Nov. 23, 1943. E. T. PLATZ 2,335,081

SWITCH

Filed July 18, 1942

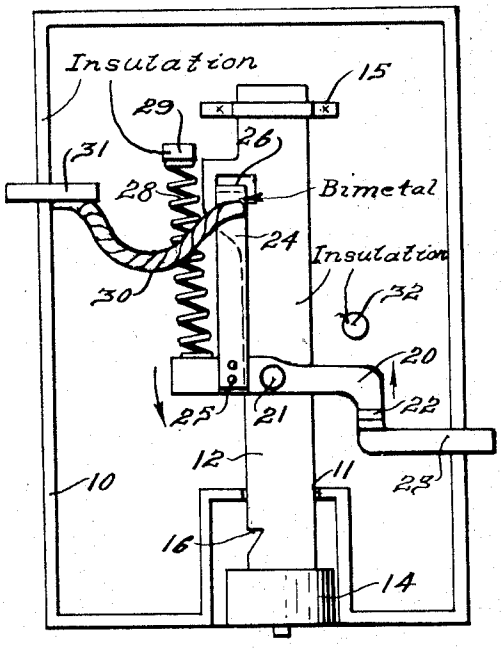


Fig. 1.

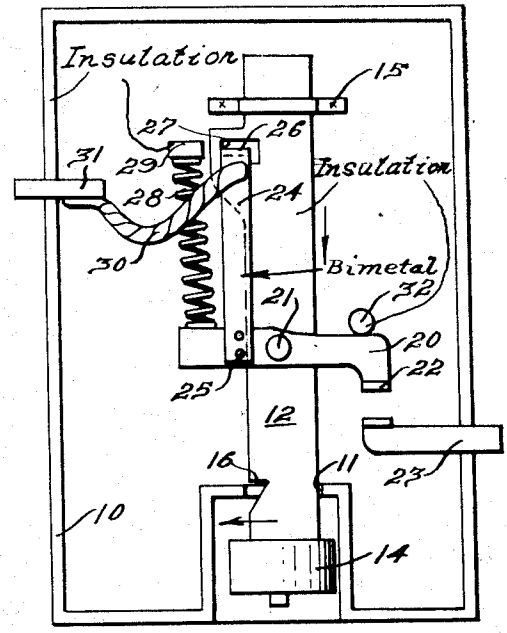


Fig. 3.

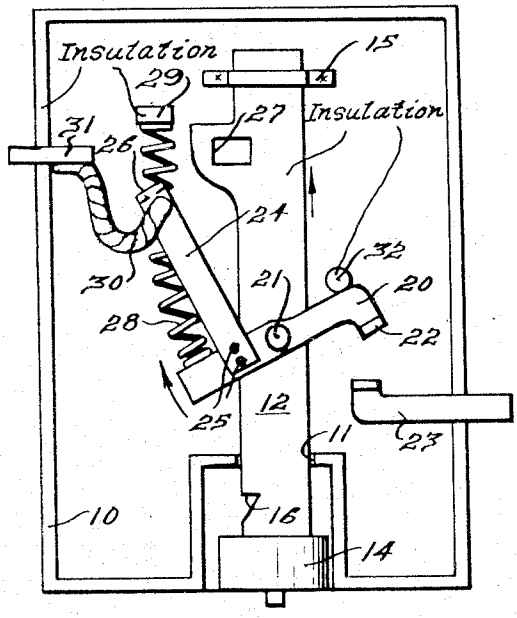


Fig. 2.

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SWITCH

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Application July 18, 1942, Serial No. 451,432

10 Claims. (Cl. 200—116)

This application relates to circuit breakers.

The circuit breaker hereof is arranged for automatic opening, as on overload, having a releasable latch, and is further arranged to be manually relatched and closed after an automatic opening merely by pushing in of a push button for relatching and subsequently releasing the push button; that button is useful for opening the circuit, manually, when it is pushed in, and operates, when released, to permit reclosing.

If, as is shown here, that push button is provided with a lock for holding it in open circuit position, the pushing in of the button and the subsequent locking of the button will enable the breaker to be used as a manually operable switch.

The breaker hereof is shown in Figs. 1–3 of the appended drawing, in three different positions respectively, "on," manual "off," and "tripped."

The drawing shows a breaker comprising a casing 10 having a slot 11 through which slides the support part 12 of a two part unit or slide. The support has its lower end in the form of an exposed push button 14 and its upper end guided by means of a guide strap 15 secured to the casing. A notch 16 in the side of the support is adapted to cooperate with an edge of the casing slot 11 for determining an elevated position of the slide, for circuit open or "off." That notch may be used, only if it is desired to use the push button for opening the circuit and keeping it open, as in a switch. It may be omitted to leave the device nothing more than a cutout.

The lowered position of the slide is its closed circuit or "on" position. It is determined by the other part of the slide; a contactor 20, pivotally mounted at 21 on the support, and having a contact end 22 for engaging a stationary contact 23, which forms an out-movement stop for the slide. The contactor has a bimetal strip 24, riveted at 25 to the remainder of the contactor; the strip has a hook or latch portion 26 disposed within an opening of the support, an edge 27 of that opening being engaged by an edge of the hook 26 to form a holding means for the latch 26. A coiled compression spring 28 has one end 29 seated on a lug of the casing and its other or lower end engages the contactor 20. A flexible connector 30 connects the free end of the bimetal strip 24 with a load terminal 31. A resetting stop 32 is provided on the casing.

The operation of the breaker is as follows:

In the event of an automatic latch release, due to warping of the bimetal on overload, the latch releases from the holding means 27 whereupon the spring 28 will rock the contactor counterclockwise to open the circuit at 22—23, the slide at that time remaining stationary in the closed circuit position. For restoring service, the button is moved upwardly to the open circuit position whereupon the contactor engages the casing stop 32 to be rocked clockwise and relatch itself to the support which at that time is in the open circuit position. On release of the button, the spring 28 moves the slide to circuit closed position.

For switching action, notch 16 is provided. The slide (support contactor) may be pushed upwardly, against spring 28, to open the circuit at 22—23; by registering notch 16 of support 12 with the edge of slot 11, and by shifting the support sidewise slightly, to dispose notch 16 around the edge of the casing slot, the slide will be held in the circuit open position by spring 28. To close the circuit, support 12 is shifted sidewise to free notch 16 from casing slot 11, and spring 28 will move the slide to circuit closing position, with contactor 20 stopped against contact 23 under spring pressure.

It will be observed that the support does not rock overcenter, but rather slides, and the spring means therefore constantly biases the parts, when the latch is not released, to closed circuit position, and at no time, when the latch holds, does the spring bias the slide to open circuit position.

Now having described the breaker hereof reference should be had to the claims which follow.

I claim:

1. A breaker comprising a casing, a stationary contact, a support mounted to move in the casing and actuated by an exposed handle arranged to be pushed in manually from closed circuit position, and thereafter released, for each and every complete cycle of operations, closed to open to closed, means for holding the support when its handle is pushed in manually and arranged for releasing the support on a release manipulation of the handle, spring means for constantly outwardly biasing the support to closed circuit position when it is manually released and arranged to be overcome manually when the handle is pushed inwardly, a contactor mounted on the support, the spring means biasing the contactor against the contact in closed circuit or rest position when the support is not held inwardly, the contact and the handle holding means defining two rest positions of the support, the contactor being movably mounted on the support, latch means interlatching the contactor and support and arranged to hold on normal circuit conditions but to release automatically on a circuit abnormality, means for releasing the latch, said spring means biasing the contactor to move relative of the support on latch release for

circuit opening, and to engage the contact when the latch holds, and a stop for engaging the released contactor, when the support is moved inwardly after latch release, for relatching the contactor and support in open circuit position.

2. In a breaker, a casing, a stationary contact, a movable unit having a support and a contactor as parts thereof, spring means constantly biasing the unit outwardly, with the contactor against the contact, for circuit closing, the contact thus forming an out-movement stop for the unit, manually releasable means for holding the unit, when it is pushed inwardly manually for circuit opening and the spring means overcome, the unit then being held inwardly, with its contactor remote from the contact, the contactor being movably mounted on the support of the unit to move with respect thereto, means releasably interlatching the support and contactor so that normally they move in unison, but the contactor may move free of the support on latch release, said spring means moving the contactor, free of the held support, on latch release, away from the contact, for circuit opening, and means for releasing the latch, said spring means constantly biasing the unit, when its parts are interlatched, to closed circuit position, except when inhibited manually.

3. In a breaker, a casing, a stationary contact, a movable unit having a support and a contactor as parts thereof, spring means constantly biasing the unit outwardly, with the contactor against the contact, for circuit closing, the contact thus forming an out-movement stop for the unit, manually releasable means for holding the unit, when its handle is pushed inwardly manually for circuit opening and the spring overcome, the unit then being held inwardly, with its contactor remote from the contact, the unit holding means engaging the support part of the slide, with release of the means and support being effected by movement of the support transverse to its normal movement, inwardly for circuit opening, and outwardly for circuit closing, the contactor being movably mounted on the support to move with respect thereto, means releasably interlatching the support and contactor so that normally they move in unison, but the contactor may move free of the support on latch release, said spring means moving the contactor, free of the held support, on latch release, away from the contact.

4. In a breaker, a casing, a stationary contact, a movable unit having a support and a contactor as parts thereof, spring means constantly biasing the unit outwardly with the contactor against the contact for circuit closing, the contact thus forming an out-movement stop for the unit, manually releasable means for holding the unit, when its handle is pushed inwardly manually for circuit opening and the spring overcome, the unit then being held inwardly, with its contactor remote from the contact, the contactor being movably mounted on the support to move with respect thereto, means releasably interlatching the support and contactor so that normally they move in unison, but the contactor may move free of the support on latch release, said spring means moving the contactor, free of the held support, on latch release, away from the contact, for circuit opening, means for releasing the latch, and a stop for engaging the released contactor, when the support is pushed inwardly after latch release, for relatching the contactor and support in open circuit position.

5. In a breaker, a casing, a stationary contact, a movable unit having a support and a contactor as parts thereof, spring means constantly biasing the unit outwardly, with the contactor against the contact, for circuit closing, the contact thus forming an out-movement stop for the unit, manually releasable means for holding the unit, when its handle is pushed inwardly manually for circuit opening and the spring overcome, the unit then being held inwardly, with its contactor remote from the contact, the unit holding means engaging the support part of the slide, with release of the means and support being effected by movement of the support transverse to its normal movement, inwardly for circuit opening, and outwardly for circuit closing, the contactor being movably mounted on the support to move with respect thereto, means releasably interlatching the support and contactor so that normally they move in unison, but the contactor may move free of the support on latch release, said spring means moving the contactor, free of the held support, on latch release, away from the contact, and a stop for engaging the released contactor, when the support is pushed inwardly after latch release, for relatching the contactor and support in open circuit position.

6. A circuit breaker comprising a support, a contactor movably mounted thereon and interlatched thereto, spring means constantly biasing the support and contactor to move to closed circuit position when they are relatively latched and biasing the contactor alone to move to and remain in open circuit position when it and the support are relatively unlatched, a relatching stop, and an actuator manually accessible for moving the support to open circuit position and the contactor to said stop for relatching them relatively, with the circuit open and for stressing the spring means the release of the actuator then permitting the stressed spring means to move the relatched support and contactor to closed circuit position.

7. A circuit breaker comprising a support, a contactor movably mounted thereon and interlatched thereto, spring means constantly biasing the support and contactor to move to closed circuit position when they are relatively latched and biasing the contactor alone to move to and remain in open circuit position when it and the support are relatively unlatched, a relatching stop, and an actuator manually accessible for moving the support to open circuit position and the contactor to said stop for relatching them relatively, with the circuit open and for stressing the spring means the release of the actuator then permitting the stressed spring means to move the relatched support and contactor to closed circuit position, the actuator being movable to overcome the spring means and move the support and contactor as a unit to open circuit position when they are relatively interlatched.

8. A circuit breaker comprising a support, a contactor movably mounted thereon and interlatched thereto, spring means constantly biasing the support and contactor to move to closed circuit position when they are relatively latched and biasing the contactor alone to move to and remain in open circuit position when it and the support are relatively unlatched, a relatching stop, and an actuator manually accessible for moving the support to open circuit position and the contactor to said stop for relatching them relatively, with the circuit open and for stressing the spring means the release of the actuator then

permitting the stressed spring means to move the relatched support and contactor to closed circuit position, the actuator being movable to overcome the spring means and move the support and contactor as a unit to open circuit position when they are relatively interlatched, and means for holding the support and contactor in open circuit position when they are so moved.

9. A circuit breaker comprising a support, a contactor movably mounted thereon and interlatched thereto, spring means constantly biasing the support and contactor to move to closed circuit position when they are relatively latched and biasing the contactor alone to move to and remain in open circuit position when it and the support are relatively unlatched, a relatching stop, and an actuator manually accessible for moving the support to open circuit position and the contactor to said stop for relatching them relatively, with the circuit open and for stressing the spring means the release of the actuator then permitting the stressed spring means to move the relatched support and contactor to closed circuit position, the actuator being a push button, arranged to be pushed in for interlatching the support and contactor.

10. A circuit breaker comprising a support, a contactor movably mounted thereon and interlatched thereto, spring means constantly biasing the support and contactor to move to closed circuit position when they are relatively latched and biasing the contactor alone to move to and remain in open circuit position when it and the support are relatively unlatched, a relatching stop and an actuator manually accessible for moving the support to open circuit position and the contactor to said stop for relatching them relatively, with the circuit open and for stressing the spring means the release of the actuator then permitting the stressed spring means to move the relatched support and contactor to closed circuit position, the actuator being movable to overcome the spring means and move the support and contactor as a unit to open circuit position when they are relatively interlatched, the actuator being a push button, arranged to be pushed in for interlatching the support and contactor, and for moving them as a unit to open circuit position.

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