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WEATHERPROOF SWITCH ASSEMBLY

Filed Oct. 28, 1964

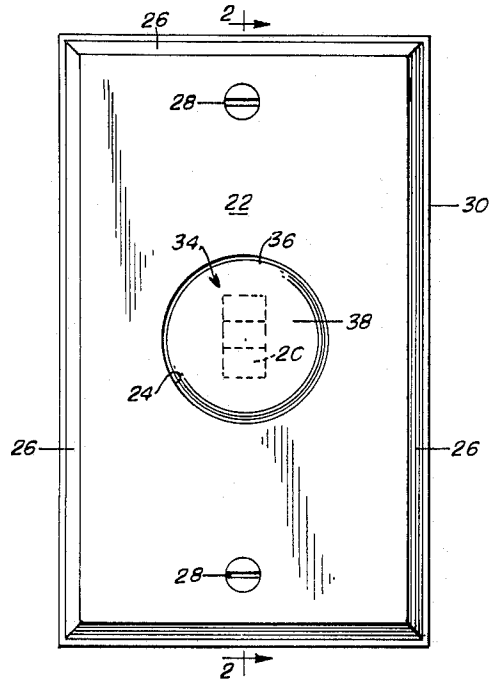


FIG. 1

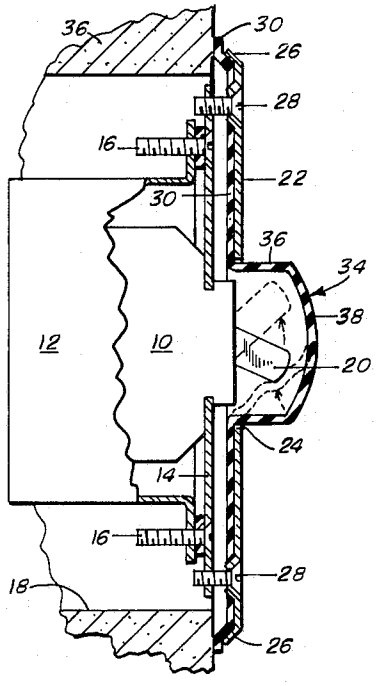


FIG. 2

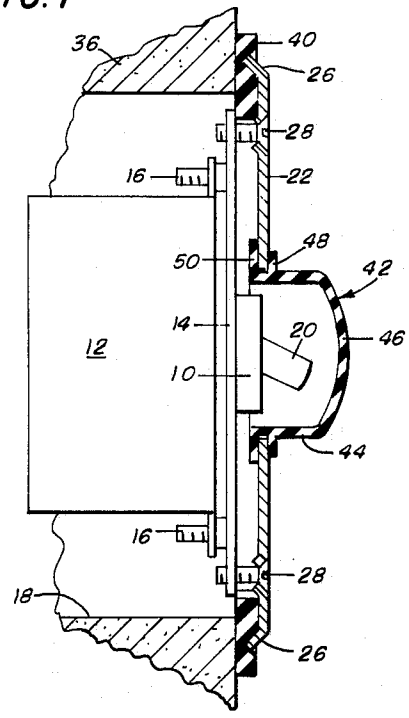


FIG. 3

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WEATHERPROOF SWITCH ASSEMBLY

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This invention relates to a weatherproof switch assembly and more particularly to such an assembly wherein there is a seal provided between the wall plate and the wall portion supporting the switch.

There are many installations which require weatherproof sealing if the electrical switches are to provide reliable and safe operation. Wall plates which are provided with an opening through which the switch operating lever may extend present additional problems in obtaining a sufficient seal, it being necessary to provide a seal around the perimeter of the wall plate and also where the switch lever extends through the wall plate. The problem is particularly acute with respect to the seal for the switch lever since there is a substantial movement of the lever which must in some manner be provided for by the seal. It is further desirable that the seal should in no way make the switch lever more difficult to operate, and furthermore it is helpful to be able to at all times readily see in which position the switch lever may be resting. It is with these problems in mind that the weatherproof switch assembly of this invention has been developed.

It is an object of this invention to provide a weatherproof switch assembly wherein sealing means are provided for sealing the perimeter of the wall plate and for further sealing the aperture in the wall plate through which the switch operating lever extends.

It is another object to provide a weatherproof switch wherein the sealing means is a unitary member for sealing both the perimeter of the wall plate and the aperture through which the switch operating lever extends.

It is a still further object to provide a weatherproof switch assembly wherein the seal for the wall plate aperture is a flexible and transparent bubble providing free movement of the switch lever therewithin.

It is another object to provide a weatherproof switch assembly which includes a conventional switch having the usual switch operating lever, means for flush mounting the switch in a wall opening with the switch lever extending outwardly beyond the plane of the wall in which the opening is formed, a conventional wall plate having a centrally disposed aperture therein, the wall plate being positioned such that the switch lever will extend freely through the wall plate aperture and the perimeter of the wall plate covers the periphery of the wall opening, and a flexible sealing member between the perimeter of the wall plate and the wall and a transparent flexible bubble portion extending outwardly through the wall plate aperture to freely cover the switch lever thus providing a weatherproof seal between the wall and wall plate.

The above and other objects will become more apparent from the following detailed description and drawing, showing by way of example, two embodiments of this invention and wherein:

FIG. 1 is a plan view of the wall plate mounted with a unitary sealing member which seals the perimeter of the wall plate and the wall plate aperture through which the switch operating lever extends,

FIG. 2 is a cross sectional view taken along line 2—2 of FIG. 1 showing the relationship of the sealing member to the wall plate, wall and switch, and

FIG. 3 is a cross sectional view similar to that of FIG. 2 illustrating a second embodiment wherein the sealing means comprises two seals, one for the perimeter of the wall plate and the other for the wall plate aperture.

The drawing illustrates two embodiments of the invention, FIGS. 1 and 2 showing the first and FIG. 3, the second. The embodiment of FIGS. 1 and 2 comprises a conventional toggle switch **10** mounted in outlet box **12** by means of a mounting strap **14** spanning the open face of the outlet box and secured thereto by means of screws **16**. The outlet box **12** is appropriately positioned in wall opening **18** by any suitable and appropriate means. The toggle switch **10** includes the usual operating lever **20** which in this instance oscillates between upper and lower positions corresponding to the "on" and "off" switch connections.

Wall plate **22** has a more or less centrally disposed aperture **24** and an angularly disposed downwardly extending flange **26** around its entire perimeter. The wall plate is also provided with a pair of vertically spaced holes through which screws **28** pass for threaded engagement wth strap **14** to secure the wall plate in assembled position.

The unitary sealing member **30** comprises a planar portion **32** generally coextensive with the wall plate **22** and a bubble portion **34** fitting outwardly through wall plate aperture **24**. Bubble portion **34** comprises a generally cylindrical wall portion **36** terminating in a convex end covering cap **38**.

As best illustrated in FIG. 2, the unitary sealing member **30** is assembled so that the outer edges of the depending wall plate flanges **26** will engage and force the planar portion **32** of the sealing member into engagement with the wall portion **36** surrounding wall opening **18** to thereby provide a seal between the wall portion surrounding wall opening **18** and the perimeter of the wall plate **12**. The bubble portion **34** fits in and through the wall plate aperture **24** and is of sufficient size both in diameter and height to provide for completely free movement of switch operating lever **20** in all positions. In other words, the bubble portion **34** is of such size that the switch lever **20** will never touch it unless the bubble is flexed inwardly.

The sealing member **30** is formed of a transparent resilient synthetic resinous material, for example, silicon rubber. In any event the material should be flexible, reasonably transparent, not readily affected by wide temperature variations and not subject to rapid deterioration by weather and sunlight.

In order to operate the switch lever **20** the bubble portion **34** is flexed inwardly as indicated in dotted lines to engage the lever and move it to the alternate position as shown in dotted lines. Upon removal of pressure the flexed bubble will return to its normal position completely spaced from the switch lever.

It should be noted that the bubble portion **34** of sealing member **30** is made rather large in order to accommodate switch operators of various sizes and types. Even a push button type switch would embody this type of sealing arrangement. It is this universal feature which provides substantial commercial advantages to this invention.

The embodiment illustrated in FIG. 3 is like that of FIG. 2 except for the sealing means; consequently identical numerals will be employed to indicate corresponding components in FIG. 3. The sealing means of this embodiment comprises two separate members. A rather thick spongy rubber-like sealing gasket **40** is positioned so that the outer edges of the depending wall plate flanges **26** engage and force same into sealing contact with the wall portion **36** surrounding wall opening **18** to thereby provide a seal between the wall plate **22** and the wall portion surrounding wall opening **18**. It should be noted that the gasket width is only sufficient to provide a seal and will somewhat overlap or extend beyond the outer edges of flanges **26**. There is at least one advantage derived from this thickened gasket namely the fact that unevenness or other dimensional inequalities between the wall and wall plate can readily be accommodated and yet have a good seal.

The bubble **42** which fits into wall plate aperture **24**

comprises a cylindrical wall portion 44 covered at its outer end by convex cap 46. The open end of cylindrical wall portion 44 is provided with a pair of spaced peripheral flanges 48 and 50. The space between said flanges is slightly greater than the thickness of the wall plate 22 so that the bubble may be mounted on the wall plate by having these flanges 48 and 50 engaging opposite faces of the wall plate surrounding the wall plate aperture 24. This bubble is made of the same material as the unitary seal member 30 of the first embodiment. Bubble 42 is of the same dimensions as bubble portion 34 of the first embodiment and functions in identical manner.

One of the advantages of the two piece seal arrangement is that different materials may be used. For example, a thick spongy rubber-like material may be used for the gasket 40 while a silicon rubber or the like may be used to form the bubble 42. In addition, there will be less material used in the two-piece arrangement. This is naturally an important consideration. Further, if one of the seals became ineffective for any reason it is necessary to only replace it rather than the entire seal as would be the case in a unitary seal.

I claim:

1. A weatherproof switch assembly comprising in combination, a conventional switch having the usual switch operating lever adapted for oscillation to turn the switch on and off, means flush mounting said switch in a wall opening with the switch lever extending outwardly beyond the plane of the wall in which the opening is formed, a conventional wall plate having a centrally disposed aperture therein, said wall plate being positioned such that the switch lever will extend freely through the wall plate aperture, and the perimeter of the wall plate covers the periphery of the wall opening and a unitary flexible sealing member between the perimeter of the wall plate and the wall, and having a bubble portion extending outwardly through the wall plate aperture to freely cover the switch lever thus providing a weatherproof seal between the wall and the wall plate.

2. The invention as described in claim 1 and wherein the unitary flexible sealing member is transparent.

3. The invention as described in claim 1 and wherein the bubble portion of the sealing member is sufficiently large so that the switch operating lever will remain spaced from the bubble in any operating position while the bubble is not flexed.

4. A weatherproof switch assembly comprising in combination, a conventional switch having the usual switch operating lever adapted for oscillation to turn the switch on and off, means mounting said switch in a wall opening with the switch lever extending outwardly beyond the plane of the wall in which the switch receiving opening is formed, a wall plate having an aperture therein, said wall plate being positioned with the switch lever extending outwardly through the wall plate aperture and the wall plate perimeter covering the wall immediately surrounding the wall opening, and a flexible sealing means between the perimeter of the wall plate and the wall adjacent thereto, said sealing means having a bubble portion extending outwardly through the wall plate aperture to cover the switch lever thus providing a weatherproof seal between the wall and the wall plate.

5. The invention described in claim 4 and wherein the bubble portion of the sealing means is transparent.

6. A weatherproof switch assembly comprising in combination, a conventional switch having the usual switch operating lever adapted for oscillation to turn the switch on and off, means flush mounting said switch in a wall opening with the switch lever extending outwardly beyond the plane of the wall in which the opening is formed, a conventional wall plate having a centrally disposed aperture therein, said wall plate being positioned such that the switch lever will extend freely through the wall plate aperture and the perimeter of the wall plate covers the periphery of the wall opening and a flexible sealing member positioned between the perimeter of the wall plate and the periphery of the wall opening to provide a weatherproof seal therebetween, a flexible bubble mounted in the wall plate aperture with the closed portion extending outwardly to provide space to cover the switch lever and provide a weatherproof seal between the bubble and the wall plate aperture.

7. The invention as described in claim 6 and wherein the bubble is of sufficient size such that the bubble may be normally flexed from without to operate the switch lever and yet provide complete clearance in all positions of the switch lever when the bubble is not flexed.

8. The invention as described in claim 7 and wherein the bubble comprises a cylindrical wall covered at the outward end by a convex cap portion, a pair of spaced peripheral flanges extending radially outward from the open end of the cylinder, the space between said flanges being sufficient to allow the flanges to fit snugly on opposite sides of the wall plate aperture to secure the bubble therein.

9. A weatherproof sealing means for use in conjunction with a generally flush mounted conventional switch having the usual switch operating lever adapted for oscillation to turn the switch on and off, means mounting said switch in a wall opening with the switch lever extending outwardly beyond the plane of the wall in which the switch receiving opening is formed, a wall plate having an aperture therein, said wall plate being positioned with the switch lever extending outwardly through the wall plate aperture and the wall plate perimeter covering the wall immediately surrounding the wall opening, and wherein the weatherproof sealing means comprises a flexible sealing means adapted to fit between the perimeter of the wall plate and the wall adjacent thereto, said sealing means having a bubble portion adapted to extend outwardly through the wall plate aperture to cover the switch lever thus providing a weatherproof seal between the wall and the wall plate.

10. A weatherproof sealing means for use in conjunction with a generally flush mounted conventional switch having the usual switch operating lever adapted for oscillation to turn the switch on and off, means flush mounting said switch in a wall opening with the switch lever extending outwardly beyond the plane of the wall in which the opening is formed, a conventional wall plate having a centrally disposed aperture therein, said wall plate being positioned such that the switch lever will extend freely through the wall plate aperture and the perimeter of the wall plate covers the periphery of the wall opening, said sealing means comprising a flexible sealing member adapted to be positioned between the perimeter of the wall plate and the periphery of the wall opening to provide a weatherproof seal therebetween, a flexible bubble adapted to be mounted in the wall plate aperture with the closed portion extending outwardly to provide space to cover the switch lever and provide a weatherproof seal between the bubble and the wall plate aperture.

11. The invention as described in claim 10 and wherein the bubble is of sufficient size such that the bubble may be normally flexed from without to operate the switch lever and yet provide complete clearance in all positions of the switch lever when the bubble is not flexed.

12. The invention as described in claim 11 and wherein the bubble comprises a cylindrical wall covered at the outward end by a convex cap portion, a pair of spaced peripheral flanges extending radially outward from the open end of the cylinder, the space between said flanges being sufficient to allow the flanges to fit snugly on opposite sides of the wall plate aperture to secure the bubble therein.

13. A weatherproof sealing means for use in conjunction with a generally flush mounted conventional switch having the usual switch operating lever adapted for oscillation to turn the switch on and off, means flush mounting said switch in a wall opening with the switch lever extend-

ing outwardly beyond the plane of the wall in which the opening is formed, a conventional wall plate having a centrally disposed aperture therein, said wall plate being positioned such that the switch lever will extend freely through the wall plate aperture, and the perimeter of the wall plate covers the periphery of the wall opening, said sealing means comprising a unitary flexible sealing member adapted to fit between the perimeter of the wall plate and the wall, and having a bubble portion adapted to extend outwardly through the wall plate aperture to freely

cover the switch lever thus providing a weatherproof seal between the wall and the wall plate.

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