C. N. SACHS.

SWITCH BOX.

APPLICATION FILED AUG. 31, 1905.

1,007,802. Patented Nov. 7, 1911.

Fig. 1.

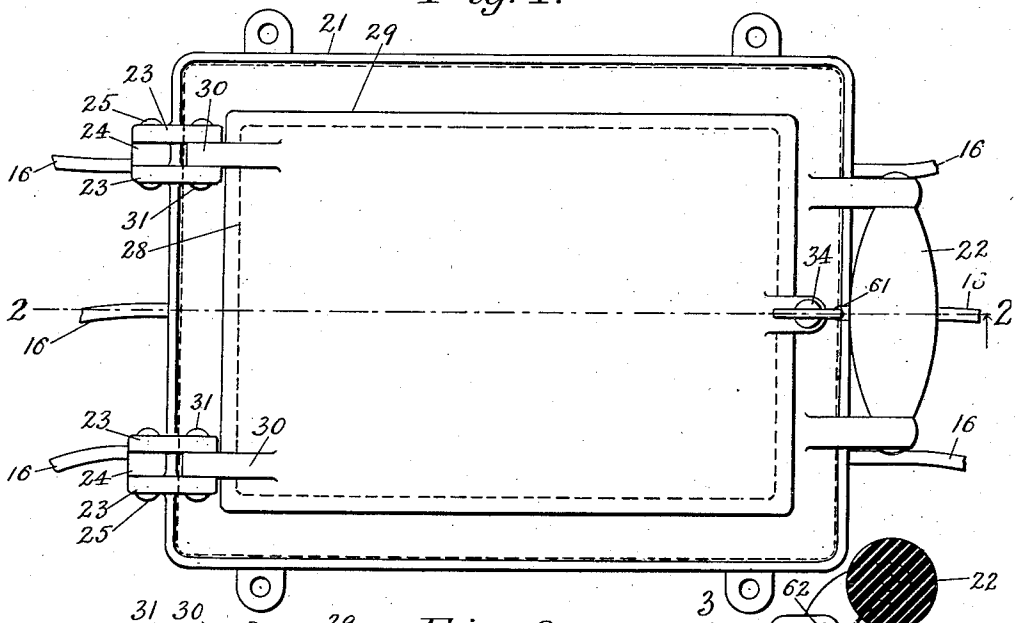


Fig. 2.

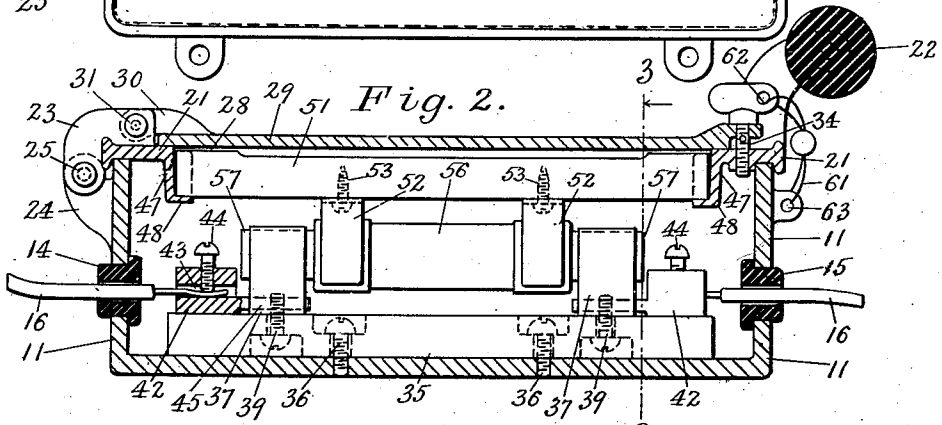
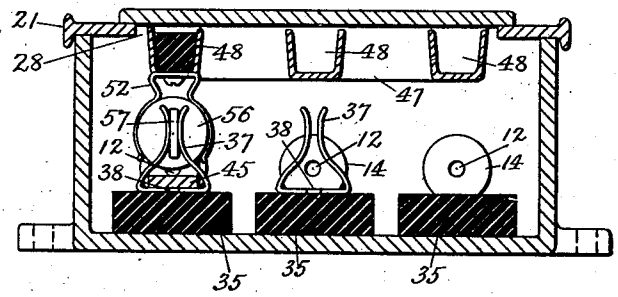


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SWITCH-BOX.

1,007,802. Specification of Letters Patent. Patented Nov. 7, 1911.

Application filed August 31, 1905. Serial No. 276,510.

To all whom it may concern:

Be it known that I, CAROLINE N. SACHS, a citizen of the United States, and resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Switch-Boxes, of which the following is a full, clear, and exact specification.

This invention relates to electric switch devices and their inclosing case or box, by which they are protected from injury and promiscuous manipulation. This improved switch box is of such construction that the connection between the wires of the circuit entering and leaving the switch can readily be opened or closed by a proper manipulation of the switch arm, which is preferably also the cover of the box. It is also possible to inspect the interior of the device and to renew or adjust such parts thereof as may require attention, without affecting the switch device proper, or any of the other parts. This latter requirement frequently arises when protected fuses form a part of the switch, and when the blowing of any one fuse makes it necessary to renew that fuse without disturbing the rest of the device. This is apt to be particularly the case in connection with so-called three wire switches. While thus readily accessible the switch is well inclosed and protected.

In the embodiment of the invention shown in the drawings, Figure 1 is a plan view of the switch box with the cover closed, Fig. 2 is a longitudinal section on the line 2, 2 of Fig. 1, Fig. 3 is a transverse section on the line 3, 3 of Fig. 2.

In this embodiment of the invention the connection between the terminals of the entering and outgoing wires for each of the poles of the device is made by means of a so-called inclosed fuse. This is merely shown as one form of connecting bar or arm, and it will be readily seen that various other arrangements are possible without departing from the spirit of the invention.

The box or casing 11 of this improved switch box is provided with three sets of suitable holes 12 in its opposite walls, in which are fitted insulating bushings 14, 15 through which the entering and outgoing circuit wires 16 are brought into the box. The main cover 21 is provided with a handle 22, and is higned by means of the arms 23 and the pins 25, to the arms 24 forming part of the top of the end wall at one end of the casing 11. The main cover 21 is provided with an opening 28 of suitable size, which in turn is closed by an auxiliary or inspection cover 29. This auxiliary cover 29 is hinged at one end to the hinge arms 23 on the main cover by means of the arms 30 and the pins 31. The auxiliary cover 29, at the end opposite the hinges, is provided with a thumb screw 34, which passing through a hole in the end of the auxiliary cover screws into a tapped hole in the main cover 21. This auxiliary cover 29 forms practically a part of the main cover 21, and is normally closed and firmly held to the main cover by means of the screw 34.

Mounted in the bottom of the box are insulating blocks 35 of slate, porcelain, wood or other suitable material, attached to the bottom of the box by means of screws 36. The box being shown with a three-wire system, is provided with three of these blocks 35 and each is fitted with a set of contact fittings for the purpose of connecting the circuit wires, and acting as switch clips. Each set of these contact fittings is placed in line with one of the pairs of holes 12 in the box, one fitting of each set being placed adjacent to each of the holes through which the circuit wires enter, so that the junction between the pair of fittings forming each set may be made by means of the safety fuse 56. Each of these contact fittings consists of a clip 37 which is preferably of flat copper bent double in the shape shown. The lower part of the clip is pierced with a hole 38, and the two upper ends of the clip are brought together, so as to clasp firmly the ends 57 of the fuse. The clip 37 is held to the insulating block 35 by means of a screw 39 which passes through a hole in the block and screws into an extension of the binding post 42, thus firmly clamping the clip 37 into position on the block 35. The binding post 42 is provided with a hole 43 for the ends of the circuit wires 16 which are held therein by screws 44. Each of the safety fuses 56 is held by clips 52 attached by screws 53 to an insulating bar 51. These bars are supported at their ends by the seats or pockets 48, formed in the depending walls 47 of the main cover, and are held in those pockets by the auxiliary cover 29. When that cover is raised, either or all of the blocks 51 may be independently removed, examined and re-

placed. The link or conductor 56 here shown is an inclosed safety fuse, the insulated barrel of which is held by the clips 52, with the projecting flat ends 57 engaged by the clips 37.

As a means for fastening or sealing both the main cover and the auxiliary cover to the box, the seal wire 61 is shown passing through a hole 62 in the thumb screw 34, and through a hole 63 in a projection on the outside wall of the casing 11. Various other means may, however, be employed for accomplishing this end, and a separate seal may also be provided for each cover.

The operation of the improved switch box is as follows:—Assuming that the box has been installed as a switch between the street and house wiring, and is mounted on the wall in an accessible position, the inspector may by releasing the holding screw 34, throw back the auxiliary cover 29, examine the interior of the box, and manipulate any one of the switch conductors separately, by taking the insulating bar 51 from its seats 48, thus withdrawing the fuse 56 from its clips 37. The fuse may then be detached from the bar 51 by withdrawing it from the clips 52, so as to replace it by another fuse should this be necessary. Or any desired tests or connections may be made, the construction permitting the removal of any one of the links or fuses without affecting the others, and without breaking the circuits, until after inspection and after ascertaining which circuit, if any, requires to be broken. Even when it is found necessary to detach one or more of the fuses, and thus break the circuits it is only necessary to break the particular circuit or circuits which may require attention. In this way the auxiliary cover 29 serves a most important function as an inspection cover, leaving the main cover to perform its more exclusive function as a switch arm. Whenever it is found desirable or necessary to open the switch as a whole and break all the circuits, the main cover 21 is opened by grasping the handle 22, swinging the cover back on its hinge pins 25 and carrying the inspection cover with it, without otherwise disturbing the inspection cover. When the main cover 21 is thus opened any desired fuse may be removed from its insulating bar by pulling the fuse out of the clamping clips 52. When the inspection cover 29 is closed, the insulating bars 51 are held firmly in the seats 48 with practically no play, thus becoming practically a part of the main cover. Thus, by opening the inspection cover, all of the fuses and their connections may be inspected without breaking any of the circuits, and any one or more of the fuses may be removed without breaking or otherwise disturbing the circuits which are found to be in proper condition. On the other hand, in case of emergency, all of the circuits may be broken in an instant, by means of the main cover, without disturbing the auxiliary or inspection cover. By this construction, the main cover 21 constitutes an electrically inert carrier for the respective fuses, being at all times preferably entirely insulated from all the currents as herein shown, thus avoiding all liability of shock to the persons who manipulate or inspect the apparatus.

When the seal wire is arranged as herein shown, a single seal may serve to secure both the main cover and the inspection cover, it being necessary in this arrangement to break the seal wire in order to open either of these covers. Thus when either cover is opened by any unauthorized person who is unable to renew the seal, the tampering is at once indicated.

The opening of the inspection door 29 permits all of the fuses and their connections and the entire interior of the box to be inspected without operating the main switch arm or without disconnecting any of the conductors from their terminals or from the switch arm. Moreover, the fuse or any other part relating to any particular circuit may be removed, examined, replaced, or a new fuse or other part substituted, without in the least disturbing any of the other circuits. Furthermore, all of the fuses are so attached to the main switch arm that they are bound to be detached from their terminals, so as to open all the circuits simultaneously whenever the main switch arm is opened, it being impossible either from carelessness or design to leave any of the fuses in circuit with their terminals when the main switch arm is pulled open. This is of great importance in devices of this character. In cases of fire or other emergencies, it is highly important to insure opening all of the circuits without inspection, by merely pulling open the main switch arm.

The main cover is provided with an individual and permanent arm, in the sense that it remains a permanent appurtenance of the main cover, and cannot either by accident or design be detached from the main cover in the manipulation of the switch box. The result of this permanent connection is that there is no possible danger of making a false move when it is desired to open the switch box in case of fire or similar emergency. On the contrary, in such an emergency, the handle when opened can be absolutely relied upon to carry with it the main switch arm or cover, thus breaking all the circuits with certainty and despatch.

I claim as my invention:—

1. In a switch box, the combination of an electric conductor, circuit terminals therefor, a cover forming a switch arm, an in-

sulated bar upon which the conductor is removably supported, a seat in the main cover for the insulated bar, and an auxiliary cover forming part of the main cover, and holding the insulated bar in its seat when closed.

2. In a switch box, the combination of a plurality of circuit terminals, a plurality of conductors coöperating with the terminals, a main cover for the box provided with a handle and forming a main switch arm, an inspection aperture in the main cover, and an auxiliary cover for the aperture for exposing the conductors for inspection and individual manipulation while in circuit, and means for detachably connecting the conductors to the main cover, whereby each conductor is detachable, independently of the others, from the switch arm, when the inspection cover is open and while the main cover is closed.

3. In a switch box, the combination of a plurality of conductors, independent circuit terminals therefor, a main cover forming a switch arm, insulated bars upon which the conductors are removably supported, seats in the main cover for the insulated bars, and an inspection cover above the main cover, holding the insulated bars in their seats when closed.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

CAROLINE N. SACHS.

Witnesses:

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