May 21, 1963 M. MORSE 3,090,855

TRANSPARENT SWITCH BOOT

Filed Oct. 31, 1961

Fig. 1

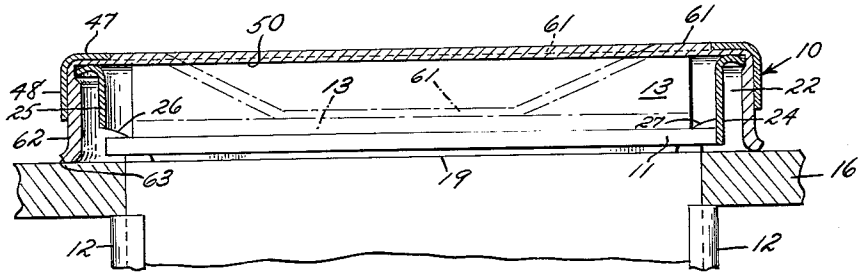


Fig. 2

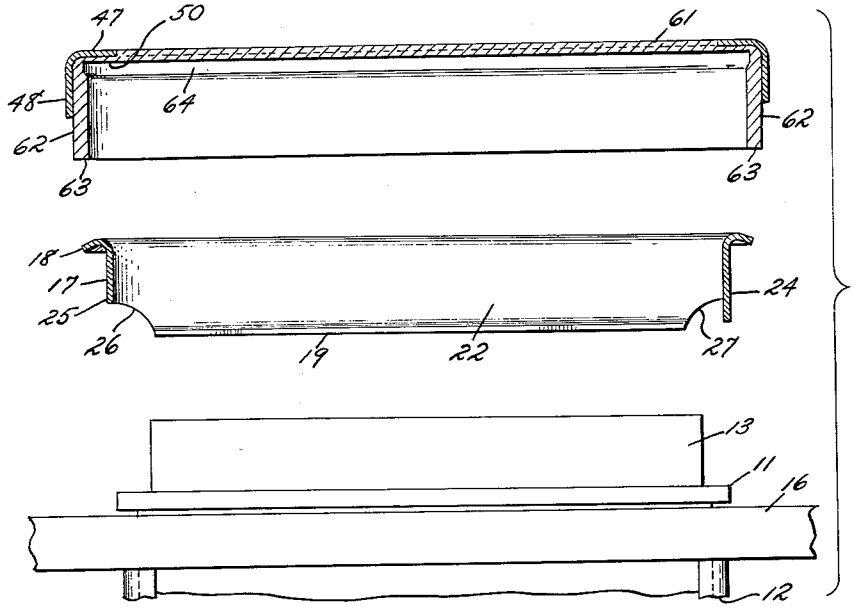


Fig. 4

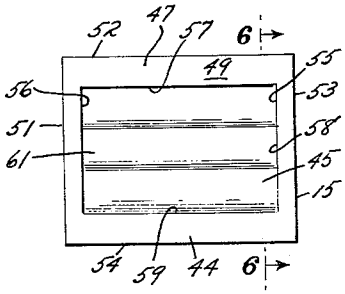
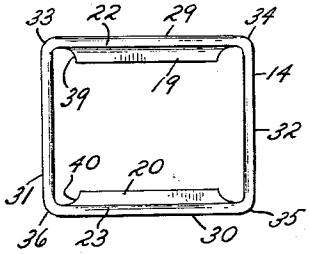


Fig. 3



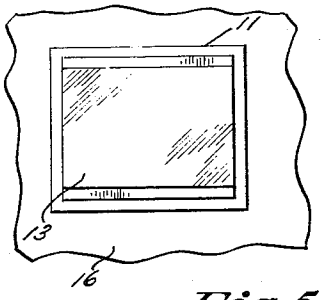


Fig. 5

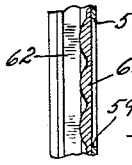


Fig. 6

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TRANSPARENT SWITCH BOOT

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2 Claims. (Cl. 200—168)

This invention relates generally to the field of flexible protective sealing devices adapted to be positioned around the exposed portions of an electric switch or other control mounted in a control panel or other surface in such manner that the control may be operated through the protective device by deforming the same, and more particularly to an improved form of such device for use in conjunction with controls having a rectangular exposed mounting flange.

It is among the principal objects of the present invention to provide an improved switch boot which may be easily installed in sealed position about the exposed portions of a rectangularly shaped control without the use of tools, to form an effective seal about such frame against the exposed surface of a panel in which the control is mounted.

Another object of the invention lies in the provision of a switch boot sealing device of the class described in which a portion of the same may be readily detached to permit inspection and/or servicing of the control disposed therebeneath.

A further object of the invention lies in the provision of a switch boot of the class described having a transparent component flexibly overlying the normally finger-engaged surface of the control, thereby particularly adapting the device for use in conjunction with self-illuminated switches.

Still another object of the invention lies in the provision of a switch boot device of the class described and possessed of the above advantages, in which the cost of fabrication may be of a reasonably low order, with consequent wide sale, distribution and use.

A feature of the invention lies in the provision of ribbed means on the transparent element comprising the device for purposes of preventing the same from sticking to the normally finger-engaged control surface.

Another feature of the invention lies in the provision of a two-piece switch boot, in which one element thereof is more or less permanently installed about the rectangular frame of the control, the other part being readily selectively engageable and disengageable therewith.

These objects and features, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIGURE 1 is a fragmentary longitudinal sectional view of an embodiment of the invention in installed condition.

FIGURE 2 is an exploded fragmentary sectional view showing the structure of FIGURE 1 in disassembled condition.

FIGURE 3 is a plan view of a boot element comprising a part of the embodiment.

FIGURE 4 is a bottom plan view of a mounting frame element comprising a part of the embodiment.

FIGURE 5 is a fragmentary plan view of a push-button type switch with which the embodiment is used.

FIGURE 6 is an enlarged fragmentary sectional view as seen from the plane 6—6 in FIGURE 3.

In accordance with the invention, the device generally indicated by reference character **10**, is illustrated in the drawings in use in conjunction with the rectangular frame **11** of a push-button type switch **12** having a projecting

rectangular button **13** disposed within the frame **11**, the details of which form no part of the present disclosure, and which need not be further described. Controls or switches of this type are normally positioned within a rectangular opening in a panel **16**, the frame **11** overlying the edges of the opening, and contacting the outer surface of the panel **16**. The device **10** is adapted to fit over the frame **11**, and to partially extend between the overhanging portion of the frame **11** and the outer surface of the panel **16**. It comprises broadly a mounting frame element **14** and a boot element **15**.

The mounting frame element **14** is preferably formed as a stamping, using progressive die technique or similar forming means. It includes a continuous side wall **17**, a continuous upper flange **18**, and a pair of frame-engaging lower flanges **19** and **20**.

The side wall **17** is of rectangular configuration corresponding to that of the frame **11**, including a pair of longer portions **22** and **23**, a first shorter portion **24** disposed at right angles with respect thereto, and a cut-away shorter portion **25** disposed opposite the portion **24**. The portion **25** is sufficiently shallow to permit the same to readily pass over the frame **11** during engagement, as will more clearly appear hereinafter. To facilitate forming operation, the juncture of the portions **22**, **23** and **24** are provided with arcuate cutout portions at **26** and **27**.

The continuous upper flange **18** includes longer portions **29** and **30**, as well as shorter portions **31** and **32** interconnected by curved portions **33**, **34**, **35** and **36**.

The lower flanges **19** and **20** are generally similar, and include angularly disposed leading edges **39** and **40** to facilitate insertion beneath the frame **11** upon engagement therewith.

The boot element **15** is also rectangular in configuration, and includes a metallic support member **44** and a resilient member **45** bonded to the inner surface thereof.

The member **44** is also preferably formed as a stamping, and includes a planar outer wall **47**, and a continuous integrally-formed side wall **48**. The planar wall **47** includes an outer surface **49**, an inner surface **50**, as well as side edges **51**, **52**, **53** and **54**. A centrally disposed opening **55** corresponds in dimensions to the button **13** of the switch **12**, being bounded by rectilinear edges **56**, **57**, **58** and **59**.

The resilient member **45** is formed of transparent resilient synthetic resinous material, and preferably transparent silicon rubber. The member **45** is preferably molded within the member **44** to be bonded thereto at the time of curing of the material from which the member **45** is formed. It includes a ribbed upper planar wall **61**, a continuous side wall **62** lying within the side wall **48**, as well as a continuous flange **63** which forms the seal against the panel **16**. The ribs form the equivalent of a Fresnel lens to facilitate viewing therethrough, and prevent the formation of an air seal between the inner surface of the walls **61** and the switch. A continuous groove **64** is positioned immediately below the wall **61**, and is selectively engageable with the upper flange **18** upon installation.

The device **10** is preferably installed prior to the tightening of the frame **11** within the opening in the panel **16**, to permit engagement of the lower flanges **19** and **20** with the inner surfaces of the frame **11**. The engagement is performed in a sliding manner, the cut-away shorter portion **25** passing over the frame **11**, the button **13** being momentarily depressed to permit clearance. Once positioned, the frame element **14** is retained by the tightening of the frame **11** against the panel **16**. The boot element **15** is installed by pushing the same directly over the frame element **14**, until the groove **64** engages the flange **18**. In this position,

the flange **63** is resiliently urged against the outer surface of the panel **16**, to provide an effective seal, and manipulation of the button **13** is accomplished by pushing upon the wall **14** which flexes under light pressure.

Should it be desirable to inspect the switch **12**, it is necessary only to disengage the boot element **15** by pulling outwardly thereupon, the frame element **14** remaining in position during such inspection.

I wish it to be understood that I do not consider the invention limited to the precise details of structure shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

I claim:

1. A hermetic boot for use in conjunction with a panel-mounted push-button control, having an outwardly extending generally rectangular frame, comprising: a mounting frame element and a boot element, said mounting frame element including first flange means slidably engageable with a portion of said rectangular frame, and second flange means lying in a plane substantially parallel to the plane of said first flange means, said boot element including a flexible member of configuration corresponding to that of said mounting frame element, and having groove means selectively engageable with said second flange means, and a continuous flange adapted to bear against an outwardly disposed surface of said panel upon engagement of said groove means with said second flange means, said boot element including a metallic frame member surrounding said resilient member in sealed relation.

2. A hermetic boot for use in conjunction with a panel-mounted push-button control, having an outwardly extending generally rectangular frame, comprising: a mounting frame element and a boot element, said mounting frame element including first flange means slidably engageable with a portion of said rectangular frame, and second flange means lying in a plane substantially parallel to the plane of said first flange means, said boot element including a flexible member of configuration corresponding to that of said mounting frame element, and having groove means selectively engageable with said second flange means, and a continuous flange adapted to bear against an outwardly disposed surface of said panel upon engagement of said groove means with said second flange means, said boot element including a metallic frame member surrounding said resilient member in sealed relation and overlying said groove means.

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