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W. F. PURCELL

SAFETY LOCK FOR KNIFE SWITCHES

Filed Jan. 12, 1925

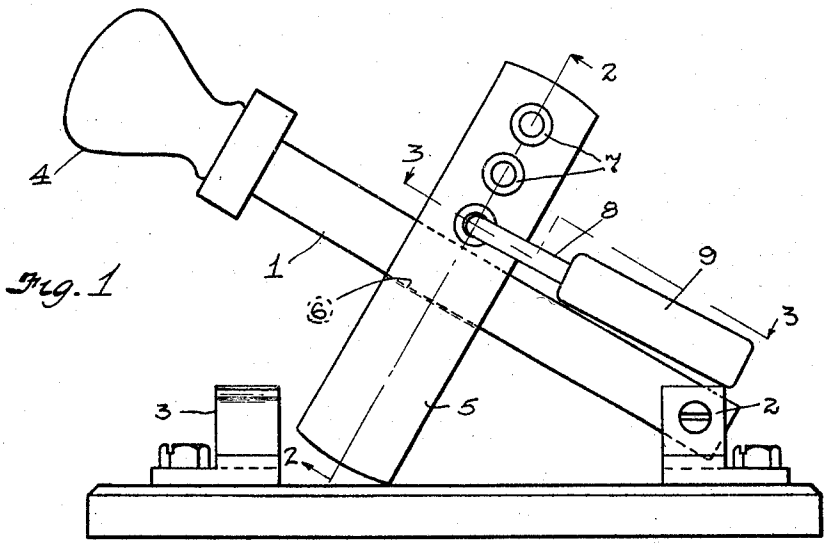

Fig. 1

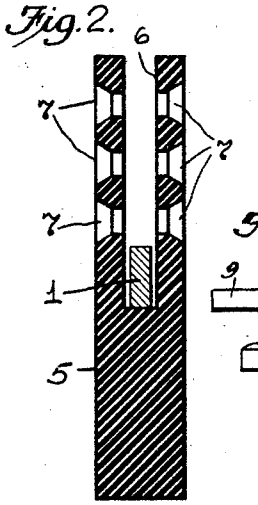

Fig. 2.

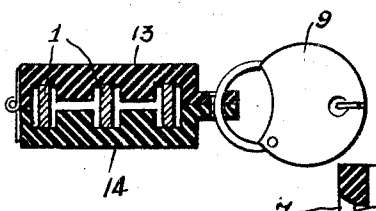

Fig. 5.

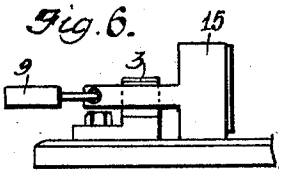

Fig. 6.

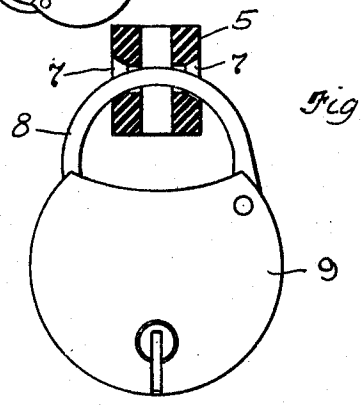

Fig. 3

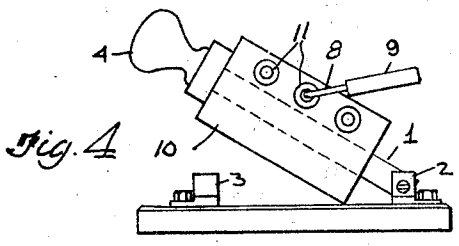

Fig. 4

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UNITED STATES PATENT OFFICE.

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SAFETY LOCK FOR KNIFE SWITCHES.

Application filed January 12, 1925. Serial No. 1,877.

To all whom it may concern:

Be it known that I, WILLIAM F. PURCELL, a citizen of the United States, and a resident of Buffalo, county of Erie, and State of New York, have invented a new and useful Improvement in Safety Locks for Knife Switches, of which the following is a specification, the principle of the invention being herein explained, and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

In any industrial plant using electrical equipment where the supply of electric current is controlled by the familiar knife switch, a serious danger exists due to the fact that such switch is frequently and necessarily located at a point remote from the apparatus controlled thereby. In other words, whenever the switch is thrown open in order to permit an operative to repair, inspect or otherwise attend the equipment, there is the ever present danger that someone ignorant or heedless of the fact may close the switch. The object of the present invention, accordingly, is to provide a simple and readily usable device for preventing accidents of this sort by enabling an operative who is going to work on a piece of electrical apparatus or machine to lock the control switch open by his own individual lock. The device is furthermore so arranged that where several men may be simultaneously working on such apparatus or machine, each may individually thus lock the switch open and thus eliminate any possibility that one operative may mistakenly assume that work on a machine has been completed and thus endanger the lives of fellow operatives by prematurely unlocking the switch.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a side elevation of a typical knife switch showing my improved safety locking device applied thereto; Fig. 2 is a transverse section of the device and one blade of the switch, the plane of the section being indicated by the line 2—2, Fig. 1; Fig. 3 is another transverse section taken on the plane indicated by the line 3—3, Fig. 1; Fig. 4 is a side elevation, similar to Fig. 1, showing a modified form of the device; and Figs. 5 and 6 are transverse sectional views showing still other modifications in construction.

As thus shown in side elevation in Fig. 1, only a single blade 1 of the switch appears, such blade being pivotally attached, as usual, to the one terminal 2 and being adapted when depressed to engage and close the circuit through the other terminal 3. The switch may of course comprise two, three or more blades, depending upon the character of the circuit, but it is sufficient to apply the locking device to a single blade, as will appear. The usual handle 4 attached to the outer or free end of the blade is shown in Fig. 1. The device consists essentially of a piece or block 5 of insulating material, for example fiber board, such block in the form illustrated in Figs. 1, 2 and 3 being of elongated, generally rectangular form. The block is provided at one end with a slot 6 and with one or more pairs of transversely aligned apertures 7 that intersect the portion thus slotted, there being three such pairs of apertures in the form of the device illustrated in the figures in question. The apertures 7 are of proper diameter and in addition are reamed or beveled at their respective outer ends so as to readily permit the insertion of a hasp 8 of any suitable padlock 9.

In use, as will be readily understood from an inspection of Fig. 1, the switch is opened and the slotted block 5 is slipped over one of the blades 1 from the under side, the blade lying in the slot 6 with the slotted transversely apertured portion projecting thereabove. The lock is then secured to the block by inserting its hasp through one of the pairs of apertures, preferably the one nearest the blade. Should it be desired to apply another lock, this is accomplished by similarly inserting the hasp thereof through the next pair of apertures and so on, as will be readily understood. With the block thus locked in place, it is of course impossible to close the switch and the operative who

applied the lock is the only person who can remove the device and so allow the switch to be closed.

If desired, the locking device may be made in the slightly modified form illustrated in Fig. 4, the block 10 here being designed to lie longitudinally of rather than transversely of the switch blade 1. The transversely aligned pairs of apertures 11 are then disposed parallel with the bottom of the slot instead of in transverse alignment with respect thereto. This form is adapted for use in exactly the same manner as the first form, but the first form is preferred inasmuch as the arrangement of apertures there embodied permits the use of the same block to lock switches, the blades of which vary considerably in width. The slot 6 will of course be wide enough to accommodate blades of any thickness usually encountered in switches of the type under consideration.

While, as shown, the block that constitutes the body of the device is indicated as of integral construction, i. e. molded in one piece out of whatever insulating material it is found most convenient to employ for the purpose, it will of course be understood that the device may be made of several pieces of strips of material, such for example as the fiber board previously mentioned, and such pieces riveted or otherwise firmly secured together; or such pieces may be separable (see pieces 13, 14, Fig. 5) for the purpose of placing the device on switch, the lock serving the dual purpose of holding them together and preventing the unauthorized removal of the device.

It will be further understood that, as shown in Fig. 6, the device may be constructed in the form of a block 15 adapted for detachable engagement with the terminal or terminals, 3, in a manner similar to that by which the block 5 engages the switch blade; it being noted that such terminals ordinarily comprise paired spring elements, the outer ends of which flare in opposite directions. In this way the accidental closing of the switch will be equally prevented.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. A device of the character described, comprising a slotted block of insulating material, the slot in said block being adapted to fit over one of the members of a standard knife switch so as to prevent the closing of such switch, and said block being apertured transversely of such slot so as to permit the insertion of a locking member.

2. A device of the character described, comprising a slotted block of insulating material, the slot in said block being adapted to fit over the blade of a standard knife switch and said block being apertured transversely of such slot to permit the insertion of a locking member.

3. A device of the character described, comprising a slotted block of insulating material, the slot in said block being adapted to fit over the blade of a standard knife switch and said block being formed with transversely aligned pairs of apertures intersecting the walls of said block on each side of such slot and respectively adapted to receive the hasp of a padlock.

4. A device of the character described, comprising an elongated block of insulating material having a slot extending longitudinally from one end thereof and transversely aligned, longitudinally spaced pairs of apertures intersecting the walls of said block on each side of such slot, the latter being adapted to fit over the blade of a standard knife switch and such pairs of apertures being respectively adapted to receive the hasp of a padlock.

Signed by me this 5th day of January, 1925.

WILLIAM F. PURCELL.