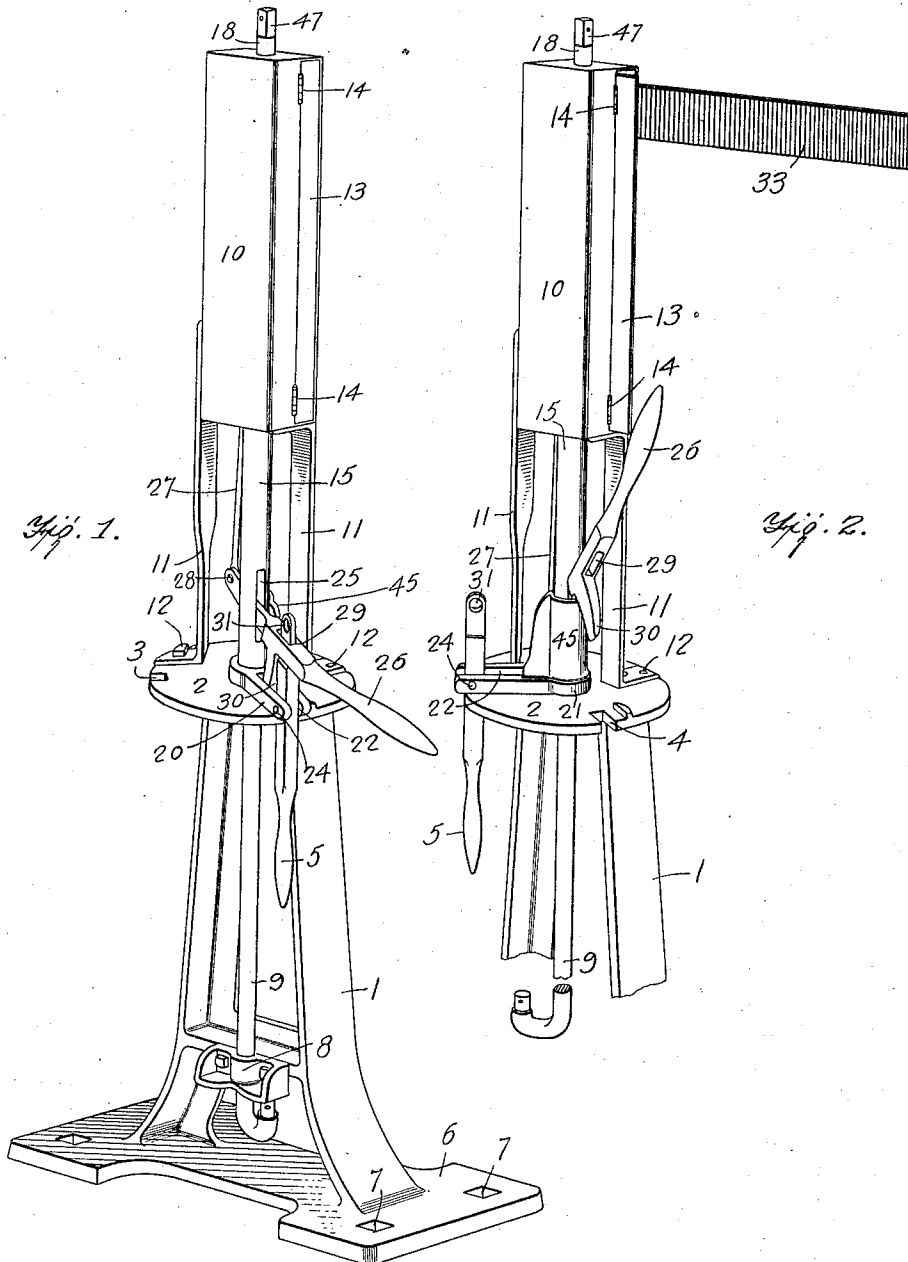


S. F. PHILIPS.
 SWITCH STAND.
 APPLICATION FILED APR. 10, 1912.

1,044,237.

Patented Nov. 12, 1912.
 2 SHEETS—SHEET 1.



WITNESSES

L. H. Schmidt.
C. E. Francis

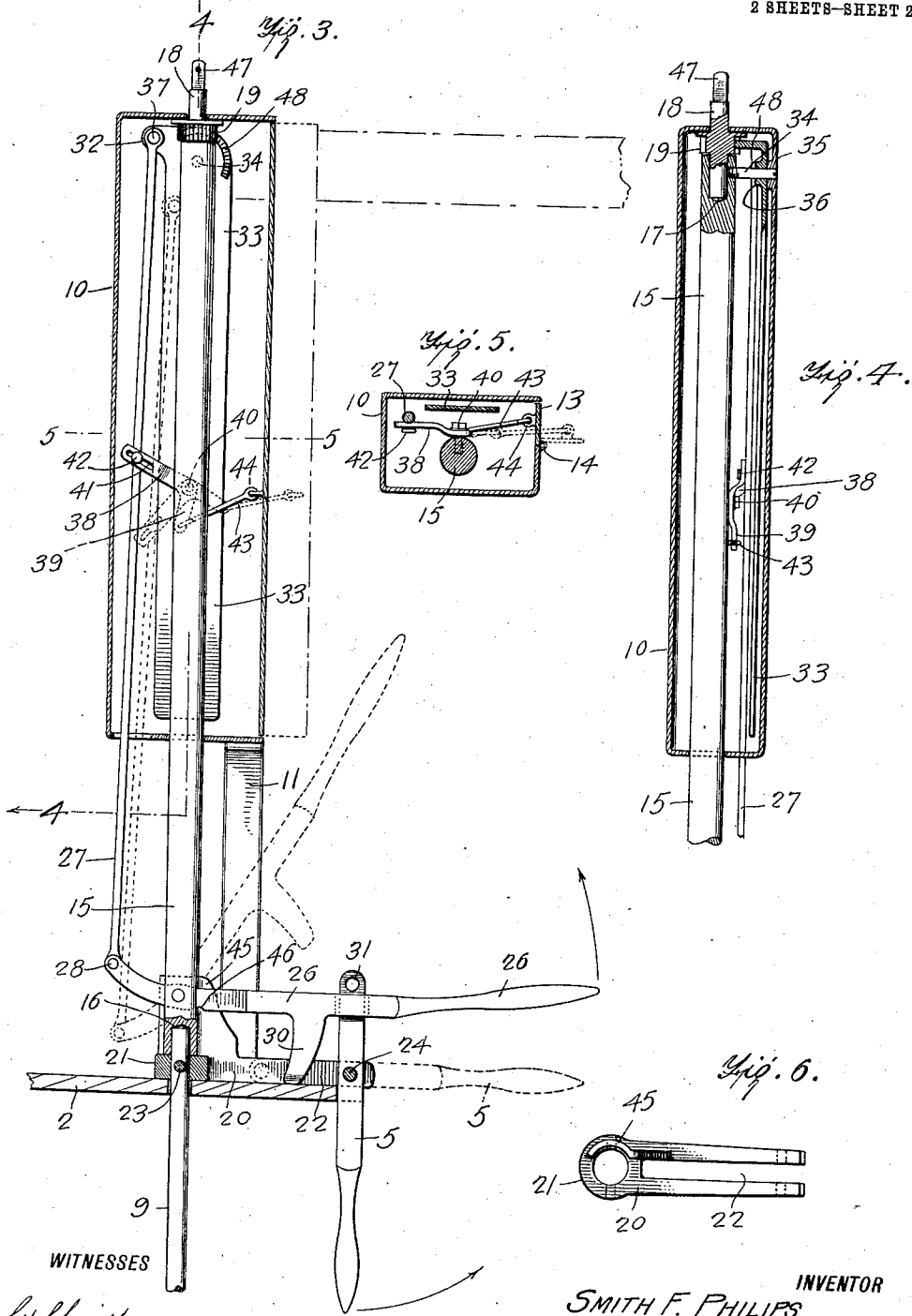
INVENTOR
 SMITH F. PHILIPS,
 BY *Munn & Co.*

ATTORNEYS

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UNITED STATES PATENT OFFICE.

SMITH F. PHILIPS, OF EL PASO, TEXAS.

SWITCH-STAND.

1,044,237.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed April 10, 1912. Serial No. 689,826.

To all whom it may concern:

Be it known that I, SMITH F. PHILIPS, a citizen of the United States, and a resident of El Paso, in the county of El Paso and State of Texas, have invented a new and useful Improvement in Switch-Stands, of which the following is a specification.

My invention is an improvement in switch stands, and has for its object the provision of a signal device for use in connection with the operating mechanism of a switch, for indicating, by a visible signal, the position of the switch, and means for operating the signal so arranged that the switch operating mechanism cannot be operated until the signal is set at danger.

A further object is to provide means in connection with the switch operating mechanism for positively preventing the return of the signal to "safety" position until the switch has been returned to its original position.

A further object is to provide a housing for the signal, in which the signal is held when the switch is in normal position, the casing having an opening for permitting the signal to be moved out of the casing, and a door normally closing the opening, and means operated by the signal moving means for opening and closing the door.

A further object is to provide a signal mechanism capable of use by day or night.

In the drawings:—Figure 1 is a perspective view of the improvement, with the parts in one position; Fig. 2 is a similar view, with the parts in another position; Fig. 3 is a longitudinal section of the upper portion of the stand; Figs. 4 and 5 are sections on the lines 4—4 and 5—5 respectively of Fig. 3; and Fig. 6 is a bottom plan view of the operating arm.

In the present embodiment of the invention, the stand 1 is provided with the usual table 2 at its upper end, the table having a series of notches 3 and 4 in its periphery, for receiving the switch lever 5 when the switch is locked. The base 6 of the stand has openings 7 for receiving spikes or the like to hold the stand in place, and the standard or body of the stand is provided with a bearing 8 for the shaft or rod 9. The rod 9 extends above the table and a casing 10 is supported above the table, by means of metallic straps or bars 11, each of which is secured at one end to the table, as shown at 12, and

at the other end to the casing. The casing is provided with a door opening in one face, normally closed by a door 13 hinged to the casing at 14.

A signal post 15 is connected with the upper end of rod 9, the said post having a socket or recess 16 in its lower end, into which the rod extends. The post 15 extends longitudinally into the casing 10 to near the upper end thereof, and the upper end of the post is provided with a recess or socket 17, for receiving one end of a stub shaft 18, and a pinion or gear wheel 19 is integral with said shaft at the center thereof. The upper end of the stub shaft is square in cross section for receiving a switch light, and the operating arm 20 for the switch is provided with a bearing ring 21, which encircles shaft 9, between the table and the lower end of shaft 15. The said arm is recessed or slotted from its outer end, as indicated at 22 (Fig. 6) to form a pair of spaced lugs, and the lever 5 is pivoted between the said lugs. A pin 23 is passed through the ring 21 and shaft 9, to hold the arm rigid with respect to the shaft, and a pin 24 is passed through the lugs of the arm and through the lever 5 to pivotally connect the arm and lever. The said pin passes through the lever near one end, as shown in Fig. 3, so that when the lever is swung upwardly into alinement with the arm, the upper end of the lever fits in the slot or recess 22.

The post 15 is provided with a transverse slot 25, just above the arm, and a second lever 26 has one of its ends extending through the slot. The said end of the lever is curved upwardly as shown in Fig. 3, and a link 27 has its lower end pivoted to the said end by a bolt or pin 28. The lever 26 is provided with a laterally enlarged portion on the opposite side of the post from the link, and with a vertical opening 29 in the said enlarged portion. The lever is also provided with a downwardly and inwardly extending arm or lug 30 between the opening and the post 15, for engaging the slot 22, when the upper end of lever 5 is in the opening 29. The said upper end of the lever 5 has an opening 31 for receiving the shackle of a padlock to lock the switch from movement. The link 27, before mentioned has its upper end pivoted at 37 to an ear 32 on a semaphore 33, which is

pivoted to the post 15 by means of a screw 34. The said screw 34 (Fig. 4) is passed from the outside of casing 10 through a boss 35, through a bearing 36 on the arm and is threaded into post 15. The semaphore is in the casing and means is provided for opening the door 13, in order to permit the semaphore to swing into danger position. The said means comprises an elbow lever 38—39, pivoted at 40 at the junction of the arms to the post 15. The arm 38 is longitudinally slotted at 41 and a pin 42 is passed through the slot and into engagement with link 27. A link 43 is pivoted at one end to the outer end of arm 39, and at the other end to an eye 44 on the inner face of the door 13. When the link 27 is pulled downwardly by lever 26, the elbow lever is rocked, the arm 38 swinging downwardly, and the arm 39 outwardly, and the link 43 swings the door open on its hinges 14 to permit the semaphore to swing out of the casing.

In operation, when the switch is in inoperative position, the lever 5 stands approximately vertical, the upper end thereof extending through the opening 29 of lever 26 and a padlock may be engaged with the opening 31. The lug or arm 30 of lever 26 is engaged with the slot 22 of arm 20, the semaphore is in the casing, and the door 13 is closed. To operate the switch, the padlock is unlocked, lever 26 is lifted to the dotted line position of Fig. 3, and the semaphore is swung outwardly, the door 13 opening before the same, by means of the elbow lever 38—39. The arm 20 is provided with an integral upwardly extending wing or vane 45 at one side of the slot 22, the highest portion of the wing or vane being arc shaped, and concentric with post 15, while the portion adjacent to lever 5 is inclined, the upper edge inclining downwardly toward the lever. The lever 26 is notched on its lower edge adjacent to post 15, as shown at 46, and the wing or vane will prevent the swinging of lever 5 angularly when lever 26 is lifted into the dotted line position of Fig. 3 that is into position to move the semaphore into horizontal position. With lever 26 in this position, as soon as lever 5 is swung angularly, the wing or vane 45 holds the lever 26 elevated, and positively prevents the lowering of the semaphore until lever 5 has been returned to its original position, and the switch has been closed. After dark, a lamp or other illuminating means will be placed in the square piston 47 at the upper end of stub shaft 18. Such lamps, as is known, are provided with a pair of oppositely arranged white panes or windows and with a pair of oppositely arranged red panes or windows, the red indicating that the switch is out of main line position. The semaphore 33 is provided with a lat-

erally extending arc-shaped flange 48 provided at its free edge with teeth for engaging and rotating the pinion 19 and the stub shaft 18. When the semaphore is swung into the danger or horizontal position, the shaft 18 is partially rotated, far enough to bring the red panes or windows into position to be seen in either direction on the track. The switch can not be thrown from main line position until the semaphore is set for danger, nor can the semaphore be returned to "safety" until the switch is set for main line.

The device provides thus a positive check or preventative against human error, not by reminding the person operating the switch, but by positively preventing movement of the switch until the danger signal is displayed. The device also prevents the malicious displacement of the switch with the safety signal displayed since the switch cannot be set for the siding and the signal at safety.

I claim:—

1. In combination with a switch stand and the operating shaft for the switch journaled in the stand, of an arm secured to the shaft and extending radially therefrom, said arm having a longitudinal recess at its outer end, an operating lever pivoted in the recess, the upper end of the lever extending above the arm when the lever is in inoperative position, said upper end having an opening for a padlock, a signal post having a socket at each end, the socket at the lower end receiving the upper end of the operating shaft, said signal post having a transverse slot near its lower end, a lever pivoted in the slot and provided on one side of the post with an opening for the upper end of the operating lever, and with a depending lug for engaging the recess of the arm, a casing supported above the stand into which the signal post extends, a stub shaft provided intermediate its ends with a pinion engaging the socket at the upper end of the signal post, said stub shaft extending above the casing and having a polygonal portion for engagement by a switch light, a semaphore pivoted to the casing near one end of the semaphore and at the upper end of the casing, said semaphore having an arc-shaped series of teeth engaging the pinion for rotating the stub shaft when the semaphore is moved to danger, said casing having an opening to permit the passage of the semaphore and a door for closing said opening, a link connecting the semaphore to the end of the signal lever, a connection between the link and the door for opening the door when the semaphore is swung outwardly and for closing the door when the semaphore is swung inwardly, and means on the arm for holding the signal lever in position to maintain the signal device with the sema-

phore horizontal when the operating lever is swung angularly to operate the switch.

2. In combination with a switch stand, the operating shaft, the operating lever and the operating arm secured to the shaft and to which the lever is pivoted, of a casing supported above the stand and having a door opening, a door hinged to the casing for closing the opening, a semaphore pivoted at one end in the casing and adapted to swing through the opening out of the casing into horizontal position, a signal post extending into the casing and in alinement with the operating shaft, said post having a transverse slot near its lower end, a signal lever pivoted intermediate its ends in the slot, said lever having an opening near one end for receiving the upper end of the switch lever when said lever is in inoperative position, and having a depending lug engaging the operating arm to prevent angular movement of the arm, a link connecting the other end of the signal lever to the semaphore for swinging the same when the first-named end of the lever is lifted to disengage said lever from the operating lever and arm, a connection between the link and the door for opening and closing the door when the link is reciprocated by the lever, a switch lamp support at the upper end of the casing, said support comprising a vertical stub shaft, having a polygonal upper end for receiving the lamp, a pinion on the shaft, and an arc-shaped rack bar on the semaphore engaging the pinion for rotating the shaft when the semaphore is moved.

3. In combination with a switch stand, the operating shaft, the operating lever and the operating arm secured to the shaft and to which the lever is pivoted, of a casing supported above the stand and having a door opening, a door hinged to the casing for closing the opening, a semaphore pivoted at one end in the casing and adapted to swing through the opening out of the casing into horizontal position, a signal post extending into the casing and in alinement with the operating shaft, said post having a transverse slot near its lower end, a signal lever pivoted intermediate its ends in the slot, said lever having an opening near one end for receiving the upper end of the switch lever when said lever is in inoperative position, and having a depending lug engaging the operating arm to prevent angular movement of the arm, a link connecting the other end of the signal lever to the semaphore for swinging the same when the other end of the lever is lifted to disengage said lever from the operating lever and arm, a connection between the link and the door for opening and closing the door when the link is reciprocated by the lever, a switch lamp support at the upper end of the casing,

and a rotatable connection between the support and the semaphore for rotating the support when the semaphore is moved.

4. In combination with a switch stand, the operating shaft, the operating lever and the operating arm secured to the shaft and to which the lever is pivoted, of a casing supported above the stand and having a door opening, a door hinged to the casing for closing the opening, a semaphore pivoted at one end in the casing and adapted to swing through the opening out of the casing into horizontal position, a signal post extending into the casing and in alinement with the operating shaft, said post having a transverse slot near its lower end, a lever pivoted intermediate its ends in the slot, means in connection with the last-named lever for holding the operating lever and arm in normal position, when the said lever is in normal position and for releasing the said operating lever and arm when the lever is swung, a connection between the last named lever and the semaphore for operating said semaphore when the lever is operated to release the operating lever and arm, a connection between the lever and the door for opening and closing the door, a lamp support at the upper end of the casing, a connection between the support and the semaphore for rotating the support when the semaphore is moved, and means on the operating arm for preventing movement of the signal lever when the switch lever is out of normal position.

5. In combination with the switch stand and the operating lever, of a signal post journaled above the stand, said post having a transverse opening, a signal lever pivoted intermediate its ends in the opening, said lever having means at one end for engaging the operating lever of the switch to prevent movement of said operating lever when the signal lever is in normal position, a casing above the stand in which the signal post is journaled, said casing having a door opening, a door hinged to the casing for closing the opening, a semaphore pivoted in the casing and mounted for swinging movement into and out of the casing through the door opening, a connection between the other end of the signal lever and the semaphore for swinging the semaphore out of the casing when the signal lever is operated, a switch lamp support mounted to rotate in the upper end of the casing, and a connection between the support and the semaphore for rotating the support when the semaphore is swung.

6. In combination with the switch stand and the operating lever, of a signal post journaled above the stand, said post having a transverse opening, a signal lever pivoted intermediate its ends in the opening, said lever having means at one end for engaging

the operating lever of the switch to prevent movement of said operating lever when the signal lever is in normal position, a casing above the stand in which the signal post is journaled, said casing having a door opening, a door hinged to the casing for closing the opening, a semaphore pivoted in the casing and mounted for swinging movement into and out of the casing through the door opening, and a connection between the other end of the signal lever and the semaphore for swinging the semaphore out of the casing when the signal lever is operated.

7. In combination with the switch stand and the operating lever, of a signal post journaled above the stand, said post having a transverse opening, a signal lever pivoted intermediate its ends in the opening, said lever having means at one end for engaging the operating lever of the switch to prevent movement of said operating lever when the signal lever is in normal position, a casing above the stand in which the signal post is journaled, a signal in the casing, a connection between the signal lever and the signal for moving the signal out of the casing when the signal lever is moved to release the operating lever of the switch, said casing having a hinged door, a connection between the door and the lever for opening and closing the door to permit the passage of the signal, a rotatable switch lamp support at the upper end of the casing, and means operated by the movement of the signal for rotating the support.

8. In combination with the switch stand and the operating lever, of a signal post

journaled above the stand, said post having a transverse opening, a signal lever pivoted intermediate its ends in the opening, said lever having means at one end for engaging the operating lever of the switch to prevent movement of said operating lever when the signal lever is in normal position, a casing above the stand in which the signal post is journaled, a signal in the casing, a connection between the signal lever and the signal for moving the signal out of the casing when the signal lever is moved to release the operating lever of the switch, said casing having a hinged door, and a connection between the door and the lever for opening and closing the door to permit the passage of the signal.

9. In combination with the switch stand and the operating lever, of a signal post journaled above the stand, said post having a transverse opening, a signal lever pivoted intermediate its ends in the opening, said lever having means at one end for engaging the operating lever of the switch to prevent movement of said operating lever when the signal lever is in normal position, a casing above the stand in which the signal shaft is journaled, a signal in the casing, and a connection between the signal lever and the signal for moving the signal out of the casing when the signal lever is moved to release the operating lever of the switch.

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Witnesses:

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A. H. GOLDSTEIN.