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SAFETY SWITCH DEVICE

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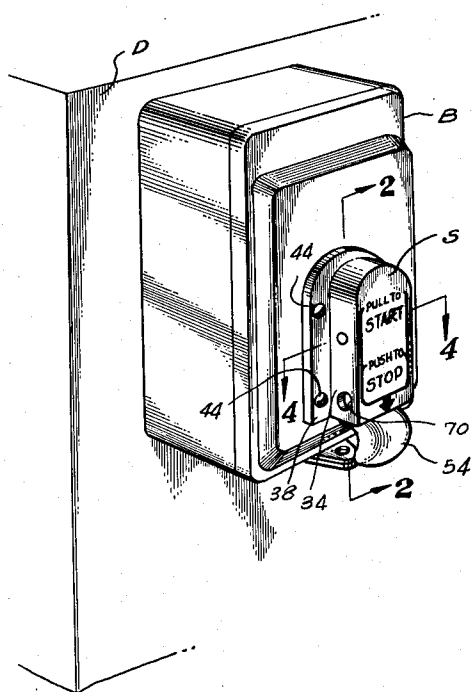


Fig. 1

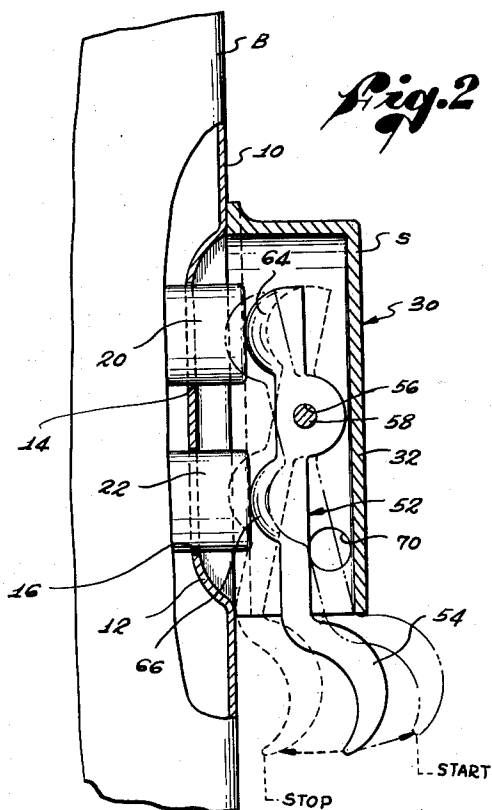


Fig. 2

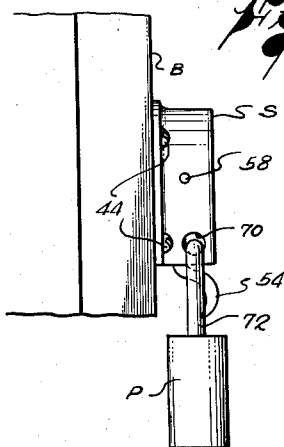


Fig. 3

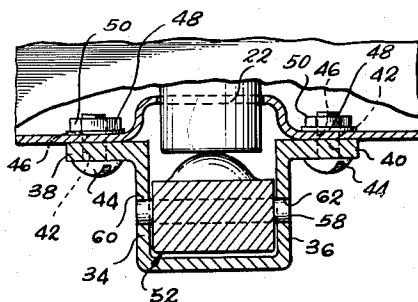


Fig. 4

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SAFETY SWITCH DEVICE

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2 Claims. (Cl. 200—172)

The present invention relates generally to electric switch boxes and more particularly to a new and novel safety switch device for use with an electric switch box.

There are presently marketed several forms of electric switch boxes utilizing a pair of proximately spaced actuating "start" and "stop" plungers. The plungers are so arranged that when the "start" plunger is depressed the "stop" plunger is extended. Similarly, when the "stop" button is depressed the "start" button is automatically extended. These electric switch boxes find wide use with various electrical appliances and particularly electric motor-driven devices. Where such plunger type switch boxes are utilized to control the operation of electric motor-driven devices, such as saws, drill presses, lathes or the like, it sometimes occurs that the electric motor must be suddenly shut off in order to prevent injury or perhaps further injury to an operator or bystander. Upon such an occurrence the operator may find it difficult to reach the "stop" button of the electric switch with his finger and thereby shut off the flow of electric current to the electric motor. This is particularly true where the operator himself is in a position of danger, as for example when his clothing or a part of his body becomes entangled in a moving part of the electric motor-driven machine.

It is a major object of the present invention to provide a safety switch device useable with a conventional plunger type electric switch box which may be readily employed to shut off the flow of electric current to an electric motor-driven machine under emergency conditions.

A further object is to provide a safety switch device of the aforescribed nature which may be actuated by an operator's knee or a part of his body other than his finger for shutting off the flow of electric current to an electric motor-driven machine.

It is a further object of the present invention to provide a safety switch device of the aforescribed nature which permits the electric switch box to be locked in an inactive position by means of an ordinary padlock. This serves to prevent unauthorized use of the electric motor-driven machine controlled by the switch box.

A further object is to provide a safety switch device of the aforescribed nature which is simple in design and rugged of construction whereby it will afford foolproof operation over an extended service life.

An additional object of the present invention is to provide a safety switch device of the aforescribed nature which is economical of construction.

A further object is to provide a safety switch device of the aforescribed nature which is adapted to be utilized with conventional electric switch boxes of the depressible plunger type, and which may be attached to such switch boxes in a minimum amount of time by even an unskilled workman utilizing ordinary hand tools.

Yet a further object of the invention is to provide a safety switch device of the aforescribed nature which is extremely compact and does not in any way interfere with the operation of the electric switch box or the machine which it controls.

These and other objects and advantages of the present invention will become apparent from the following detailed description, when taken in conjunction with the appended drawings wherein:

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FIGURE 1 is a perspective view of a conventional electric switch box upon which is mounted a preferred form of safety switch device embodying the present invention;

FIGURE 2 is a vertical sectional view taken in enlarged scale along line 2—2 of FIGURE 1;

FIGURE 3 is a side elevational view showing the manner in which said safety switch device may be utilized to lock the switch box in an inactive condition; and

FIGURE 4 is a horizontal sectional view in enlarged scale taken along line 4—4 of FIGURE 1.

Referring to the drawings and particularly FIGURE 1 thereof, there is shown a conventional electric switch box B of the depressible plunger type which is adapted to control an electric motor-driven device D, such as a band saw, drill press, lathe or the like. Mounted upon the front of the electric switch box B is a preferred form of safety switch device S embodying the present invention.

As indicated in FIGURE 2, the electric switch box B includes a vertically extending front wall 10 formed with a pocket 12. A pair of vertically aligned bores 14 and 16 are formed in the portion of the front wall 10 defining the pocket 12. An upper plunger 20 extends through the upper bore 14, while a lower plunger 22 extends through the lower bore 16. For the purpose of the following description it will be assumed that the upper plunger 20 is a "start" plunger and the lower plunger 22 is a "stop" plunger. Thus, when the upper plunger 20 is depressed to its phantom outline position of FIGURE 2, the parts of the switch box B will act in a conventional manner to connect the electric motor of the device D with a source of electric current. At this time the "stop" plunger 22 will be disposed in its extended position shown in solid outline in FIGURE 2. When, however, the "stop" plunger 22 is depressed to its dotted outline position indicated in FIGURE 2, the "start" plunger 20 will automatically be extended to its solid outline position of FIGURE 2 and the flow of electric current to the electric motor of the device D will be shut off.

The safety switch device S includes a box-like housing generally designated 30 having a vertically extending front wall 32 and a pair of side walls 34 and 36. Preferably, the housing 30 is of integral metallic construction. The side walls 34 and 36 straddle the plungers 20 and 22 as indicated in FIGURE 4. The rear end of the side walls 34 and 36 merge into a pair of vertically extending mounting flanges 38 and 40. The upper portion of the housing 30 is of generally semicircular configuration, as indicated in FIGURE 1. The mounting flanges 38 and 40 are provided with a plurality of bores 42 which receive mounting bolts 44. These mounting bolts 44 extend rearwardly through complementary bores 46 formed in the front wall 10 of the switch box B. A washer 48 and nut 50 are received by the shank of the mounting bolts 44 within the switch box B so as to secure the housing 30 to the front wall 10 thereof. With the housing 30 so affixed to the front of the switch box B, the plungers 20 and 22 are completely covered.

With reference again to FIGURE 2, the underside of the housing 30 is open. A vertically extending rocker member generally designated 52, is supported within the housing 30 between the side walls 34 and 36. The lower portion of the rocker 52 extends through the open lower end of the housing and defines a manipulating handle 54 which may be engaged by the operator of the device D so as to control the position of the plungers 20 and 22. Preferably, the manipulating handle 54 takes the form of a hook 54 that may be engaged by the finger of the operator. The intermediate portion of the rocker 52 is formed with a horizontally extending bore 56. A

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horizontal pivot pin 58 extends sidewardly through this bore and is received by horizontally aligned bores 60 and 62 formed in the side walls 34 and 36, respectively. The upper portion of the rocker 52 is formed with a rearwardly extending protrusion or knob 64 that en- 5 engages the "start" plunger 20. A similar knob or protrusion 66 is formed on the rocker 52 below the pivot pin 58 to engage the "stop" plunger 22.

In the operation of the aforescribed safety switch device S, the operator of the machine D may start the electric motor of such machine by grasping the hook 54 10 of the rocker 52 with his index finger and pulling such hook rearwardly. This will effect counterclockwise rotation of the rocker 52 whereby the upper knob 64 will depress the "start" button 20. At such time as the operator wishes to shut off the flow of electric current to the electric motor of the machine D, he need only exert forward pressure on the hook 54 so as to move it to its dotted position of FIGURE 2. It will be readily appreciated 15 that in case of an emergency such forward pivotal movement of the rocker 52 may be provided by the operator's knee or some other part of his body. Thus, it is much easier to depress the "stop" button 22 in this manner than would be the case where such button must be engaged by the finger of the operator.

Referring again to FIGURE 2, it will be observed that a pair of horizontally aligned bores 70 are formed in the lower front portion of the housing side walls 34 and 36. These bores 70 are adapted to receive the hasp 72 of a conventional padlock P in the manner indicated in FIGURE 3. With the padlock P so positioned, the hasp 72 thereof will abut the front portion of the rocker 52 20 below the lower knob 66. Accordingly, it will not be possible for the rocker 52 to be pivoted in a counterclockwise direction so as to depress the "start" plunger 20. In this manner unauthorized use of the device D is positively prevented.

Although there has been shown and described hereinabove what is presently considered to be the preferred embodiment of the present invention, it will be apparent that various modifications and changes may be made thereto without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. A safety switch device for use with an electric switch box having a pair of vertically spaced actuating "start" and "stop" plungers that are alternately depressed to control the flow of electric current through an electric circuit associated with said switch box, comprising: a cup-shaped housing securable to said switch box having a front wall carried by a plurality of side walls formed with an opening, an elongated rocker within said housing 40

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having a concavo-convex end portion extending through said opening and disposed to be manually depressed on the convex surface and to be manually pulled on the concave surface thereof, said rocker being formed with a pair of spaced spherically-shaped knobs for individual single point contact with said plungers respectively, a pivot pin connected to the side wall of said housing and to said rocker to permit the latter to pivot within said housing for alternate operation of said actuating "start" and "stop" plungers, and padlock hasp receiving means formed in one of the side walls of said housing to receive a padlock hasp only when said rocker is depressed to actuate said "stop" plunger and thereby prevent said rocker from being pulled to operate said "start" plunger.

2. A safety switch device for use with an electric switch box having a pair of vertically spaced actuating "start" and "stop" plungers that are alternately depressed to control the flow of electric current through an electric circuit associated with said switch box, comprising: a cup-shaped housing securable to said switch box having a front wall carried by a plurality of side walls formed with an opening, an elongated rocker within said housing having a concavo-convex end portion extending through said opening and disposed to be manually depressed on the convex surface and to be manually pulled on the concave surface thereof, said rocker being formed with a pair of spaced spherically-shaped knobs for individual single point contact with said plungers respectively, a pivot pin connected to the side wall of said housing and to said rocker to permit the latter to pivot within said housing for alternate operation of said actuating "start" and "stop" plungers, and a padlock hasp receiving opening formed in one of the side walls of said housing adjacent the spherical knob for said "stop" plunger of said switch box to receive a padlock hasp only when said rocker is depressed to actuate said "stop" plunger and thereby prevent said rocker from being pulled to operate said "start" plunger.

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