

Feb. 5, 1963

H. I. STANBACK ETAL

3,076,876

MEANS FOR LOCKING CIRCUIT BREAKER OPERATING HANDLES

Filed Sept. 7, 1960

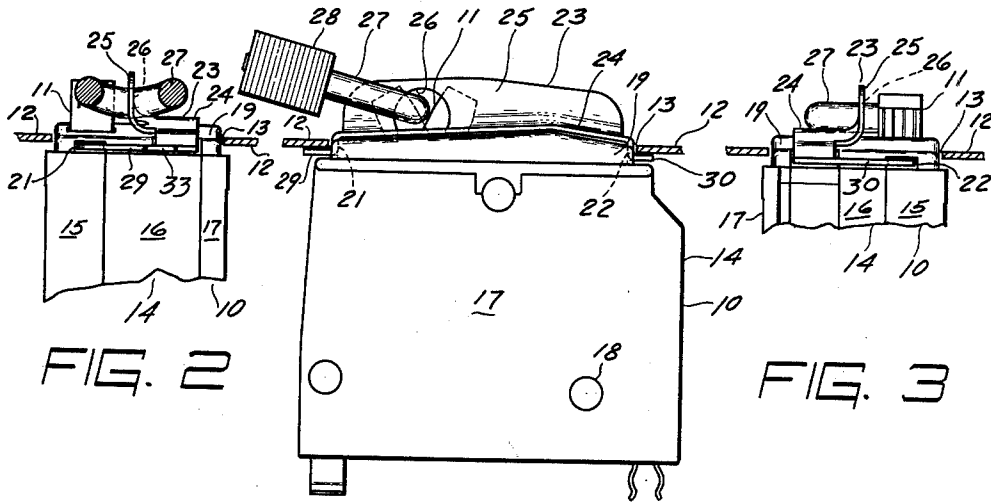


FIG. 2

FIG. 3

FIG. 1

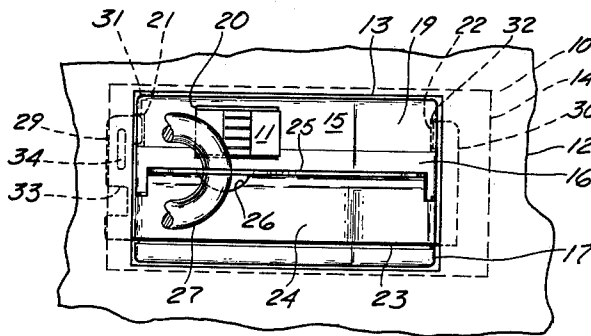


FIG. 4

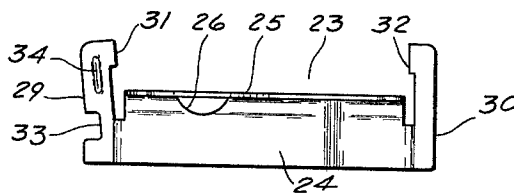


FIG. 5

INVENTOR.
HARRIS I. STANBACK
CLEMENT W. WOLF
BY

Thomas F. Kirby

3,076,876

MEANS FOR LOCKING CIRCUIT BREAKER OPERATING HANDLES

Harris I. Stanback, Lexington, Ky., and Clement W. Wolf, Mount Clement, Mich., assignors to Square D Company, Detroit, Mich., a corporation of Michigan
 Filed Sept. 7, 1960, Ser. No. 54,453
 7 Claims. (Cl. 200-44)

This invention relates generally to means for locking the operating handles of circuit breakers in selected position. More particularly, it relates to a padlock type handle locking device for use with panelboard mounted molded case type electric circuit breakers to lock the operating handle thereof in "off" or "on" position.

It is an object of this invention to provide an improved handle locking device which is adapted to be removably attached to the case of a circuit breaker and to accommodate a padlock so that the hasp thereof interferes with movement of the circuit breaker operating handle from one position to another.

Another object is to provide a handle locking device of the aforesaid character which has improved means for attachment to the circuit breaker case, such means being concealed and rendered inaccessible by the trim pan or cover on the circuit breaker panelboard.

Another object is to provide a handle locking device of the aforesaid character which can be employed with circuit breakers of standard construction after a slight modification has been made in the cases of the latter.

Another object is to provide a locking device of the aforesaid character which is fabricated from a unitary piece of metal, which is economical to manufacture and which is easy to install in the factory or field with standard tools.

Other objects and advantages of the invention will hereinafter appear.

The drawing illustrates a preferred embodiment of the invention, hereinafter described, but it is to be understood that the embodiment illustrated is susceptible of modification with respect to details thereof without departing from the scope of the appended claims.

In the drawing:

FIG. 1 is a side view of a circuit breaker having a handle locking device and a padlock associated therewith.

FIG. 2 is a view of one end of the circuit breaker and handle locking device shown in FIG. 1.

FIG. 3 is a view of the other end of the circuit breaker and handle locking device shown in FIG. 1.

FIG. 4 is a top plan view of the circuit breaker and handle locking device shown in FIG. 1.

FIG. 5 is a top plan view of the handle locking device showing its configuration prior to association with the circuit breaker.

Referring to FIGS. 1 through 4, the numeral 10 designates a type of electric circuit breaker with which the invention is employed to great advantage. The circuit breaker 10 may be assumed to be of standard construction and is a two-pole device having a pair of separable contacts (not shown) for each pole and an operating mechanism (not shown) for each pole. Both operating mechanisms are simultaneously movable to open and closed conditions by means of an operating handle 11 which is pivotally movable between "on" and "off" positions, as FIG. 1 makes clear. Both operating mechanisms are automatically and simultaneously movable to open condition in response to an abnormal circuit condition which affects either one or both of the poles. The circuit breaker 10 is of the trip-free type in that both mechanisms are free to move automatically to open condition even though the operating handle 11 is held in "on" position. The circuit breaker 10 is adapted for

mounting in a panelboard (not shown) which, for example, could be of the type shown in Patent No. 2,902,632 for Electrical Panelboard issued to Stanback et al. on September 1, 1959 and assigned to the same assignee as the present invention. The panelboard is provided with a trim pan 12 having a knockout or hole 13 therein for accommodating the handle 11 and portions of the case of the circuit breaker 10.

The circuit breaker 10 comprises an insulating case 14 which is fabricated by stacking together a base portion 15, an intermediate portion 16, and a cover portion 17. The portions 15, 16 and 17, which are preferably molded from suitable insulating material such as "Bakelite" or the like, are secured together by means of a plurality of rivets 18. The portions 15, 16 and 17 are each provided with a molded projection and the projections combine to form a raised portion 19 on the circuit breaker case 14. As FIG. 4 best shows, the base portion 15 of the case 14 is provided with a hole 20 through its molded projection for accommodating the operating handle 11. The operating handle 11, which is molded from suitable insulating material such as "Bakelite" or the like, is understood to be pivotally supported in a well-known manner between the base portion 15 and the intermediate portion 16 of the case 14. FIG. 1 shows the operating handle 11 disposed in "off" position and indicates the position it assumes when moved to "on" position.

In accordance with the invention, the raised portion 19 of the case 14 is provided with locking slots 21 and 22 at opposite ends thereof. More specifically, the slots 21 and 22 are formed in the projection on the base portion 15 of the case 14 and are intersected by the plane in which the operating handle 11 moves. As FIGS. 1, 3 and 4 show, the slots 21 and 22 are disposed so as to lie below the level of the lower surface of the trim pan 12 when the circuit breaker 10 is properly disposed in the panelboard.

Referring to FIGS. 1 through 5, the numeral 23 designates a handle locking device which is constructed in accordance with the invention. The handle locking device 23 is a unitary member preferably fabricated by punching or stamping from heavy gauge sheet metal. The handle locking device 23 comprises a body portion 24 which is shaped to conform to the configuration of the raised portion 19 of the circuit breaker case 14. The body portion 24 of the handle locking device 23 is provided with a flange 25 which is integral therewith and extends upwardly or outwardly therefrom. The flange 25 is provided with a hole 26, best seen in FIG. 1, which is disposed adjacent the operating handle 11 of the circuit breaker 10 when the handle locking device 23 is associated with the circuit breaker. The hole 26 in the handle locking device 23 is adapted to accommodate the hasp 27 of a padlock 28 which may be of any well-known type. The body portion 24 of the locking device 23 is further provided with offset legs 29 and 30 at opposite ends thereof and the legs 29 and 30 are provided with locking tongues 31 and 32, respectively, which are adapted to engage the locking slots 21 and 22, respectively, in the raised portion 19 of the case 14 of the circuit breaker 10, as will hereinafter be explained. The legs 29 and 30 lie in a plane which is normal to the plane in which the flange 25 of the locking device 23 lies. As FIGS. 4 and 5 show, the offset leg 29 of the locking device 23 is provided with a notch or cutout portion 33 which weakens the leg sufficiently in that area so that it may be bent from the position it occupies in FIG. 5 to that shown in FIG. 4, or vice-versa, as will be explained. The offset leg 29 of the locking device 23 is provided with a depression 34 which is adapted to accommodate the tip of a blade-type screw driver (not shown) which is employed to effect bending of the offset leg 29.

The invention is employed in the following manner.

The handle locking device 23 may be attached to the case 14 of the circuit breaker 10 either before or after the circuit breaker is attached to the panelboard, but in either event, before the trim pan 12 is associated with the circuit breaker. The handle locking device 23 is attached to the case 14 of the circuit breaker 10 by engaging the locking tongue 32 on the offset leg 30 with the locking slot 22 in the raised portion 19 of the case 14. The handle locking device 23 is then pressed down so that the body portion 24 thereof fits snugly against the raised portion 19 of the case 14. In this position the flange 25 of the locking device 23 lies in a plane which is parallel to but spaced apart from the plane in which the operating handle 11 of the circuit breaker 10 moves. The locking tongue 31 of the leg 29, which initially is disposed as shown in FIG. 5, is then aligned with the locking slot 21 in the raised portion 19 of the case 14. The tip of a blade type screw driver (not shown) is inserted in the depression 34 in the offset leg 29 of the handle locking device 23 and the screw driver is turned to twist the offset leg 29 in the clockwise direction (with respect to FIGS. 4 and 5) until the locking tongue 31 engages the locking slot 21 in the raised portion 19 of the case 14. By this operation, the handle locking device 23 is secured to the circuit breaker 10. The circuit breaker 10 is then installed in the panelboard, or if already installed, the trim pan 12 is put in place. When the trim pan 12 is in place, the raised portion 19 of the circuit breaker 10, the flange 25 and the body portion 24 of the handle locking device 23 extend through the hole 13 in the trim pan. As FIG. 4 shows, the offset legs 29 and 30 of the handle locking device 23 are covered by the trim pan 12 and are not accessible from the front of the panelboard unless the trim pan 12 is removed. The operating handle 11 of the circuit breaker 10 is now ready to be locked in either "on" or "off" position.

To lock the operating handle 11 in "off" position, the handle is moved to the position shown in FIGS. 1 through 4, the hasp 27 of the padlock 28 is inserted through the hole 25 in the flange 25 of the handle locking device 23, and the padlock is locked in the usual manner. The hasp 27 of the padlock 28 is thus in position to interfere with pivotal movement of the operating handle 11 of the circuit breaker 10 to the "on" position.

To lock the operating handle 11 in "on" position the padlock 28 is removed in the usual manner, the operating handle is moved to the "on" position indicated in FIG. 1, and the padlock is attached to the handle locking device 23 as aforescribed so that the hasp 27 thereof interferes with pivotal movement of the operating handle to the "off" position.

It will be apparent that, if desired, the padlock 28 may be removed from the locking device 23 and the circuit breaker 10 may be operated in the usual manner even though the handle locking device is still attached to the circuit breaker.

The handle locking device 23 may be detached from the circuit breaker 10 without damage to either of them by removing the trim pan 12 of the panelboard, by employing a screw driver to twist the offset leg 29 in the counterclockwise direction (with respect to FIGS. 4 and 5) until the locking tongue 31 thereof disengages the locking slot 21 in the raised portion 19 of the case 14, and by lifting the handle locking device to disengage the locking tongue 32 on the offset leg 30 from the locking slot 22 in the raised portion of the circuit breaker case.

Although the handle locking device disclosed herein is shown associated with a two-pole circuit breaker, it is apparent that it may be employed with circuit breakers having a greater or lesser number of poles provided they are suitably adapted as described herein.

What is claimed is:

1. In combination, a circuit controlling device having a case and a movable operating handle extending from

said case, said case having slots therein near opposite ends thereof, a locking device having a portion disposed adjacent the plane in which said operating handle moves, said portion having an aperture for a padlock hasp therein, and a pair of detents integral with said portion at opposite ends thereof for engagement with respective slots in said case, one of said detents having a notch therein to facilitate bending thereof in opposite directions for respectively engaging it with and disengaging it from its respective slot, and a padlock having a hasp insertable in said aperture in said locking device whereby said hasp interferes with movement of said operating handle of said circuit controlling device from one position to another.

2. The combination according to claim 1 including a trim panel forming part of an enclosure for said circuit controlling device, said trim panel having an aperture for accommodating the operating handle of said circuit controlling device and said portion of said locking device, said trim panel being adapted to overlie said detents to render them inaccessible for bending purposes.

3. In combination, a circuit controlling device having a case, said case having slots therein near opposite ends thereof, and an operating handle extending from said case and movable between two positions in a plane intersecting each of said slots, and a locking device having a portion lying in a plane adjacent and parallel to said plane in which said operating handle moves, said portion having an aperture for a padlock hasp therein to lock said operating handle in either of its two positions and a pair of detents integral with said portion at opposite ends thereof for engagement with respective slots in said case, one of said detents having a notch therein to facilitate bending thereof in opposite directions for respectively engaging it with and disengaging it from its respective slot.

4. A locking device for attachment to a circuit controlling device having an operating handle extending from the case thereof and movable in a plane between two positions, said case having slots therein near opposite ends thereof and intersected by said plane, said locking device comprising a portion adapted to lie in a plane adjacent and parallel to said plane in which said operating handle moves, said portion having an aperture for accommodating a padlock hasp, a pair of offset legs integral with said portion at opposite ends thereof, each of said offset legs being provided with a detent for engagement with a respective slot in said case, and one of said offset legs having a notch therein to facilitate bending thereof in opposite directions with respect to said portion of said locking device for respectively engaging its detent with and disengaging its detent from the respective slot in said case.

5. The combination according to claim 4 wherein said one of said offset legs of said locking device is provided with means for accommodating the tip of a screw driver to facilitate bending thereof.

6. A locking device for attachment to a circuit controlling device having an operating handle extending from the case thereof and movable in a plane between two positions, said case having slots therein near opposite ends thereof and intersected by said plane, said locking device comprising a body portion adapted to overlie the top of said circuit breaker, a flange portion integral with said body portion and adapted to lie in a plane adjacent and parallel to said plane in which said operating handle moves, said flange portion having an aperture for accommodating a padlock hasp, and a pair of downwardly offset legs integral with said body portion at opposite ends thereof, each of said offset legs being provided with a detent for engagement with a respective slot in said case, each offset leg and its detent lying in a plane which is normal to the plane in which said operating handle moves, and one of said offset legs being provided with a notch to weaken its attachment to said body

5

portion and being further provided with a depression for accommodating the tip of a screw driver to facilitate bending of said one offset leg in the plane in which it lies.

7. For a circuit controlling device having an operating handle extending outwardly from a front facing surface of a casing thereof and having a pair of recesses adjacent said front facing surface respectively in an opposed pair of side facing surfaces of said casing, a handle locking member comprising a body portion adapted to engage a portion of said front facing surface adjacent but spaced from said operating handle, a flange portion integral with said body portion and projecting angularly from an edge portion thereof adjacent said operating handle,

6

said flange portion having a hole therein adapted to receive a padlock hasp in interfering relationship with operation of said operating handle, and a pair of inwardly extending detents integral with and adjacent opposite ends of said body portion and adapted to be received in said recesses to retain said handle locking member on said circuit controlling device.

References Cited in the file of this patent

UNITED STATES PATENTS

2,169,860	Von Hoorn -----	Aug. 15, 1939
2,192,060	Wise -----	Feb. 27, 1940
2,484,424	Rosing -----	Oct. 11, 1949