

July 14, 1953

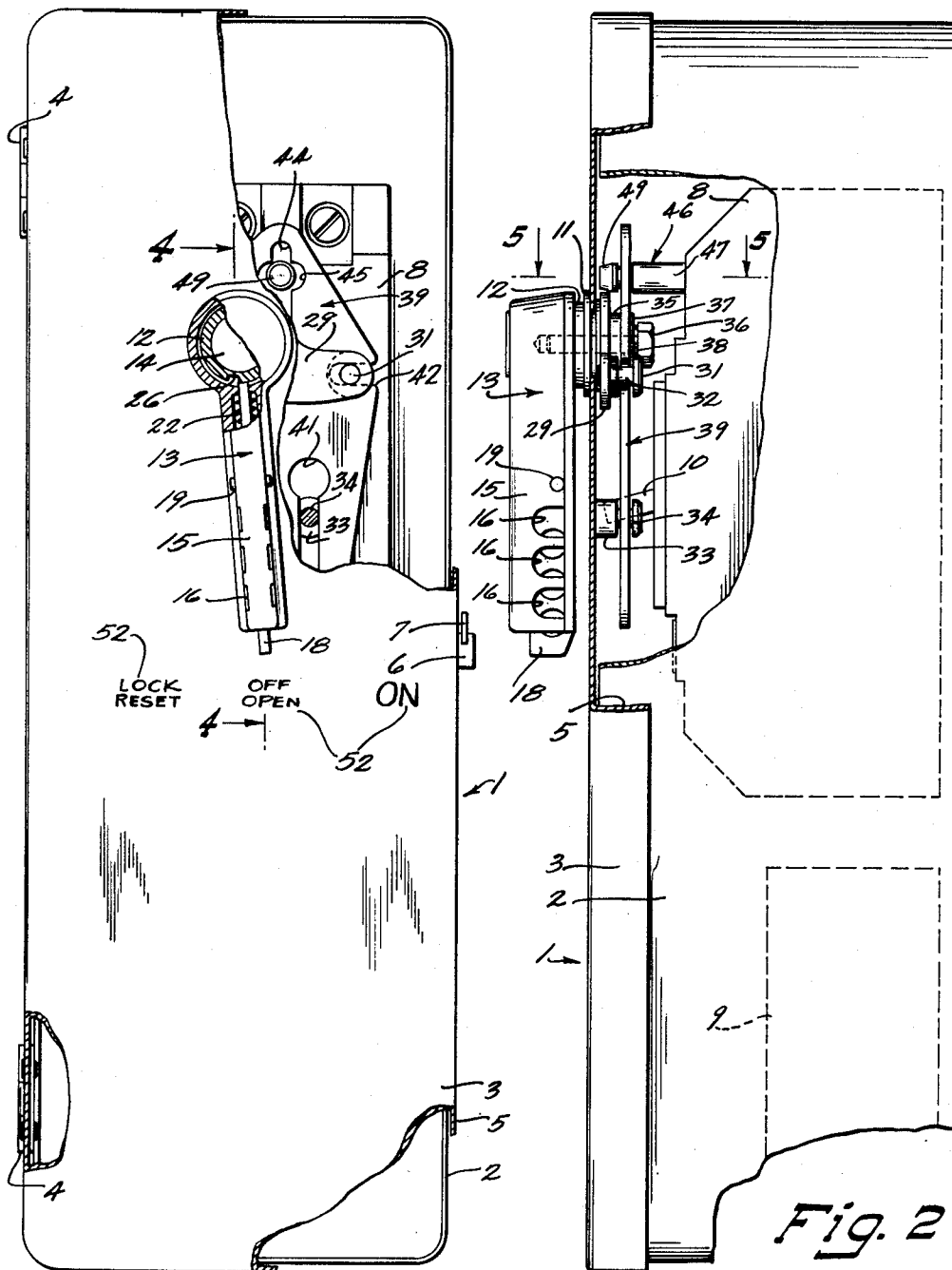
W. A. DE SMIDT, ET AL

2,645,688

CIRCUIT BREAKING OPERATING LEVER

Filed Aug. 25, 1952

3 Sheets-Sheet 1



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CIRCUIT BREAKING OPERATING LEVER

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Fig. 3

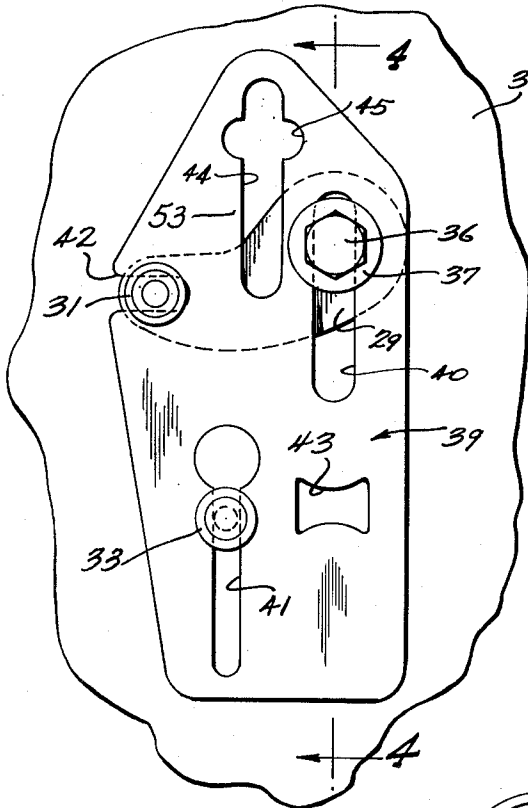


Fig. 4

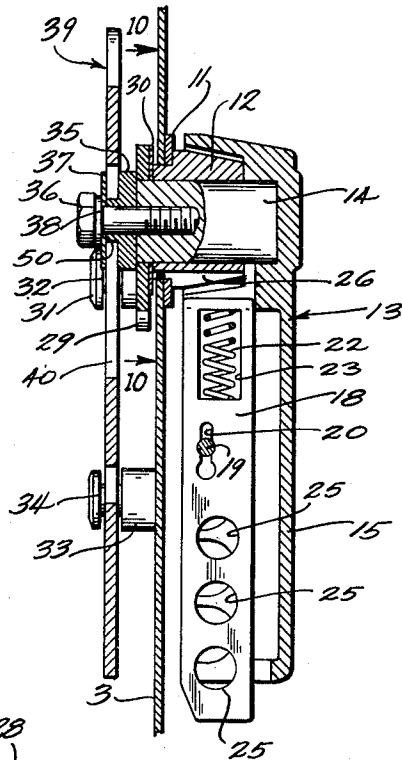
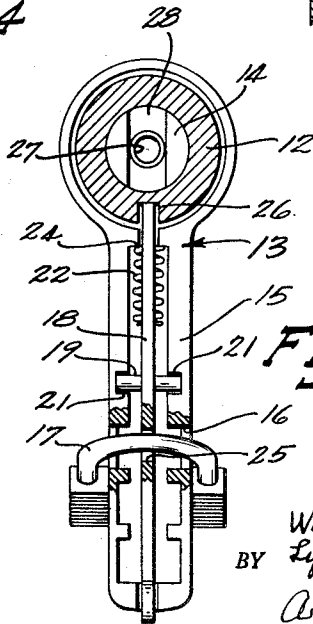
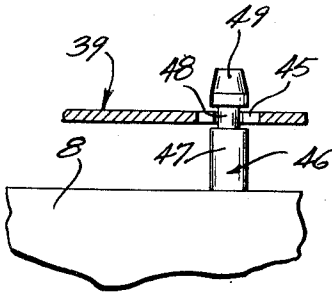


Fig. 5



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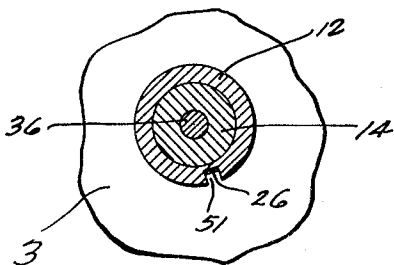
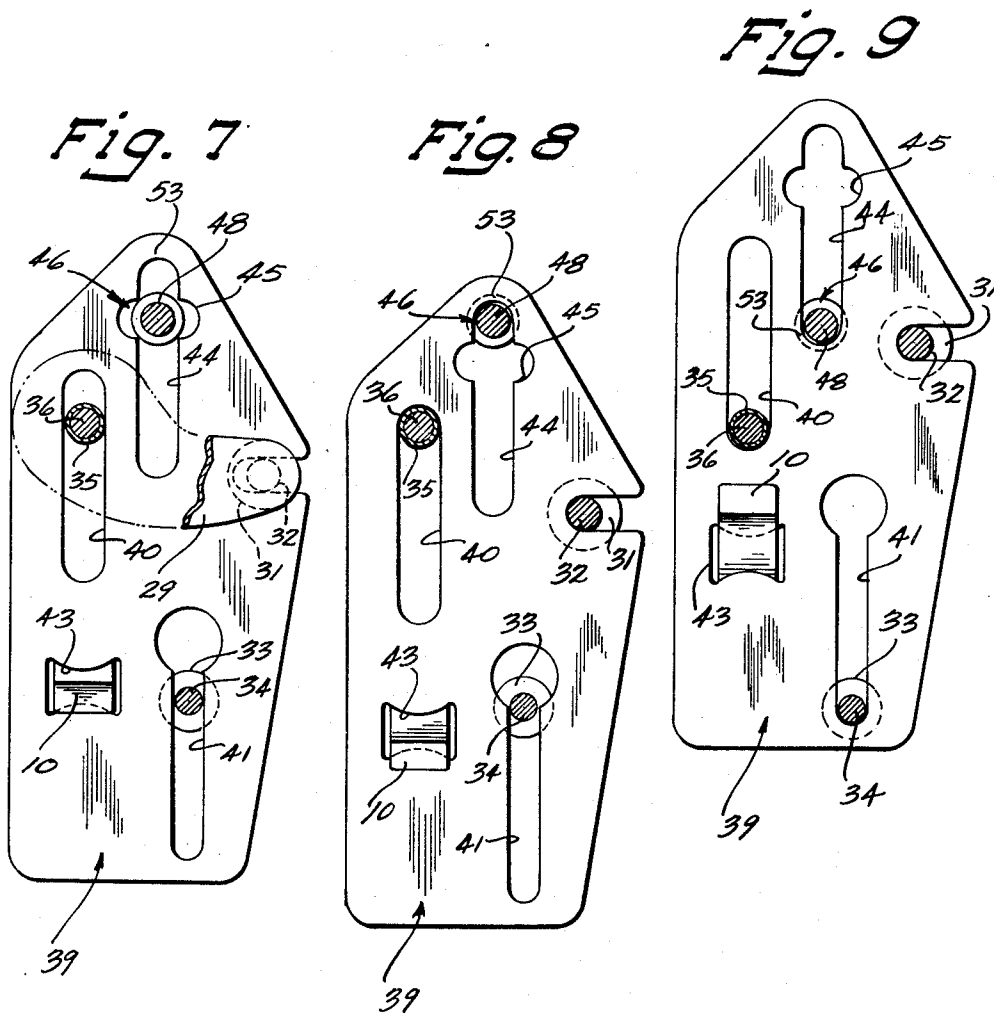
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2,645,688

CIRCUIT BREAKING OPERATING LEVER

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Application August 25, 1952, Serial No. 306,264

9 Claims. (Cl. 200—50)

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This invention relates to enclosures for electrical circuit breakers which may be secured against tampering, wherein an external actuating means for resetting the breaker when tripped and for manually throwing it to "off" and "on" positions is associated with means precluding opening of the enclosure except when the breaker is in a safe circuit position, and it resides more specifically in an improvement in such enclosures wherein a pivoted actuating handle mounted on the cover of the enclosure is operatively connected to intermediate member means that engages the operating lever of the breaker to throw the breaker to "on" and "off" positions and beyond the "off" position to "reset" position and which cooperatively engages when the cover is closed with a locking member secured within the enclosure which acts to maintain the cover closed for all positions of the pivoted operating handle save an "off-open" position in which the intermediate member may be disengaged from the locking member to open the cover.

So called circuit breakers for the handling of moderate loads in most instances exhibit certain common structural features. Usually such apparatus includes an operating member which may be manually moved to and from "off" and "on" positions thus causing the breaker to function as a manual disconnect switch. Such breakers also include mechanism, automatically responsive to load, for causing the switch contacts of the breaker to open when an overload condition occurs. In addition such breakers include means for resetting the breaker after an overload has occurred so that the breaker can again be manually closed. In the commonest form of such apparatus the manually operated member must be moved to and beyond the so called "off" position to a so called "reset" position in order to prepare the breaker for reclosing which then occurs only when the operating member is moved to the "on" position. One specific form of such a breaker in wide use is shown and described in Letters Patent No. 2,419,125.

To protect against casual contact with exposed circuit connections and against accidental damage to the circuit breaker, safety authorities commonly recommend or require that circuit breakers be enclosed in metal housings. To meet this requirement it is necessary to provide a manually operable handle on the exterior of the enclosure, cooperatively connected through means extending into the enclosure, with the operating member of the circuit breaker. Some have so interconnected the external handle with

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locking means for the enclosure, that opening of the enclosure can only be effected when the external handle is moved to the "reset" position of the breaker. This is undesirable under certain conditions particularly where the circuit breaker has tripped due to malfunctioning of the circuit breaker rather than due to an overload in the circuit. In such cases it is often desirable to inspect the circuit breaker in its tripped condition before it has been moved to "reset" position in order to ascertain the cause of failure.

It is one object of this invention to provide a circuit breaker enclosure having actuating means which are disposed on the exterior of the enclosure and which extend into the enclosure to engage the circuit breaker to move it to "on" and "off" positions and beyond the "off" position to the "reset" position and which serves to lock the enclosure against opening in all positions except that in which the actuating means is disposed in an "off-open" position that permits the enclosure to be opened and that places the breaker in an open circuit condition.

Another object of this invention is to provide an enclosure for a circuit breaker having actuating means which can be locked in a position calling for an open circuit condition in the circuit breaker from which position the actuating member cannot be moved, until an authorized person possessing a key shall unlock the same.

Another object of this invention is to provide a circuit breaker enclosure including actuating means comprising but three movable parts cooperating to impart all of the necessary movements to the circuit breaker and at the same to provide the foregoing locking functions.

The foregoing and other objects and advantages of this invention will appear from the description which follows, the same being set forth by reference to the accompanying drawings forming a part hereof and in which there is shown by way of illustration and not of limitation one form in which the apparatus embodying this invention may be constructed.

In the drawings:

Fig. 1 is a front view in elevation with parts broken away and in section of one form of the circuit breaker enclosure of this invention showing its relationship to an enclosed circuit breaker,

Fig. 2 is a side view in elevation with parts broken away and in section of the apparatus shown in Fig. 1,

Fig. 3 is a rear view in elevation of a detail of the apparatus mounted on the interior of the cover of the enclosure shown in Fig. 1,

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Fig. 4 is an enlarged detailed side view in elevation and in section of a portion of the apparatus shown in Fig. 1 viewed through the plane 4—4 indicated in Figs. 1 and 3.

Fig. 5 is an enlarged fragmentary detailed top plan view of the locking post of the apparatus shown in Fig. 1 viewed through the plane 5—5 indicated in Fig. 2,

Fig. 6 is an enlarged detailed rear view with parts broken away and in section of the actuating handle of the enclosure showing a padlock in place to maintain the circuit breaker in an open circuit condition,

Fig. 7 is an enlarged detailed front view in elevation of the cam plate of the apparatus shown in Fig. 1 showing the relationship of the same to the locking post when the circuit breaker is in "off" position,

Fig. 8 is an enlarged detailed fragmentary front view in elevation of the cam plate of the apparatus shown in Fig. 1 showing the relationship of the same to the locking post when the circuit breaker is in "reset" position,

Fig. 9 is an enlarged detailed fragmentary view in front elevation of the cam plate of the apparatus shown in Fig. 1 showing the same in its relationship to the locking post when the circuit breaker is in "on" position, and

Fig. 10 is a fragmentary rear view in elevation with parts in section of the cover of the enclosure viewed through the plane 10—10 in Fig. 4.

Referring now to the drawings, the circuit breaker enclosure 1 shown in Figs. 1 and 2 comprises a rectangular shell 2 open at the front and a cover 3 mounted by hinges 4 at the left hand side of the open front of the shell 2. The cover 3 may be swung toward and away from a closed position with respect to the shell 2 and when in closed position, as shown in Figs. 1 and 2, there is provided a fully enclosed compartment. Backwardly turned margins 5 of the cover 3 overlap the outer edges of the shell 2 that form the open front to ensure complete closure, and to prohibit the insertion of any implements that might be employed in any attempt to tamper with the apparatus. If desired rubber, felt or other suitable stripping, may be placed on the inner side of the cover 3 to engage the edges of the shell 2 to provide a tight fit that will exclude dust from the enclosure interior.

A latch engaging ear 6 is rigidly fixed to the turned margin 5 of the cover 3 disposed oppositely from that side joined to the hinges 4, and a hook latch 7 is mounted on the shell 2 to engage the ear 6 to retain the cover 3 in closed position. The hook latch 7 is biased by spring means, not shown, to the position shown and by manual disengagement of the ear 6 and latch 7 the cover 3 may be opened upon properly positioning cover locking elements to be hereinafter described.

The enclosed compartment formed by the enclosure 1 is adapted to receive and have mounted therein at the back of the shell 2 a circuit breaker 8 and an electro-magnetic switch 9 that is suitable for the starting and stopping of an electric motor, or the energization and deenergization of similar electrical equipment that is joined to a power source through the circuit breaker 8. The circuit breaker 8 is provided with an operating lever 10 that is extended forwardly to a position directly behind the cover 3. The operating lever 10 is shown in its lower or "off" position in Fig. 2 and may be moved upwardly into an "on" position that will bring the contacts of the breaker into engagement.

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To open the contacts the lever may be returned to the "off" position. In the event that breaker 8 automatically opens the contacts upon occurrence of an overload it is necessary to move the lever 10 to a "reset" position slightly beyond, or beneath, the "off" position. Such movements for the operating lever 10 are commonplace in standard commercial circuit breakers employed for moderate loads and it is this type with which apparatus embodying this invention is to be employed.

On the outer face of the cover 3 is placed a reinforcing ring 11 that surrounds an opening into which extends a rectangular ear 51 that is formed as an integral part of the cover 3, and which is more clearly shown in Fig. 10. Seated upon the ring 11 is a bushing 12 that has a longitudinal slot 26 extending for the full length along one side. The bushing 12 is extended through the opening with the ear 51 being snugly received in the slot 26 to orientate the bushing 12 and to prohibit unwanted twisting or turning. The inner end of the bushing 12 is turned over the inner face of the cover 3 to rigidly hold the same in place. A manually engageable actuating handle 13 having a hub shaft 14 is pivotally mounted on the exterior side of the cover by insertion of the shaft 14 into the bushing 12. Handle 13 is preferably formed of a cast material with a shank portion 15 that is hollow and open at the back, as shown in Figs. 4 and 6, and which also has three sets of apertures 16 at the lower end that are each of sufficient size to receive the shank of a padlock, such as that of the lock 17 shown in Fig. 6.

Marking indicia 52 on the cover 3 indicate three positions for the handle 13. An "off-open" position, that corresponds to the "off" position of the breaker 8 and in which the cover 3 may be opened and closed by apparatus to be hereinafter described, is assumed by the handle 13 when moved slightly to the right of vertical, as shown in Fig. 1. A "lock-reset" position is assumed when the handle 13 is moved slightly to the left of the vertical and this position corresponds to the "reset" position of the breaker 8. A third position indicated as "On" by the indicia 52 corresponds to the "on" position of the breaker 8.

Received within the recessed or hollow actuating handle shank portion 15 is a flat locking bolt 18 that may be moved longitudinally toward and away from the bushing 12. A retaining pin 19 is passed through slot 20 in the locking bolt 18 and is disposed at each end in a retaining seat 21 formed as a part of the shank portion 15. To urge the bolt 17 downwardly into a normally depressed position a bias spring 22 is disposed in a second slot 23 in the bolt 18 with the upper end butting a shoulder 24 that forms a part of the handle 13 and the lower end resting against the bottom of the slot 23. The bolt 18 has a set of three apertures 25 that are brought into alignment with the apertures 16 of the shank portion 15 upon movement of the bolt 18, against the bias spring 22, into its upper position. In order to move the bolt 18 upward to bring the respective sets of apertures 16 and 25 into alignment the handle 13 must be rotated to the "lock-reset" position at which point the path of travel of the bolt 18 is aligned with the slot 26 in the bushing 12. The upper end of the bolt 18 may then be received within the slot 26 and further rotation of the actuating handle 13 will be inhibited unless the bolt 18 is permitted to return to its lower position. With the handle 13 rotated to a position other than the "lock-reset" position the bushing

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12 blocks upward travel of the bolt 18. Thus, to lock the handle in position by means such as the padlock 17, it is only possible to bring the sets of apertures 16 and 25 into alignment for one handle position and this is the "lock-reset" position.

The inner end of the hub shaft 14, that extends through the bushing 12 to within the enclosure 1 has a tapped hole 27 and portions at the end are cut away to form a roughly rectangular end boss 28, as shown in Fig. 6. Seated on the end of the shaft 14 with an opening that snugly receives the boss 28 is an operating arm 29 and disposed between the arm 29 and the cover 3 is a thin spring washer 30. The operating arm 29 is rotated in unison with the handle 13 and at the outer end of the operating arm 29 is mounted a cam post 31 having a neck 32 of reduced diameter, which post 31 is swept upward and downward in an arcuate path in response to manipulation of the actuating handle 13. A cylindrical boss 33 that has a neck 34 of reduced diameter lying in a plane common with the neck portion 32 of the cam post 31 is mounted on the inner side of the cover 3. A spacer 35 with a central opening is disposed behind the operating arm 29 concentric with the tapped hole 27 of the hub shaft 14. The rearward end of the spacer 35 has a neck 50 of reduced diameter that lies in the plane common to the neck portions 32 and 34 of the cam post 31 and of the stationary boss 33. To retain the spacer 35 in position a bolt 36 is passed through the spacer 35 and into threaded engagement with the tapped hole 27 in the hub shaft 14. A flat washer 37 and a lock washer 38 are disposed between the head of the bolt 36 and the spacer 35.

In assembling the spacer 35 and flat washer 37 a cam operating plate 39 is disposed in engagement with the neck 50 and the neck portions 32 and 34 of the cam post 31 and boss 33. The plate 39 is an intermediate operating member between the handle 13 and the lever 10 of the circuit breaker 8. A number of openings and slots of particular configuration are provided in the plate 39 to guide its motion which is longitudinal in an upward and downward direction, to act as locking means for the cover 3, and to engage the lever 10 to throw the breaker 8 into its "on," "off" and "reset" positions. The first of these openings is a vertically disposed lengthwise aperture 40 that receives the neck 50 of reduced diameter of the spacer 35. The aperture 40 functions as a guiding track for the plate 39 that limits the extent of vertical throw and which in conjunction with a second vertical aperture 41 that receives the neck 34 of the boss 33 guides the plate 39 in vertical direction. The upper extent of the second aperture 41 is enlarged to allow the head of the boss 33 to pass through the plate 39 for the purpose of assembly. A short horizontal slot 42 that extends to the edge of the plate 39 engages the neck 32 of the cam post 31 at the end of the operating arm 29. As the post 31 is swept vertically along an arcuate path, in response to movement of the actuating handle 13, the cam post 31 will carry the plate 39 in like direction.

The cam operating plate 39 has a lever engaging opening 43 adapted to receive the operating lever 10 of the circuit breaker 8 and to allow the outer extent of the lever 10 to extend through to the fore side of the plate 39, upon closure of the cover 3, as is shown more clearly in Fig. 2. The vertical clearances between the lever 10 and the sides of the opening 43 are small and as the

plate 39 is moved upward or downward the lever 10 is urged and carried in like direction with a minimum of lost motion in the movement of the handle 13.

The cam plate 39 also has in the upper central portion a vertically extending aperture 44 that forms a locking track 53 comprising the margins of the plate 39 that extend about the aperture 44. The aperture 44 is of a uniform width with the exception of a pair of semi-circular recesses at either side of the aperture 44 that form a gap 45 spaced slightly beneath the upper extent of the aperture 44 to divide the locking track 53 into a pair of segments extending in opposite senses from the gap 45. The locking track 53 is engageable with a locking post 46 that is rigidly fixed to the circuit breaker 8. The post 46, which is more clearly shown in Fig. 5, is comprised of a cylindrical body 47 from which extends a neck 48 of reduced diameter to be received within the aperture 44 and a tapered head 49 of a diameter that restricts its entrance into the aperture 44. The gap 45 will receive and pass the locking post head 49 when brought into alignment therewith by movement of the handle 13. The post 46 extends forwardly for a sufficient distance to strike the plate 39 upon swinging the cover 3 toward closed position, in event that the post 46 and gap 45 are not aligned, to preclude closure. The plate 39 is then blocked from movement into engagement with the breaker lever 10. With the locking post 46 and gap 45 aligned, however, the cover 3 may be moved to fully closed position providing that the operating lever 10 of the circuit breaker 8 is likewise aligned with the opening 43 in the plate 39.

The relative positions of the locking post 46 and the gap 45 are such that upon alignment for receipt of the head 49 by the gap 45 the lever engaging opening 43 will receive the operating lever 10 of the breaker 8 only when placed in "off" position. Thus, it is only possible to close the cover 3 of the enclosure 1 when the contacts of the breaker 8 are disengaged. The appropriate marking "Off-open" on the cover 3 indicates the position of the actuating handle 13 that brings the gap into the proper position to permit closure of the cover 3. In Fig. 7 there is shown the relative position of the cam plate 39 and the elements engaged therewith when the cover is closed and the breaker is in "off" position and the handle 13 is in the corresponding "off-open" position.

To throw the circuit breaker 8 to the "on" position the actuating handle 13 is moved counterclockwise, as viewed from the front of the enclosure 1. The cam plate 39 will be carried upward by the cam post 31 and the position shown in Fig. 9 will be assumed. The opening 43 in moving upward throws the operating lever 10 of the breaker 8 to the "on" position and the locking post 46 will engage the upwardly moving locking track 53 to preclude opening of the cover 3. The cam plate 39 will be retained in its upper position, as shown in Fig. 9, upon the snap of the lever 10 into its "on" position and the marking "On" on the cover 3 indicates the position to which the handle 13 must be moved to place the breaker 8 in its "on" position.

If it is now desired to open the cover 3 the operating plate 39 must be returned to the position shown in Fig. 7 to allow the head 49 of the post 46 to pass through the gap 45. This necessitates the return of the handle 13 to its "off-open" position which carries the breaker 8 to the "off" position. An attendant or technician

desiring to inspect the apparatus within the enclosure 1 is thus safeguarded from circuits which he might otherwise inadvertently leave in a state of energization.

If, when the breaker 3 was in "on" position, it had been caused to trip automatically by reason of an overload it then becomes necessary to move the operating lever 10 to the "reset" position, beyond, or below, the "off" position. This is accomplished by movement of the operating handle 13 clockwise beyond the "off" position to that which is marked "Lock-reset" by the indicia 52. The lever 10 of the breaker 3 is then correspondingly carried downward beneath the "off" position to its "reset" position. The position of the plate 39 and the elements engaged therewith with the handle 13 in the "lock-reset" position is shown in Fig. 8. In this position the locking post 46 is in engagement with the portion of the locking track 53 above the gap 45 to preclude opening of the cover 3. As hereinbefore stated, it is upon movement of the actuating handle 13 to the "lock-reset" position that the locking bolt 18 is brought into alignment with the slot 26 in the bushing 12. Thus, if it is desired by an attendant, technician, or other party to lock the breaker 3 in an inoperative or "off" position in order that inspection or repair may be made of the particular equipment connected to the breaker 3 and switch 9 in complete safety from untimely energization of the electrical circuits of such equipment all that is necessary is to move the handle 13 to the "lock-reset" position, throw the bolt 18 upward and insert a padlock, such as 17 shown in Fig. 6, through a set of aligning apertures 16 and 25 in the shank portion 15 of the handle 13 and the bolt 18 respectively. Tampering by unauthorized personnel is thus prohibited. By providing a series of apertures it is possible for more than one party to lock the apparatus in a position of safety at any given time.

If there is a question of malfunction of the circuit breaker 3, rather than of the circuits fed from the breaker 3, in which tripping occurs as though there were an apparent overload it is of advantage to inspect the breaker 3 after it has been tripped without movement to the "reset" position before inspection may be made. The apparatus of this invention permits opening of the cover 3 without recourse to the "reset" position and the breaker 3 may consequently be inspected in its tripped position. In providing this characteristic of enhanced utility this invention comprises a minimum of moving parts. A single part in the form of a plate 39 engages both the breaker 3 and the cover locking post 46 that is fixed with respect to the shell of the enclosure. A single rotating member that includes the manually engageable handle 13 and the plate engaging arm 29 imparts necessary movement to the plate 39, and to provide for the remaining function of locking the handle in "lock-reset" position to retain the breaker 3 in an open circuit condition a third movable part in the form of the locking bolt 18 is required.

We claim:

1. An enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure movable to a closed

position covering the outwardly facing operating lever of said circuit breaker; an actuating handle mounted on said cover movable between positions corresponding to the "off," "on" and "reset" positions of said operating lever; an intermediate member mounted on the interior side of said cover cooperatively engaged by said actuating handle to be moved thereby including a cover locking portion and throwing means engageable when said cover is closed with the operating lever of said circuit breaker for moving the same in response to movement of said actuating handle to and from said "off," "on" and "reset" positions; and a stationary locking member fixed with respect to said shell; said stationary locking member and said cover locking portion of said intermediate member comprising a post member having a head and a neck of a width less than that of said head, and a locking track with a gap disposed therein; said gap receiving said head of said post member when said cover is closed and said intermediate member is moved to position aligning said head and said gap in response to movement of said actuating handle, and said locking track and said stationary locking member engaging one another when said cover is closed to preclude opening of said cover for all positions of said actuating handle save that aligning said head with said gap.

2. An enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure hingedly attached to said shell and movable to a closed position covering the outwardly facing operating lever of said circuit breaker; an actuating handle pivotally mounted on said cover movable between positions corresponding to the "off," "on" and "reset" positions of said operating levers; intermediate means mounted on the interior of said cover and cooperatively engaged by said pivotal handle to be moved thereby including a circuit breaker actuating portion engageable with said operating lever of said circuit breaker upon closure of said cover for moving the operating lever in response to movement of said actuating handle to and from said positions corresponding to said "off," "on" and "reset" positions of the operating lever, and a cover locking portion movable between positions corresponding to the "off," "on" and "reset" positions of said operating lever upon movement of said actuating handle to and from said positions corresponding to said "off," "on" and "reset" positions of the operating lever; and stationary locking means rigidly associated with said mounting shell disposed to collide with said cover locking portion to block swinging movement of said cover toward closed position when said actuating handle is in a position other than that corresponding to said "off" position of said operating lever, and to be free of colliding movement with said cover locking portion upon swinging of said cover to closed position when said actuating handle is in the position corresponding to said "off" position, said stationary locking means being engageable with said cover locking portion upon closure of said cover to lock said cover in closed position in all positions of said actuating handle save that corresponding with

the "off" position of said circuit breaker operating lever.

3. An enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure hingedly attached to said shell and closable to a position covering the outwardly facing operating lever of said circuit breaker; an actuating handle pivotally mounted on said cover; an intermediate member movably mounted on the interior of said cover cooperatively engaged by said pivotal handle to be moved thereby, having throwing means engageable when said cover is closed with the operating lever of said circuit breaker for moving the same in response to movement of said actuating handle to and from said "off," "on" and "reset" positions, said intermediate member having a locking track thereon extending in opposite senses from a gap, said track being aligned with the direction of movement of said intermediate member; cooperating stationary locking means rigidly associated with said shell lockingly engageable with said locking track to lock said cover in closed position in all positions of said actuating handle save that corresponding with the "off" position of said circuit breaker operating lever disposed adjacent to and received within said gap when said pivoted handle is in a position corresponding with the "off" position of said circuit breaker to permit opening and closing of said cover only when said pivoted handle is in a position corresponding with the "off" position of said circuit breaker.

4. In an enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the off position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure hingedly attached to said shell and closable to a position covering the outwardly facing operating lever of said circuit breaker; an actuating handle pivotally mounted on said cover; a longitudinally movable operating plate mounted on the interior of said cover cooperatively engaged by said pivotal handle to be moved thereby and having an aperture therein for receiving the operating lever of said circuit breaker for moving the same in response to movement of said operating handle to and from said "off," "on" and "reset" positions; said operating plate having a lengthwise aperture aligned with the direction of movement of said plate with a gap of increased width disposed intermediate the ends of said aperture; cooperating stationary locking means rigidly associated with said shell lockingly engageable with the lengthwise aperture of said plate to lock said cover in closed position in all positions of said actuating handle save that corresponding with the "off" position of said circuit breaker operating lever disposed adjacent to and received within said gap when said pivoted handle is in a position corresponding with the "off" position of said circuit breaker to permit opening and closing of said cover only when said pivoted handle is in a position corresponding with the "off" position of said circuit breaker.

5. An enclosure for a circuit breaker having a movable operating lever capable of occupying

spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure movable to a closed position covering the outwardly facing operating lever of said circuit breaker; an actuating handle mounted on the outer side of said cover movable between positions corresponding to the "off," "on" and "reset" positions of said operating lever; intermediate means mounted on the interior side of said cover cooperatively engaged by said actuating handle to be moved thereby having a cover locking portion and a circuit breaker operating lever actuating portion engageable when said cover is closed with the operating lever of said circuit breaker for moving the same in response to movement of said actuating handle to and from said "off," "on" and "reset" positions; and a stationary locking means associated with said shell; said stationary locking means and said cover locking portion of said intermediate means comprising a post member having a head and a neck of a width less than that of said head, and a locking track having a lengthwise aperture of width less than said head and greater than said neck with a gap intermediate the ends of said aperture of width greater than said head, said gap receiving said head when said actuating handle is disposed in position corresponding to said "off" position of said circuit breaker operating lever to permit closure of said cover and said lengthwise aperture receiving said neck of said post member upon closure of said cover and movement of said actuating handle to and from said positions corresponding to said "on" and "reset" positions of said circuit breaker operating lever.

6. An enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure movable to a closed position covering the outwardly facing operating lever of said circuit breaker; a handle mounting member fixed to the exterior of said cover having a slot in a surface thereof; an actuating handle movable between positions corresponding to said "on," "off" and "reset" positions of said operating member having a hub pivotally mounted on said mounting member and a manually engageable shank with a set of padlock receiving openings extending transversely therethrough; a locking bolt with a second set of padlock receiving openings mounted upon and movable longitudinally with said actuating handle shank when said handle is in position corresponding to said "reset" position into a locking position aligning said sets of padlock receiving openings and extending an end of said bolt within said slot, said locking bolt being prohibited by said mounting member from movement into locking position upon movement of said actuating handle to positions other than that corresponding to said "reset" position; spring means interposed between said handle and bolt biasing said bolt from said locking position; intermediate means mounted on the inner side of said cover cooperatively engaged by said actuating handle to be moved thereby having a cover locking portion and a circuit breaker operating lever actuating portion engageable when said cover is closed with the operating lever of

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said circuit breaker for moving the same in response to movement of said actuating handle to and from said "off," "on" and "reset" positions; and a stationary locking means associated with said shell; said stationary locking means and said cover locking portion of said intermediate means including a post member having a head and a neck of section less than that of said head and a plate member having a lengthwise aperture of width less than said head and greater than said neck with a gap intermediate the ends of the aperture of width greater than said head, said gap receiving said head when said actuating handle is disposed in position corresponding to said "off" position of said circuit breaker operating lever to permit closure of said cover and said lengthwise aperture receiving said neck of said post member upon closure of said cover and movement of said actuating handle to and from said positions corresponding to said "on" and "reset" positions of said circuit breaker operating lever.

7. An enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure hingedly attached to said shell and closable to a position covering the outwardly facing operating lever of said circuit breaker; an actuating handle pivotally mounted on said cover; an operating plate movably mounted on the interior of said cover cooperatively engaged by said pivotal handle to be moved thereby having throwing means engageable when said cover is closed with the operating lever of said circuit breaker for moving the same in response to movement of said actuating handle to and from said "off," "on" and "reset" positions, said operating plate having a lengthwise aperture extending in the direction of movement of said plate of uniform width with a gap of increased width intermediate the ends of said aperture; a stationary post member rigidly associated with said shell having a head of configuration passable through said gap with a width not passable through the uniform width of said aperture and a neck of width less than said aperture; said gap receiving said head when said actuating handle is disposed in position corresponding to said "off" position of said circuit breaker operating lever to permit closure of said cover and said lengthwise aperture receiving said neck of said post member upon closure of said cover and movement of said actuating handle to and from said positions corresponding to said "on" and "reset" positions of said circuit breaker operating lever.

8. An enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure movable to a closed position covering the outwardly facing operating lever of said circuit breaker; an actuating handle

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mounted on said cover movable between positions corresponding to the "off," "on" and "reset" positions of said operating lever; an intermediate member mounted on the interior side of said cover cooperatively engaged by said actuating handle to be moved thereby, said intermediate member having throwing means engageable when said cover is closed with the operating lever of said circuit breaker to move the same to and from said "off," "on" and "reset" positions in response to movement of said actuating handle; and a cover locking member rigidly associated with said mounting shell disposed for colliding contact with said intermediate member to hinder movement of said cover from open to closed position for all positions of said intermediate member save a position corresponding to a position of said operating lever placing said breaker in an open circuit condition, said locking member engaging with said intermediate member when said cover is closed and said intermediate member is moved from said position corresponding to an open circuit in said breaker to prohibit opening of said cover.

9. An enclosure for a circuit breaker having a movable operating lever capable of occupying spaced "off" and "on" positions and a "reset" position beyond the "off" position; said enclosure comprising a mounting shell within which said circuit breaker may be mounted with its operating lever facing outwardly, and a cover completing said enclosure movable to a closed position covering the outwardly facing operating lever of said circuit breaker; an actuating handle mounted on said cover movable between an "off-open" position and an "on" position corresponding to the "off" and "on" positions of said operating lever and also movable to a "lock-reset" position corresponding to the "reset" position of said operating lever; handle locking means associated with said handle movable to a handle restraining position when said actuating handle is in said "lock-reset" position; an intermediate member movably mounted on the interior of said cover cooperatively engaged by said actuating handle to be moved thereby having throwing means engageable when said cover is closed with the operating lever of said circuit breaker for moving the same in response to movement of said actuating handle, said intermediate member including a cover locking portion; and a stationary locking means fixed with respect to said shell; said cover locking portion and said locking means comprising a locking track aligned with the direction of movement of said intermediate member extending in opposite senses from a gap, and a track engaging post lockingly engageable with said track to lock said cover in closed position for all positions of said actuating handle save the "off-open" position and disposed adjacent to and received within said gap when said actuating handle is in said "off-open" position to permit opening and closing of said cover only when said actuating handle is in the "off-open" position.

WOODROW A. DE SMIDT.
LYNN H. MATTHIAS.

No references cited.