

June 12, 1945.

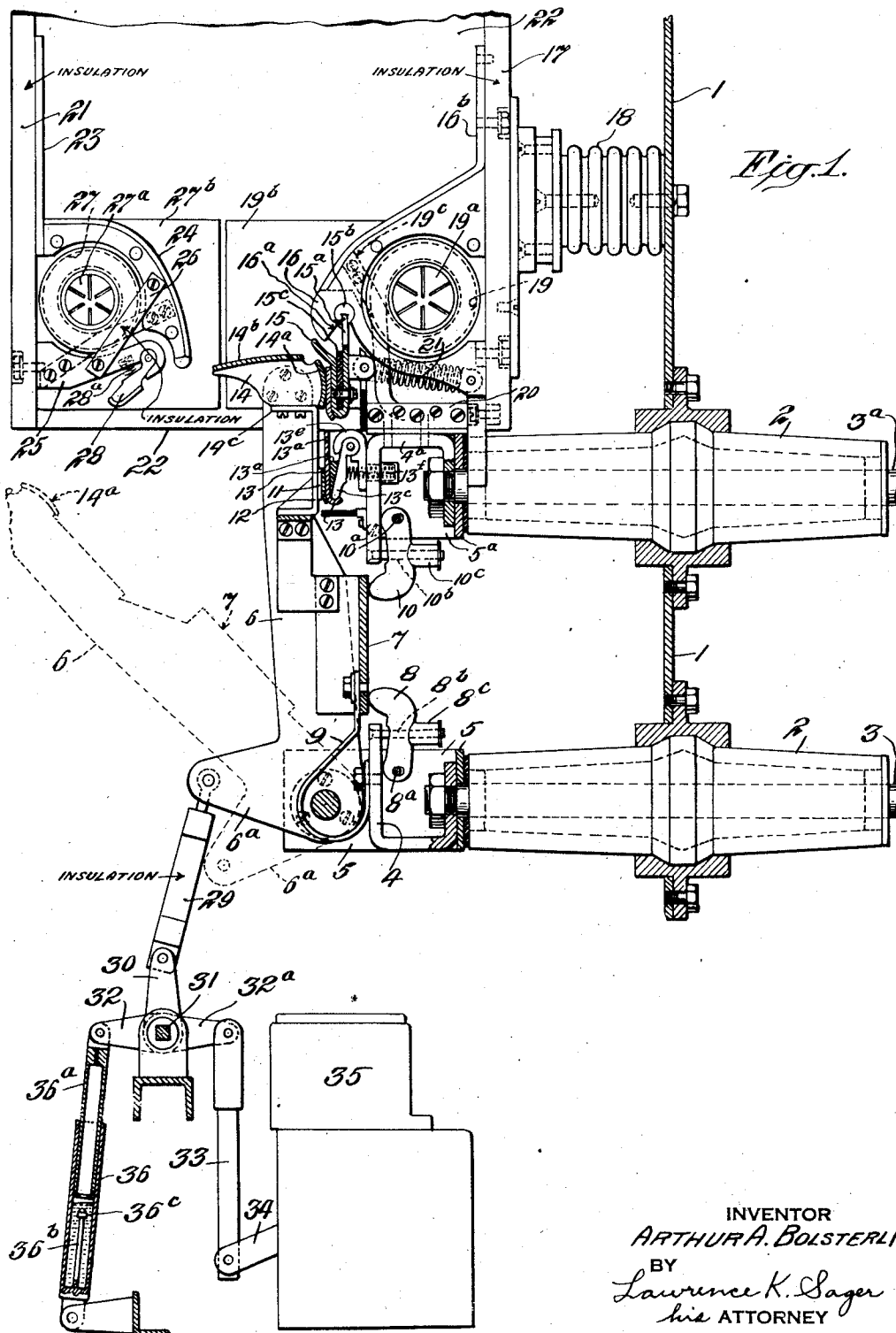
A. A. BOLSTERLI

2,378,124

CIRCUIT BREAKER

Filed March 26, 1942

3 Sheets-Sheet 1



June 12, 1945.

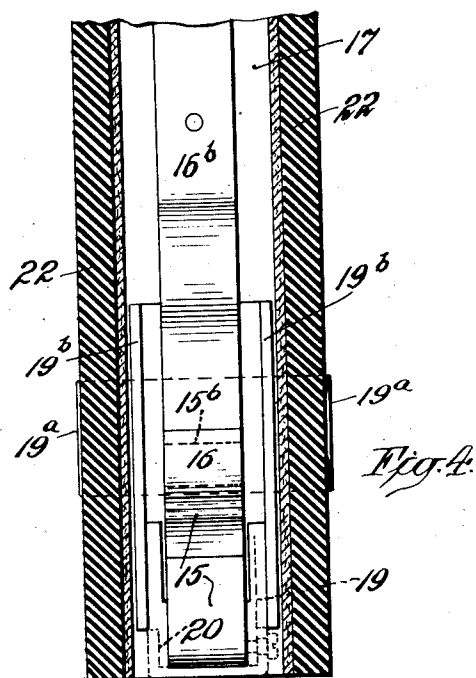
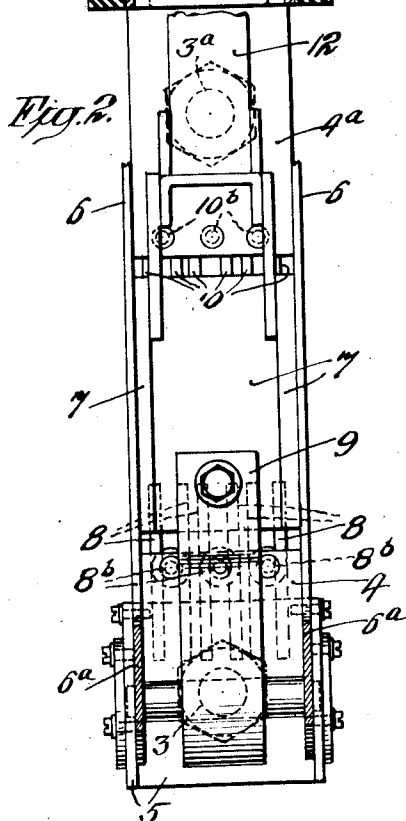
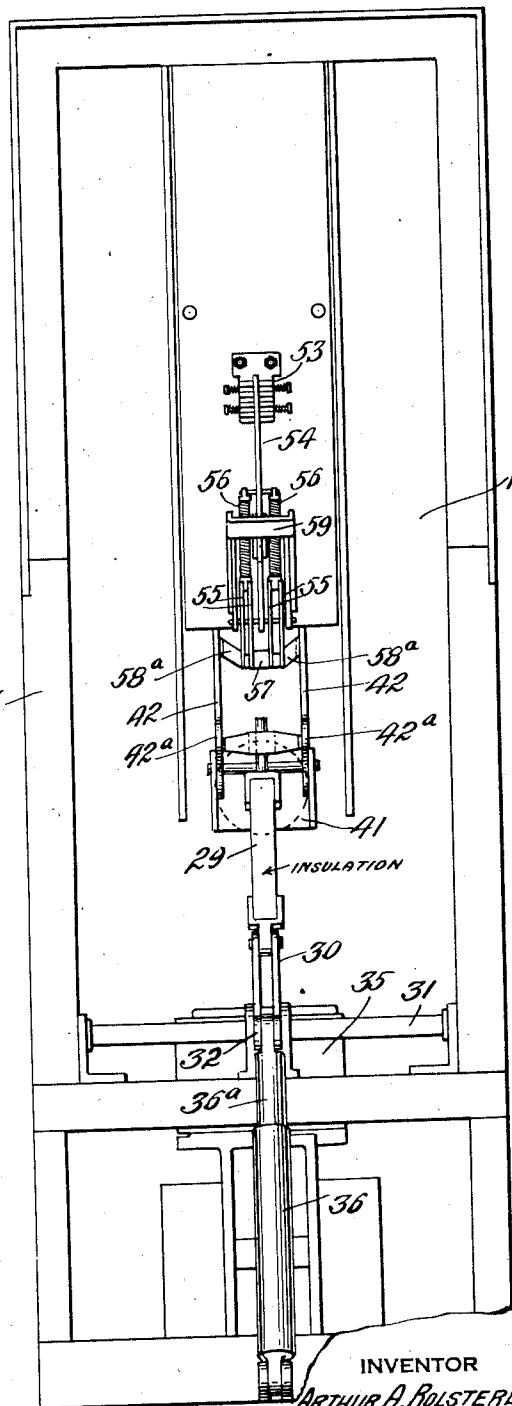
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CIRCUIT BREAKER

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3 Sheets-Sheet 2.



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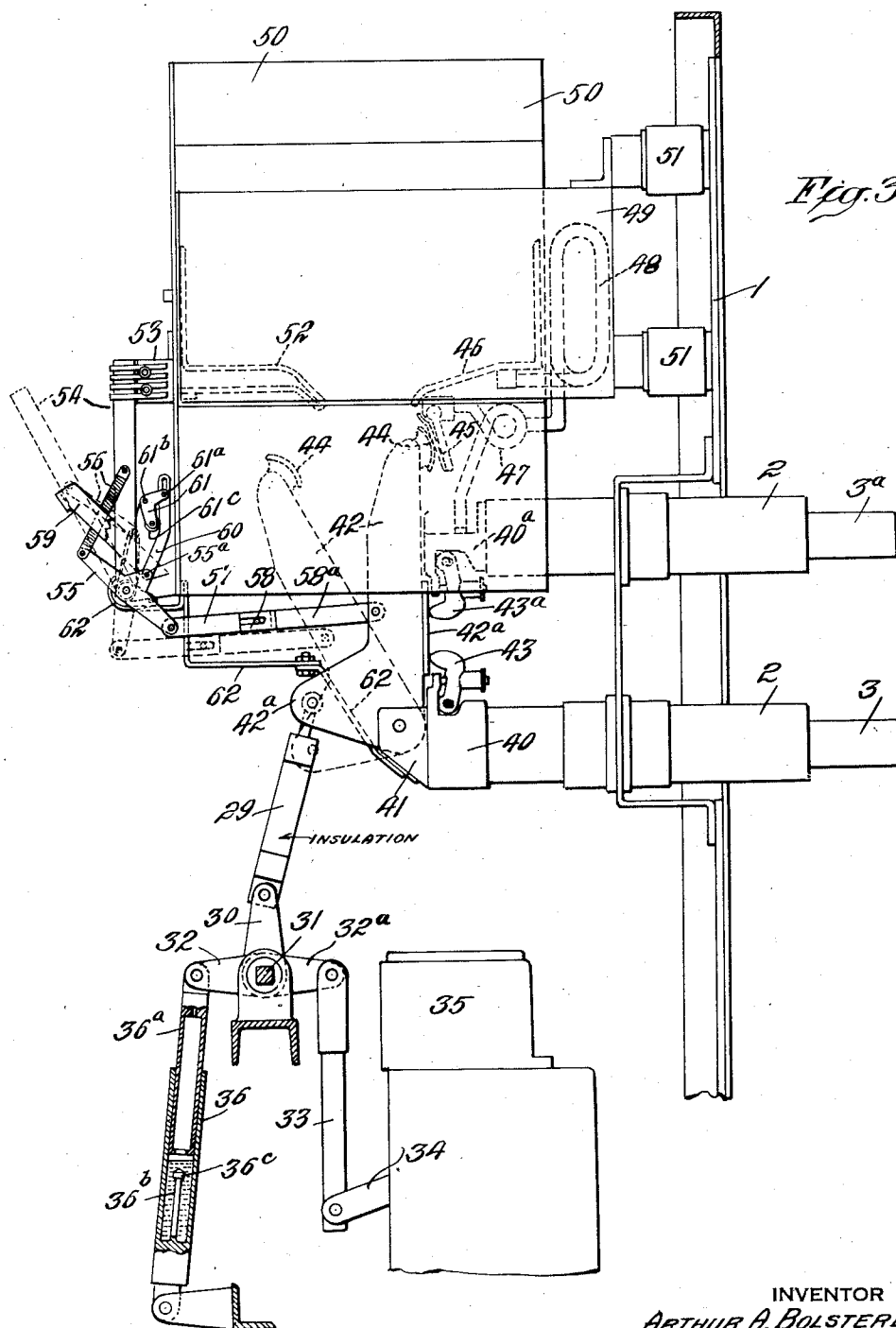
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CIRCUIT BREAKER

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3 Sheets-Sheet 3



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2,378,124

CIRCUIT BREAKER

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Application March 26, 1942, Serial No. 436,264

10 Claims. (Cl. 200-147)

This invention relates to the air type of circuit breaker wherein an arc chute is provided above the circuit breaking contacts for dissipating and extinguishing the arc.

The main object of the invention is to provide a relationship of contacts and auxiliary parts which will result in an effective extinguishment of the arc without objectionable deterioration of the contacts. Another object is to provide an improved form of apparatus wherein the maintenance of the full voltage on the parts within the arc chute, or at the entrance thereof, is avoided. This invention insures that after the arc is extinguished, the potential is removed from one of the portions between where the arc is formed; and this overcomes any tendency of leakage currents or flash-overs which might otherwise occur upon deterioration of the insulating qualities of the arc chute resulting from long continued use. Another object is to provide an air type of circuit breaker adapted for carrying currents of comparatively high amperage and for use with circuits having comparatively high voltages. Other objects and advantages will be understood from the following description and accompanying drawings which illustrate preferred embodiments of the invention.

Fig. 1 is a side elevation partly in section showing one form of circuit breaker embodying the invention; Fig. 2 is a front view thereof partly in section with some parts removed; Fig. 3 is a side elevation partly in section showing another form of circuit breaker; and Fig. 4 is a front view thereof partly in section.

Referring to Figs. 1 and 2, the breaker is supported upon a main supporting panel 1 which may be formed of a steel plate. This supports a pair of insulating bushings 2 through which extend the conducting leads or terminals of the breaker in the form of heavy copper rods 3 and 3a. At the front end of the rod 3 is bolted a heavy copper strap 4 of U form; and between the inner portion of this strap and the end of the bushing 2 is clamped a metal plate 5 of U form with outwardly extending sides. The front portions of these sides form a bearing for the contact arm which is shown as a pair of upwardly extending plates 6. On the inner sides of these plates is secured a copper contact plate 7 of U form, the base of the U extending vertically and back of the rear portions of the plates. A plurality of contact fingers 8 engage the rear face of the contact plate 7 at the lower portion thereof and are freely pivoted at their lower ends on a crossbar 8a extending between the sides of the supporting plate 5. Between each pair of contactors 8 is a rod 8b which is fixed at its front end to the upper end of the conductor 4 and carries at its other end spring pressure exerting means 8c of usual form for insuring good contact

of the fingers between the copper strap 4 and the contact plate 7. An auxiliary copper strap 9 is bolted at one end to the lower portion of the plate 7 and at its other end to the conductor 4 for forming an additional electrical connection between the plate 4 and the plate 7 and for avoiding any arcing between the fingers 8 and the plate 7.

The upper conducting lead or terminal 3a is connected at its front end to a U-shaped conducting strap 4a having downwardly extending sides. A U-shaped bracket 5a is clamped between the plate 4a and the bushing 2 and extends forwardly for supporting between its sides a rod 10a for freely pivotally supporting a series of contact plates 10 similar to the contact fingers 8. Between each pair of plates 10 is a rod 10b fixed at its front end to the conducting plate 4a and supporting at its rear end spring pressure means 10c for forcing the plates 10 into engagement with the fixed conducting plate 4 and the conducting plate 7 when the breaker is in closed position.

A secondary contact 11 carried by the arms 6 is electrically connected by copper straps 12 to the contact plate 7. The contact 11 engages another secondary contact 13 provided at its back with a metal arcing horn 13a which extends upwardly and connects electrically at its lower end with a pivotally mounted conducting piece 13c and is separated a large portion of its length from the horn 13a by insulation 13b. The upper end of the conducting block 13c is pivoted within a hook-shaped conducting element 13e which in turn is fixed to the conductor 4a. A spring 13f passes through the front leg of the conductor 4a and the lower portion of the conducting bearing 13e and is supported at its inner end to engage and exert an outward pressure on the pivoted block 13c for securing good contact engagement between the secondary contacts 11 and 13 when the breaker is closed.

Between the upper ends of the arms 6 is fixed a conducting casting 14 having a curved inner arcing contact 14a and an upper contact surface 14b. The conducting casting 14 is connected by the conducting plate 14c to the conducting straps 12 and thence to the contact plate 7. The contact 14a in the closed position of the breaker engages an arcing contact 15 which is fixed to a conductor 15a which has an arcing horn at its upper end and extends downwardly back of the contact 15 and then upwardly where its upper end is in good electrical connection with and fixed to a cylindrical conducting block 15b. The two portions of the conductor 15a are separated by an insulating strip 15c and clamped together by a bolt 15d which is insulated from the inner portion of the conductor.

The cylindrical conducting block 15b is seated

in a bearing formed in a casting 16 with which it makes good electrical contact. The casting has a downwardly extending front portion for limiting the outward movement of the conductor 15a by engagement with the surface 16a of the casting. This casting extends rearwardly and is fixed to the front side of the rear insulating plate 17 of the arc chute which in turn is supported by a post insulator 18 fixed to the panel plate 1. A metal element forming an arcing horn 16b extends from the casting 16 and upwardly against the inside of the insulating plate 17. A blow-out coil 19 is supported within the casting 16 and has a slotted iron core 19a to the ends of which are secured iron or steel plates 19b for creating a magnetic field for forcing the arc upwardly through the chute. The blow-out coil is indicated as having a flat copper strap wound edge-wise, one terminal 19c of which is secured to the casting 16, the other terminal extending downwardly and secured at its lower end to the side of a U-shaped conductor 20 which in turn is bolted to the top of the conductor 4a. A spring 21 is secured at its inner end to the casting 16 and at its outer end to the contact assembly 15 and 15a for the purpose of forcing it outwardly towards the contact 14a.

The arc chute is closed at the front by an insulating plate 21 and on the sides by insulating plates 22 which may be of fibre or other suitable material and may be lined within by asbestos sheets. The chute above the arcing contacts is provided with cross partitions or bars for breaking up and cooling the arc but as these form no part of the present invention, they are not indicated.

On the inside of the front plate of the chute is mounted another element forming an arcing horn 23 extending upwardly from a casting having an arcing horn element or surface 24. A second casting 25 below the other casting and spaced therefrom is bolted at one end to the front plate 21 of the chute, the upper casting being supported from the lower casting by a strip 26 of insulating material. A blow-out coil 27 is positioned between the two castings and is provided with a slotted iron core 27a. Iron or steel plates 27b are mounted on the opposite ends of this core in the usual manner for creating a magnetic field for forcing the arc upwardly. One end of the edge-wound winding of the blow-out coil is connected to the upper casting having the horn element 24 and the other end is connected to the lower casting 25. A movable contact block 28 is pivotally mounted at one end within the curved end portion of the casting 25 and is normally pressed outward by a spring 28a which is positioned between the contact block 28 and casting 25.

The contact arms 6 may be actuated on their pivot to closed position in any suitable manner but in the present case provision is made for delaying the opening action in the latter part of the stroke. The arms are shown with forward extensions 6a and between them is pivotally connected a rod 29 of insulating material. This is pivotally connected between a pair of arms 30 fixed to a square shaft 31 journaled in fixed bearings at its ends. A pair of links having oppositely extending portions 32 and 32a is likewise fixed to the shaft 31. The portion 32a is pivotally connected to links 33 which are in turn pivotally connected to a pivoted bar 34. The latter may be actuated by any means but is shown as operated by a solenoid indicated at 35.

The portion 32 of the links fixed to the shaft 31 is controlled by retarding means in the form of a dashpot. This is shown as having a cylinder 36 pivoted on a fixed pivot. Slidable within this cylinder is another cylinder 36a, the upper end of which is pivotally connected to the portion 32. A stem 36b is fixed at its lower end to the bottom of the cylinder 36 and carries a cone-shaped head 36c opposite the end of the cylinder 36a but at a short distance therefrom when the breaker is closed. The cylinder 36 is about half filled with oil or other suitable liquid and an air vent is provided in the upper end of the cylinder 36a.

The breaker is brought to the closed position shown by a downward pull on the links 33 as by energizing the solenoid 35 or otherwise. This turns the shaft 31 clockwise and closes the breaker by the toggle action of the links 30 and rod 29. When the closing action starts, the cylinder 36a of the dashpot is well within the cylinder 36 and retards the closing movement in the first portion of the stroke; but before any of the contacts are closed, the head 36c passes from within the cylinder 36a which gives free movement to the cylinder 36a and permits a quick closing of the breaker in the latter part of its stroke. When the breaker is opened by the deenergization of the closing coil, or the release of the latching means or otherwise, the opening movement is rapid in the first part of the stroke but retarded in the latter part because the head 36c then enters the cylinder 36a.

In the closed position of the breaker, the main circuit is closed from the lower conductor 3 through the conductor 4 and contact fingers 8 to the plate 7 and thence through the contact fingers 10 through the conductor 4a to the conducting lead 3a. When the breaker is opened, the initial break in the circuit occurs between the plate 7 and the contact fingers 10. This transfers the path of the current from the plate 7 through the secondary contacts 11 and 13 and by the conducting block 13c to the conductor 4a and to the lead 3a. Upon further opening movement of the contact arm the next break in the circuit occurs between the secondary contacts and thereby shifts the path of the current from the plate 7 to the arcing contacts 14a and 15 and thence to the casting 16 through the blow-out coil 19 to the conductors 20 and 4a to the lead 3a. This places the blow-out coil in the circuit which is thereby energized for driving upwardly the arc between the contacts 14a and 15 when the latter are finally separated upon further opening movement of the breaker. During the opening movement the spring 21 causes the contact 15 to maintain engagement with the contact 14a until the contact 14b is well under the arcing horn 24. At the time these arcing contacts separate, the contact surface 14b is about to engage the yieldable contact 28; and as the arc passes upwardly along the horn of the conductor 15a to the casting 16, the arc is transferred to the horn 24 as the contact 14b passes under the horn 24 and engages the contact 28. This then places the blow-out coil 27 in circuit by a path from the contact arm of the breaker to the contact 28 and thence through the blow-out coil 27 to the horn 24 across the arc gap to the casting 16. The two blow-out coils then cooperate to drive the arc upwardly, the length of the arc being increased as it is forced upwardly between the horns 23 and 16b and then into the arc chute where it is extinguished. In the meantime the contact 14b maintains engagement with the contact 28 during the continuing

open movement of the breaker; and before the contact 14b leaves the contact 28, the arc has been extinguished. Consequently upon the continued opening movement of the breaker arm and the separation of the contact 14b from the contact 28, there is no current passing and no arc is formed when these contacts separate. The fully open position of the contact arm is indicated by dotted lines in Fig. 1 which introduces a large air gap between the contact 14a and the tip of the contact 28 by movement of the contact arm away from and beyond the contact 28 and its connected parts. In this manner the potential of the circuit is removed from the horns 24 and 23 and their adjoining parts which effectively prevents the possibility of leakage currents or flashovers from them to the casting 16 and the horn 16b which otherwise might occur, particularly when the insulation quality of the arc chute has deteriorated after long continued use.

In order to insure that the arc will be extinguished before the contact 14b leaves the contact 28, there should be a delayed action of the circuit breaker arm in the latter part of the opening stroke. Any suitable means may be provided for this purpose and in Fig. 1 this is accomplished by the dashpot action of the parts 36, 36a, 36b and 36c. At the time the contact 14b engages the contact 28, the cylinder 36a has closely approached the head or piston 36c of the dashpot and as the movement continues, the separation of the contact 14b from the contact 28 is retarded by the dashpot action. This insures the extinguishment of the arc in the arc chute where the parts are specially provided for its rapid and efficient interruption, instead of permitting the arc to be formed between the contacts 14a and 28 when they are finally separated.

Figs. 3 and 4 show another embodiment of the invention. Here the steel panel plate 1 supports the insulators 2 through which pass the conducting terminals 3 and 3a having contact blocks 40 and 40a at their front ends. The block 40 is provided with forwardly extending plates 41 at its opposite sides which form a pivotal support for the contact arm 42. This carries a contact plate 42a which is engaged by the spring pressed movable contacts 43 and 43a for closing the circuit between the main leads when the breaker is in closed position. The upper end of the contact arm carries the secondary arcing contact 44 which engages the movable spring pressed contact assembly 45 similar to the contact assembly 15 to 15d of Fig. 1. The arcing contact 45 is supported by and in electrical connection with an arcing horn element 46. It is also electrically connected with a terminal of a blow-out coil 47, the other terminal of which is electrically connected to the block 40a and terminal 3a of the breaker. The horn element 46 is electrically connected with one terminal of another larger upper blow-out coil 48, the other terminal of which is connected to the blow-out coil 47 and thence to the block 40a and terminal 3a of the breaker. The blow-out coil 48 is provided with iron or steel side plates 49 which extend outwardly along the inner sides of the arc chute 50 and the blow-out coil 47 is similarly provided with magnetic plates extending outwardly on opposite sides of the contacts 44 and 45. These blow-out coils and the horn 46 and contact assembly 45 are supported by post insulators 51 from the panel plate 1.

Another arcing horn element 52 is mounted on the inside of the front plate of the chute and extends towards the horn 46 and also has a portion

extending upwardly along the inside of the chute somewhat similar to the upward extension of the horn element 46. A fixed contact 53 is mounted on the front of the chute and electrically connected with the horn 52. A switch blade 54 pivoted at its lower end by a support on the front of the arc chute extends upwardly and engages the fixed contact 53. At opposite sides of the blade 54 and mounted on the pivot of the blade is a pair of arms 55 from the front ends of which extend a pair of springs 56 which are pivotally connected to the blade 54 at an intermediate portion thereof. The lower ends of the arms 55 are connected to a pair of links 57 which extend rearwardly and converge to form a tube having a pin and slot connection with another telescoping tube 58 carried by a pair of straps 58a which are pivotally connected to the arms 42 of the breaker. A pair of arms 59 are supported from the switch frame and arc chute and extend forwardly and are joined together at their front portions to form a stop for the switch blade 54 when it is in its open position as indicated by the dotted lines. The pivoted arms 55 are provided with extensions 55a which are connected by a pin forming a pivot for a link 60 which extends upwardly and engages a pin 61a by a slot connection at its upper end. This pin is carried between a pair of lever arms 61 which are pivotally mounted at 61b on a pin supported from the arc chute. The arms 61 carry a roller 61c between their lower ends which is positioned opposite the inner edge of the blade 54 at an intermediate portion thereof. The blade 54 is electrically connected by conducting straps 62 with the block 40.

The breaker is shown as actuated to its closed position by a solenoid 35 and connecting parts to the circuit breaker arm 42 similar to those described with reference to Fig. 1 and designated by corresponding reference characters. Likewise the same form of means for delaying the opening action of the breaker in the latter part of its stroke is shown in the form of a retarding dashpot like shown in Fig. 1.

The breaker is shown in its closed position in Fig. 3, the conducting plate 42a and the contacts 43 and 43a serving as the main path for the current between the terminals 3 and 3a. When the breaker is opened by release of the holding means, the first separation of the contacts takes place between the contact plate 42a and contacts 43a, the path of the current then being transferred through the arcing contacts 44 and 45 and through the blow-out coil 47 to the terminal 3a. As the opening movement continues, the spring pressed contact 45 is forced forwardly maintaining an engagement with the contact 44 until the contact 45 engages its stop. An arc is then drawn between these contacts as they separate and the blow-out coil 47 serves to force the arc upwardly. The continued opening movement causes the contact 44 to pass close to the horn 52 which results in the arc being transferred to and between the horns 52 and 46. The path of the current is then from the lead or terminal 3 to the block 40 and thence by the straps 62 through the switch blade 54 to the horn 52 and then by the arc to the horn 46 through the blow-out coil 48 and coil 47 to the block 40a and then to the terminal lead 3a. This brings the blow-out coil 48 into action which forces the arc upwardly between the horns 52 and 46 into the arc chute where it is extinguished. After the arc has been extinguished in this manner, the continued opening movement of the contact arms 42 to their final position as indicated

by the dotted lines, causes the connection between the arms 42 and the levers 55 to turn the latter in a clockwise direction. This throws the lower ends of the compression springs 56 inwardly past their dead center position and thereby throws the switch blade 54 outwardly to its dotted position as shown in Fig. 3. In case the blade 54 should stick and the springs 56 fail to throw it to the open position, the link 60 and its connecting parts will insure the opening of the switch because it is moved downwardly by the lever 55 and after a certain amount of movement will engage the pin 61a and force the roller 61c against the inner edge of the blade 54 and force it outwardly from the fixed contact 53. The springs 56 will then hold this blade in its open position. The opening of this switch removes the potential of the circuit from the horn 52 and thereby prevents the possibility of leakage currents or flash-overs to the horn 46 when the circuit breaker is open.

Although the arc may be extinguished in the chute before the switch blade 54 is moved to its open position by the lost motion of the parts and design of the switch, means for delaying the movement of the contact arms in the latter portion of the stroke is provided for insuring such sequential action. This is provided in Fig. 3 by the dashpot form of control like that described with reference to Fig. 1 and any possibility of arcing between the switch blade 54 and the fixed contact 53 is thereby avoided when this switch is opened.

When the circuit breaker is actuated to its closed position, the mechanical connections between the contact arms of the breaker and the switch blade 54 will cause the lower ends of the springs 56 to be swung from the inner side to the outer side of the center line from the upper ends of the springs to the pivot of the arms 55 and thereby snap the switch blade 54 to its closed position. During this movement the link 60 will be moved upwardly and remove the roller 61c from the path of the switch blade in its movement to closed position. This brings the parts to the position shown in full lines in Fig. 3 in readiness for functioning in the manner already described when the circuit breaker is opened again.

Any desired number of single pole circuit breakers of the character described may be mounted side by side and simultaneously controlled in their closing and opening movements. For example, Fig. 4 shows a supporting frame 63 with spaces provided at the sides of the single pole breaker already described for the reception of two additional units, such as for the control of a three-phase supply line. The additional poles would be simultaneously controlled by movement of the shaft 31 with toggle connections therefrom to the respective poles.

Although particular embodiments of this invention have been described, various modifications may be made and adaptations for particular requirements without departing from the scope of the invention.

I claim:

1. A circuit breaker comprising a movable contact arm, a contact engaged thereby in the closed position of the arms, an arc chute, a horn element for carrying the arc positioned above said engaged contact at one wall of the arc chute and electrically connected with said engaged contact, a second horn element for carrying the arc electrically disconnected from said first named element and from said contact arm and positioned at the opposite wall of the arc chute, and means for

electrically connecting the contact arm to said second element during the opening movement of the contact arm for thereby transferring the arc to said elements during the opening movement and for electrically disconnecting said contact arm from said second element in the latter part of the opening movement of the contact arm by movement of the contact arm beyond and away from said second element.

2. A circuit breaker comprising a movable contact arm, a contact engaged thereby in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said engaged contact at one wall of the arc chute and electrically connected with said engaged contact, a second horn element for carrying the arc electrically disconnected from said first named element and positioned at the opposite wall of the arc chute, means for electrically connecting the contact arm to said second element during the opening movement of the contact arm for thereby transferring the arc to said elements during the opening movement and for electrically disconnecting said contact arm from said second element in the latter part of the opening movement of the contact arm, and means for retarding the movement of the contact arm during the latter part of its opening movement for providing a time interval for extinguishing the arc before electrically disconnecting the contact arm from said second element.

3. A circuit breaker comprising a movable contact arm, a contact engaged thereby in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said engaged contact at one wall of the arc chute and electrically connected with said engaged contact, a second horn element for carrying the arc electrically disconnected from said first named element and positioned at the opposite wall of the arc chute, means for electrically connecting the contact arm to said second element during the opening movement of the contact arm for thereby transferring the arc to said elements during the opening movement and for electrically disconnecting said contact arm from said second element in the latter part of the opening movement of the contact arm, and a dashpot mechanically related to the contact arm for retarding the movement of the contact arm during the latter part of its opening movement for providing a time interval for extinguishing the arc before electrically disconnecting the contact arm from said second element.

4. A circuit breaker comprising a movable contact arm, a contact engaged thereby in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said engaged contact at one wall of the arc chute and electrically connected with said engaged contact, a second horn element for carrying the arc electrically disconnected from said first named element and from said contact arm and positioned at the opposite wall of the arc chute, a blow-out magnet electrically connected in circuit between said first named element and said engaged contact, and means for electrically connecting the contact arm to said second element during the opening movement of the contact arm for thereby transferring the arc to said elements during the opening movement and for electrically disconnecting said contact arm from said second element in the latter part of the opening movement of the contact arm by movement of the contact arm beyond and away from said second element.

5. A circuit breaker comprising a movable con-

tact arm, a contact engaged thereby in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said engaged contact at one wall of the arc chute and electrically connected with said engaged contact, a second horn element for carrying the arc electrically disconnected from said first named element and from said contact arm and positioned at the opposite wall of the arc chute, a blow-out magnet electrically connected in circuit between said first named element and said engaged contact, a second blow-out magnet connected in circuit from the contact arm during its opening movement to said oppositely positioned element, and means for electrically connecting the contact arm to said second element during the opening movement of the contact arm for thereby transferring the arc to said elements during the opening movement and for electrically disconnecting said contact arm from said second element in the latter part of the opening movement of the contact arm by movement of the contact arm beyond and away from said second element.

6. A circuit breaker having a movable contact arm, a terminal electrically connected with said contact arm, a second terminal electrically connected with the contact arm in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said second terminal at one wall of the arc chute and electrically connected with said second terminal, a second horn element for carrying the arc positioned at the opposite wall of the arc chute, the contact arm in its opening movement passing from near said first named element towards said oppositely positioned element for transferring the arc to said elements, an auxiliary switch electrically connected to said oppositely positioned element and to said first named terminal, and means controlled by the contact arm in the latter part of its opening movement for opening said switch for disconnecting said oppositely positioned element from said first named terminal.

7. A circuit breaker having a movable contact arm, a terminal electrically connected with said contact arm, a second terminal electrically connected with the contact arm in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said second terminal at one wall of the arc chute and electrically connected with said second terminal, a second horn element for carrying the arc positioned at the opposite wall of the arc chute, the contact arm in its opening movement passing from near said first named element towards said oppositely positioned element for transferring the arc to said elements, an auxiliary switch electrically connected to said oppositely positioned element and to said first named terminal, and means controlled by the contact arm in the latter part of its opening movement for opening said switch for disconnecting said oppositely positioned element from said first named terminal, said means comprising a spring for opening said switch and supplemental means mechanically connected with the contact arm for forcing said switch open.

8. A circuit breaker having a movable contact arm, a terminal electrically connected with said contact arm, a second terminal electrically connected with the contact arm in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said second

terminal at one wall of the arc chute and electrically connected with said second terminal, a second horn element for carrying the arc positioned at the opposite wall of the arc chute, the contact arm in its opening movement passing from near said first named element towards said oppositely positioned element for transferring the arc to said elements, an auxiliary switch electrically connected to said oppositely positioned element and to said first named terminal, means controlled by the contact arm in the latter part of its opening movement for opening said switch for disconnecting said oppositely positioned element from said first named terminal, and means for retarding the movement of the contact arm during the latter part of its opening movement for providing a time interval for extinguishing the arc before opening said switch.

9. A circuit breaker having a movable contact arm, a terminal electrically connected with said contact arm, a second terminal electrically connected with the contact arm in the closed position of the arm, an arc chute, a horn element for carrying the arc positioned above said second terminal at one wall of the arc chute and electrically connected with said second terminal, a second horn element for carrying the arc positioned at the opposite wall of the arc chute, the contact arm in its opening movement passing from near said first named element towards said oppositely positioned element for transferring the arc to said elements, an auxiliary switch electrically connected to said oppositely positioned element and to said first named terminal, means controlled by the contact arm in the latter part of its opening movement for opening said switch for disconnecting said oppositely positioned element from said first named terminal, and a dash-pot mechanically related to the contact arm for retarding the movement of the contact arm during the latter part of its opening movement for providing a time interval for extinguishing the arc before the opening of said switch.

10. A circuit breaker comprising a movable contact arm, said arm having a main contact and an arcing contact, a terminal electrically connected with said arm, a second terminal having a main contact and an arcing contact respectively engaged by said main contact and arcing contact of the contact arm when the breaker is closed, an arc chute, a horn element for carrying the arc positioned above said second terminal of the breaker at one wall of the arc chute, a second horn element for carrying the arc electrically disconnected from said first named element and from said contact arm and positioned at the opposite wall of the arc chute, the contact arm in its opening movement passing from near said first named element towards the oppositely positioned element for transferring the arc to said elements and for electrically disconnecting said contact arm from said second element in the latter part of the opening movement of said contact arm by movement of the contact arm beyond and away from said second element, a blow-out magnet connected in circuit between said second terminal and its arcing contact for acting on the arc between said arcing contacts, and a second blow-out magnet connected in circuit between said first named element and said second terminal for acting on the arc between said elements.

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