CIRCUIT BREAKER DISABLING MEANS

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The instant invention generally relates to circuit breakers having non-interchangeability means and more particularly to circuit breakers of this type wherein tampering with the non-interchangeability means renders the circuit breaker inoperative.

Copending application Serial No. 806,959, filed April 16, 1959, in the name of Farnsworth et al., entitled "Non-Interchangeability Means for Circuit Breaker Panelboards," and assigned to the assignee of the instant invention sets forth a construction whereby a circuit breaker of high current rating cannot be inserted at a panelboard location adapted to receive a circuit breaker of low current rating. The means on the circuit breaker to prevent interchangeability from a low rated current circuit breaker to the high current rated circuit breaker comprises an extension of the circuit breaker housing. However, it has been found that if the housing extension were to be broken away the high current rated circuit breaker could then be inserted at the panelboard location adapted to exclude high current rated circuit breakers and a dangerous condition is created.

In order to overcome this problem the instant invention provides means whereby the breaking away of the housing extension serves to render the circuit breaker inoperative. In one embodiment of the device illustrated in the aforesaid application 806,959 the circuit breaker non-interchangeability means comprises an extension of the molded housing. In accordance with the instant invention this housing extension is made hollow and is provided with an insert which serves as a seat for one end of the circuit breaker main operating spring.

If the extension is broken away sufficiently to permit mounting at panelboard locations adapted to exclude high current rated circuit breakers, the main spring forces the insert out of the hollowed extension. With the insert no longer in place the main operating spring is no longer loaded so that operation of the circuit breaker is impossible.

The surface of the insert which provides seating means for the main spring comprises an inclined surface positioned to cause buckling of the main spring in the forced element of the circuit breaker to a predetermined latching position. The operation and function of the main spring buckling is set forth in detail in copending application Serial No. 752,630, filed August 1, 1958, in the name of R. W. Thomas, entitled "Circuit Breaker Latch," and assigned to the assignee of the instant invention.

The insert is dovetailed with respect to the hollowed housing extension. With this construction the insert readily leaves the housing when the extension is broken away. The dovetail construction is also advantageous during assembling of the circuit breaker. That is, during assembly the main spring bearing against the inclined seat of the insert tends to cock the insert causing it to bind thereby preventing it from being forced out of the uncovered back of the housing.

In order to insure that the main spring will become unloaded when the insert leaves the hollowed housing extension the housing is provided with an internal formation extending from the inclined surface at approximately a right angle with respect thereto. With this construction the end of the main spring normally seated on the inclined surface cannot catch on a housing projection, which if present, would maintain loading of the main spring even without the presence of the insert.

In order to prevent the inclined seating surface from being improperly orientated, and thereby buckling the main spring in the wrong direction, the insert is asymmetrically formed. A cooperating formation of the housing seats with the asymmetrical portions of the insert to assume that the latter can be mounted in only a single predetermined position.

Accordingly, a primary object of the instant invention is to provide a novel circuit breaker construction whereby the defeating of non-interchangeability means results in rendering the circuit breaker mechanism inoperative.

Another object is to provide a circuit breaker having non-interchangeability means comprising a hollowed housing extension and an insert disposed within the extension and supporting an operating member of the circuit breaker.

Still another object is to provide a non-interchangeability means of this type wherein the insert is dovetailed within the extension.

A further object is to provide a non-interchangeability means of this type wherein the insert is provided with an inclined surface which supports one end of the main operating spring causing this spring to buckle and thereby exert a component of force which urges an operating element of the circuit breaker to a predetermined latching position.

A still further object is to provide a non-interchangeability means of this type in which the circuit breaker housing is provided with an internal formation to cooperate with the asymmetrically formed insert so that the insert can be mounted only in a predetermined position.

Yet another object of the instant invention is to provide a non-interchangeability means of this type in which the circuit breaker housing is provided with an internal formation extending from the insert inclined surface at substantially right angles thereto to serve as a guide for the main operating spring.

These as well as other objects of the instant invention shall become readily apparent after reading the following description of the accompanying drawings in which:

FIGURE 1 is a perspective view of a circuit breaker constructed in accordance with the teachings of the instant invention.
FIGURE 2 is an exploded perspective of the circuit breaker operating mechanism.
FIGURE 3 is a front elevation of the circuit breaker with the cover removed to reveal the internal mechanism.
FIGURE 4 is a fragmentary view similar to FIGURE 3 showing the condition which arises when a substantial portion of the housing extension, comprising the non-interchangeability means, is broken away.
FIGURE 5 is a side elevation illustrating two circuit breakers mounted to a panelboard with one of the circuit breakers being of low current rating and the other of high current rating.
FIGURE 6A is a side elevation of the spring seating insert.

FIGURE 6B is a front elevation of the insert looking in the direction of arrows 6B—6C of FIGURE 6A. FIGURE 6C is a top view of the insert looking in the direction of arrows 6C—6D of FIGURE 6B.

Now referring to the figures, circuit breaker 10 comprises a U-shaped casing 11 having an open front enclosed by an insulating plate or cover 12 secured thereto by the ears 12a of metal mounting member 12b. The back of casing 10 is formed with two openings through which line and load terminals 14, 15 extend. The current path through circuit breaker 10 comprises line terminal 14 having stationary contact 16 mounted thereon and disposed within casing 11, movable contact 17 mounted to one end of L-shaped contact arm 18, bimetal 19 mounted to its lower end to contact arm 18, flexible braid 20 secured to the upper end of bimetal 19, to load terminal 15.

The operating mechanism of circuit breaker 10 in addition to including contact arm 18 and bimetal 19, the circuit breaker operating mechanism includes insulating cam plate 21 pivoted to housing 11 by rivet 22 which also provides a pivot for contact arm 18. Main operating spring 23, seated at its upper end against contact arm extension 24 and at its lower end against insert 50 whose construction will be hereinafter explained in detail, provides the operating forces to 17 about both opening and closing of circuit breaker 10 with a snap action. This operation is explained in detail in the aforesaid copending application 752,630 and the patents referred to therein.

The upper end of housing 11 is provided with an opening 24' through which extends handle or actuator 25 formed of a push button to bring about manual operation of circuit breaker 10. A cross-ledge of casing 11 is provided with a seat for coiled compression spring 27 which also bears against handle 25 to bias the same upwardly. Pawl 28 of cam plate 21 cooperates with a handle lug to limit outward movement of handle 25 but only during the closed circuit condition, merely holding handle 25 in an intermediate or On position and preventing handle 25 from going all of the way out to its open circuit or Off position. The latter position is established through the cooperation of handle lug 29 and casing surface 30. Movement of handle 25 is also utilized to operate on indicator 31 in the form of a plate disposed within undercut portion 32 of handle 25.

The rivet 22, which secures bimetal 19 to L-shaped contact arm 18 to form a movable contactor, is formed as a pin to provide a loose pivotal connection between the cam plate 21 and cam plate 19. The latter is provided with an elongated slot 35 which receives a stop lug (not shown) extending forwardly from the back of casing 11.

Main spring 23 functions to rotate arm 18 counterclockwise for circuit opening about the axis of pivot pin 23 when catching hook 36 forming the free end of bimetal 19 is released from engagement with its holding abutment, i.e., the latching edge 37 of plate 21. Such release of latch 36 from holding means 37 is effected either automatically, by the warping of bimetal 19 on overload, or manually, by the camming action provided by a sloping cam 38 of integral with handle 25. When cam 38 is pushed down it causes latch hook 36 off of its abutment 37 to permit the contact arm 18 to be rocked counterclockwise relative to plate 21 by main spring 23 for circuit opening. Spring 23 biases contactor 18, 19 upwardly and also biases plate 21 upwardly, and when the latch holds provides a force to move contact 17 towards and press contact 17 against contact 16.

For circuit opening, spring 23, through pivot axis 22, will slide plate 21 upwardly, with the latter guided by the casing; the engagement of the lower edge of plate slot 35 with the casing stop as previously mentioned, limits such movement of plate 21. At that time the stop will function as pivot for plate 21 and since the line of ac-
tion of spring 23 through axis 22 is to the left of that pivot, plate 21 will rock clockwise about the stop. Pawl portion 25 of plate 21 which normally holds handle 25 against extreme outward movement releases handle 25 and permit it to travel to the full Off position under the bias of spring 27.

In the On position plate 21 is so positioned by spring 23 and by the casing walls that pawl 28 engages a suitable lug of handle 25 to hold handle 25 against full outward movement to the Off position.

The end of pivot pin 22 near the back of casing 11 is seated within an elongated pocket (not shown) which permits pin 22 to slide up and down as required. To restore the elements to the circuit closing position, handle 25 is pushed down as far as may still go. In this down travel the handle notch 39 engages a reset lug 40 of plate 21 to cause pin 22 to slide downwardly. That part of plate 21 connecting lug 40 and pin 22 acts as a translator. The contactor 18, 19 will move downwardly with pin 22, until arm 41 reaches a resetting stop (not shown) in casing 11. Continued downward movement of handle 25 and continued downward movement of lug 40 and pin 22 will cause the contactor 18, 19 to rock clockwise about axis 22 far enough to cause latch 36 to slide over or overtravel beyond its holding edge 37, for relatching. The release of handle 25 by the operator at that time will free handle 25 to be moved to its outward position by spring 23 and as the handle moves downwardly spring 23 will act on contactor 18, 19 to bring movable contact 17 into engagement with stationary contact 16.

The contactor 18, 19 will rock slightly counterclockwise and assume its final position, when latch 36 engages holding edge 37. Plate 21 will rock counterclockwise to place lug 40 out of the path of cam notch 31.

Circuit breaker 10 is provided with a non-interchangeability means in the form of a hollow extension 52 formed integrally with casing 11 and extending downwardly therefrom. That is, circuit breaker 10 is of a higher current rating than circuit breaker 49 (FIGURE 5). It is to be noted that circuit breaker 49 does not have an extension 52 at the bottom of its housing. Thus, as explained in detail in the aforesaid copending application 806,959, the high current rated circuit breaker 10 cannot be mounted at a panelboard location having a projecting means 48 thereof.

The insert 50, whose upper surface 53 provides an inclined seat for the lower end of main operating spring 23, is disposed within hollow extension 52 being retained therein through the partial overlapping of cover 12. Insert 50 is provided with side walls 54, 55 which diverge as they move downwardly from inclined surface 53. The hollow of extension 52 is shaped to conform with the sloped configuration of walls 54, 55, so that upon assembly the pressure of spring 23 causes insert 50 to assume a cocked position and bind to prevent insert 50 from accidentally flying out of housing 11.

The front of insert 50 is asymmetrically formed through the inclusion of bevel 56. A complementary housing formation is provided for cooperation with bevel 56 to assure that the insert 50 can only be inserted in a single direction wherein incline 53 is properly oriented so that main spring 23 is caused to buckle and thereby exert a component of force toward the bevel 56. If a substantial portion of molded extension 52 is broken away, as in FIGURE 4, in an attempt to modify circuit breaker 10 so that it may be mounted at a circuit location which is adapted to exclude circuit breaker 10, compression spring 23 will act to force insert 50 downwardly and out of casing 11. The inclined seat for the lower end of spring 23 and subsequent operations of handle 25 will not cause spring 23 to be loaded so that operation of circuit breaker 10 is thereafter impossible.

It is noted that the casing wall 57 at the back end and adjacent to inclined surface 53 is positioned at ap-
proximately right angles thereto. Surface formation 57 provides means which insures that the spring 23 when the lower end thereof moves downward will not snag. If the bottom of spring 23 were to snap circuit breaker 10 could operate even though insert 59 is no longer in place.

Thus, this invention provides a novel circuit breaker construction wherein an attempt to defeat the non-interchangeability means renders the circuit breaker inoperative.

Although I have here described preferred embodiment of my novel invention, many variations and modifications will now be apparent to those skilled in the art, and I therefore pray that a broad disclosure herein, but only by the appending claims.

I claim:

1. A circuit breaker including a pair of cooperating contacts, an operating mechanism for automatically disengaging said contacts as well as manually operating said contacts into and out of engagement, means for said circuit breaker to prevent installation thereof in an improper circuit, said means constituting an operative support for an element of said operating mechanism utilized for operating said contacts into engagement, said means constructed and operatively positioned whereby removal of a substantial portion thereof sufficient in extent to permit installation of said circuit breaker in an improper circuit removes said operative support for said element and thereby renders said operating mechanism ineffective to operate said contacts into engagement.

2. A circuit breaker comprising a pair of cooperating contacts, an operating mechanism for moving said contacts into and out of engagement, a housing wherein said contacts and said mechanism are disposed; said housing including a first means for cooperation with means of a panelboard to prevent mounting of said circuit breaker at a first panelboard location adapted to exclude said circuit breaker and accept another circuit breaker of lower rating than said first recited circuit breaker; said first means being operatively associated with said mechanism whereby tampering with said first means renders the mechanism ineffective to operate said contacts into engagement; said first means comprising a hallowed portion of said housing; an insert disposed within said hallowed portion; said insert operatively supporting an element of said operating mechanism; said first means being constructed and operatively positioned whereby removal of a portion thereof sufficient in extent to permit mounting of said circuit breaker at said first panelboard location leaves said insert unsupported which in turn leaves said element unsupported whereby the mechanism is rendered ineffective to operate said contacts into engagement.

3. A circuit breaker comprising a pair of cooperating contacts, an operating mechanism for moving said contacts into and out of engagement, a housing wherein said contacts and said mechanism are disposed; said housing including a first means for cooperation with means of a panelboard to prevent mounting of said circuit breaker at a first panelboard location adapted to exclude said circuit breaker and accept another circuit breaker of lower rating than said first recited circuit breaker; said first means comprising a hallowed portion of said housing; an insert disposed within and supported by said hallowed portion; said insert operatively supporting an element of said operating mechanism; said first means being constructed and operatively positioned whereby removal of a portion thereof sufficient in extent to permit mounting of said circuit breaker at said first panelboard location leaves said insert unsupported which in turn leaves said element unsupported whereby the mechanism is rendered ineffective to operate said contacts into engagement.

4. A circuit breaker comprising a pair of cooperating contacts, an operating mechanism for moving said contacts into and out of engagement, a housing wherein said contacts and said mechanism are disposed; said housing including a first means for cooperation with means of a panelboard to prevent mounting of said circuit breaker at a first panelboard location adapted to exclude said circuit breaker and accept another circuit breaker of lower rating than said first recited circuit breaker; said first means being operatively associated with said mechanism whereby tampering with said first means renders the mechanism ineffective to operate said contacts into engagement; said first means comprising a hallowed portion of said housing; an insert disposed within said hallowed portion; said insert operatively supporting an element of said operating mechanism; said first means being constructed and operatively positioned whereby removal of a portion thereof sufficient in extent to permit mounting of said circuit breaker at said first panelboard location leaves said insert unsupported which in turn leaves said element unsupported whereby the mechanism is rendered ineffective to operate said contacts into engagement.

5. A circuit breaker comprising a pair of cooperating contacts, an operating mechanism for moving said contacts into and out of engagement, a housing wherein said contacts and said mechanism are disposed; said housing including a first means for cooperation with means of a panelboard to prevent mounting of said circuit breaker at a first panelboard location adapted to exclude said circuit breaker and accept another circuit breaker of lower rating than said first recited circuit breaker; said first means being operatively associated with said mechanism whereby tampering with said first means renders the mechanism ineffective to operate said contacts into engagement; said first means comprising a hallowed portion of said housing; an insert disposed within said hallowed portion; said insert operatively supporting an element of said operating mechanism; said first means being constructed and operatively positioned whereby removal of a portion thereof sufficient in extent to permit mounting of said circuit breaker at said first panelboard location leaves said insert unsupported which in turn leaves said element unsupported whereby the mechanism is rendered ineffective to operate said contacts into engagement.

6. A circuit breaker comprising a pair of cooperating contacts, an operating mechanism for moving said contacts into and out of engagement, a housing wherein said contacts and said mechanism are disposed; said housing including a first means for cooperation with means of a panelboard to prevent mounting of said circuit breaker at a first panelboard location adapted to exclude said circuit breaker and accept another circuit breaker of lower rating than said first recited circuit breaker; said first means being operatively associated with said mechanism whereby tampering with said first means renders the mechanism ineffective to operate said contacts into engagement; said first means comprising a hallowed portion of said housing; an insert disposed within said hallowed portion; said insert operatively supporting an element of said operating mechanism; said first means being constructed and operatively positioned whereby removal of a portion thereof sufficient in extent to permit mounting of said circuit breaker at said first panelboard location leaves said insert unsupported which in turn leaves said element unsupported whereby the mechanism is rendered ineffective to operate said contacts into engagement.
at a first panelboard location adapted to exclude said circuit breaker and accept another circuit breaker of lower rating than said first recited circuit breaker; said first means being operatively associated with said mechanism whereby tampering with said first means renders the mechanism ineffective to operate said contacts into engagement; said first means comprising a hollowed portion of said housing; an insert disposed within said hollowed portion; said insert operatively supporting an element of said operating mechanism; said element comprising a spring for operating said contacts into engagement. 8. A circuit breaker comprising a pair of cooperating contacts, an operating mechanism for moving said contacts into and out of engagement, a housing wherein said contacts and said mechanism are disposed; said housing including a first means for cooperation with means of a panelboard to prevent mounting of said circuit breaker at a first panelboard location adapted to exclude said circuit breaker and accept another circuit breaker of lower rating than said first recited circuit breaker; said first means being operatively associated with said mechanism whereby tampering with said first means renders the mechanism ineffective to operate said contacts into engagement; said first means comprising a hollowed portion of said housing; an insert disposed within said hollowed portion; said insert operatively supporting an element of said operating mechanism; said element comprising a spring for operating said contacts into engagement; said insert at the portion thereof supporting said spring comprising an inclined surface engaging said spring at one end thereof to position said spring for exerting a first component of force maintaining said contacts in engagement and a second component of force urging another element of said mechanism to a predetermined latching position. 9. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a movable contact carried by said contactor and engageable with said fixed contact; said contactor being operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said handle being engageable with said contactor for movement thereof to a position wherein said main spring is effective to bring about the disenagement of said contacts; said housing including a hollowed portion for cooperation with means of a panelboard to prevent mounting of said switch at a first panelboard location adapted to exclude said switch and accept another switch of lower rating than said first recited switch; an insert providing seating means for said main spring; said insert being operatively disposed within said housing; a movable contact carried by said insert and engageable with said fixed contact; said insert operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said insert providing seating means for said main spring; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement. 11. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a movable contact carried by said insert and engageable with said fixed contact; said insert operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said handle being engageable with said contactor for movement thereof to a position wherein said main spring is effective to bring about the disenagement of said contacts; said housing including a hollowed portion for cooperation with means of a panelboard to prevent mounting of said switch at a first panelboard location adapted to exclude said switch and accept another switch of lower rating than said first recited switch; an insert providing seating means for said main spring; said insert being operatively disposed within said housing; a movable contact carried by said insert and engageable with said fixed contact; said insert operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said insert providing seating means for said main spring; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement. 12. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a movable contact carried by said contactor and engageable with said fixed contact; said contactor being operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said handle being engageable with said contactor for movement thereof to a position wherein said main spring is effective to bring about the disenagement of said contacts; said housing including a hollowed portion for cooperation with means of a panelboard to prevent mounting of said switch at a first panelboard location adapted to exclude said switch and accept another switch of lower rating than said first recited switch; an insert providing seating means for said main spring; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement. 13. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a movable contact carried by said insert and engageable with said fixed contact; said insert operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said insert providing seating means for said main spring; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement. 14. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a movable contact carried by said insert and engageable with said fixed contact; said insert operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said insert providing seating means for said main spring; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement. 15. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a movable contact carried by said insert and engageable with said fixed contact; said insert operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said insert providing seating means for said main spring; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement. 16. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a movable contact carried by said insert and engageable with said fixed contact; said insert operatively connected to said cam plate; said handle being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said insert providing seating means for said main spring; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement.
spring; said insert being operatively disposed within said hollow portion; said main spring comprising a coiled element; said seating means constructed and positioned whereby said coiled element is buckled at a point intermediate said insert being operatively disposed within said hollow portion; said seating means comprising an inclined surface; said insert and said hollow portion being so shaped that said insert falls free of said housing when a substantial part of said hollow portion of the housing is broken away in an effort to alter said first recited circuit breaker for mounting at said first panelboard location whereby said main spring is thereafter ineffective to bring said contacts into engagement; said housing having an internal wall formation extending upwardly from said inclined surface to assure that said spring will be unsupported when said insert falls free of said housing.

15. An electric switch comprising a housing, a cam plate, a contactor, an operating handle, and a main spring; said cam plate, said contactor, and said main spring being disposed within said housing; a fixed contact secured to said housing and a moveable contact carried by said contactor and engageable with said fixed contact; said contactor being operatively disposed within a hollow portion of the housing; said housing being engageable with said cam plate for movement of said contactor and said cam plate to positions wherein said main spring is effective to latch said contactor to said cam plate and to bring said contacts into engagement; said housing being engageable with said contactor for movement thereof to a position wherein said main spring is effective to bring about the disengagement of said contacts; said housing including a hollowed portion for cooperation with means of a panelboard to prevent mounting of said switch at a first panelboard location adapted to exclude said switch and accept another switch of lower rating that said switch; said hollowed portion operatively associated with said main spring in a manner such that when a substantial part of said hollowed portion is broken away the main spring is thereafter ineffective to bring said contacts into engagement.
an internal keying formation; said insert being asymmetrical whereby it cooperates with said keying formation for mounting of said insert in a single predetermined position within said housing.

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