S. A. MEYERS AND C. PARKER.

INCLOSED SWITCH.

APPLICATION FILED NOV. 20, 1917.

1,382,210.

Patented June 21, 1921.

2 SHEETS—SHEET 1.

FIG. 1

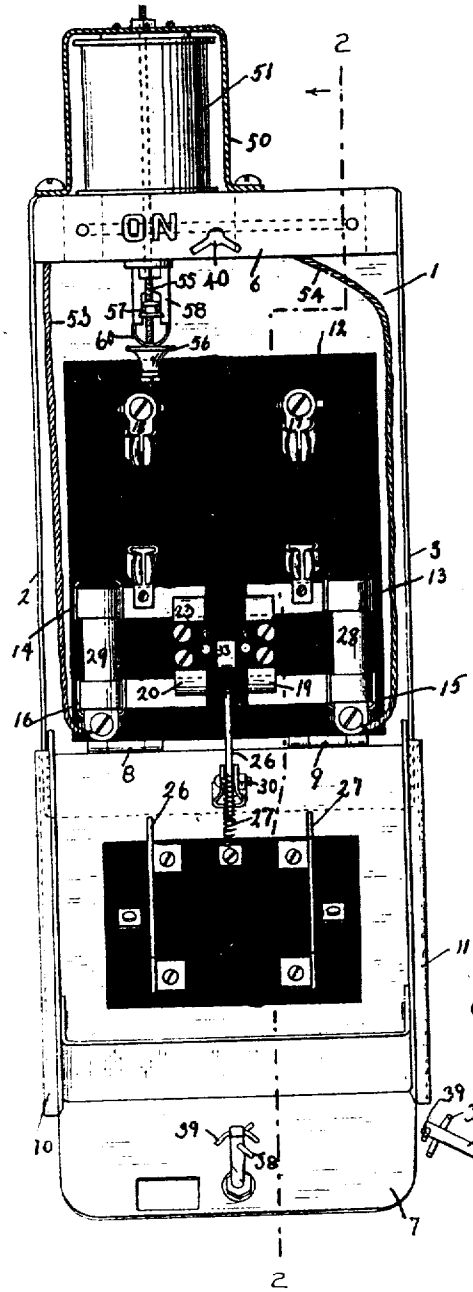
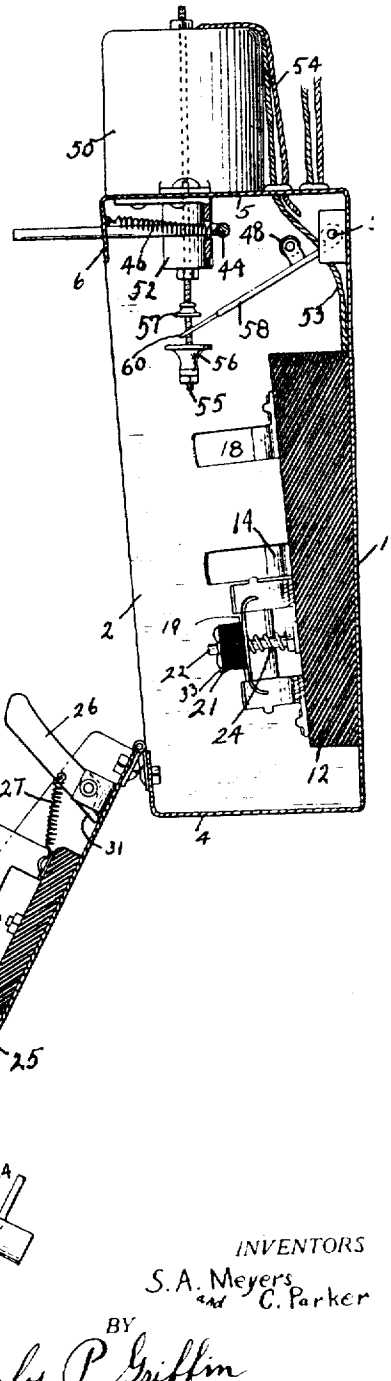


FIG. 2



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2 SHEETS—SHEET 2.

FIG. 3

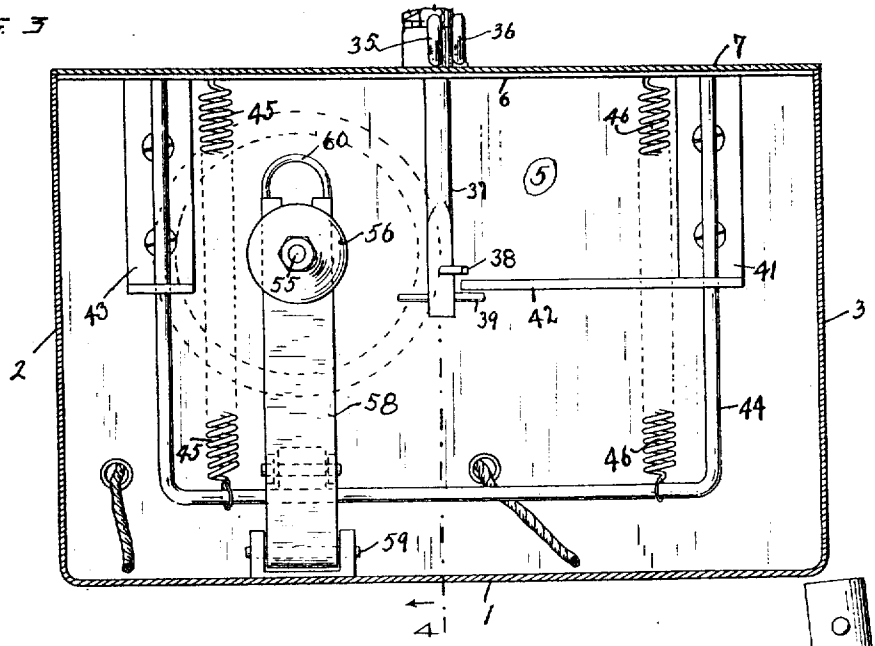
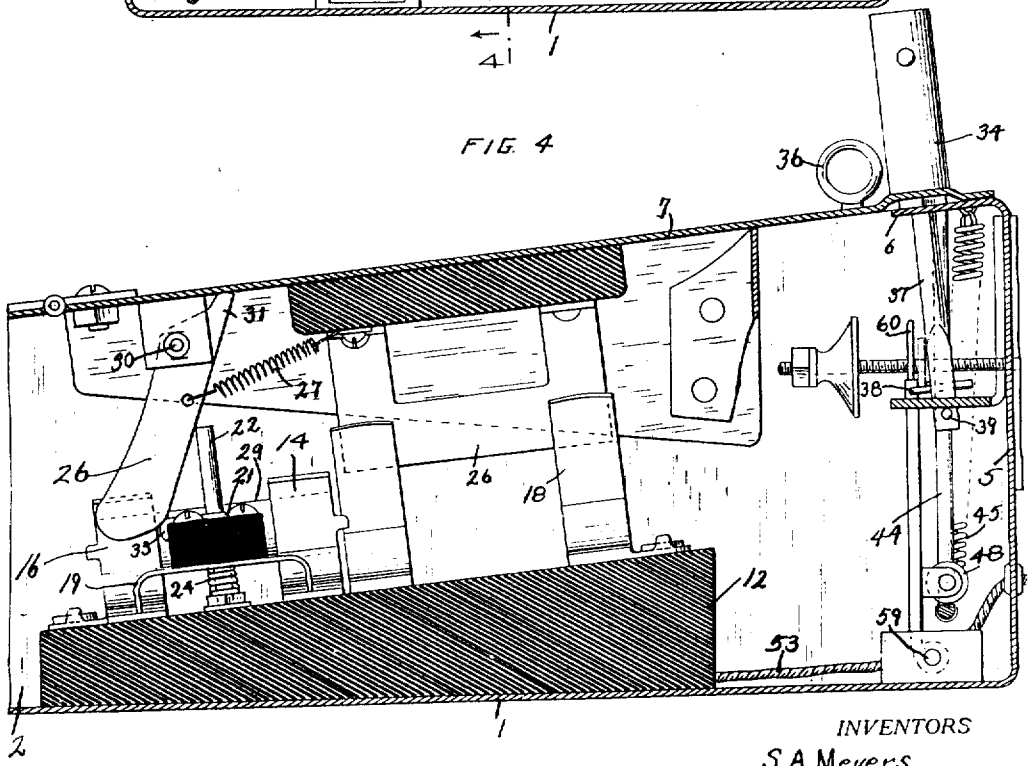


FIG. 4



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SAMUEL A. MEYERS AND CHARLES PARKER, OF SAN FRANCISCO, CALIFORNIA.

INCLOSED SWITCH.

1,382,210. Specification of Letters Patent. Patented June 21, 1921.

Application filed November 20, 1917. Serial No. 202,935.

To all whom it may concern:

Be it known that we, SAMUEL A. MEYERS, a subject of Russia, and CHARLES PARKER, a citizen of the United States, residing at San Francisco, in the county of San Francisco, State of California, have invented a new and useful Inclosed Switch, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a hand operated inclosed switch.

An object of the invention is to provide a no-voltage release mechanism which will release the switch contacts when the voltage on the circuit momentarily drops to zero, while, at the same time, not permitting the switch box cover to open far enough to permit the switch contact points to be interfered with by unauthorized persons.

Another object of the invention is to produce a switch which will have means for momentarily short circuiting the fuses in order that a sufficiently heavy load may be carried momentarily to start the motor without danger of injury to the fuses.

Another object of the invention is to provide a lock which is capable of locking the switch in a closed position if desired, locking it in an intermediate position, and also having means whereby a padlock may be applied to the switch if desired to lock it against access or change in any of the desired positions.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the drawings in which the same reference numeral is applied to the same portion throughout, but we are aware that there may be modifications thereof.

Figure 1 is a front elevation of the switch and its inclosing casing with the front inclosure open,

Fig. 2 is a vertical sectional view on the line 2—2, Fig. 1,

Fig. 3 is a bottom plan view of the upper portion of the switch casing showing the no-voltage release mechanism, and

Fig. 4 is a sectional view of a portion of the switch inclosing casing on the line 4—4, Fig. 3, in which the cover is shown closed but at the moment prior to the expansion of the spring for lifting the short circuiting device.

The numeral 1 indicates the bottom or back of the switch casing, which has sides 2 and 3 connected therewith and ends 4 and 5, which, with the sides, form a rectangular box for the inclosure of the several parts of the switch mechanism. The end 5 has a depending lip 6 which forms the means for locking the front plate 7 in the desired position. The front plate is secured to the lower portion of the box by means of two hinges 8 and 9, and it has outwardly extending flanges 10 and 11 which close the crevice at the side of the hinge front plate 7. Secured to the back 1 is a block of insulating material 12, which block carries the knife switch and fuse fixtures 13 and 14 as well as the fuse connections 15 and 16.

At the upper end, the block also has two knife switch connectors 17 and 18. The combined fuse connectors and knife switch connectors 13 and 14 have an extension to one side to provide for connecting with the fuse bridging plates 19 and 20. The plates 19 and 20 are suitably secured to a block of insulating material 21, which block is slidable on two posts 22 and 23, a spring on each post similar to the spring 24 holding the plates 19 and 20 normally out of contact with the two fuse connectors 15 and 16 and 13 and 14. The front door or plate 7 has a block 25 secured thereto, which block carries two knife blade connectors 26 and 27, said connectors being so positioned as to contact with the combined fuse connectors and knife connectors 13 and 14 and with the two knife connectors 17 and 18 when the door 7 is closed. The door 7 carries a pivoted arm 26′ which is held in the position indicated in Fig. 2, by means of a spiral spring 27. The object of said arm is to press the block 21 and the two connectors 19, 20 into contact with the plates 13 and 14 and 15 and 16, to prevent the blowing out of the fuses 28 and 29 during the momentary period of excess current in starting the motor. The position of the arm 26 is such that at the moment the door 7 is completely closed (note Fig. 4, in which the arm is shown just released but the spring 24 is still compressed) the said arm 26′ will release from the block 21 and permit the fuses 28, 29 to carry all of the load thereafter, the plates 19 and 20 being then disconnected from the terminals with which the fuses are connected. The arm 26 is pivoted on two ears secured to the door 7 as indicated at 30, and it has a heel part 31 which

prevents it from moving in one direction, while it permits a free movement in the opposite direction to allow the door to be opened. In order to prevent the arm 26 from wearing the block 21 unduly, said block is provided with a wear plate 33.

In order to provide for the locking of the door in the several desired positions, it has a handle 34 which handle has a ring 35 secured thereto, which is so positioned as to enable it to register with a ring 36 fixed to the door, thus enabling the switch door to be padlocked in a given position when desired. The handle 34 is provided with a stem 37, which stem has two pins 38, 39 extending therethrough bent to pass through the opening 40 in the depending flange 6. However, the pins 38 and 39 are so bent as to be able to pass through said opening 40 only when the rod 37 is properly turned with respect to said opening. The pins 38 and 39 are both so bent as to be able to pass through the opening 40 but each occupies a different position with respect to the rod 37 so when one has passed in or out the rod 38 must be turned somewhat to allow the other to pass in or out, as may be desired.

Within the top of the box, there is a bracket 41, which has a portion 42 so positioned as to enable the pin 39 to be placed behind the same (see Fig. 3) to lock the switch closed when desired. At the opposite end of the top, there is a depending bracket 43, which, in conjunction with the bracket 41, forms the support for a U-shaped rod 44, the ends of which bear upon the door 7. Springs 45 and 46 are connected with depending flange 6 and with the U-shaped rod 44 to cause it to push the door 7 outwardly unless it is locked in the closed position either by means of the pin 39 or by means of the roller 48, said roller locking the rod 44 to prevent it from pushing the door outwardly.

On the top of the box containing the switch mechanism is a smaller box 50, within which there is a suitable coil 51 capable of lifting the core 52 up when the coil is energized, and said coil receives current through the wires 53 and 54. Connected with the core 52 is a threaded rod 55, which has a nut 56 with a wide flange, and a nut 57 with a slightly smaller flange which is adapted to raise the arm 58 whenever the magnet 51 is energized. The arm 58 is pivoted to the casing back 1 at 59, and when raised causes the roller 48 to hold the rod 44 from moving forward under the influence of the springs 45, 46.

The result of the foregoing construction is that, as soon as the door is raised, the arm 26 contacts with the block 21 which short circuits the fuses. The switch blades 26, 27 are connected with their respective contacts, the operator pushing on the door hard enough to tension the springs 45, 46; and, as this is done, the magnet 51 is energized thereby locking the rod 44 back, and the friction on the knife blades 26, 27 is sufficient to hold them in engagement unless the current should drop to zero, whereupon the core 52 would drop down releasing the bar 44 and permitting it to push the door 7 outwardly until its pin 38 would strike the flange 6.

If it is desired to lock the switch in the closed position, the pin 39 is placed behind the arm 42, as shown in Fig. 3. If it is desired to lock the door with the switch in an open position, the pin 39 is placed within the flange 6, while the pin 38 is placed outside the flange 6, and the ring 35 may then be turned around so that a padlock can be inserted in the two rings 35 and 36.

In order to prevent the rod 55 from becoming dislodged with respect to the position it should occupy with the arm 58, a loop of wire 60 is connected to said arm and surrounds the rod 55.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States, is as follows, express reservation being made of permissible modifications.

1. An inclosed switch comprising an inclosing casing, a front hinged to the casing carrying knife blades for closing the switch contacts, a spring operated member to push the front of the casing open when the current is not on, and means without the casing to lock said front in position when the current is on.

2. An inclosed switch comprising switch contact points, an inclosing casing therefor, fuses in the casing, means to bridge across each of said fuses momentarily during the closing of the switch, a front hinged to said casing carrying knife blades for closing the contacts and means carried by said hinged front for operating the fuse bridging mechanism.

3. An inclosed switch comprising an inclosing casing, switch points therein, fuses in circuit with said switch points, means to bridge across said fuses momentarily during the closing of the switch, a front hinged to the casing, knife blades carried by said front for connecting the switch points and a spring operated arm carried by the front adapted to operate the bridging mechanism momentarily on the closing of the switch.

4. An inclosed switch comprising an inclosing casing, a hinged front therefor, switch connections within the casing, knife blades carried by the hinged front for closing the circuits on said connections, and a revoluble pin carried by the hinged front for locking the hinged front either with the switch closed or the switch opened as desired.

5. An inclosed switch comprising an inclosing casing, switch points therein, a hinged front for the casing, knife blades carried by said hinged front and adapted to close the contacts of the switch points within the casing, a spring operated pusher rod adapted to hold the hinged front normally open, and electro mechanical means for locking the pusher rod in the retracted position so long as the circuit is closed and energized.

In testimony whereof we have hereunto set our hands this 14th day of November A. D. 1917.

SAMUEL A. MEYERS.
CHARLES PARKER.