

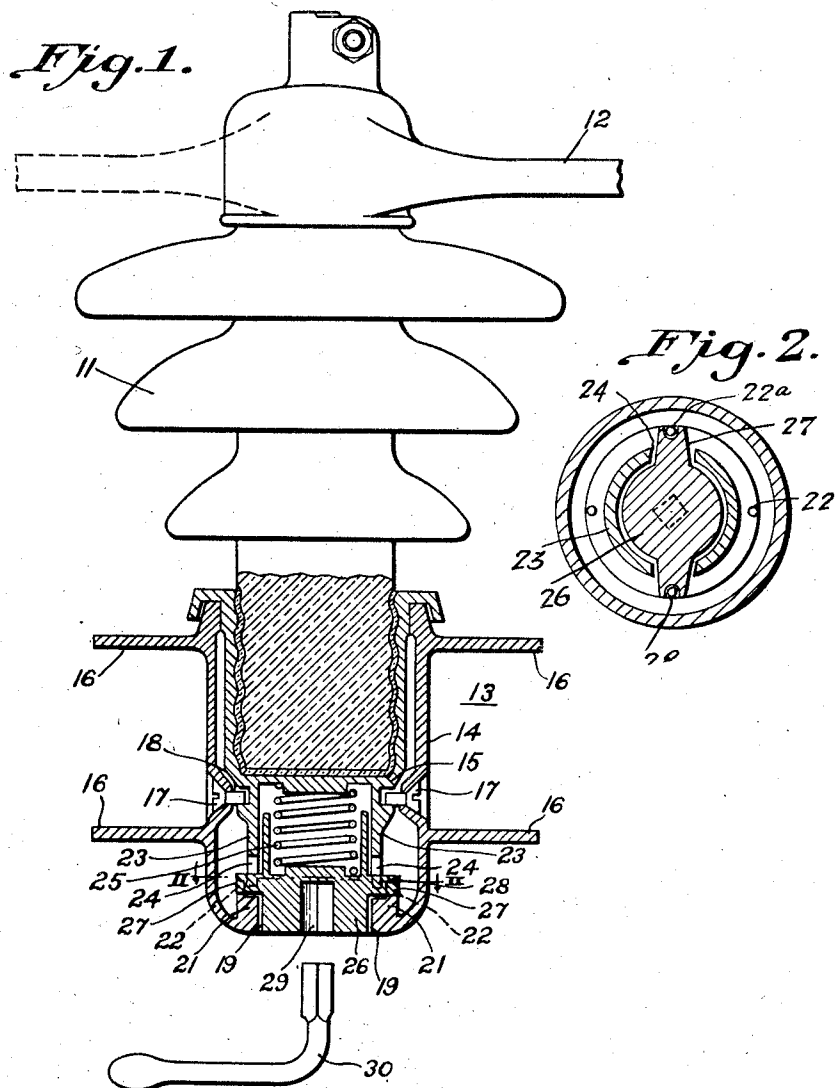
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DISCONNECTING SWITCH

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WITNESSES:

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DISCONNECTING SWITCH.

Application filed February 16, 1927, Serial No. 168,572, and in Germany February 19, 1926.

My invention relates to disconnecting switches and particularly to locking mechanisms therefor.

One object of my invention is to provide a disconnecting switch that shall have a positive locking device for preventing accidental opening or closing movements of the switch.

A further object of my invention is to provide a disconnecting switch that shall snap into a locked position only when it is in its full open and closed positions.

Heretofore, disconnecting switches of the rotatably-mounted type have not been provided with a positive internal locking device. If such locking means is provided, the switch will always remain in the desired position even though it has been in long-continued use with the resultant wear.

My invention provides means for locking the switch in either its full-open position or its full-closed position until an operating means is applied to the locking device for unlocking and for turning the switch into the other position.

For an illustration of one of the various forms my invention may take, reference is to be had to the accompanying drawing, in which:—

Figure 1 is a view, partially in elevation and partially in section, of a disconnecting switch embodying my invention; and,

Fig. 2 is a view, in section, taken on the line II—II of Fig. 1, with the central member at right angles to the position it occupies in Fig. 1.

My invention comprises, in general, an insulator 11 that supports a switch arm 12 and which is supported by and locked by a double socket 13.

The double socket 13 comprises an outer socket member or housing 14 and an inner socket member 15, in which the lower end of the insulator 11 is embedded.

The outer socket member 14 may be secured by flanges 16 to a wall or any other desired support. Lugs or screws 17 are inserted through the outer socket 14 for engagement with annular grooves 18 formed in the outer periphery of the socket member 15 for preventing actual movement of the latter in an axial direction. The bottom of the socket member 14 is provided with an opening 19 that is surrounded by an upwardly extending ring 21. Projections 22 and 22^a

are disposed on the upper surface of the ring 21 for a purpose to be hereinafter described.

The inner socket member 15 is provided with a downwardly extending tubular extension 23 that terminates in slots 24, the length of which in the periphery bears a definite relation to the angular movement desired for the switch arm 12. A coil spring 25 is disposed within the tubular extension 23 and with one of its ends bearing against the inner socket 15 and its other end bearing against a locking or positioning member 26 that is disposed in the opening 19 in the outer socket member 14.

The locking or positioning member 26 is provided with outwardly extending arms 27 that are provided with recesses 28 for the reception of the lugs 22 or the lugs 22^a in accordance with the position of the arms. The positioning member 26 is provided with a squared opening 29 for the reception of an operating crank 30.

In the operation of a switching device embodying my invention, the operator places the crank 30 in the opening 29 and applies an upward pressure thereto, which serves to lift the positioning member 26 clear of the lugs 22 against the bias of the spring 25. After the arms 27 are clear of the lugs 22, a turning movement in a desired direction may be imparted to the positioning member 26 which is transmitted through the arms 27 engaging the sides of the slots 24 to the inner socket member 15 and the switch arm 12. At the end of the desired movement of the switch arm 12, the arms 27 engage another set of lugs 22^a (see Fig. 2) over which they must be raised before the final movement of the switch arm 12 can be obtained, and whereby upon the withdrawal of the crank 30, the positioning member 26 again locks the switch arm 12 in position.

Accordingly, I have provided a supporting, operating and locking means for mounting insulators, supporting switch arms and the like, in which the possibilities of the switch arm accidentally becoming displaced are prevented by a locking device that is rendered inoperative only when an operating crank is pressed upwardly against a tensioning spring. An operator is informed that the switch arm is in the desired open or closed position by the operation of the locking device.

It is to be understood that various changes in the arrangement, disposition and construction of the component parts of my invention, such as the reversal of the positioning of the locking projections and recesses may be made as shall fall within the scope of the appended claims.

I claim as my invention:

1. In combination, an insulator, an electrical device cooperating therewith, and a support for the insulator comprising an outer socket member having a stop member formed thereon, an inner socket member having a slot formed therein, and a locking means cooperating with the socket members and comprising an arm extending through the slot into engagement with the stop member.

2. In combination, an insulator, an electrical device cooperating therewith, and a support for the insulator comprising an outer socket member having stop members formed thereon, an inner socket member having slots formed therein, and a locking means cooperating with socket members and comprising arms extended through the slots into engagement with stop members.

3. In combination, an insulator, an electrical device cooperating therewith, and a support for the insulator comprising an outer socket member having stop members formed thereon, an inner socket member having slots formed therein, and a spring biased locking means cooperating with the socket members and comprising arms extending through the slots into engagement with said stop members.

4. In combination, an insulator, an electrical device cooperating therewith, and a support for the insulator comprising an outer socket member having stops formed thereon, an inner socket member having slots formed therein cooperating with the outer socket member, and a spring-biased locking means being provided with means for the reception of an operating member and comprising arms extending through the slots in the inner socket member for engagement with the stop members.

5. In combination, a switch arm having an open position and a closed position, a shaft member for supporting the switch arm, a double socket for supporting the shaft member and comprising an outer member and an inner member, biased locking means interposed between the inner and outer members and cooperating therewith to prevent relative movement of the inner and outer members, and operating means for neutralizing the effect of the biasing means and imparting relative movement to the inner and outer members.

6. In a switch structure, a switch arm, a supporting shaft member, a double-socket for supporting the shaft member and comprising an outer member and an inner member, biased

locking means for locking the outer and inner member to prevent relative movement of said switch arm in its open position or in its closed position, and operating means for unlocking said biased locking means.

7. In combination, a switch arm having an open position and a closed position, a shaft member for supporting the switch arm, a cap member supporting the shaft member and having a tubular extension, the cap member being rotatably mounted in a housing, means for preventing movement of the cap member in an axial direction, and a spring member interposed between the cap member and a locking means having an opening for the reception of a crank member, said locking means having resilient engagement with the housing and cooperating with the tubular extension of said cap member, and a crank member, for insertion into the opening of said locking member before effecting switch movement.

8. In combination, a switch arm having an open position and a closed position, a shaft member supporting said switch arm, said shaft member being supported by a double socket that comprises an outer member having stops thereon and an inner member having slots therein, said inner member being rotatably mounted within the outer member, and locking means extending through the slots in the inner member for engagement with the stops on the outer member, said locking means being movable in an axial direction to unlock the members before turning said inner member relative to the outer member.

9. In combination, a switch arm having an open position and a closed position, a shaft member supporting the switch arm, the shaft member being supported by a double socket that comprises an outer member and an inner member, and a spring member interposed between the inner member and a locking member that cooperates therewith.

10. In combination, a switch arm having an open position and a closed position, a shaft member supporting said switch arm, the shaft member being supported by a cap member that is in resilient engagement with a housing having recesses therein, a locking mechanism comprising a spring member and a positioning member having lugs thereon disposed within a tubular extension of the cap member and normally in a locking position, operating means for compressing the spring member to unlock said locking mechanism from recessive engagement with the housing and to turn the locking mechanism which is operable therewith, the tubular extension and the switch arm being automatically locked upon reaching their closed or open positions.

11. In combination, a switch arm having an open position and a closed position, a shaft member supporting the switch arm, the

shaft member being supported by a base member comprising inner and outer socket members, both of which are provided with registering slots, one of the socket members being provided with stop means, at an end of its slots, tensioning means disposed between the socket members and comprising a locking member that projects through the slots for engagement with the stop members, whereby the switch arm is automatically locked upon reaching the end of its travel in either direction.

In testimony whereof, I have hereunto subscribed my name this 15th day of January, 1927.

FRITZ RONNEBERGER.