

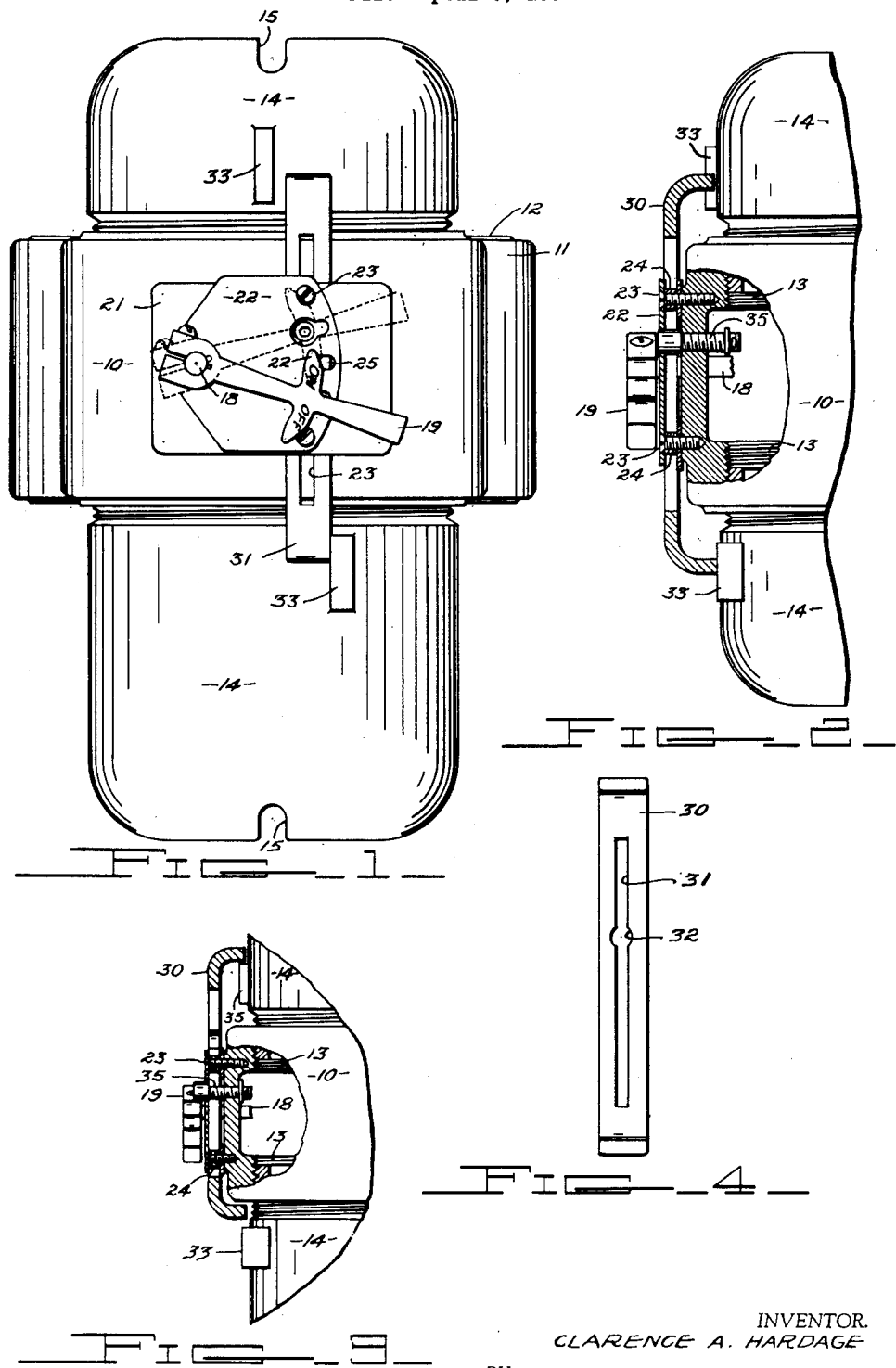
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EXPLOSIONPROOF SWITCH HOUSING

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EXPLOSIONPROOF SWITCH HOUSING

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6 Claims. (Cl. 200—50)

This invention relates generally to explosion-proof switch housings of the type disclosed in my Patent No. 2,156,564 of May 2, 1939, which comprises a main body section provided with one or more internally threaded openings into each of which an end closure is threaded.

More particularly this invention has as an object an explosionproof switch housing of the type referred to embodying a structure operable to prevent removal of one or both of the end closures while the switch or circuit breaker arranged in the housing is in the on position, and which structure is particularly economical to construct, efficient in operation, and which may be conveniently manipulated.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is a front elevational view of an explosionproof switch housing embodying my invention.

Figure 2 is a side elevational view of the device shown in Figure 1 with parts broken away and parts in section.

Figure 3 is a fragmentary view of the left-hand portion of Figure 2 illustrating the end closure interlock in released position.

Figure 4 is a detached view of the interlocking bar.

The explosionproof switch housing, to which the present embodiment of my invention is applied, consists of a body section 10 of substantially cylindrical form provided with one or more bosses 11 having conduit receiving apertures at 12. Each side of the body section 10 is provided with an internally threaded opening 13 in which is threaded an end closure 14. It will be understood that the openings 13 are substantially coextensive with the body and form a sizable opening to permit installation, repair, or removal of the switch or other electrical apparatus mounted within the housing. The end closures 14 are of general tubular construction and may be of any suitable length to house the particular apparatus mounted in the housing.

As here shown, the end closures are provided with transversely extending slots 15 at their outer ends for the reception of a piece of pipe or other implement to aid in threading and unthreading the end closures to the body section 10. A shaft 16 is journaled in one side of the housing 10, the

inner end being connected to the switch or circuit breaker, and the outer end being provided with an operating handle 18 which is here shown as being provided, intermediate its ends, with transversely extending projections 20 carrying the on and off legends. In Figure 1, the handle 18 is shown in full line in the off position, and in dotted outline in the on position. Preferably, the side of the body section, on which the switch operating handle is mounted, is formed with a rectangular shaped flat surface 21 and a pad or plate 22 is secured to the body section by screws 23 and is maintained in spaced apart relation thereto by spacing collars 24 mounted upon the fastening screws. The plate 22 is provided with one or more apertures 25 for the reception of a padlock to secure the handle in either the off or on positions.

Enclosed explosionproof fittings of the type herein referred to are used to house electrical apparatus in locations where the surrounding atmosphere contains explosive substances. Any explosive mixture within the housing may become ignited with the arcing of the contacts of the switch when the same are opened or closed, and the purpose of such a housing is to prevent the escape of the ignited gases to the surrounding atmosphere. In order to maintain a maximum condition of safety, it is desirable that the closures of the housing be not removed while the switch is in the on position and to also prevent movement of the switch to the on position after the closure has been removed, or at least during removal of the closure.

The structure herein employed to accomplish this purpose consists of a bar 30 slidably mounted on the body section 10 and being arranged to be moved into and out of engagement with the end closure or, as here shown, into and out of engagement with both of the end closures 14 and being operable, when in engagement with the end closures, to prevent the same from being unthreaded from the body section 12.

The bar 30 is formed with an elongated slot 31 intermediate its ends, the slot having an enlarged portion at 32. The bar 30 is arranged intermediate the flat surface 21 of the body section and the plate 22, the width of the slot 31 being such as to permit the bar to be slidably mounted on the spacing collars 24. The end closures are provided with one or more projections 33, and the ends of the bar 30 extend inwardly so as to engage with the projections 33 upon rotation of the end closures.

In the structure illustrated, the bar 30 engages

the projections 33 on both of the end closures 14, and the slot 31 is of sufficient length to permit the bar to be moved axially a sufficient distance to clear the projections on both of the end closures. The bar 30 is held in central position engaging both end closures by a screw 35 threaded into the wall of the body section 10. The shank of the screw is slightly less in diameter than the width of the slot 31, whereby the bar 30 may be moved axially when the screw is threaded outwardly, as illustrated in Figure 3. The head of the screw is substantially coextensive with the enlarged portion 32 of the slot and when the screw is threaded inwardly, as illustrated in Figure 2, with the head of the screw arranged in the enlarged portion of the slot, axial movement of the bar 30 is prevented. The arrangement or location of the screw 35 is such that the head of the screw is covered by the switch handle 19 when the handle is moved to the on position. That is, the handle is operable in the on position to prevent access to the screw 35.

When the handle 19 is moved to the off position, the screw may be backed out until the head portion thereof clears the bar 30. Thereupon, the bar may be moved axially out of engagement with the end closures 14, as illustrated in Figure 3. The switch handle 19 however can not then be moved into the on position because of the projecting head of the screw 35. After the bar 30 has been shifted out of engagement with the end closures 14, it may be secured in shifted position upon tightening the screws 35 bringing the head of the screw into engagement with the bar, as illustrated in Figure 3.

When in operative position, the bar 30 positively prevents unthreading of the end closures 14 from the body section. The structure described is particularly simple requiring only the addition of the bar 30 and the screw 35 to the fitting, with the result that while the structure is highly efficient for the purpose intended, it does not add any appreciable cost to the fitting.

What I claim is:

1. An explosionproof switch housing comprising a body section provided with a conduit receiving aperture and a threaded opening in one side, a closure threaded into said opening, a bar slidably mounted on the body section and shiftable into and out of engagement with said closure and being operable when in engagement with the closure to prevent the same being unthreaded from the opening, means coaxing with said bar and body section to retain said bar in engagement with said closure and being operable to release said bar, a switch operating handle mounted on the body section and being movable into on and off positions and being operable, when in on position, to prevent operation of said means, said means being operable when said switch handle is in off position to release said bar to permit the same to be shifted out of engagement with said closure.

2. An explosionproof switch housing comprising a body section provided with a conduit receiving aperture and a threaded opening in one side, a closure threaded into said opening, a bar slidably mounted on the body section and shiftable into and out of engagement with said closure and being operable when in engagement with the closure to prevent the same being unthreaded from the opening, means coaxing with said bar and body section to retain said bar in engagement with said closure and being operable to release said bar, a switch operating handle mounted on

the body section and being movable into on and off positions and being operable, when in on position, to prevent operation of said means, said means being operable when said switch handle is in off position to release said bar to permit the same to be shifted out of engagement with said closure and to prevent movement of the switch handle into the on position.

3. An explosionproof switch housing comprising a body section provided with a conduit receiving aperture and a threaded opening, a closure threaded into said opening, a bar slidably mounted upon the body and being shiftable into and out of engagement with said closure and being operable when in engagement with said closure to prevent the same being unthreaded from said opening, a screw threaded into said body section and engaging said bar to retain the same in engagement with said closure, a switch handle pivotally mounted on said body section and being movable into on and off positions, said switch handle being arranged to prevent said screw from being threaded outwardly when said handle is in the on position, and said screw being operable when threaded outwardly to release said bar and to prevent movement of the switch handle into the on position.

4. An explosionproof switch housing comprising a body section provided with a conduit receiving aperture and a threaded opening, a closure threaded into said opening, a screw having a threaded shank and an enlarged head portion, a bar mounted on said body section and being formed with an elongated slot to receive the shank of said screw, and being slidable into and out of engagement with said closure and being operable when in engagement with said closure to prevent the same being unthreaded from said opening, said slot having an enlarged portion to receive the head of the screw when the latter is threaded inwardly to retain said bar from sliding movement and to hold the same in engagement with said closure, a switch operating handle mounted on the body section and being movable into on position when said screw is threaded inwardly with the head thereof arranged in the enlarged portion of said slot, and said screw being operable when threaded outwardly to prevent movement of the switch handle into the on position.

5. An explosionproof switch housing comprising a body section provided with a conduit receiving aperture and a threaded opening, a closure threaded into said opening, a screw having a threaded shank and a head portion, a bar slidably mounted upon the body section and being shiftable into and out of engagement with said closure and being operable when in engagement with said closure to prevent the same being unthreaded from said opening, said bar being formed with an elongated slot to receive the shank of said screw when the same is threaded into the body section and said slot having an enlarged portion to receive the head of said screw, said screw being operable, when threaded inwardly with the head arranged in said enlarged portion of the slot, to maintain said bar in engagement with said closure and being operable, when threaded outwardly with the head moved out of said enlarged portion, to permit said bar to be moved out of engagement with said closure, a switch handle mounted on the body section and being movable into on and off positions and being arranged when in on position to prevent said screw from being threaded outwardly, and said

screw being operable when threaded outwardly to prevent movement of the switch handle into the on position.

5 6. An explosionproof switch housing comprising a body section provided with a conduit receiving passage and having a threaded opening at each end, an end closure threaded into each of said openings and having a projection extending radially therefrom, a bar mounted on the body
10 and extending axially thereof, said bar being formed with a slot extending lengthwise thereof and having an enlarged portion intermediate its ends, a screw extending through said slot and being threaded into the body and having a head
15 portion of greater width than said slot, said en-

larged portion of the slot being arranged to receive the head of the screw with the ends of the bar positioned to engage the projections on the end closures respectively to prevent the same being unthreaded from the body, a switch operating handle pivotally mounted on the body and being operable when in the on position to prevent said screw being unthreaded to move the head thereof out of the enlarged portion of said slot, and said screw and switch operating handle being
10 arranged relatively whereby said screw prevents movement of the switch handle into the on position when the head of the screw is moved out of said slot.

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