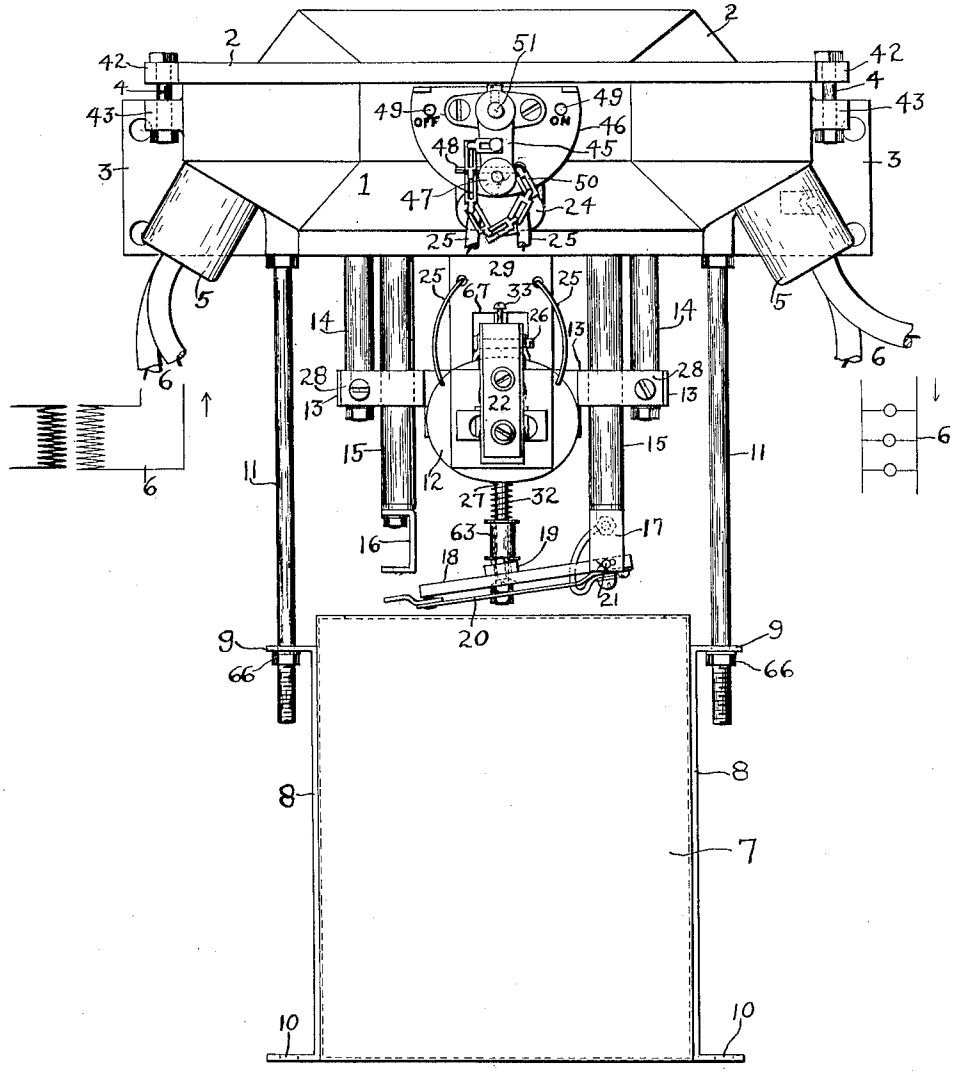
Feb. 6, 1934. L. W. GUIN 1,945,775

REMOTE CONTROL INTERLOCKING OIL SWITCH

Original Filed June 6, 1930 3 Sheets-Sheet 1

Fig. 1.



Lister W. Guin

Inventor

By H. S. Amstutz

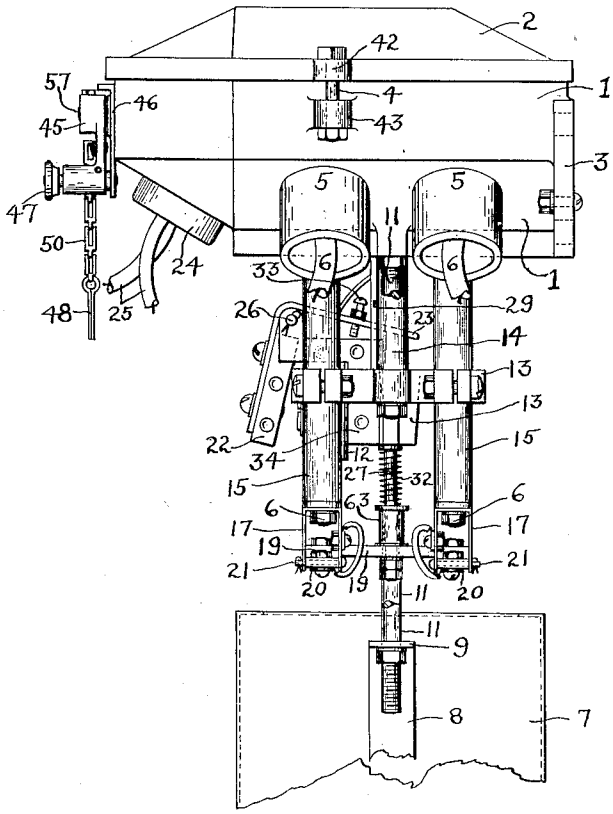
Attorney

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REMOTE CONTROL INTERLOCKING OIL SWITCH

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Fig. 2.



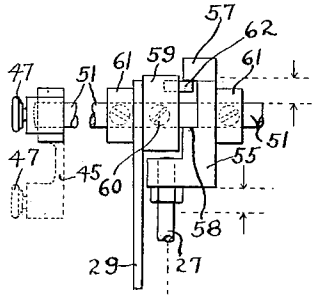


Fig. 5.

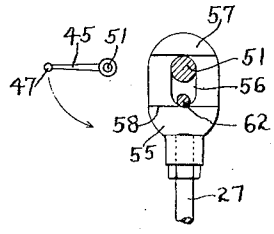


Fig. 6.

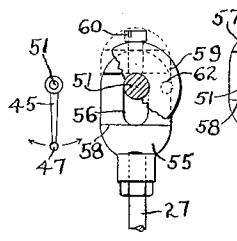


Fig. 7.

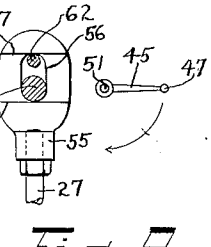


Fig. 8.

Lester W. Guin Inventor

By M. S. Austin

Attorney

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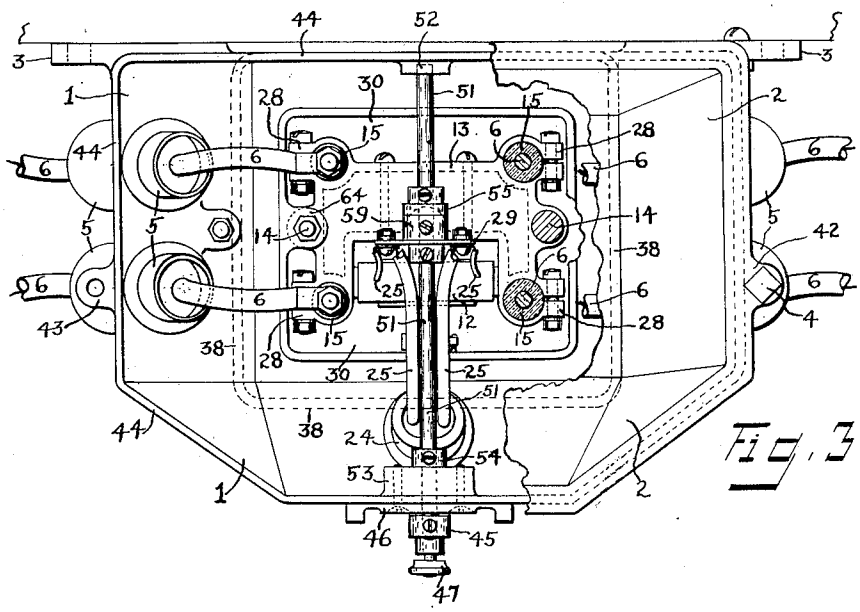


Fig. 3.

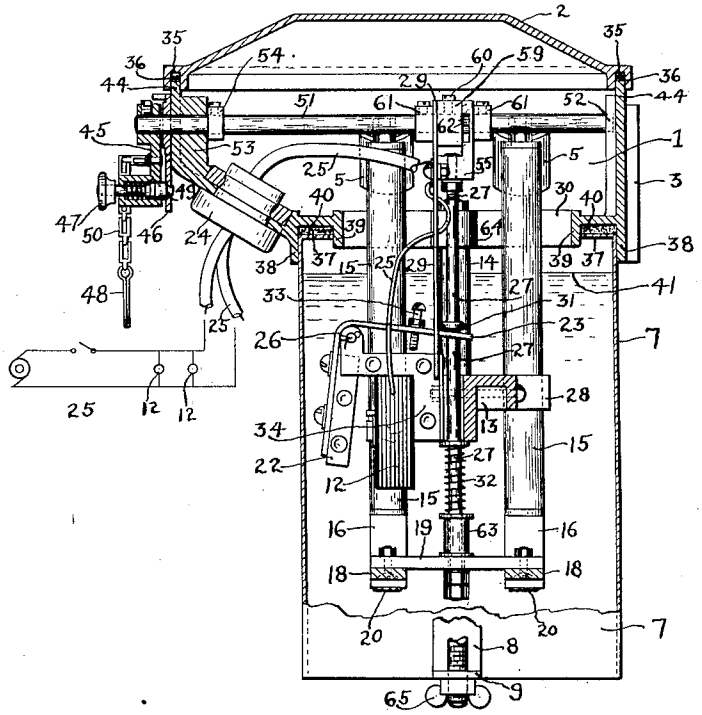


Fig. 4.

Peter W. Guin Inventor

By N. S. Amstutz

Attorney

Patented Feb. 6, 1934 1,945,775

UNITED STATES PATENT OFFICE

1,945,775

REMOTE CONTROL INTERLOCKING OIL SWITCH

Lester W. Guin, Mishawaka, Ind., assignor to South Bend Current Controller Company, South Bend, Ind., a corporation of Indiana

Application June 6, 1930, Serial No. 459,444
Renewed September 8, 1933

7 Claims. (Cl. 200—50)

My invention relates to improvements in remote control interlocking oil switches and it more especially consists of the features pointed out in the claims.

The purpose of the invention is to provide an oil switch subject to remote control; that permits remote control signals to pass through the switch without affecting its own distributing circuit; that provides means for manually locking the switch in an "on" or "off" position so that its own supply circuits may be serviced without inconveniencing the users of current of other groups; that will also permit the switch to respond to remote control signals automatically at will to turn on or off its supply circuit simultaneously with similarly equipped switches serving other groups of circuits; and that encloses the switching members in an oil container, and the entire mechanism in an all-weather casing.

With these and other ends in view, I illustrate on the accompanying drawings such instances of adaptation as will disclose the broad underlying features without limiting myself to the specific details shown thereon and described herein.

Figure 1 is a front elevation showing the oil casing or container lowered.

Fig. 2 is a right-hand side elevation of Fig. 1.

Fig. 3 is a top plan view with a portion of the cover broken away.

Fig. 4 is a right-hand side elevation, in section, showing the oil container raised.

Fig. 5 is an enlarged detached elevation of the manual control mechanism.

Fig. 6 is a detached diagrammatic elevation of the manual control in the "off" position.

Fig. 7 is a detached diagrammatic elevation of the manual control in the "automatic" position.

Fig. 8 is an elevation similar to Figs. 6 and 7 showing the parts in the "on" position.

In utilizing my invention I employ whatever alternatives or equivalents of structure that the exigencies of varying conditions may demand without departing from the broad spirit of the invention.

The switch exemplified in the drawings comprises a main casing 1 on which a cover 2 is placed. It is held by bolts 4 which pass through lugs or ears 42 on the cover and corresponding projections 43 on the casing. The cover has a groove 35 on its under side around its entire outer edge. In this groove a packing 36 is placed and the upstanding side walls 44 abut the packing, thus completely sealing in the switch mechanism against damage by sleet and rain storm.

In the bottom or underside of the casing 1 an opening 30 of rectangular shape (Fig. 3) is formed. This is bounded by a depending flange 39. A second flange 38 is formed parallel to the other and between them any suitable packing 40 is placed. This seals off the oil container or casing 7 when its upper inwardly projecting flange 37 is drawn tightly against the packing 40. The container 7 is held in position against the packing by two rods 11 (Fig. 1). These rods are threaded into the underside of the casing 1 where they are held by a lock nut. At their lower end they are threaded and they may pass successively through upper ears 9 and lower ears 10 of straps 8 which are secured to the sides of the oil container 7.

When the container 7 is to be lowered to fill or replenish the oil, approximately to the level 41, or inspect or adjust the mechanism, the wing nuts 65 are removed. This permits the container to slide downward while its upper ears 9 guide it between the rods 11. At its lowest position the ears 9 rest on the nuts 66. This prevents the accidental dropping of the container when the wing nuts 65 are removed. The completed switch may be secured wherever desired by means of the flanges 3 at the rear edge of the casing which project sidewise as shown on Figs. 1 and 3.

There are four main insulators 5 in the casing walls through which the incoming and outgoing leads 6 pass. In the front wall a single insulator 24 is placed. This accommodates the incoming and outgoing remote control leads 25. On the front of the casing (Figs. 1 and 4) a limit plate 46 is secured. This has three limit stop holes 49. The shaft 51 used for manually setting the internal mechanism projects through the plate 46, and on its front end a crank handle 45 is secured by a set screw or otherwise.

The crank 45 has a spring pressed knob 47. Its inner end passes into any one of the holes 49 thus serving to hold the crank in any one of the three positions. When the arm 45 stands down it is in the automatic position (Figs. 5–8) permitting the interior switching mechanism to respond to all remote control signals. When it is turned to the left the interior switch is locked in the "off" position, and when turned to the right the switch inside of the container 7 is locked in the "on" position. A pin 48 attached by a chain 50 to the plate 46 serves to lock the knob 47 against withdrawal. If desired any kind of a key

lock with a slender hasp may be used instead of the cotter pin 48.

The central opening 30, at its sides has ears 64 formed thereon. Supporting rods 14 are threaded into the ears and lock nuts serve to firmly hold the rods in place. These rods at their lower end are attached to the magnet frame 13. This frame (Figs. 3 and 4) supports the magnet 12 and four insulating tubes 15 by means of clamps 28. Inside of these tubes leads 6 are placed. They terminate (Fig. 1), at the left, onto a pair of contacts 16. At the right-hand side a pair of brackets 17 are attached to the lower end of a pair of leads passing through the interior of the tubes 15. From the brackets 17 a pair of insulating arms project toward the contacts 16. Beneath these arms resilient conducting plates 20 are attached at the right hand end to the arms 18 and they are in electrical connection with the brackets 17. The arms 18 are pivoted at 21 to the brackets 17. A cross bar 19 of insulating material connects the bars 18 at about midway their length. From this bar a rod 27 leads to the manual operating rod 51.

The rod 27 passes through a slot in the magnet frame 13. Below this frame and above a loose thimble 63 a coil spring 32 is placed on the rod so as to exert a rapid releasing movement of the switch plates 20 whenever this is free to move downward. About midway its length a collar 31 (Fig. 4) is formed on the rod 27. This collar is engaged by the arm 23, on its under side. The end of the arm may be slotted to pass over the rod 27 and its other end is attached at about right angles to the armature 22 which is pivoted at 26. A stop screw 33 in the arm 23 may be set to limit the downward movement of the arm 23. For convenience in disposing of the remote control leads 25 an insulated plate 29 is suspended from the shaft 51. This plate has a clearance opening 67 (Fig. 1) through which the arm 23 passes. Its lower end is held adjacent the magnet support 34.

The mechanism for manually controlling the switch parts is associated with the shaft 51 and the rod 27. At the upper end of the rod 27 a head 55 is attached. The shaft 51 passes through a slot 56 (Figs. 6–8) formed in this head. The length of the slot determines the extent of the up and down movement of the head and the rod 27. It has a recess across its front face that is bounded by a top wall 57 and a bottom wall 58. In this recess the pin 62 moves as the ring 59 rotates with the shaft 51 due to its being attached to the shaft by a set screw 60. Limiting collars 61 are placed on the shaft 51, one adjacent the plate 29 which abuts the ring 59 and the other against the head 55.

The manually operated shaft 51 has a rear bearing 52 and a front bearing 53. A limit collar 54 adjacent the bearing 53, in conjunction with the crank arm 45 serves to hold the shaft 51 against endwise movement.

The remote control leads 25 connect a central station to as many oil switches as it is desired to control from one point. When the crank arm 45 is in its lowered or automatic position the pin 62 will stand between the shoulders 57 and 58, in consequence the magnet 12 is free to close the switch 20 as often or as long as the impulse continues. On a stopping of the impulse or a deenergizing of the magnet 12 the switch 20 is opened and the outgoing leads 6 are deprived of current from the supply transformer serving the incoming leads 6. When it is desired to remove the switch from remote control the crank arm 45 is moved either to the right or left, thus holding the switch 20 positively closed or as positively open. The switch may be used on many kinds of circuits to suit varying demands for current as to hours, time on and off, voltage and amperage. In view of the almost endless combinations of circuits that may be employed no specific arrangement of these is shown. The double pole switch 20 may serve groups of lamps, motors, etc., as desired. The oil in the container 7 serves to quench sparks when the switch 20 is opened.

What I claim is:

1. In remote control oil switches of the class described, a casing, an oil container suspended therefrom, a magnetically controlled switch supported by the casing while immersed in the oil, an external manually operated control for placing the switch under remote control for automatic response, and means for locking the switch in an "on" or "off" position independent of remote control impulses in the magnet.

2. In remote control switches of the class described, a suitable casing, switching mechanism supported by the casing, incoming and outgoing leads connected to the switching mechanism, a protective casing enclosing the mechanism, an exterior manual control, an interior remote control, means for setting the exterior control to permit the switch to be operated automatically by remotely produced impulses, and means for setting the same exterior control to lock the switch against remote control impulses.

3. An automatic switch of the class described, comprising switching means, circuit leads to and from said means, means for manually operating the switch, automatic means for recurringly actuating the switch by remote control impulses, independently of the manual control or vice versa, and means for locking the switch against automatic operation as desired.

4. An automatic switch of the class described, comprising a suitable enclosing casing, a switching mechanism supported by the casing, means for separately enclosing the switching mechanism, and submerging it in oil, automatic means also submerged in the oil for electrically controlling the switching mechanism from a distance, and means external of the casing for operating or locking the switching mechanism, independently of the automatic means.

5. A combined automatic and manual controlled switch of the class described, comprising a remote control magnet, a switch operated by the magnet, and manual means for locking the magnet and operating the switch independently of the automatic means.

6. A combined automatic and manual controlled switch of the class described, comprising manual means for locking the switch in an "on" or an "off" position, and automatic means under remote control for operating the switch at will when it is released from manual control.

7. A combined automatic and manual controlled oil switch comprising a remote controlled service switch immersed in oil and held in insulated supports, a container for the oil, a weatherproof casing for supporting the oil container and the insulated supports, manual means for locking the switch in an "on" or "off" position said means being accessible from the outside of the casing.

LESTER W. GUIN.