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R. C. BERRY

2,886,675

EXPLOSION PROOF SWITCH HOUSING

Filed Feb. 14, 1957

2 Sheets-Sheet 1

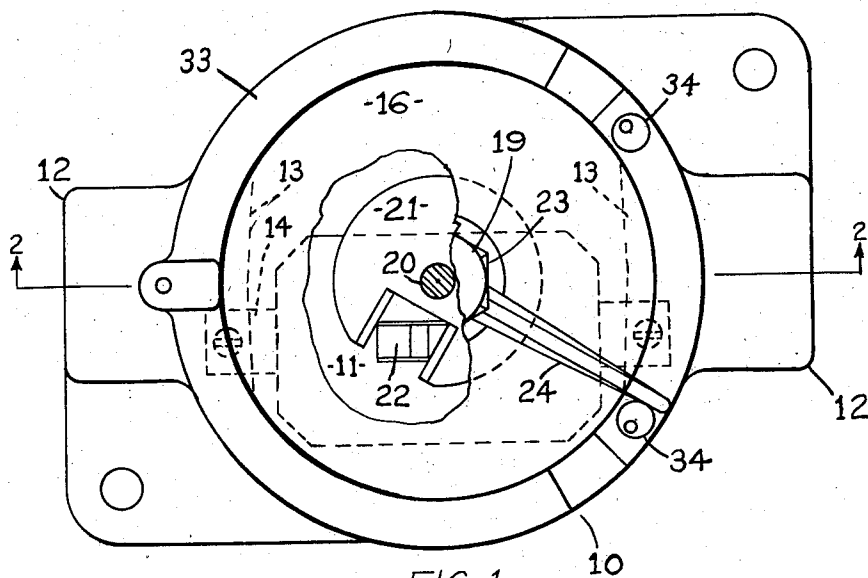


FIG 1

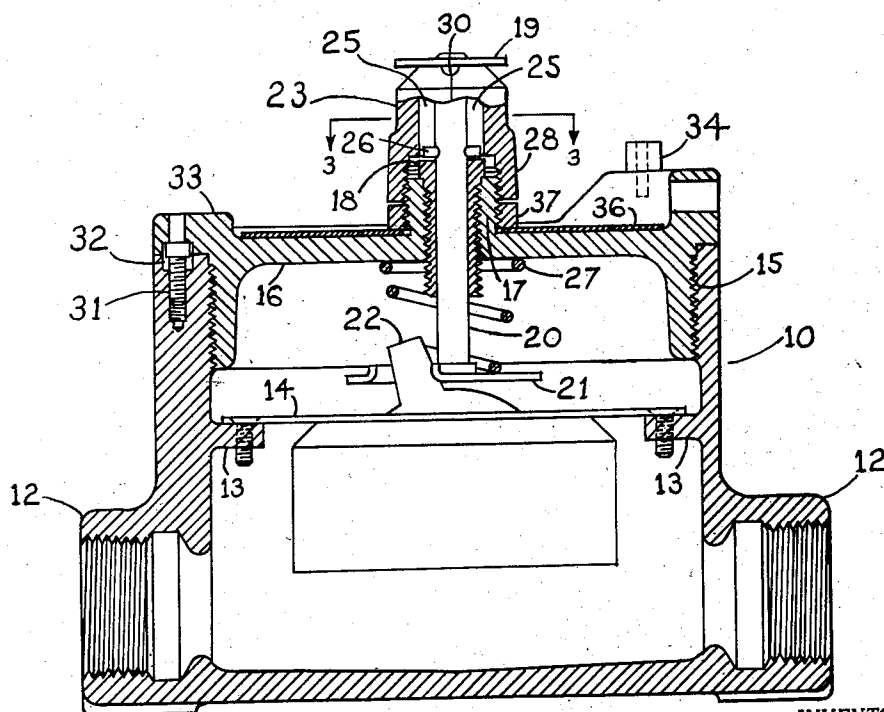


FIG 2

INVENTOR.
Richard C. Berry
BY *Emmett Thompson*
Attorney

May 12, 1959

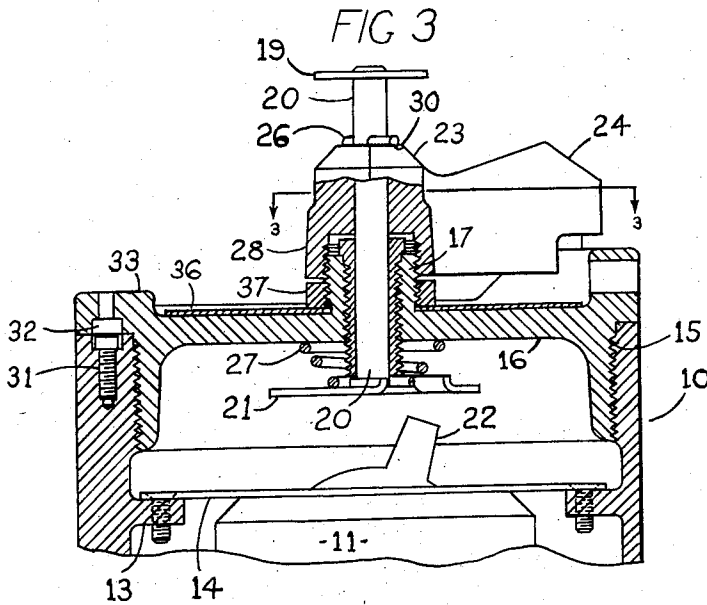
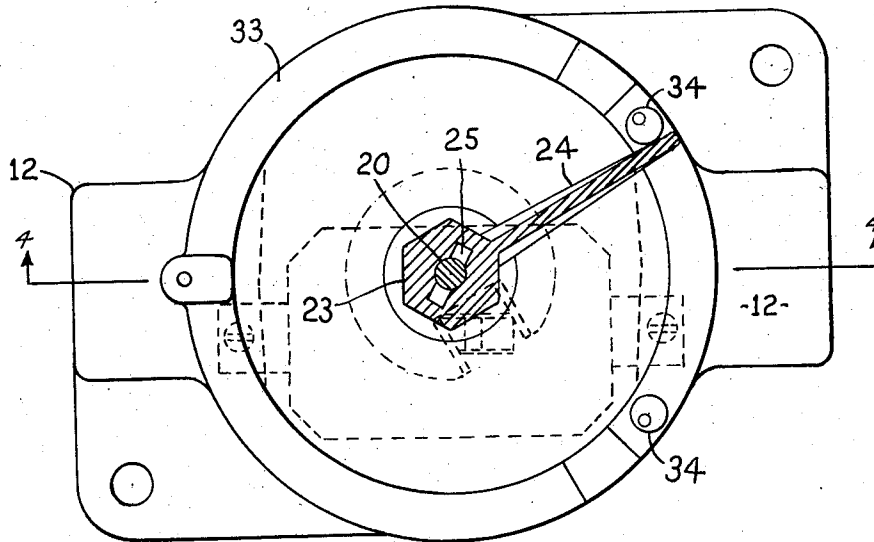
R. C. BERRY

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INVENTOR.
Richard C. Berry
BY *L. Emmett Thompson*
Attorney

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EXPLOSION PROOF SWITCH HOUSING

Richard C. Berry, Camillus, N.Y., assignor to Crouse-Hinds Company, Syracuse, N.Y., a corporation of New York

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4 Claims. (Cl. 200—168)

This invention relates to explosion proof housings for electrical switches, and has as an object an explosion proof switch housing embodying a structural arrangement wherein the switch actuating mechanism is maintained in flame tight relation to the housing and provides for the easy and convenient assembly of the housing and the connection between the externally operated actuating mechanism and the handle of the switch.

The invention consists of the novel features and of 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.

In the drawings—

Figure 1 is a top plan view, partly broken away, of my invention.

Figure 2 is a cross sectional view taken on line 2—2 of Figure 1.

Fig. 3 is a cross section taken on line 3—3 of Figure 4.

Figure 4 is a cross section taken on line 4—4 of Figure 3.

Referring to the drawings, 10 generally indicates the housing which carries the switch 11. The housing 10 has a pair of threaded hubs 12 for the reception of wire carrying conduits, not shown herein. The housing has a pair of inwardly extending ledges 13 on which the plate 14, which carries the switch 11, is mounted. The housing is formed with an internally threaded work opening at the top thereof, as is indicated at 15, for the reception of a closure member 16.

The threaded connection between the closure member 16 and the housing 10, at 15, provides a flame proof engagement between the closure and the housing because of the threaded joint. The closure member 16 has an integral upstanding boss 17 threaded externally and also provided with an internally threaded bore into which there is threaded a bushing 18. A shaft 20 is journaled in the bushing 18 and has affixed to its inner end a bifurcated or forked plate 21 for engaging and actuating the handle 22 of the switch upon oscillation of the shaft 20. The shaft 20 extends outwardly from the bushing, and a hub portion 23 of an operating handle 24 is mounted on the outer end of the shaft, the shaft having sliding movement axially on the hub 23. A disk 19 is affixed to the outer end of the shaft 20 externally of the hub 23. The hub is formed with slots 25 on opposite sides of the shaft 20, and the shaft 20 is provided with a transversely extending pin 26, the ends of which are slidably positioned in the slots 25.

The shaft 20 extends downwardly from the inner end of the bushing 18, and a helical compression spring 27 is positioned on the shaft between the inner surface of the closure 16 and the plate 21 and serves to yieldingly urge the shaft 20 inwardly until the pin 26 is positioned on the outer end of the bushing 18. The hub is formed with a circular flange 28 threaded internally for threaded engagement with the boss 17.

The bore of the bushing 18 is such, relative to the

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diameter of the shaft 20, as to provide a close running fit to establish a confined flame path for a substantial axial distance whereby, if gases are exploded within the switch housing, the flame resulting from such explosion is cooled below the ignition point before reaching the outer atmosphere. The threaded connection between the flange 28 of the hub 23 and the boss 17 serves to retain the handle against displacement from the hub 17.

In assembling the top closure 16 to the housing, the shaft 20 is moved outwardly against the action of spring 27 until the pin 26 reaches a position external of the hub 23 whereupon the shaft is rotated to move the pin 26 out of registration with the slots 25. The shaft is then released, permitting the pin to engage the outer end surface of the hub which may be formed with diametrically arranged notches 30 into which the pin may be seated against displacement.

This operation elevates the switch actuating plate 21 upwardly, as shown in Figure 4, out of engagement with the switch handle 22 whereby the top closure 16 may be threaded into the housing 10, and the closure may be secured by backing out a screw 31 to position the head of the screw into a bore 32 formed in the inner surface of the flange 33 of the top closure 16 which overlies the marginal surface about the opening in the housing. Thereupon, the shaft 20 may be rotated by the disk 19 to re-align the pin 26 with the slots 25 to permit inward movement of the shaft 20 to position the actuating plate 21 in engagement with the switch handle 22, as shown in Figure 2. The switch may be then actuated to on and off positions by arcuate movement of the handle 24. The flange portion 33 of the top closure 16 may be provided with stop members 34 to limit the arcuate movement of the handle 24. Also, a circular name plate 36 may be positioned on the outer surface of the closure member and secured thereto, as by nut 37.

What I claim is:

1. An explosion proof switch housing formed with an internally threaded opening in one side, a closure member threaded into said opening, said closure member being formed with a bore extending therethrough, an operating handle mounted on the outer side of the closure for rotation about the axis of said bore, said handle having a bore extending therethrough in alignment with the bore in said closure, a switch fixedly mounted in the housing and having an actuating handle, a shaft mounted in the bore of said closure for axial and rotatable movement therein, said shaft extending outwardly from the closure through the bore formed in said operating handle, an actuating member fixedly secured to the inner end of said shaft, the bore in said operating handle being formed with a slot extending axially inwardly from the outer end thereof, a pin carried by said shaft and having an end portion slidably mounted in said slot to effect a driving connection between said operating handle and said shaft, a compression spring mounted on the inner end portion of said shaft and being operable to urge said shaft inwardly to position said actuating member in engagement with said switch handle and yieldingly maintain said pin in said slot, said shaft being movable axially outwardly against the action of said spring to move said actuating member out of engagement with said switch handle and to position said pin exteriorly of the operating handle.

2. A device as set forth in claim 1, wherein said operating handle and closure have means cooperable to limit axial movement of the handle relative to the closure.

3. An explosion proof switch housing formed with an internally threaded opening in one side, a closure member threaded into said opening, said closure member being formed on its outer side with an externally threaded boss, a bore extending through said boss and closure member, an operating handle formed with an internally

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threaded cylindrical flange threaded on said boss for rotation about the axis of said bore, said operating handle having a bore extending therethrough in alignment with the bore in said closure and boss, a switch fixedly mounted in the housing and having an actuating handle, the bore in said operating handle being formed with a slot extending axially inwardly from the outer end thereof, a shaft journaled in said closure bore, an actuating member fixedly secured to the inner end of said shaft, and the outer end of said shaft extending outwardly through the bore in said operating handle and having a transversely disposed pin slidably engaging said slot, a compression spring mounted on the inner portion of said shaft between said closure and said actuating member and yieldingly urging said shaft inwardly to position said actuating member in operative engagement with said switch handle, said shaft being movable outwardly against the action of said spring to move said actuating member out of engagement with said switch handle and to move said pin exteriorly of the operating handle.

4. An explosion proof switch housing formed with an internally threaded opening in one side, a circular closure member threaded into said opening, said closure member being formed at its outer side with an externally threaded boss, a bushing threaded into said boss and extending through said closure member, an operating handle formed

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with an internally threaded cylindrical flange threaded upon said boss for rotation about the axis of said bushing, said handle being formed with a bore arranged in axial alignment with said bushing, said bore being formed with a slot extending axially inwardly from the outer end of the bore, a shaft journaled in said bushing and extending outwardly through the bore in said operating handle, the outer portion of said shaft having a transversely extending pin with an end portion slidably mounted in said slot to effect a driving connection between said operating handle and the shaft, an actuator fixedly secured to the inner end of said shaft, a compression spring mounted on the inner portion of said shaft between said closure and said actuator for yieldingly urging said shaft inwardly to position said actuator in operative engagement with said switch handle and with said pin engaging the outer end of said bushing, said shaft being movable outwardly against the action of said spring to move said actuator out of engagement with said switch handle and to position said pin exteriorly of the operating handle.

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