operating member, a crank within the handle secured to the operating member and having a lost-motion connection thereto and a spring within the handle for moving the crank with a snap action when the switch member is released from the contact member.

2. Switch mechanism comprising a movable switch member, a housing therefor, an operating rod for the switch member pivoted to the side walls of the housing and having a portion extending exteriorly of the housing, a hollow operating handle pivoted upon the exteriorly extending portion of the rod and having a lost-motion connection thereto and a spring within the handle yieldingly connecting the rod and the operating handle.

3. Switch mechanism comprising a movable switch member, a rotatable operating member therefor, a rotatably mounted hollow operating handle, a crank secured to the operating member and disposed within the operating handle and having limited movement therein and a spring carried by the handle for yieldingly connecting the crank to the handle.

4. Switch mechanism comprising a movable switch member, a rotatable operating member therefor, a rotatable hollow handle having a lost motion connection to the operating member for positively engaging and moving it, and a helical spring encased within the handle and extending longitudinally thereof for yieldingly connecting the handle to the operating member.

5. Switch mechanism comprising a movable switch member, a housing therefor, an operating rod for the switch member pivoted to a side wall of the housing and having a portion extending exteriorly thereof, a crank fixed to the said portion, a rotatable hollow handle enclosing the crank and having a lost motion connection thereto, a helical spring within the handle connected at one end to the crank and at the other end to the handle adjacent to the free end thereof for moving the crank with a snap action.

6. Switch mechanism comprising a movable switch member, a housing therefor, an operating rod for the switch member pivoted to the side walls of the housing and having a portion extending exteriorly of the housing, a rotatable operating handle mounted exteriorly of the casing and having a lost motion connection to the operating member, a spring for yieldingly connecting the operating member to the handle, stop means exteriorly of the housing for limiting movement of the handle and stop means within the housing for limiting movement of the operating means.

In testimony whereof, I have hereunto subscribed my name this 20th day of August, 1923.

HUBERT K. KRANTZ.