

April 12, 1960

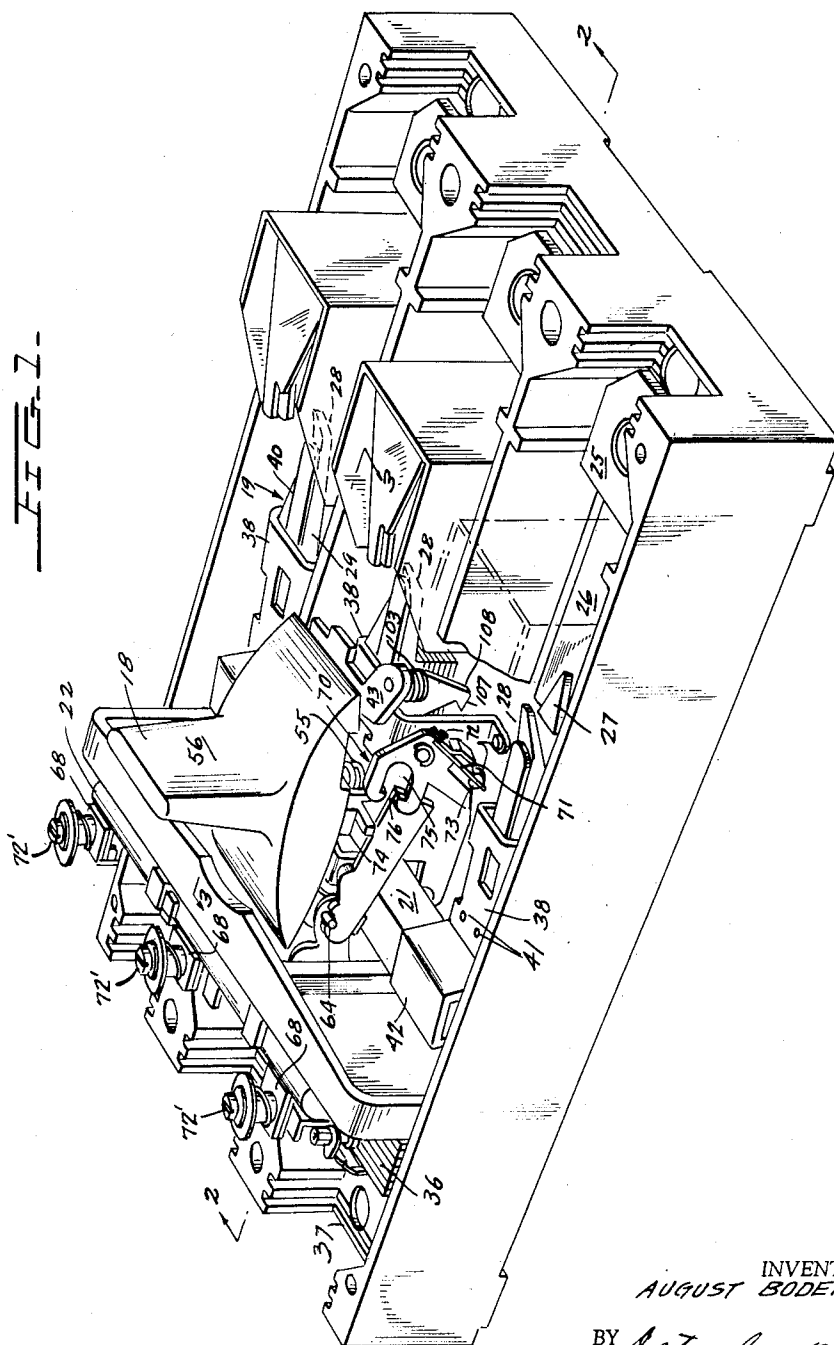
A. BODENSCHATZ

2,932,706

HOLD-OPEN AND ANTI-REBOUND LATCHES

Filed May 12, 1958

4 Sheets-Sheet 1



INVENTOR.
AUGUST BODENSCHATZ
BY *Petrolenk Faber,*
Just & Soffen
ATTORNEYS

April 12, 1960

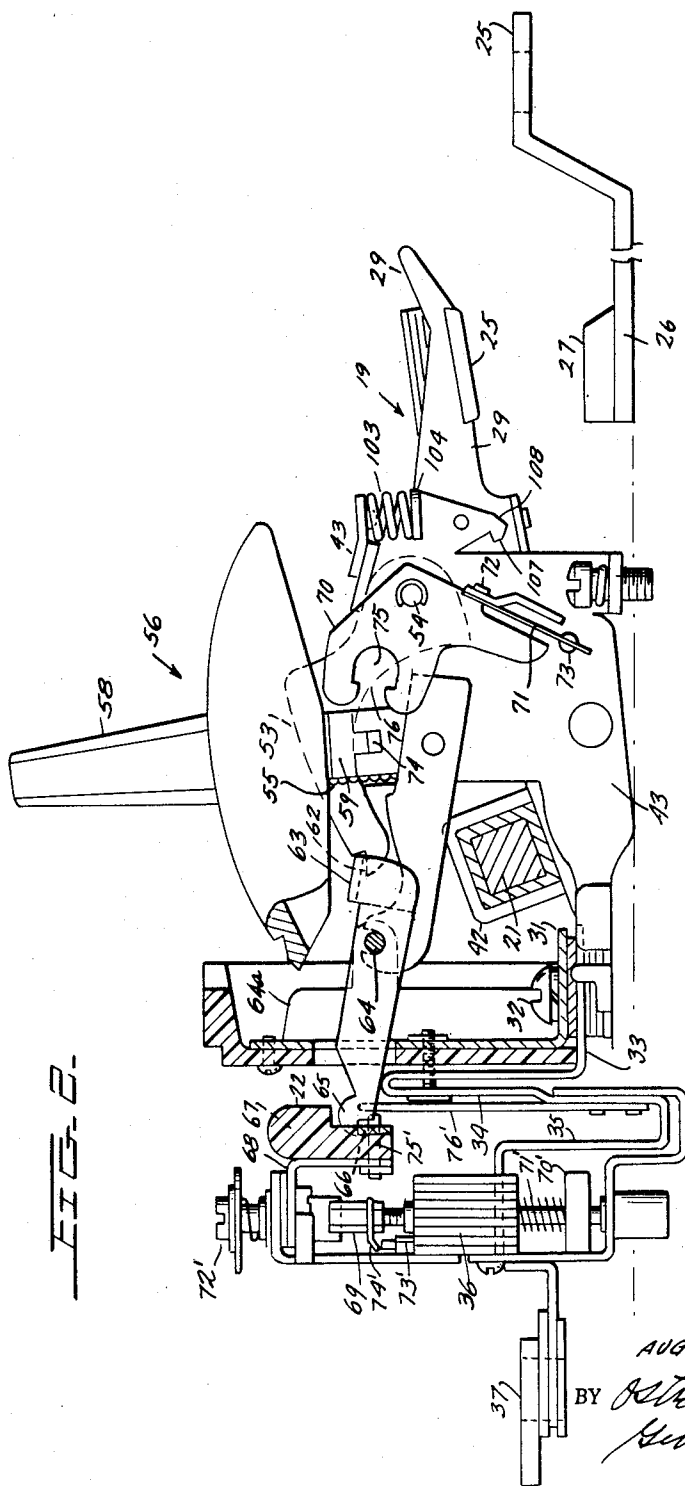
A. BODENSCHATZ

2,932,706

HOLD-OPEN AND ANTI-REBOUND LATCHES

Filed May 12, 1958

4 Sheets-Sheet 2



INVENTOR.
AUGUST BODENSCHATZ

BY *Retro. Curt. Fisher,*
Kurt & Hoffen
ATTORNEYS

April 12, 1960

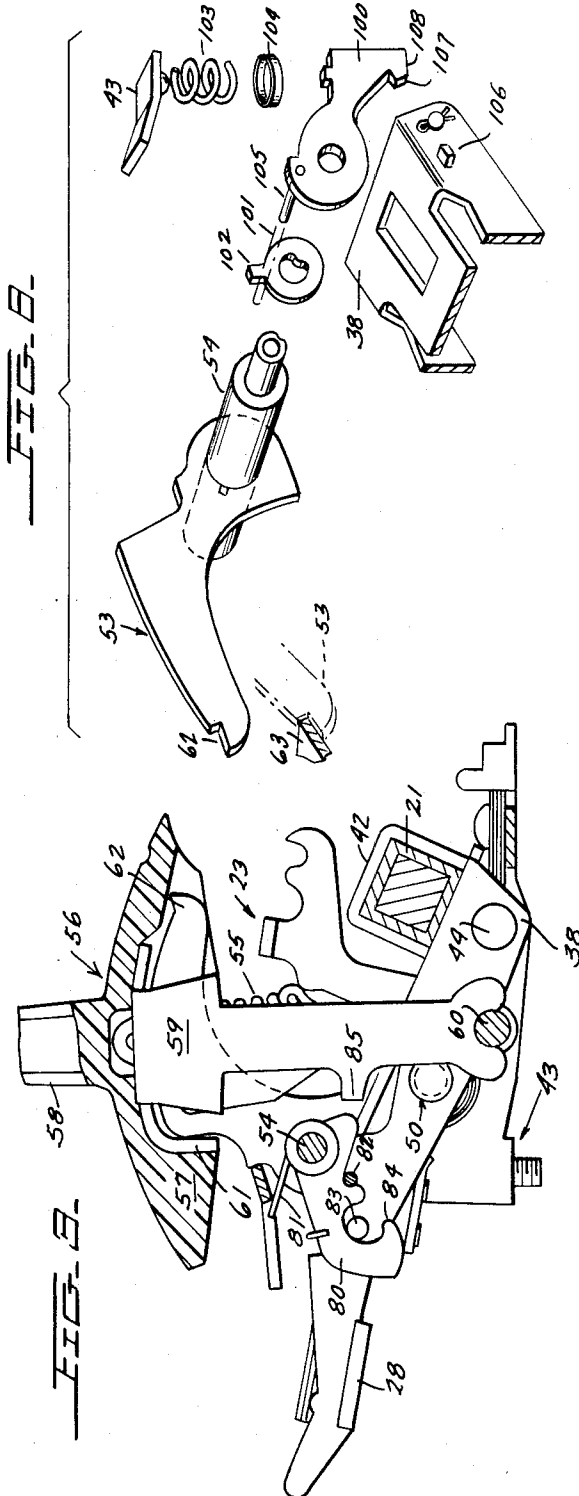
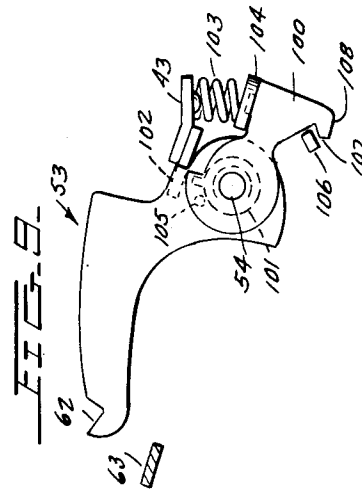
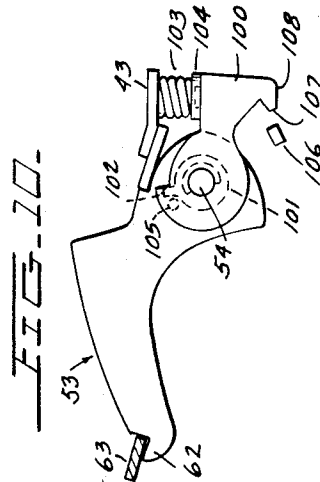
A. BODENSCHATZ

2,932,706

HOLD-OPEN AND ANTI-REBOUND LATCHES

Filed May 12, 1958

4 Sheets-Sheet 3



INVENTOR.
AUGUST BODENSCHATZ

BY *Peter Lind, Faber,*
Kurt & Saffer
ATTORNEYS

April 12, 1960

A. BODENSCHATZ

2,932,706

HOLD-OPEN AND ANTI-REBOUND LATCHES

Filed May 12, 1958

4 Sheets-Sheet 4

FIG. 5--RESET

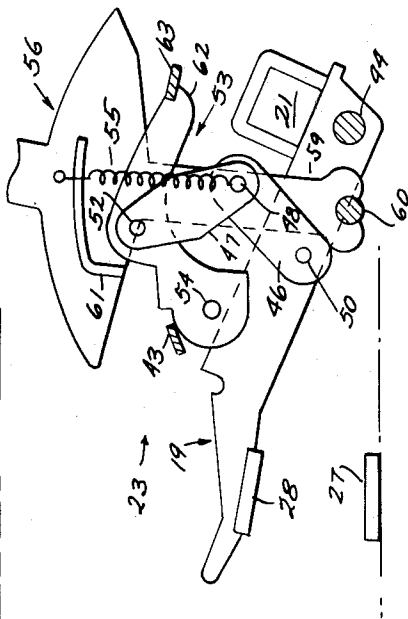
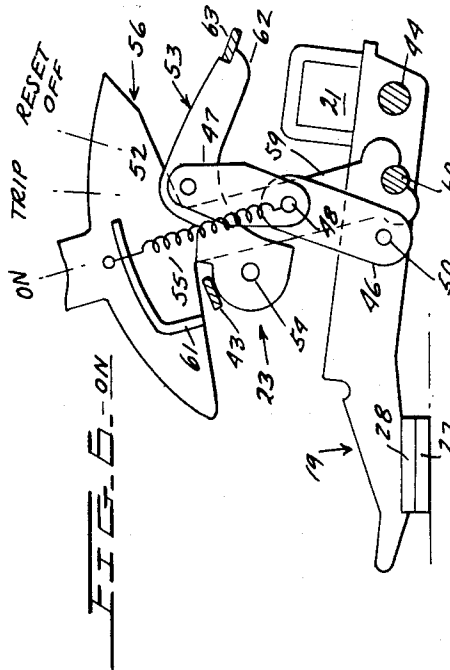
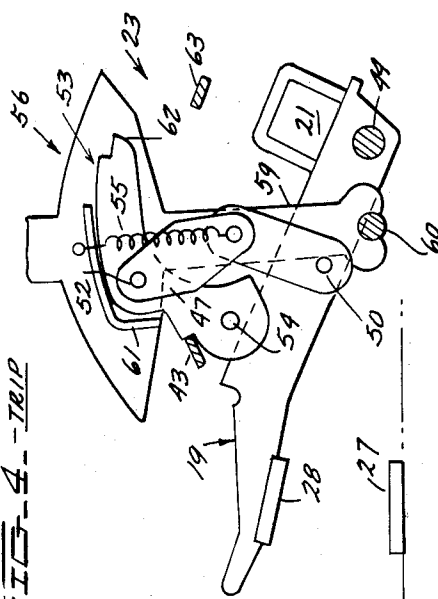
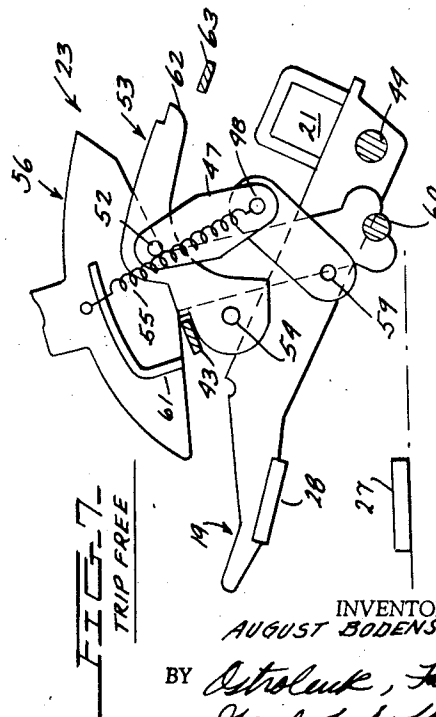


FIG. 4--TRIP



INVENTOR.
AUGUST BODENSCHATZ
BY *Detrolink, Fisher,
Dent & Soffen*
ATTORNEYS

1

2,932,706

HOLD-OPEN AND ANTI-REBOUND LATCHES

August Bodenschatz, Philadelphia, Pa., assignor to I-T-E Circuit Breaker Company, Philadelphia, Pa., a corporation of Pennsylvania

Application May 12, 1958, Serial No. 734,785

11 Claims. (Cl. 200—197)

This invention generally relates to circuit interrupters and more particularly to means for preventing unwanted closing of a circuit because of contact arm rebound on opening and also preventing closing due to an impact from a blow striking the circuit breaker case from without.

Heretofore, some circuit breakers have been equipped with both hold-close and hold-open latches. Circuit breakers are usually provided with operating springs in which energy is stored to effect closing and opening of the circuit breaker with a snap action. The energy stored in the springs is not completely expended in moving the contact arm to the closed position. However, the loading of the springs is not enough to maintain the contacts in engagement against a severe shock which might be transmitted to the circuit breaker casing from without to combine with the inertia of the operating handle and handle arm. A rebound at this time will draw an arc and consequently damage the cooperating contacts. To prevent this condition, a hold-close latch, operating on a moving mass principle, is often provided which engages the movable contact arm and prevents it from moving to the open position.

The hold-open latch is required to maintain the movable contact arm open under both static and dynamic condition. Staticlly, a circuit breaker in the Open position may receive a blow directed in a particular direction tending to move the contact arm to the closed position. To avoid momentary closure a hold-open latch is usually locked in such a position so as to maintain the movable contact arm in the open position. This latch can be released only by the circuit breaker handle arm as it approaches its extreme On position. The latch sometimes serves to hold the contact arm open while the operating spring becomes loaded during the slow mechanical movement of the operating handle. As the circuit breaker handle approaches the On position, the latch is released enabling the operating spring to provide positive high speed movement for the contact arm as it moves the cooperating contacts of the circuit breaker into engagement.

The hold-open latch has also been effective to prevent the movable contact arm from rebounding toward or to the closed position when the circuit breaker is tripped because of very high blow off forces accompanying severe short circuit conditions. Rebound at this time will interfere with arc interruption in that restrike is more likely as the distance between the parted contacts is decreased. The latch, however, fails to serve the latter purpose should the short occur on closing of the breaker. Under these circumstances, the breaker handle is not in the Off or Reset position but is usually near the extreme On position and as such makes the hold-open latch inoperative.

When molded case circuit breakers were first introduced they were constructed to interrupt currents in the magnitude of 20 amperes with the available short circuit currents being not much in excess of this figure. Today molded case circuit breakers are constructed to carry

2

continuous currents in the order of 800 amperes flowing from a source which is capable of delivering 25,000 to 100,000 amperes under short circuit conditions. Because of the high magnitudes of current which are present under severe short circuit conditions the blow off force acting to separate the cooperating contacts becomes so great that the movable contact will either rebound with great force back toward engagement with the stationary contact or actually engage the stationary contact. A partial rebound will hinder arc interruption while complete rebound will cause a new arc to be struck.

The instant invention overcomes the shortcoming of the prior art by providing a novel anti-rebound latch means which is independent of the position of the circuit breaker operating handle and as such is effective during all critical operating periods. The anti-rebound latch is positioned by the cradle of the reset mechanism. That is, when the reset mechanism is tripped open the latch is positioned so as to engage the contact arm and latch it against return to the On position, and when the cradle is in the Reset position, the latch is positioned so that it is ineffective to prevent the contact arm from being operated to the On position.

Should closing be attempted on a severe short the cradle will rapidly move to the tripped position thereby positioning the anti-rebound latch to its latching position. In the latching position, the anti-rebound latch is engaged by the movable contact arm as it moves to the Open position and is cammed aside to hook over a pin carried by the contact arm thereby preventing the contact arm from rebounding to the closed position. Thus, my novel anti-rebound latch is effective should opening occur on a fault as well as on a short or fault developing after closing.

My novel anti-rebound latch may be added to a circuit breaker having the conventional hold-open latch. In that event, when the cradle is moved to the Reset position the hold-open latch will maintain the contact arm in the Open position even though an impact should occur at this time.

However, in some circuit breakers equipped with my anti-rebound latch and not the conventional hold-open latch, when the cradle is moved to the reset position, the main operating springs for the circuit breaker are partially loaded and positioned so as to bias the contact arm toward the Open position. The partially loaded spring gives some measure of protection against the contact arm moving to the closed position on the occurrence of an external impact.

Accordingly, it is a primary object of the instant invention to provide a circuit breaker having an anti-rebound latch whose position is independent of the position of the circuit breaker operating handle.

Another object is to provide an anti-rebound latch, for a circuit breaker, which is positionable by the reset cradle and engageable with the contact arm to maintain the circuit breaker cooperating contacts disengaged.

A still further object is to provide an anti-rebound latch which is in latching position whenever the cradle of the reset mechanism is in the tripped position.

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

Figure 1 is a perspective view of a molded case circuit breaker which includes my novel anti-rebound latch with the cover and arc extinguishing means removed for the sake of clarity.

Figure 2 is a section taken through line 2—2 of Figure 1 looking in the direction of arrows 2—2.

Figure 3 is a section taken through line 3—3 of Figure 1 looking in the direction of arrows 3—3.

Figures 4—7 are side elevations illustrating the reset

cradle and toggle linkages of the circuit breaker operating mechanism in their various positions. In Figure 4 the mechanism is tripped open, in Figure 5 it is reset, in Figure 6 it is closed, and in Figure 7 it is tripped free with the operating handle in the On position.

Figure 8 is an exploded view illustrating the details of my novel anti-rebound latch.

Figures 9 and 10 are side elevations of the anti-rebound latch members of Figure 8 in their assembled positions. In Figure 9 the anti-rebound latch is in position to maintain the circuit breaker contacts disengaged while in Figure 10 the anti-rebound latch has been moved to an inoperative position.

Referring to the figures, molded case circuit breaker 20 is illustrated as being a three phase device, the three phases of which are electrically isolated from one another by suitable insulating barriers and are mechanically tied together by a common insulating bar 21, and a common tripper bar 22. Operating mechanism 23 is immediately connected to center phase B and, by means of insulating bar 21 and tripper bar 22, the operation of phases A and C are coordinated with the operation of phase B so that all three phases A—C are operated simultaneously to the On and Off positions.

Each of the phases A—C includes an identical interruptible current path through circuit breaker 20. For the sake of brevity, only one current path will be described, it being understood that the current paths of the other two phases are identical to the current path of the described phase. This current path comprises terminal 25, bus conductor 26 to stationary contact 27. Stationary contact 27 is engageable by movable contact 28 which is mounted on the rigid forward section 29 of contact arm 19. The central section 30 of arm 19 is flexible and terminates in a rigid portion 31 which is connected by means of fastener 32 to bus conductor 33. Bus conductor 33 is connected to one end of heating element 34 while the other end of heating element 34 is connected to a looped bus conductor 35 which extends through magnetic core 36, forming the energizing turn therefor, and finally terminating in terminal 37.

Contact arm 19 is positioned between the walls of elongated U-shaped bracket 38 and is secured thereto by means of pin 83. One end of leaf spring 40 is secured to bracket 38 by means of rivets 41 while the other end of leaf spring 40 bears against the forward end 29 of contact 19 thereby biasing movable contact 28 in a direction toward engagement with stationary contact 27. Another U-shaped bracket 42 secures bracket 38 to insulating bar 21 so that the movable contacts 28 of each phase are operated in unison. Bracket 38 is pivotally secured to frame 43 by means of pin 44. Frame 43 is in turn rigidly secured to base section 45 of the circuit breaker casing.

Operating mechanism 23 comprises toggle linkage 46, 47 connected at knee pin 48. Linkage 46 includes a U-shaped portion 49 which straddles bracket 38 and is pivotally secured thereto at pins 50. The other linkage 47 comprises two aligned members which are secured to one another in spaced relationship by spacer rivet 51. The upper end of linkage 47 is pivotally secured at 52 to latchable cradle 53. Cradle 53 is keyed to shaft 54, the ends of which are journaled in frame 43. Operating spring 55 is secured at one end to knee 48 and at the other end to handle assembly 56.

Handle assembly 56 comprises a molded member 57 having an upwardly extending portion the end of which projects through an opening in the casing cover (not shown) to provide an external operating handle for circuit breaker 20. Member 57 is rigidly secured to a bifurcated arm 59 which straddles bracket 38 and is positioned between the walls of frame 43. The tips of each bifurcated section are forked and engage pins 60 which extend inwardly from the walls of frame 43.

A hooked tip 61 extends from arm 59 and is in posi-

tion to engage cradle 53 to cause rotation thereof about pin 54 when operating handle 58 is moved from the Tripped to the Reset or manual Off position. When operating handle 58 is moved to the Off position, tip 62 becomes latched under member 63. Member 63 is mounted on fixed pivot 64, journaled in bracket 64a, and includes a rearwardly extending tip 65 which is latchable on common tripper bar extension 66.

Common tripper bar 22 is mounted on fixed pivot 67 and biased thereabout to a latching position. Tripper bar 22 includes individual extension members 68 for each phase of the circuit breaker 20. Each extension member 68 is engageable by a plunger 69, which is secured to magnetic armature 70', when the armature 70 is attracted to magnetic core 36 and serves as an instantaneous trip means for circuit breaker 20. Spring 71' biases armature 70' away from core 36 with the spacing between core 36 and armature 70' being established by adjusting screw 72' which positions pivot member 73' which in turn engages an extension 74' on plunger 69. A screw means 75' is also mounted to extension 68 and is engageable by bimetallic element 76' thereby providing a time delay trip means for circuit breaker 20. If either the time delay trip or instantaneous trip means causes extension 68 to bring about a clockwise rotation of common tripper bar 22 with respect to Figure 2, extension 66 will likewise be pivoted in a clockwise direction thus releasing tip 55 and permitting member 63 to be forced counterclockwise about pivot 64 under the influence of operating spring 55 thus freeing tip 62 of cradle 53 and permitting cradle 53 to assume a tripped position. The operation of operating mechanism 23 is best explained by reference to the Figures 4—7. In the Tripped open position of Figure 4 handle assembly 56 is in the central position with spring 55 being in its most relaxed but not completely relaxed condition and knee 48 being positioned between the sections of arm 59. As handle assembly 56 is moved toward the right to the Reset or manual Off position of Figure 5, tip 61 engages cradle 53 causing it to rotate about point 54 until cradle tip 62 is latched beneath member 63. The rotation of cradle 53 causes the upper pivot point 52 of the toggle to move downward and slightly to the right.

The Off position of contact arm 19, which is established by the abutting of bracket 38 against cradle pivot 54, remains fixed at this time so that the lower pivot point 50 of the toggle does not move. Thus, knee 48 moves to the right and downward. This causes spring 55 to lengthen and thereby store more energy. Since cradle 53 is now latched in the Reset position, subsequent movement of the handle assembly 56 from the Reset position of Figure 5 to the circuit breaker Closed position of Figure 6, will not cause the upper pivot point 50 of the toggle to move. As arm 59 moves to the left, spring 55 at first urges knee 48 upward. However, as the upper end of spring 55 moves to the left of upper linkage 47, a component of force is exerted on knee 48 in a leftward direction. As knee 48 moves to the left, the lower pivot point 50 of the toggle is forced downward thereby moving contact arm 19 to the Closed position wherein movable contact 28 engages stationary contact 27. In the absence of a hold-open latch, to be hereinafter described, knee 48 begins to move to the left at substantially the instant spring 55 moves to the left of upper toggle linkage 47. Operating mechanism 23 remains in the Closed position of Figure 6 since operating spring 55 exerts an upward force on knee 48 which would have to be increased for the handle assembly 56 to be moved either to the right or left of its Closed position.

If a fault should occur as handle assembly 56 is being moved from the Reset position of Figure 5 toward the Closed position of Figure 6, common tripper bar 22 will be rotated clockwise thereby releasing latch tip 62 from element 63 and permitting cradle 53 to return to its tripped position of Figure 4. This will cause upper toggle

5

pivot 52 to move upward, which in turn causes knee 48 to move upward thereby preventing toggle linkages 46, 47 from moving toward a straight position wherein contact arm 19 would be closed (Figure 7).

Referring more particularly to Figure 2, circuit breaker 20 is provided with a hold-close latch 70 which is freely mounted on cradle shaft 54. A leaf spring 71 is secured at one end thereof, by fastener 72, to hold-close latch 70 and at its other end leaf spring 71 is entered into a slotted projection 73 of frame 43 thereby establishing a quiescent operation position for hold-close latch 70. Handle assembly arm 59 carries an outwardly extending projection 74 which enters aperture 75 of latch 70 through a constricted opening 76 when handle assembly 56 is in the closed position. If circuit breaker 20 should be subjected to a shock, the impact of which would tend to move handle assembly 56 toward the open position, hold-close latch 70 would be rotated about pivot 54 into a position such that opening 76 is no longer in alignment with projection 74 and handle assembly 56 is thus prevented from moving to the Off position.

Referring more particularly to Figure 3, circuit breaker 20 also includes a hold-open latch 80 which is mounted to freely pivot on cradle shaft 54. Torsion spring 81 bears against frame 43 and hold-open latch 80 thus biasing latch 80 in a counterclockwise direction with respect to Figure 3 to a latching position wherein latch 80 abuts pin 82 which is inwardly extending from the side walls of frame 43. With circuit breaker 20 in the Open position pin 83, extending from bracket 38, is captured by hooked latch tip 84 thereby preventing contact arm 19 from moving to a closed position.

As handle assembly 56 is moved toward the Closed position, spring 55 will act to move contact arm 19 toward the Closed position. However, hold-open latch 80 will prevent contact arm from moving to the closed position until handle assembly 56 is positioned substantially at the circuit breaker Closed position. At this time, projection 85 on handle assembly arm 59 will engage hold-open latch 80 causing it to rotate clockwise with respect to Figure 3 against the force of biasing spring 81 to an unlatched position wherein pin 83 is no longer captured by latch tip 84.

At this time, contact arm 19 is free to move to the Closed position. Should a fault occur with arm 59 in the Closed position, it is now apparent that hold-open latch 80 is inoperative to prevent contact arm 19 from rebounding toward the closed position. This gives rise to the need for my novel anti-rebound latch the operation of which is most clearly seen by reference to Figures 8-10.

Anti-rebound latch 100 is freely mounted on cradle shaft 54. Element 101 having projection 102 is keyed to shaft 54 to move in unison therewith as cradle 53 is moved to the Reset and Tripped positions. Coil spring 103 abuts a cross member of frame 43 as well as spring cup 104, which is engaged with anti-rebound latch 100, thus biasing latch 100 in a direction such that pin 105 thereon is always urged toward engagement with projection 102.

When cradle 53 is unlatched (Figure 9) spring 103 urges anti-rebound latch 100 to a latching position which is determined by the position of projection 102. Bracket 38, to which contact arm 19 is secured, moves toward contact disengaged position when cradle 53 is unlatched. Latch pin 106 carried by bracket 38 engages cam surface 108 of latch 100 thereby moving latch 100 against the force of spring 103 until such time as latch pin 105 is captured by hooked latch tip 107. No matter how rapidly the circuit breaker movable contact 26 moves to the disengaged position, rebound is impossible since latch pin 106 is automatically captured by hooked tip 107 of anti-rebound latch 100 (Figure 9).

When cradle 53 is moved to the Reset position (Figure 10) shaft 54 is rotated counterclockwise causing pro-

6

jection 102 to rotate in the same direction. Pin 105 follows projection 102 thereby causing anti-rebound latch 100 to move, in a direction opposite to that in which it is being urged by spring 103 to an inoperative position. In this position, hooked tip 107 has been moved out of the path of latch pin 106 thereby permitting movable contact 26 to be brought into engagement with stationary contact 107. It is apparent that whenever cradle 53 is unlatched, anti-rebound latch 100 assumes a latching position. That is, hooked tip 107 is positioned in the path of latch pin 106.

Thus, I have provided novel anti-rebound latch means which is positionable by the reset cradle of the circuit breaker operating mechanism and engageable with the contact arm to maintain the contact arm in a disengaged position independently of the position of the circuit breaker operating handle.

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 prefer to be limited, not by the specific disclosure herein, but only by the appending claims.

I claim:

1. A circuit breaker including a pair of cooperating contacts, an operating handle, and means operatively connected between said handle and said cooperating contacts whereby said contacts are movable by said handle from a disengaged to an engaged position; said contacts being movable into engagement only when a first portion of said means is in a first position; an anti-rebound latch positionable to operatively engage one contact of said cooperating contacts and thereby maintain said contacts disengaged; said anti-rebound latch being positioned to operatively engage said one contact independently of said handle position whenever said first portion is in other than said first position.

2. A circuit breaker including a pair of cooperating contacts and a reset mechanism operably connected to one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and engaged respectively; said reset mechanism including a cradle and a first latch engageable with said cradle; said arm being operable to said second position only when said cradle is latched by said first latch; a latch means positionable by said cradle and engageable with said arm to maintain said arm in said first position.

3. A circuit breaker including a pair of cooperating contacts and a reset mechanism operably connected to one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and engaged respectively; said reset mechanism including a latchable cradle; said arm being operable to said second position only when said cradle is latched; a latch means positionable by said cradle and engageable with said arm to maintain said arm in said first position; said latch means being comprised of a projection carried by said cradle, a latch member, a biasing means urging said latch member into engagement with said projection; said arm being engaged by said latch member when said cradle is unlatched.

4. A circuit breaker including a pair of cooperating contacts and a reset mechanism operably connected to one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and engaged respectively; said reset mechanism including a latchable cradle; said arm being operable to said second position only when said cradle is latched; a latch means positionable by said cradle and engageable with said

arm to maintain said arm in said first position; said latch means being comprised of a projection carried by said cradle, a latch member, a biasing means urging said latch member into engagement with said projection; said arm being engaged by said latch member when said cradle is unlatched and being disengaged from said arm when said cradle is latched; said latch member having a hooked tip and a cam surface; said cam surface being engageable by said arm when said arm is moved from said second to said first position and said cradle is unlatched thereby moving said latch member against said biasing means to permit said hooked tip to engage said arm and maintain said cooperating contacts disengaged.

5. A circuit breaker including a pair of cooperating contacts and a reset mechanism operably connected to one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and engaged respectively; said reset mechanism including a latchable cradle; said arm being operable to said second position only when said cradle is latched; a latch means positionable by said cradle and engageable with said arm to maintain said arm in said first position; said latch means being comprised of a projection carried by said cradle, a latch member, a biasing means urging said latch member into engagement with said projection; said arm being engaged by said latch member when said cradle is unlatched; a shaft to which said cradle is keyed; said latch member being freely mounted for rotation on said shaft; said biasing means urging said latch member to rotate about an axis defined by said shaft.

6. A circuit breaker including a pair of cooperating contacts, a reset mechanism, and means including a main spring operably connected between said mechanism and one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and engaged respectively; said reset mechanism including a latchable cradle; said arm being operable to said second position only when said cradle is latched; a latch means positionable by said cradle and engageable with said arm to maintain said arm in said first position; said main spring being positionable to urge said arm to both said first and said second positions; said main spring being partially loaded when said cradle is latched.

7. A circuit breaker including a pair of cooperating contacts, a reset mechanism, and means including a main spring operably connected between said mechanism and one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and engaged respectively; said reset mechanism including a latchable cradle; said arm being operable to said second position only when said cradle is latched; a latch means positionable by said cradle and engageable with said arm to maintain said arm in said first position; said main spring being positionable to urge said arm to both said first and said second positions; said main spring being partially loaded when said cradle is latched; said latch means being comprised of a projection carried by said cradle, a latch member, a biasing means urging said latch member into engagement with said projection; said arm being engaged by said latch member when said cradle is unlatched.

8. A circuit breaker including a pair of cooperating contacts, a reset mechanism, and means including a main spring operably connected between said mechanism and one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and

engaged respectively; said reset mechanism including a latchable cradle; said arm being operable to said second position only when said cradle is latched; a latch means positionable by said cradle and engageable with said arm to maintain said arm in said first position; said main spring being positionable to urge said arm to both said first and said second positions; said main spring being partially loaded when said cradle is latched; said latch means being comprised of a projection carried by said cradle, a latch member, a biasing means urging said latch member into engagement with said projection; said arm being engaged by said latch member when said cradle is unlatched and being disengaged from said arm when said cradle is latched; said latch member having a hooked tip and a cam surface; said cam surface being engageable by said arm when said arm is moved from said second to said first position and said cradle is unlatched thereby moving said latch member against said biasing means to permit said hooked tip to engage said arm and maintain said cooperating contacts disengaged.

9. A circuit breaker including a pair of cooperating contacts, a reset mechanism, and means including a main spring operably connected between said mechanism and one contact of said pair of cooperating contacts; an arm carrying one contact of said pair of cooperating contacts; said arm being operable to a first and a second position wherein said cooperating contacts are disengaged and engaged respectively; said reset mechanism including a latchable cradle; said arm being operable to said second position only when said cradle is latched; a latch means positionable by said cradle and engageable with said arm to maintain said arm in said first position; said main spring being positionable to urge said arm to both said first and said second positions; said main spring being partially loaded when said cradle is latched; said latch means being comprised of a projection carried by said cradle, a latch member, a biasing means urging said latch member into engagement with said projection; said arm being engaged by said latch member when said cradle is unlatched and being disengaged from said arm when said cradle is latched; said latch member having a hooked tip and a cam surface; said cam surface being engageable by said arm when said arm is moved from said second to said first position and said cradle is unlatched thereby moving said latch member against said biasing means to permit said hooked tip to engage said arm and maintain said cooperating contacts disengaged; a shaft to which said cradle is keyed; said latch member being freely mounted for rotation on said shaft; said biasing means urging said latch member to rotate about an axis defined by said shaft.

10. A circuit breaker comprising a pair of cooperating contacts and an operating mechanism operatively connected to said cooperating contacts for operation thereof into and out of engagement; said operating mechanism including a handle assembly; a first latch and a cradle latchable in a reset position by said first latch; said handle assembly being operable to a reset position wherein said cradle is in said reset position and to a closed position wherein said cooperating contacts are engaged when said cradle is latched by said first latch; an anti-rebound latch means operatively positioned to prevent said cooperating contacts from being moved toward engagement while said cradle is unlatched independently of the position of said handle assembly.

11. A circuit breaker comprising a pair of cooperating contacts and an operating mechanism operatively connected to said cooperating contacts for operation thereof into and out of engagement; said operating mechanism including a handle assembly and a cradle latchable in a reset position; said handle assembly being operable to a reset position wherein said cradle is in said reset position and to a closed position wherein said cooperating contacts are engaged when said cradle is latched; a hold-open latch means operatively positioned by said handle

assembly, when in said closed position, to permit said cooperating contacts to be brought into engagement; said hold-open latch being operatively positioned to prevent said cooperating contacts from being brought from disengagement to engagement while said handle assembly is not in said closed position; an anti-rebound latch means operatively positioned to prevent said cooperating contacts from being moved toward engagement while said

5

cradle is unlatched independently of the position of said handle assembly.

References Cited in the file of this patent**UNITED STATES PATENTS**

1,492,138	Meyer	-----	Apr. 29, 1924
2,421,853	Scott	-----	June 10, 1947