March 4, 1958 R. A. VAN OLST ET AL 2,825,485

COVER ASSEMBLY

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Fig. 1

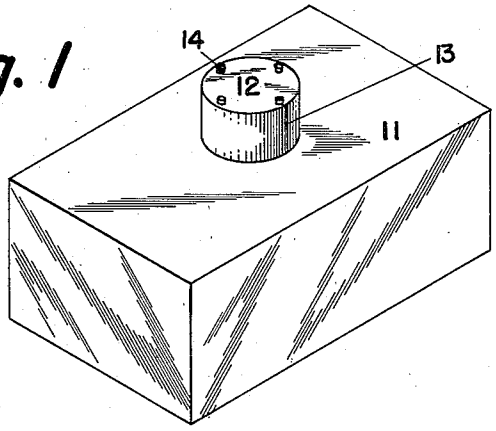


Fig. 2

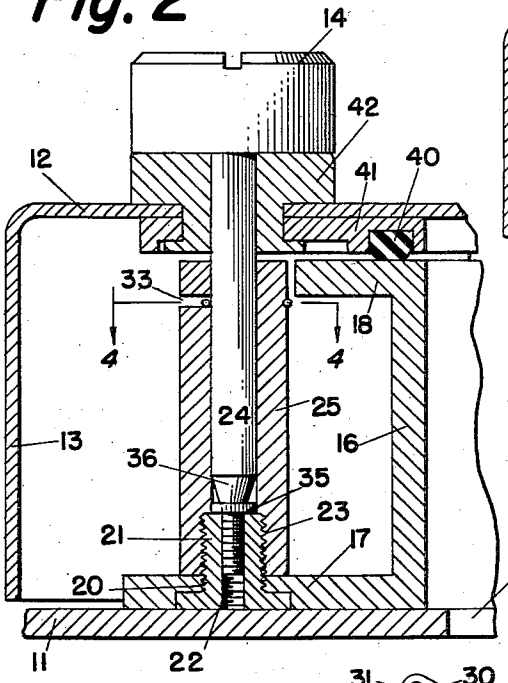


Fig. 3

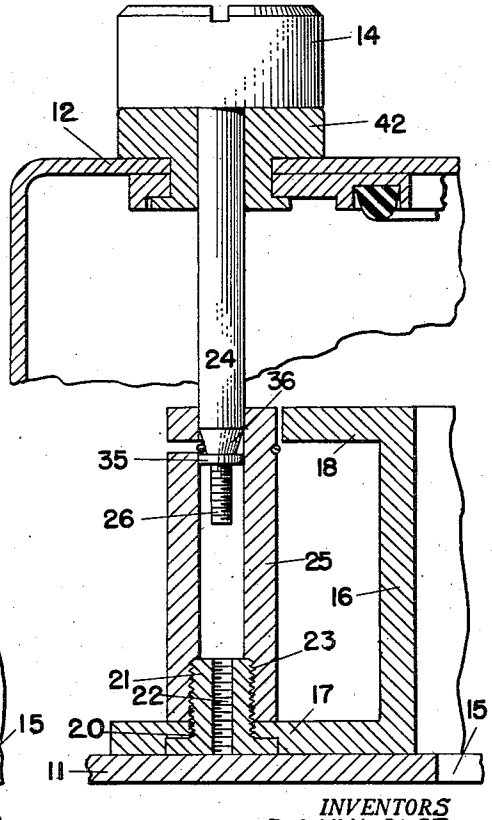
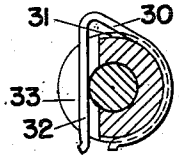


Fig. 4



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COVER ASSEMBLY

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7 Claims. (Cl. 220—55)

This invention relates to housings for electronic equipment and the like, and more particularly to covers for such housings which are adjustable toward the housing to provide a watertight assembly or adjustable away from the housing to provide a ventilated assembly. The housing and cover assembly of this invention is adapted especially for enclosing electronic equipment which is to be used under submerged conditions where a waterproof housing structure is required for the equipment or under such conditions where the equipment is exposed to ventilation purposes and yet the housing and cover assembly presents a splashproof structure.

The invention provides a housing having a cover assembled thereon in a manner to be selectively maintained in the closed or watertight position or in the open or ventilated and splashproof position.

The invention also contemplates a particular arrangement for adjusting the cover which permits its manual operation to secure the cover in its watertight position and its manual release from the watertight position to a selected ventilated position or completed ventilated position.

A specific object of the invention is to provide adjusting apparatus for the cover which insures that it will be maintained in the fully open position. Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the annexed drawings, which illustrate a preferred embodiment, and wherein:

Fig. 1 is a perspective view of the assembled housing cover of the invention;

Fig. 2 is a sectional elevational view of the housing and cover unit in the watertight position;

Fig. 3 is a view similar to Fig. 2 but with the cover in ventilated position; and

Fig. 4 is a view taken on the line 4—4 of Fig. 2 to show a detail of the invention.

Referring to Fig. 1, a housing is shown which may be considered adapted especially for housing electronic equipment and is formed of a top wall 11 and side, end and a bottom wall which are not indicated, but are arranged to provide a suitable pressure tight or sealed enclosure. The top wall 11 of the housing receives an adjustable cover having an upper end 12 and an annular side wall 13 which are movable as a unit relative to the top wall 11 of the housing by means of a plurality of adjustable bolt assemblies 14 which will be described in detail.

The details shown in Figs. 2 and 3 of the drawings are similar and as shown, the top wall 11 of the housing is provided with an opening 15 which permits communication with the interior of the housing. An annular ring 16 is mounted on the top wall 11 about the opening 15 and has a lower outwardly extending flange 17 which may be welded or otherwise secured thereto and the ring is also provided with an upper and outwardly extending flange 18. The lower flange 17 is provided with spaced screw threaded openings 20, each of which receives a socket member 21, which is adapted for securing adjusting bolt assemblies 14. To this end each socket member is provided with an inner screw threaded area 22 and an outer screw threaded area 23.

Each bolt assembly 14 consists of a bolt shaft 24 and sleeve 25. The bolt shaft 24 has a screw threaded lower end portion 26 which is received in the inner screw threaded area 22 of a socket member while the sleeve 25 is screw threaded at its inner lower end and is received by the outer screw threaded area 23 of the socket. The sockets provide connecting means between the bolt shafts and the sleeves for releasably maintaining the cover in closed position. When the imperforate cover is in the closed or watertight position of Fig. 2, the screw threaded end portion 26 of each bolt is received in the threaded areas 22 of the socket while the sleeves 25 are received by the outer threaded sections 23 of the sockets. When the imperforate cover is in the open or ventilating position of Fig. 3, the sleeves 25 remain fixed to the sockets but the bolt shafts are released and moved axially of the sleeves.

The screw threaded connecting means between the bolt shafts and the sleeves permits ready release of the air vent cover from its watertight position of Fig. 2 and the bolt assemblies are further arranged to maintain the cover in its ventilating position of Fig. 3. The particular arrangement consists of a spring latch formed, as shown in detail in Fig. 4, of a spring which has one arcuate arm 30 received or carried by a groove 31 formed in the outer wall of each sleeve 25 and has a spring latching arm or extension 32 which is received in a slot 33 formed in the sleeve opposite the groove 31. The latching arm 32 is, in effect, bent toward the arcuate arm 30 to provide resiliency and to permit the arm 32 to be spring biased against a bolt shaft 24. Each bolt shaft 24 is provided above the threaded end portions 26 with an abutment or annular flange 35 formed by a portion 36 which tapers downward to form the abutment and to provide, with the abutment, a locking recess. The latching arm 32 of the spring constantly engages or contacts the bolt shaft 24 and when the shaft is manually moved from its position shown in Fig. 2 to that shown in Fig. 3, the latching arm 32 will be biased into the recess and held by the abutment 35 and thus prevent further upward movement of the bolt shaft and maintain the cover in its completely open or ventilated position. The downward tapering portion 36 permits the latching arm 32 to readily release the bolt shaft when it is urged downward from the ventilated position of Fig. 3 to the watertight position of Fig. 2 and yet provides an arrangement for securely maintaining the cover in the open position of Fig. 3 under normal conditions of use.

In order to insure that the housing is sealed, a resilient annular gasket 40 is provided and may be disposed between the upper end 12 of the cover and upper flange 18 of ring 16 when the cover is in the watertight position of Fig. 2. The gasket, as shown, is preferably secured in an annular groove in a plate 41 which is held against the inner face of the upper end 12 of the cover by means of a bushing 42. The bushing 42 is mounted at the upper end of the bolt shaft 24 and is provided to effect threading the lower end of a bolt shaft to a socket.

What is claimed is:

1. A housing having an apertured upper wall, a ring having its lower edge secured to the upper wall about said aperture and its upper edge disposed thereabove providing a passageway in communication with the housing, an imperforate cover for said passageway having a top and a depending side flange, an adjusting bolt assembly for said cover comprising a vertical sleeve having its lower open end supported by the upper wall and its upper open end disposed in a plane generally in line with the upper edge of said ring, a bolt having its upper

end supported by the top of the cover and its lower end disposed within said sleeve, connecting means on the bolt and other connecting means on the sleeve for releasably maintaining the cover in closed position and spring means carried by the sleeve adjacent its upper end for cooperating with the bolt to maintain the cover in open position when it is moved from its closed position.

2. A housing having an apertured upper wall, a ring having its lower edge secured to the upper wall about said aperture and its upper edge disposed thereabove providing a passageway in communication with the housing, an imperforate cover for said passageway having a top and a depending side flange, an adjusting bolt assembly for said cover comprising a vertical sleeve having its lower open end supported by the upper wall and its upper open end disposed in a plane generally in line with the upper edge of said ring, a bolt having its upper end supported by the top of the cover and its lower end disposed within said sleeve, connecting means on the bolt and other connecting means on the sleeve for releasably maintaining the cover in closed position, a latching arm carried at the upper end of said sleeve and adapted for biasing contact with said bolt and a locking recess adjacent the lower end of the bolt above its connecting means for receiving said latching arm to maintain the cover in its open position when it is moved from its closed position.

3. A housing having an apertured upper wall, a ring having its lower edge secured to the upper wall about said aperture and its upper edge disposed thereabove providing a passageway in communication with the housing, an imperforate cover for said passageway having a top and a depending side flange, an adjusting bolt assembly for said cover comprising a vertical sleeve having its lower open end supported by the upper wall and its upper open end disposed in a plane generally in line with the upper edge of said ring, a bolt having its upper end supported by the top of the cover and its lower end disposed within said sleeve, connecting means on the bolt and other connecting means on the sleeve for releasably maintaining the cover in closed position, a latching arm carried at the upper end of said sleeve and adapted for biasing contact with said bolt, a downward tapering portion adjacent the lower end of the bolt forming an abutment above its connecting means and providing, with the abutment, a locking recess for receiving said latching arm to maintain the cover in open position when it is moved from its closed position.

4. A housing having an apertured upper wall, a ring having its lower edge secured to the upper wall about said aperture and its upper edge disposed thereabove providing a passageway in communication with the housing, an imperforate cover for said passageway having a top and a depending side flange, an adjusting bolt assembly for said cover comprising a vertical sleeve having its lower open end supported by the upper wall and its upper open end disposed in a plane generally in line with the upper edge of said ring, a bolt having its upper end supported by the top of the cover and its lower end disposed within said sleeve, connecting means on the bolt and other connecting means on the sleeve for releasably maintaining the cover in closed position, a slot formed in said sleeve adjacent its upper end, a spring carried by said sleeve and having a latching arm extending into said slot, said latching arm being adapted for biasing contact with the bolt when the cover is moved from its closed position and an abutment on the bolt adjacent its lower end adapted to coact with the latching arm to maintain the cover in its open position.

5. A housing having an apertured upper wall, a ring having its lower edge secured to the upper wall about said aperture and its upper edge disposed thereabove providing a passageway in communication with the housing, an imperforate cover for said passageway having a top and a depending side flange, an adjusting bolt assembly for said cover comprising a vertical sleeve having its lower open end supported by the upper wall and its upper open end disposed in a plane generally in line with the upper edge of said ring, a bolt having its upper end supported by the top of the cover and its lower end disposed within said sleeve, connecting means on the bolt and other connecting means on the sleeve for releasably maintaining the cover in closed position, a slot formed in said sleeve adjacent its upper end, a spring supported by the sleeve adjacent its upper end and having a resilient latching arm mounted within said slot and arranged for biasing contact with the bolt when the cover is moved from closed position, a downward tapered portion on said bolt above its connecting means forming an abutment therewith and providing a recess for receiving the resilient latching arm when the cover is moved from its closed position to maintain the cover in its open position.

6. A housing having an apertured upper wall, a ring having its lower edge secured to the upper wall about said aperture and its upper edge disposed thereabove providing a passageway in communication with the housing, an imperforate cover for said passageway having a top and a depending side flange, an adjusting bolt assembly for said cover comprising a vertical sleeve having its lower open end supported by the upper wall and its upper end disposed in a plane generally in line with the upper edge of said ring, a bolt having its upper end supported by the top of the cover and its lower end disposed within said sleeve, connecting means on the bolt and other connecting means on the sleeve for releasably maintaining the cover in its closed position, a transverse slot in said sleeve adjacent its upper end, a spring supported by said sleeve and having a resilient latching arm disposed within said slot and in contact with the bolt, a downward taper on said bolt above its connecting means terminating in an abutment and providing therewith a locking recess for receiving the resilient latching arm when the cover is raised from its closed position whereby the cover is maintained in its open position.

7. Apparatus as in claim 6 further characterized by a socket disposed within the lower end of the sleeve and being adapted for screw-threadedly receiving the bolt connecting means and for being received by the connecting means on the sleeve.

References Cited in the file of this patent

FOREIGN PATENTS

10,592 Great Britain ..... of 1912