May 7, 1957 E. A. BAUMBACH 2,791,665

SWITCH WITH CUSHIONING PROTECTIVE HOUSING

Filed April 15, 1954

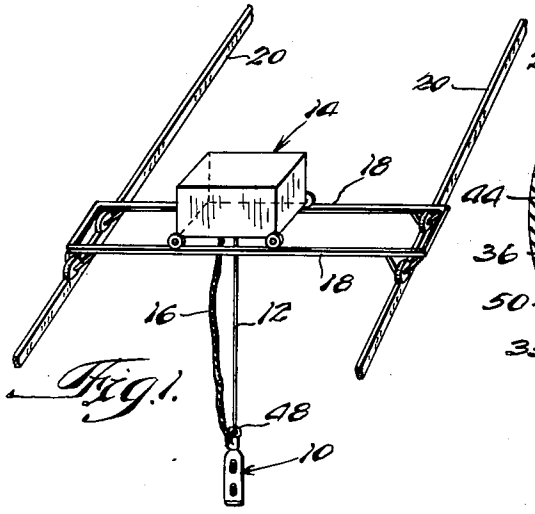


Fig. 1.

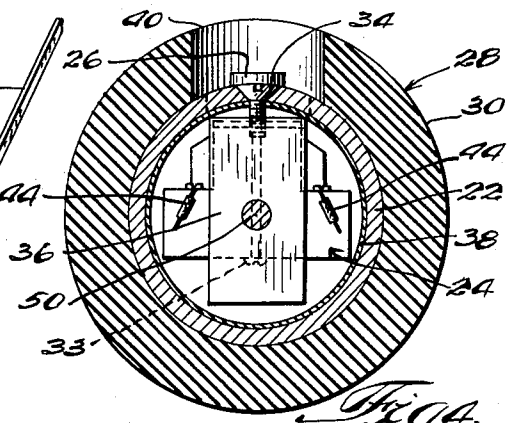


Fig. 4.

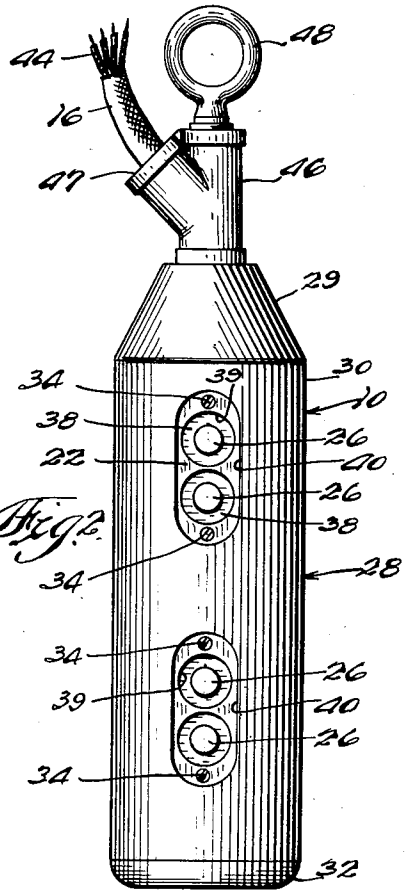


Fig. 2.

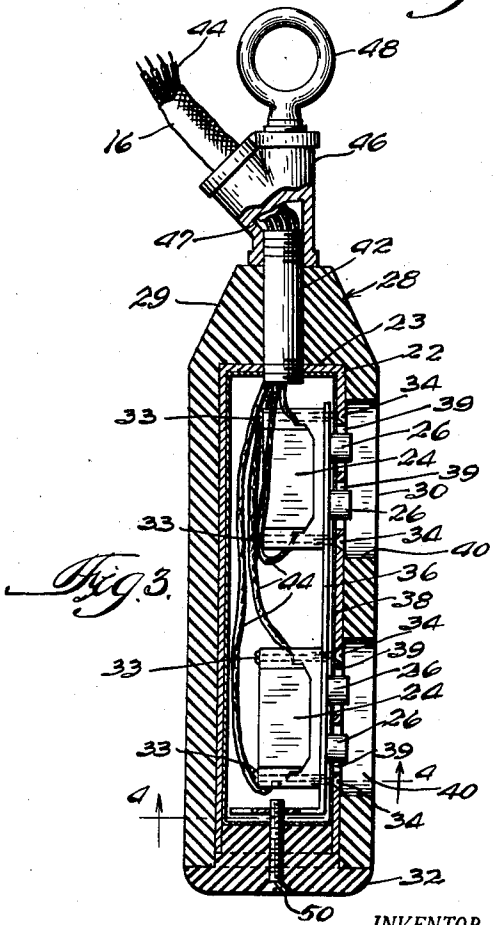


Fig. 3.

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United States Patent Office 2,791,665 Patented May 7, 1957

2,791,665

SWITCH WITH CUSHIONING PROTECTIVE HOUSING

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Application April 15, 1954, Serial No. 423,274

8 Claims. (Cl. 200—168)

This invention relates to switches having cushioning protective housings and more particularly to pendant switches of this type for use in operating overhead traveling cranes.

It is an object of this invention to provide a pendant switch housing which will protect the switch mechanism, the operator, and other nearby persons from injury during operation.

It is a further object of this invention to provide a pendant switch housing which will prevent accidental operation of the switch mechanism.

It is a further object of this invention to provide a pendant switch constructed so as to minimize the possibility of the switch becoming entangled with some object during movement of the switch.

It is a still further object of this invention to provide a durable pendant switch constructed so as to provide for readily removing the switch mechanism from the protective housing.

Accordingly, in carrying out this invention, there is provided a housing for pendant push button switches comprising a rigid tube for receiving and holding therein at least one push button switch, a sheath of soft yieldable material of substantial thickness surrounding said tube, a conduit attached to said tube at one end and extending through said sheath, said conduit providing means for suspending said housing and passage means for conductors, said sheath including opening means to provide access to the switch push buttons, and the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of such push buttons.

This invention together with further objects and advantages thereof will be best understood by reference to the following description taken in connection with the accompanying drawings, and the scope thereof will be pointed out in the appended claims.

In the drawings in which like parts are designated by like reference numerals:

Figure 1 is a perspective view of the pendant switch operatively secured to an overhead traveling crane;

Fig. 2 is a front elevational view of the pendant switch constituting the invention;

Fig. 3 is substantially a side sectional view showing the interior of the switch; and

Fig. 4 is an enlarged sectional view taken along line 4—4 of Fig. 3.

With particular reference to Fig. 1, applicant's invention comprises a pendant switch 10 suspended by means of a cable 12 from an overhead traveling crane 14, the switch including a cable 16 containing electrical leads 44 for controlling the motors (not shown) for moving the crane 14 along the tracks 18 and 20.

Referring to Figs. 2 and 3, the pendant switch 10 comprises a rigid cylindrical tube 22 for receiving and holding therein a pair of push button switches 24 including push buttons 26. The bottom of tube 22 is open to provide for removal of the switches 24 as will be described hereinafter. A cylindrical sheath 28 of soft

yieldable material, such as rubber, having a cylindrical main body portion 30 and a removable bottom 32 surrounds the rigid tube 22. The sheath 28 is provided with a tapered top 29 to minimize the possibility of the switch becoming caught on other objects during movement of the switch.

The switches 24 are secured by means of screws 33 to an L-shaped mounting bracket 36, the mounting bracket being secured by screws 34 which engage the tube 22 and a cylindrical insulating member 38 disposed between the tube and mounting bracket.

Openings 39 (Fig. 3) are provided in the tube 22 and insulating member 38 to receive therethrough the switch buttons 26. An opening 40 is provided in the sheath opposite each of the enclosed switches, the area of each opening 40 being not substantially greater than is sufficient to surround the push buttons 26, as shown in Fig. 2. As shown in Fig. 3, the thickness of the sheath 28 is such as to extend substantially outwardly from the outermost surface of the switch buttons in order to protect the switch buttons from contact with surrounding objects during operation and thereby prevent accidental operation of the switch.

The switches 24 may be removed from the housing for cleaning or replacement by removing the screws 34, by depressing the switch buttons 26 to clear the inside of the insulating member 38, and by pulling the mounting bracket 36 out of the bottom of the sheath 30 following removal of the sheath bottom 32.

As shown in Fig. 3, a rigid tubular member 42 is centrally disposed in the upper portion of the sheath 28 to serve as a conduit for the leads 44 which connect with the switches 24. The lower end of the conduit 42 is threadably secured to the top 23 of the tube 22. The upper end of conduit 42 is threadably received in an elbow member 46 having an obliquely disposed passageway 47 for receiving the lower end of the cable 16 carrying the leads 44. An eye member 48, to which is secured the pendant cable 12 (Fig. 1), is threadably secured in the vertical portion of the elbow member 46.

It is thus apparent that by using my invention, the movement of an overhead traveling crane may be controlled by an operator walking on the floor beneath with the pendant switch normally in hand. The design of the switch is such as to protect against accidental operation of the switch should the switch strike an object in the path of its travel beneath the crane. Due to the resiliency and cushioning effect of the sheath, the switch mechanism will not be damaged by shock if foreign objects are struck in operation. The sheath also serves to keep dirt out of the switch mechanism.

While a particular embodiment of this invention is shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

The invention having thus been described, what is claimed and desired to be secured by Letters Patent is:

1. A housing for pendant push button switches comprising a rigid tube for receiving and holding therein at least one push button switch, a sheath of soft yieldable material of substantial thickness surrounding said tube, a conduit attached to said tube at one end and extending through said sheath, said conduit providing means for suspending said housing and passage means for conductors, said sheath including opening means to provide access to the switch push buttons, and the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of such push buttons.

2. A housing for pendant push button switches com-

prising a rigid tube for receiving and holding therein at least one push button switch, a sheath of soft yieldable material of substantial thickness surrounding said tube, said sheath including opening means to provide access to the switch push buttons, the area of said opening means being not substantially greater than the area of an opening sufficient to surround such push buttons, and the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of such push buttons.

3. A housing for pendant push button switches comprising a metallic tube for receiving and holding therein at least one push button switch, said tube being open at one end thereof, a continuous sheath of soft yieldable material and of substantial thickness surrounding said tube except for said open end, a conduit attached to said tube at one end and extending through said sheath, said conduit providing means for suspending such housing and passage means for conductors, said sheath including opening means to provide access to the switch push buttons, and the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of such push buttons and a base member of soft yieldable material closing said open end.

4. A housing for pendant switches comprising a rigid tube for receiving and holding therein at least one switch, a sheath of soft yieldable material and of substantial thickness surrounding said tube, said sheath including an opening at one end to provide a passage for conductors, means for suspending such housing, said sheath including opening means to provide access to the operating means of such switch, and the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of said operating means.

5. A pendant switch comprising a rigid tube, a switch supported within said tube, a sheath of soft yieldable material and of substantial thickness surrounding said tube, said sheath including an opening at one end to provide a passage for conductors, said sheath including opening means to provide access to the operating means of such switch, the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of said operating means, and means for suspending such switch.

6. A pendant switch comprising a rigid tube closed at one end and open at the other end, a switch, a frame to which said switch is attached, said frame being insertable into said tube through said open end and attached thereto, a sheath of soft yieldable material and of substantial thickness surrounding said tube, said tube including an opening at its closed end, said sheath including an opening at its end corresponding to the opening in said tube, said tube opening and said sheath opening being in registry with each other to provide a passage for conductors, said sheath including opening means to provide access to the operating means of such switch, the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of said operating means, and means for suspending such switch.

7. A pendant switch comprising a rigid tube closed at one end and open at the other end, a switch, a frame to which said switch is attached, said frame being insertable into said tube through said open end and attached thereto, a sheath of soft yieldable material and of substantial thickness surrounding said tube, said tube including an opening at its closed end, said sheath including an opening at its end corresponding to the opening in said tube, said tube opening and said sheath opening being in registry with each other to provide a passage for coductors, said sheath including opening means to provide access to the operating means of such switch, the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of said operating means, means for suspending such switch, and a base member of soft yieldable material closing said open end of said sheath.

8. A pendant switch comprising a rigid tube closed at one end and open at the other end, a switch, a frame to which said switch is attached, said frame being insertable into said tube through said open end and attached thereto, a sheath of soft yieldable material and of substantial thickness surrounding said tube, said tube including an opening at its closed end, said sheath including an opening at its end corresponding to the opening in said tube, said tube opening and said sheath opening being in registry with each other to provide a passage for conductors, a layer of insulating material immediately inside of said tube for insulating said switch and such conductor, said sheath including opening means to provide access to the operating means of such switch, the thickness of said sheath being such as to extend substantially outwardly from the outermost surface of said operating means, and means for suspending such switch.

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