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CIRCUIT BREAKER HANDLE ASSEMBLY

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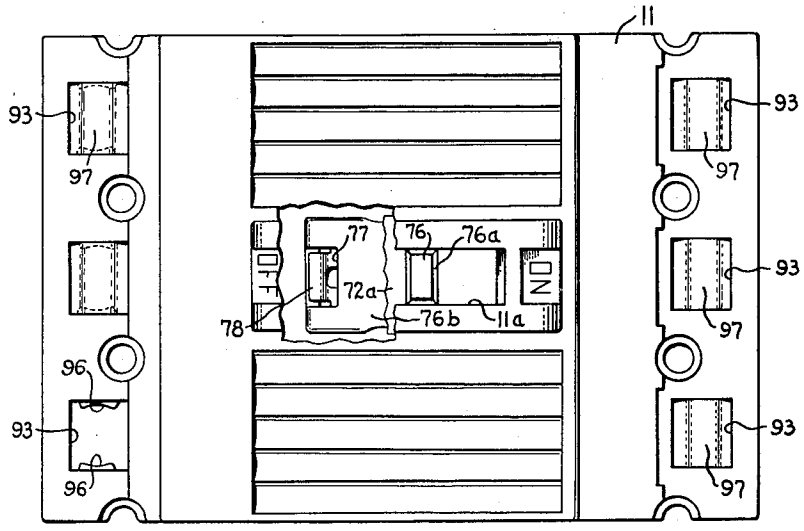


Fig. 1

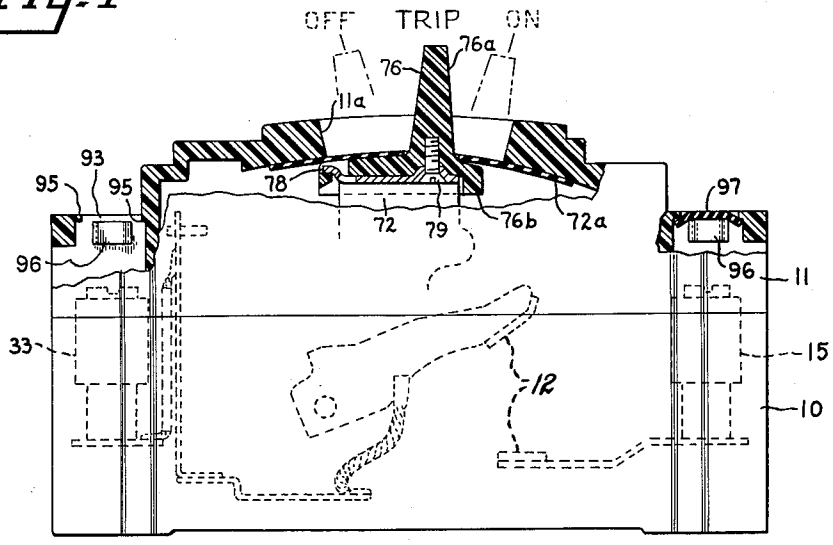


Fig. 2

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CIRCUIT BREAKER HANDLE ASSEMBLY

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Original application Dec. 19, 1958, Ser. No. 781,766, now Patent No. 3,046,371, dated July 24, 1962. Divided and this application Oct. 10, 1960, Ser. No. 61,533
2 Claims. (Cl. 200—172)

My invention relates to electric circuit breaks and particularly to electric circuit breakers of the multipole type, including movable contacts for each pole operated by an over-center spring type operating mechanism, the whole being enclosed in a casing of molded insulating material.

This application is a division of copending application Serial Number 781,766, filed December 19, 1958, now Patent No. 3,046,371, issued July 24, 1962, and assigned to the same assignee as the present invention.

It is a general object of the present invention to provide an electric circuit breaker of the type described which is extremely compact and which is usable in electric circuits of higher voltage and current rating than prior circuit breakers of comparable size.

It is a particular object of the invention to provide an electric circuit breaker of the type described including an operating handle which occupies a minimum of space within the circuit breaker casing and which may be readily attached to a handle support member internally of the circuit breaker casing in an extremely rigid and simplified manner.

In accordance with the invention in one form, an electric circuit breaker is provided including a manually operable handle member of molded insulating material which is supported upon a metallic handle support member. The molded insulating handle has a relatively small base portion which rests upon the metallic handle support. The handle support includes an offset upwardly projecting tongue portion, and the insulating handle member has an aperture therein receiving the tongue portion of the handle support in interlocking manner. A screw is inserted upwardly through the underside of the handle support member into threaded engagement with the insulating handle, thereby locking the handle to the base. A thin flexible shield of insulating material is placed over the molded handle portion to provide required insulation and closure of the handle opening in the casing cover.

My invention will be more fully understood from the following detailed description, and its scope will be pointed out in the appended claims.

In the drawing,

FIGURE 1 is a top plan view of a multipole circuit breaker incorporating the invention, a portion of the casing being broken away; and,

FIGURE 2 is a side elevation view partially in section of the circuit breaker **1**.

In the drawing, the invention is shown as incorporated in a three-pole electric circuit breaker comprising an insulating casing including an insulating base portion **10** and an insulating cover portion **11**. The base portion **10** has three line terminal members **15** supported in corresponding recesses at one end thereof, and three corresponding load terminals **33** positioned in recesses at the opposite end of the base. The cover portion **11** is provided with portions projecting over the terminals at each end of the base **10**, and provided with apertures **93**, for a purpose to be described.

The circuit breaker casing includes a plurality of pole chambers not shown, in line, respectively, with the line and load terminals **15** and **33**. Each of the pole chambers contains a pair of relatively movable contacts **12** (only one pair shown) for making and breaking an electric

circuit through that particular pole. For the purpose of operating the relatively movable contacts between open and closed position, operating mechanism is provided, including a manually operable metallic support member **72** carrying a manually engageable insulating handle portion **76**. The handle portion **76** projects through an aperture in the top wall of the cover **11** and is manually engageable to operate the operating mechanism.

The insulating handle **76** includes a stem portion **76***a* and a base portion **76***b*. The base portion **76***b* is made relatively short, to occupy less space within the circuit breaker casing, thereby making possible a more compact structure. The base portion **76***b* also includes an opening **77**, through which an offset tongue or lug **78** of the support member **72** extends. An anchoring screw **79** extends through the bight portion of the handle support member **72** upwardly into threaded engagement with the handle member **76**. It will be observed that the handle member **76** is thereby rigidly and fixedly supported on the handle supporting member **72** by the use of only a single screw. In order to close the handle opening **11***a* of the cover **11**, without requiring the use of much space internally of the enclosure, a relatively thin shield **72***a* is provided, which fits over the stem **76***a* and is loosely trapped between the cover **11** and the base **76***b* of the molded handle. The shield **72***a* serves to close the opening **11***a* in the cover **11** in all positions of the handle.

The circuit breaker operating mechanism may be of any suitable type, such for example, as that disclosed in the above mentioned copending application.

As previously mentioned, the end portions of the cover **11** are provided with apertures **93** corresponding in location to the line and load terminal member **15** and **33**, respectively. These apertures provide access to the clamping screws of the respective terminal members by suitable means such as by a screwdriver.

For the purpose of providing a simple, secure and effective closure of the openings, **93**, lip portions **95** are provided at each of two opposed sides of the apertures in **93**, and projections **96**, extending inwardly from the other two opposed sides of the aperture. The top surface of the projections **96** are substantially on a line with the bottom surfaces of the lips or projections **95**. A closure member **97**, conforming generally in outline to apertures **93** and of relatively thin resilient insulating material, is then snapped into position in each of the apertures **93** so as to assume the trapped position shown in FIGURE 2. It has been found that these closure members are securely retained by this construction and that it is virtually impossible to remove them from the top surface of the breaker.

It will be observed that by means of this casing and handle construction, I have provided a circuit interrupter which is small in over-all size, inexpensive to construct and assemble, yet suitable for use at relatively high voltages.

While I have shown only one specific form of the invention, it will be readily appreciated that many modifications thereof may be made by those skilled in the art, and I therefore intend by the appended claims to cover all such modifications as fall within the true spirit and scope of the invention.

What I claim as new and desire to secure to Letters Patent of the United States is:

1. An electric circuit breaker comprising a molded insulating casing, at least one relatively stationary contact mounted in said insulating casing, at least one movable contact movable between open and closed circuit positions into and out of engagement with said stationary contact, manually operable means for moving said movable contact between said open and closed circuit positions com-

prising a handle supporting member having a generally planar metallic portion including an offset tongue portion, and an insulating handle member attached to said handle supporting portion, said insulating handle member having an aperture therein through which said tongue portion of said handle support member projects so that a portion thereof overlies an upper surface of said insulating handle member, and means fixedly attaching an intermediate portion of said insulating handle member to said handle supporting member at a point spaced from said aperture.

2. An electric circuit breaker comprising a casing of molded insulated material, at least one relatively stationary contact mounted in said insulating casing, at least one movable contact movble between open and closed circuit positions into and out of engagement with said stationary contact, manually operable means for moving said movable contact between said open and closed circuit positions comprising a handle supporting member having a relatively short generally planar metallic portion including an offset tongue portion, a handle opening in said insulating casing, a handle member of molded insulating material including a base portion mounted on said handle supporting member and a stem portion projecting through

said handle opening, said base portion having an aperture therein through which said tongue portion of said handle support member projects, a portion of said tongue overlying a portion of the upper surface of said insulating handle member, retaining screw passing through said handle support member and into a threaded engagement with said insulating handle member, and a relatively thin shield of insulating material supported on said insulating handle member and trapped between said insulating casing and said handle support member, said insulating shield covering said overlying portion of said tongue and closing said handle opening in all positions of said handle.

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