July 28, 1953 H. A. HUMPAGE 2,647,191

CIRCUIT BREAKER

Original Filed May 24, 1945 2 Sheets-Sheet 1

Fig. 1

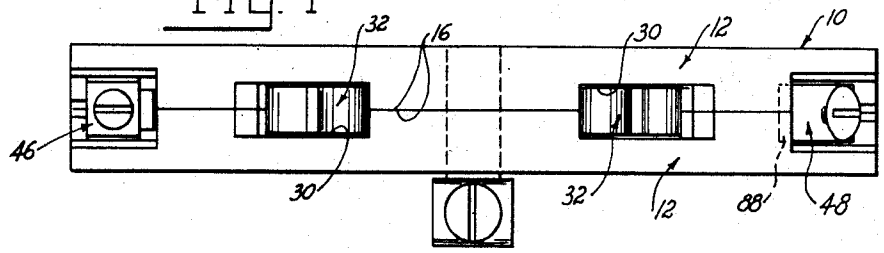


Fig. 2

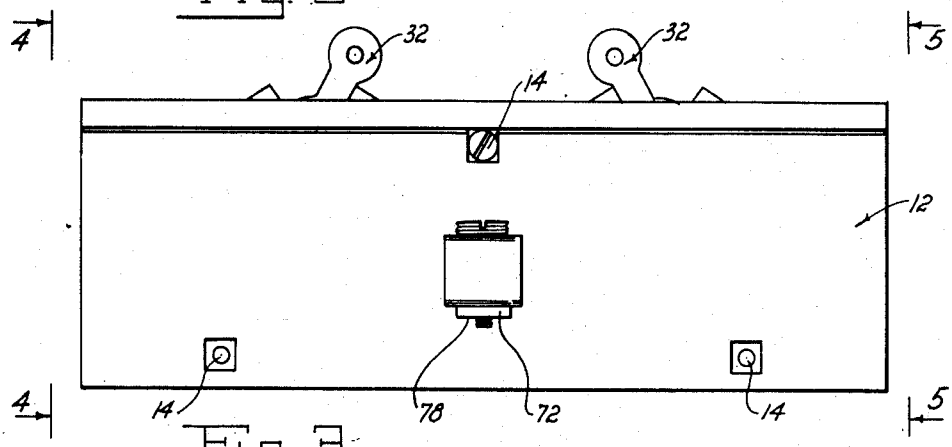


Fig. 3

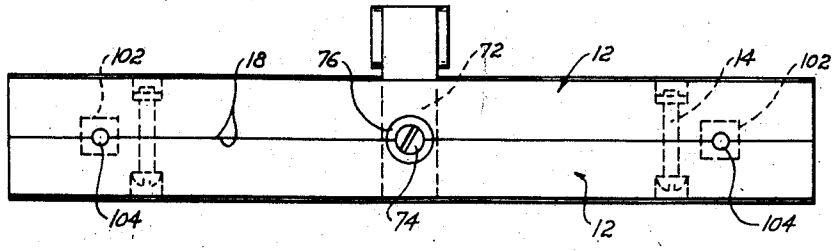


Fig. 4

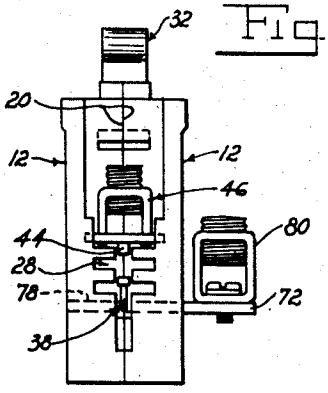
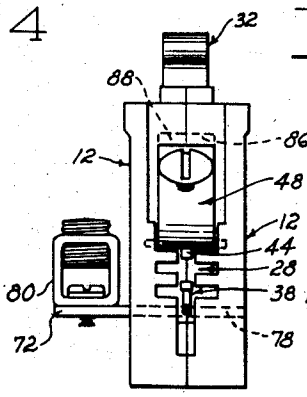


Fig. 5



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CIRCUIT BREAKER

Original Filed May 24, 1945 2 Sheets-Sheet 2

Fig. 6

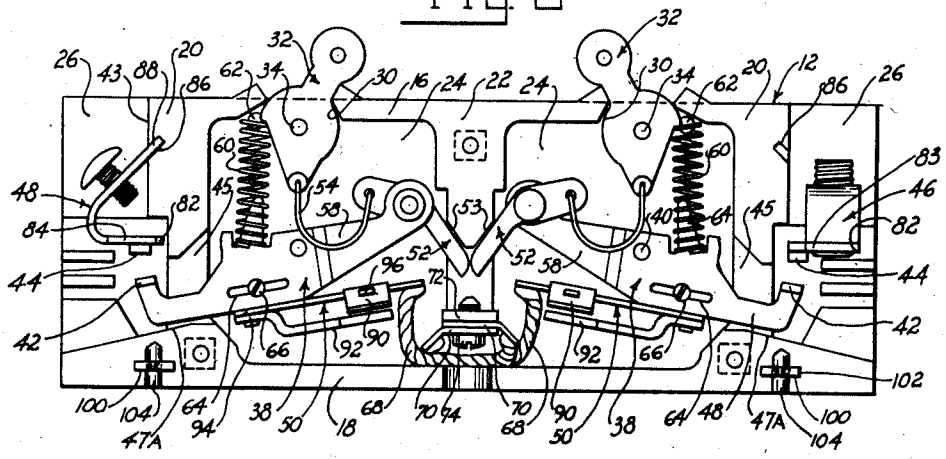


Fig. 7

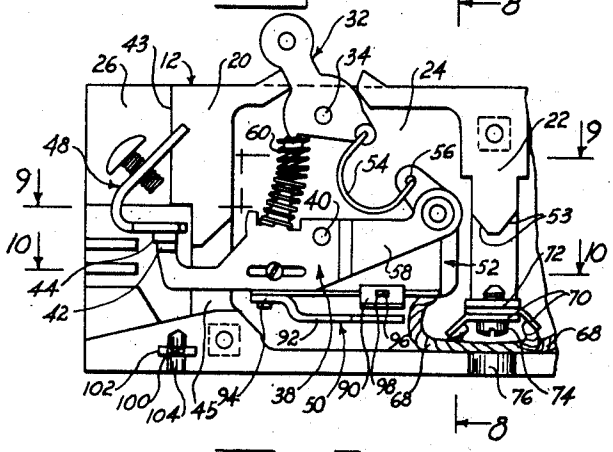


Fig. 8

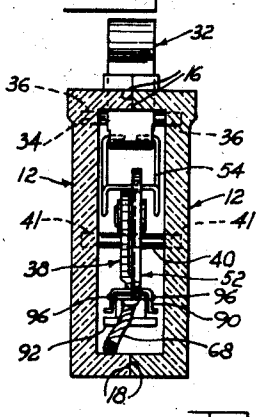


Fig. 9

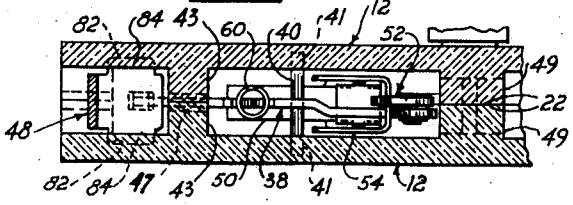


Fig. 10

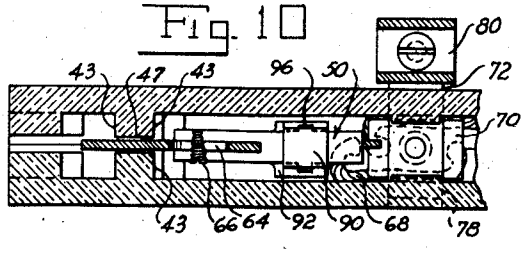


Fig. 11

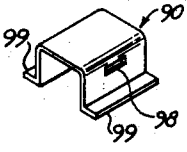
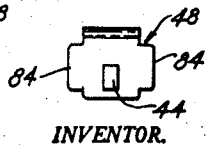


Fig. 12

Fig. 13



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Patented July 28, 1953 2,647,191

UNITED STATES PATENT OFFICE

2,647,191

CIRCUIT BREAKER

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Original application May 24, 1945, Serial No. 595,556, now Patent No. 2,459,427, dated January 18, 1949. Divided and this application July 31, 1948, Serial No. 41,837

16 Claims. (Cl. 200—168)

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This invention relates to automatic circuit breakers, and more particularly to circuit breakers of the type which are used for house lighting and other low amperage circuits.

The primary object of the invention is to provide a circuit breaker mechanism constituting a unit and comprising a housing in which said unit is mounted, the mechanism unit and the housing being so constructed and related that the mechanism unit can be calibrated and tested before being placed in the housing and so that the assembly of the mechanism unit in the housing is facilitated.

Another object of this invention is the provision of a multi-pole circuit breaker comprising a housing in which a plurality of circuit breaker mechanism units, one for each pole, are disposed for independent operation, the construction and arrangement of the housing and mechanism units being such that they can be interchangeably positioned within the housing.

A further object of the invention is the provision of a circuit breaker comprising a housing for the circuit breaker mechanism having means formed in the housing as an integral part thereof for guiding the movable contact member.

A yet further object of the invention is generally to provide an improved small and inexpensive circuit breaker which is well adapted to be used, with reliability of operation, for house lighting and other low amperage circuits in lieu of a switch and fuse combination.

The above and other objects, features and advantages of the present invention will be fully understood from the following description considered in connection with the accompanying illustrative drawings:

In the drawings:

Fig. 1 is a front view of a circuit breaker embodying the present invention;

Fig. 2 is a side view thereof;

Fig. 3 is a rear view thereof;

Figs. 4 and 5 are end views as seen from lines 4—4 and 5—5 respectively of Fig. 2;

Fig. 6 is a side view of the circuit breaker, one part of the housing being removed, the movable contact members of the circuit breaker mechanisms being in their open positions;

Fig. 7 is a view of the left hand part of the housing, as illustrated in Fig. 6, and of the circuit breaker mechanism, showing the movable contact member in its closed position;

Fig. 8 is a sectional view on the line 8—8 of Fig. 7;

Fig. 9 is a sectional view on the line 9—9 of Fig. 7;

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Fig. 10 is a sectional view on line 10—10 of Fig. 7;

Fig. 11 is a perspective view of a magnetic member forming a part of a circuit breaker mechanism;

Fig. 12 is an end view of a combined terminal and stationary contact member of one type;

Fig. 13 is a bottom view of a combined terminal and stationary contact member of another type.

Referring now to the drawings in detail, the circuit breaker of the present invention comprises a two part insulation casing or housing 10 formed of two identical or symmetrical parts 12, each of said parts being formed of insulation material preferably by a molding operation. Each casing part 12 forms one-half of the housing, the two casing parts being secured in housing defining relation in any suitable way, for example by bolts 14, the front and rear facing edges 16 and 18, the end facing edges 20 and the intermediate facing edge 22 of the two casing parts 12 being in abutting surface to surface relation. Said facing edges are formed on the thickened edge portions at the inner or confronting sides of the opposed side walls of the housing, said thickened edge portions of said side walls extending peripherally of the housing. Thus, each casing part is formed with two recesses 24 which define two chambers for two circuit breaker mechanisms. It will be understood, however, that the housing can be provided for a single pole breaker in which case it can have a single chamber, in lieu of the two chambers for the multi-pole circuit breaker illustrated herein. Each casing part 12 is provided at its opposite ends with open recessed portions 26 which form arcing chambers and in which terminal members and the stationary contacts of the two circuit breaker units are positioned respectively. The arcing chambers formed by the recesses 26 provided in the companion casing parts 12 are indicated at 28 in Figs. 4 and 5. The front of each casing part is provided with recessed portions which define openings 30 through which the handles 32 project for manual operation of the circuit breaker mechanisms. Each of said handles is fixed to pivot pin 34, the opposite ends of which are received in bearing recesses 36 (Fig. 8) formed in the companion casing parts 12.

Referring now to the circuit breaker mechanisms, which are disposed in the companion chambers in housing 10, each of said mechanisms is of the same construction and includes a manually operable member, here shown as the above-mentioned pivoted handle 32. A movable contact member 38, formed in one piece of sheet

metal of suitable thickness, is mounted in the chamber for pivotal movement by pivot pin **40**, the opposite ends of which are received in aligned bearing recesses **41** in the companion casing parts **12**. Said movable contact member **38** is provided at one end thereof with a contact **42** which is engageable with and disengageable from a companion stationary contact **44** carried by a terminal member **46** or by a terminal member **48** both of which will hereinafter be more particularly described. The casing **10** is provided with means for guiding movable contact member **38**, for which purpose the thickened or inwardly projecting end portions **43** of the companion casing parts **12** are provided with recessed portions **45** which define a guide slot **47** (Figs. 9 and 10) through which an end portion **48** projects with slight clearance. Thus, it will be noted that the means for guiding the movable contact member **38** of each circuit breaker mechanism is formed in the casing as integral parts thereof. A thermal-current responsive member **50** which, as here shown, consists of a thermostatic bi-metallic flexible strip, is welded or otherwise secured at one end thereof to a side edge of movable contact member **38**. The free end of bi-metallic strip **50** is arranged to releasably engage the end of one arm of a lever **52** pivotally mounted on the end of movable contact member **38** opposite to the end which carries the contact **42**, said lever **52** being preferably insulated from the movable contact member in any suitable way, for example, as shown in Fig. 7 of Christensen Patent No. 2,209,319. The other arm of lever **52** is connected to the companion handle **32** by a resilient link **54**, one end of which passes with slight clearance through an opening **56** in said arm and the other end of which is pivotally engaged with the adjacent end of said handle. As clearly shown in the drawings, each movable contact member **38** is provided with a laterally offset portion **58** so that each circuit breaker mechanism can comprise a movable contact member of the same construction as well as other parts of the same construction and be mounted interchangeably in either of the mechanism chambers of the casing. A coil spring **60** is operatively interposed between the movable contact member **38** and the companion handle **32** for biasing the movable contact member to its open position. One end of said spring engages a lug **62** fixed to handle **32** and the other end of said spring engages a lug **64** integral with the companion movable contact member **38**. The mechanism constituted by handle **32** movable contact member **38** thermal strip **50** lever **52** and link **54** is similar to and operates substantially in the same way as corresponding mechanism in the circuit breaker disclosed in said Christensen Patent No. 2,209,319. Also as here shown the movable contact member **38** is provided with a slot **64** and a tapered screw **66** for calibrating the circuit breaker as shown and described in said Christensen patent. It will be understood that member **50** operates to latch the manually operable actuating mechanism to the movable contact member and to unlatch the actuating mechanism from the movable contact member, the unlatching taking place by deflection of member **50** from engagement with lever **52** upon the occurrence of an overload or under other abnormal predetermined current conditions in the circuit controlled by the circuit breaker. When member **50** is deflected from engagement with the companion lever **52**, spring **60** is effective to move contact member **38** to its

open position, i. e., from the position illustrated in Fig. 7 to the position illustrated in Fig. 6. It will be noted that the inner end **47A** of the guide slot **47** constitutes a stop for member **38** to limit the opening movement of the latter. The intermediate thickened wall portion **49** of each casing part **12** terminates short of the rear wall of the casing to provide a recess into which levers **52** are movable, as shown in Fig. 6, and to provide shoulders **53** which serve as stops for said levers, respectively.

The thermal element **50** is connected in series with movable contact member **38** and the circuit which is to be controlled by the circuit breaker. For this purpose a flexible metallic conductor or connector **68** is connected to said thermal element, preferably adjacent to free end thereof, and to a companion terminal member **70**. There are two terminal members **70**, one for each of the two thermal members **50** of the two circuit breaker mechanisms. These two terminal members **70** are positioned in the recess below intermediate casing portions **49**, and are mechaniacly and electrically connected preferably removably, to a common lead or bus bar **72** in any suitable way as by a screw **74** which passes through aligned apertures in said thermal member **70** and is threaded into a tapped hole in bus bar **72**. An opening **76** is provided in the back of casing **10** for access to screw **74**. The lead or bus bar **72** enters the casing through a slot **78** in the side thereof. Said slot is provided in each of the companion casing parts **12**. Thus, the terminal lead or bus bar **72** can be long enough to project into a plurality of casings **10** which may be disposed with their respective side walls in adjacent or abutting side by side relation. The outer portion of bus bar **72** is provided with a terminal member **80**. It will be noted that the provision of the separate individual terminals **70** for the two circuit breaker mechanisms provides for independent calibration and testing of the different circuit breaker mechanisms and also provides for different current carrying capacities of the two circuit breaker mechanisms, respectively. Thus, while the two circuit breaker mechanisms are mounted in a common housing, they can be of different current carrying capacities or ratings, although, of course, they can have the same current carrying capacities or ratings. As here shown, the circuit breaker mechanisms are illustrated for different current carrying capacities as indicated by the different terminal members **46** and **48** for the two independently operable circuit breaker mechanisms, respectively. More particularly the circuit breaker mechanism at the right of the casing, as illustrated in Fig. 6 is designed for a higher current carrying capacity than the other circuit breaker mechanism and for that purpose the terminal member **46** for said first mentioned circuit breaker mechanism has a higher current carrying capacity than the terminal member **48** for the other circuit breaker mechanism. Also it will be noted that the terminal members **70** when secured to the bus bar **72** internally of the housing hold the latter in stationary position, since said terminal members are positioned in the space between confronting wall portions of the housing with the edges of said terminal members abutting or closely adjacent to the inner surfaces of said adjacent portions, respectively, of the housing.

The casing **10** is constructed to hold the terminal members **46** and **48** in such manner as

to obviate the need for screws or other fastening means. For this purpose the casing 10 is provided with aligned recesses 82 formed in the companion casing parts 12 to receive either the projections 83 of the terminal member 46 or the projections 84 of the terminal member 48. In addition to the recesses 82, casing 10 is provided at each end thereof with aligned recess 86 formed in the two casing parts 12 to receive an end portion 88 of the member 48. It will be noted therefore, that the casing is constructed and arranged so that either terminals such as 46 or terminals such as 48 can be mounted and secured at both ends of the casing or, as here shown, a terminal such as 46 can be mounted and secured at one end of the casing and a terminal such as 48 can be mounted and secured at the opposite end of the casing. It will be understood that when the terminals are positioned with their projecting portions 83 or 84, as the case may be, in the companion recesses 82 and the two casing parts are fastened together by the bolts 14, or in any other suitable manner, with their inner faces in abutting relation, the terminal members are securely held or fastened to the casing, in position between the opposite side walls thereof, thus eliminating the use of extraneous fastening devices. It will be noted that, as here shown, members 46 and 48 carry the stationary contacts 44, which are preferably welded thereto, and thus constitute combined terminal and stationary contact members, and that when said combined members are mounted on the casing said stationary contacts are disposed in the respective arcing chambers in position to be releasably engaged by the contacts 42 of the companion movable contact members 38, respectively.

The thermal current responsive member 50 is operable not only in response to the heating effect of the current passing therethrough, but is also operable under the control of electromagnetic means for effecting disengagement of the companion relatively movable contacts 42 and 44, and the arrangement is preferably such that as here shown the electromagnetic means is energized by the current which passes through the thermal current responsive member 50. For this purpose an electromagnetic member 90 is mounted on member 50 near the free end thereof and a companion rigid armature 92 is disposed in spaced confronting relation to electromagnetic member 90. As clearly illustrated in the drawings, the inner end 94 of armature 92 is fixed, preferably by welding, to the fixed end of thermal member 50. The electromagnetic member 90 is secured to the thermal member 50 by lateral projections 96 which are integral with thermal member 50 and which project through openings 98 in the companion electromagnetic member 90. Preferably, openings 98 are somewhat larger than the companion provisions 96 to allow relative movement between thermal member 50 and electromagnetic member 90 so as to maintain the parallel relation between the confronting portions of member 90 and the companion armature 92 without impairment by the deflection or flexing of thermal member 50. As shown in the drawings, magnetic member 90 straddles the member 50 by which it is carried. Said member 90 is formed in one piece of soft sheet steel or other suitable sheet metal and is provided with an end wall, opposed side walls in which the openings 98 are provided, and with out-turned end portions 99 (Fig. 11) which are arranged in surface-confronting relation to the adjacent surface of armature 92. Openings 98 are positioned so that said end wall of member 90 is spaced from member 50, and there is a slight clearance between the edges of member 50 and the inner surfaces of the side walls of member 90 so that the latter has a free relative movement on member 50. It will be understood that upon the occurrence of an overload in excess of that for which the circuit breaker is designed to open under the control of the thermal member 50 by flexing of the latter in response to the heating thereof, the electromagnetic device is operable instantaneously to effect, disengagement of the companion contact members. It will be understood that upon the occurrence of such excess overload the magnetic attraction between members 90 and 92 results in the deflection of thermal strip 50 for disengaging the latter from the companion arm of the lever 52, and in this connection it will be understood that since member 92 is rigid and thermal member 50 which carried member 90 is flexible, member 90 is movable by magnetic attraction toward member 92, thus deflecting or unlatching thermal member 50 from the companion lever 52.

The housing 10 is provided with means to enable it to be secured to a supporting plate, panel, or other support. For this purpose the casing parts 12 are provided with recesses 100 in which nuts 102 fit and are held against rotation by the side walls of the recesses. Holes 104 are provided at the back of the housing for screws (not shown) which engage nuts 102.

This is a division of my application which originally issued as Patent No. 2,459,427, dated January 18, 1949, and which was reissued on January 10, 1950, as Re. 23,188.

Certain features shown but not claimed herein or in my Reissue Patent No. 23,188 are claimed in my divisional application Serial No. 351,267, filed April 27, 1953.

While I have shown and described the preferred embodiment of my invention, it will be understood that the latter may be embodied otherwise than as herein specifically illustrated or described and that in the illustrated embodiment certain changes in the details of construction and in the arrangement of parts may be made without departing from the underlying idea or principles of the invention within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In an automatic circuit breaker comprising an insulation housing and a circuit breaker mechanism disposed therein, said mechanism including a movable contact member provided with a contact, and said housing comprising opposed side walls between which said movable contact is mounted for movement, a combined terminal and stationary contact member positioned externally of said housing and disposed between said side walls and provided with a contact positioned for releasable engagement by said movable contact, portions of said opposed walls on the outer side of the housing having aligned recesses therein and said combined member having oppositely extending substantially similarly dimensioned portions engaging said opposite side walls in said recesses, respectively, and thereby securing said combined member to said housing.

2. In an automatic circuit breaker, a housing consisting essentially of two symmetrical parts formed of insulation material, each of said parts having an outer side wall and having thickened

edge portions projecting from the inner side of the side wall and extending peripherally thereof and abutting the similar thickened edge portions of the other side wall thereby forming a chamber internally of the housing, the thickened portions of the two casing parts having opposed recesses therein defining a guide slot, a circuit breaker mechanism mounted in said chamber and including a movable contact member movable in said slot and guided thereby, said side walls having integral portions projecting outwardly beyond said guide slot and defining an external open recess at one end of the housing, and a stationary contact member mounted in said external recess and held in position by complemental substantially similarly dimensioned formations on said projecting portions of said side walls, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker.

3. In an automatic circuit breaker, a housing consisting essentially of two symmetrical parts formed of insulation material, each of said parts having an outer side wall and having thickened edge portions projecting from the inner side of the side wall and extending peripherally thereof and abutting the similar thickened edge portions of the other side wall thereby forming a chamber internally of the housing, the thickened portions of the two casing parts having opposed recesses therein defining a guide slot, a circuit breaker mechanism mounted in said chamber and including a movable contact member movable in said slot and guided thereby, said side walls having integral portions projecting outwardly beyond said guide slot and defining an external open recess at one end of the housing, and a stationary contact member mounted in said external recess and disposed entirely externally of said chamber beyond said guide slot, said stationary contact member partitioning said recess to provide an arcing chamber therein, and a terminal connector member positioned in said recess and secured directly to said stationary contact member in said external arcing chamber, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker.

4. In an automatic circuit breaker, a housing consisting essentially of two symmetrical parts formed of insulation material, each of said parts having an outer side wall and having thickened edge portions projecting from the inner side of the side wall and extending peripherally thereof and abutting the similar thickened edge portions of the other side wall thereby forming a chamber internally of the housing, the thickened portions of the two casing parts having opposed recesses therein defining a guide slot, a circuit breaker mechanism mounted in said chamber and including a movable contact member movable in said slot and guided thereby, said side walls having integral portions projecting outwardly beyond said guide slot and defining an external open recess at one end of the housing, and a stationary contact member mounted in said external recess and disposed entirely externally of said chamber beyond said guide slot, and a terminal connector member positioned in said recess and secured directly to said stationary contact member in said external recess, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker, and cooperating formations on said projecting portions of said side walls disposed below said stationary contact member in said external recess and positioned laterally of and adjacent to said companion contacts and forming an arc chute open to the space between said contacts in the disengaged condition of the latter.

5. In an automatic circuit breaker, a housing consisting essentially of two symmetrical parts formed of insulation material, each of said parts having an outer side wall and having thickened edge portions projecting from the inner side of the side wall and extending peripherally thereof and abutting the similar thickened edge portions of the other side wall thereby forming a chamber internally of the housing, the thickened portions of the two casing parts having opposed recesses therein defining a guide slot, a circuit breaker mechanism mounted in said chamber and including a movable contact member movable in said slot and guided thereby, said side walls having integral portions projecting outwardly beyond said guide slot and defining an external open recess at one end of the housing, and a stationary contact member mounted in said external recess and held in position by complemental formations on said projecting portions of said side walls, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker, and cooperating formations on said projecting portions of said side walls underlying said stationary contact member in said external recess and positioned laterally of and adjacent to said companion contacts and forming an arc chute open to the space between said contacts in the disengaged condition of the latter.

6. In an automatic circuit breaker, a housing consisting essentially of two symmetrical parts formed of insulation material, each of said parts having an outer side wall and having thickened edge portions projecting from the inner side of the side wall and extending peripherally thereof and abutting the similar thickened edge portions of the other side wall thereby forming a chamber internally of the housing, the thickened portions of the two casing parts having opposed recesses therein defining a guide slot, a circuit breaker mechanism mounted in said chamber and including a movable contact member movable in said slot and guided thereby, said side walls having integral portions projecting outwardly beyond said guide slot and defining an external open recess at one end of the housing, and a stationary contact member mounted in said external recess and held in position by complemental formations on said projecting portions of said side walls, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker, and a terminal connector member positioned in said recess and secured directly to said stationary contact member in said external recess, and cooperating formations on said projecting portions of said side walls underlying said terminal connector member and said stationary contact member in said external recess and positioned laterally of and adjacent to said companion contacts and forming an arc chute open to the space between said contacts in the disengaged condition of the latter.

7. In an automatic circuit breaker, a housing formed of insulation material and comprising means including opposed side walls forming a chamber, a circuit breaker mechanism mounted

in said chamber between said side walls and including a movable contact member mounted within the chamber for movement between and parallel to said side walls, said housing having a chamber defining wall extending transversely of said side walls therebetween and provided with a slot through which said movable contact member projects from the interior to the exterior of the chamber and which constitutes a guide for said member, a contact carried by said movable contact member exteriorly of the chamber, a terminal connector disposed at the outer side of said transversely extending wall in position between said side walls, a stationary contact member fixed directly to said terminal connector and disposed between said side walls at said outer side of said transversely extending wall and provided with a contact positioned exteriorly of said chamber between said side walls in position for releasable engagement by said movable contact, and integral formations on said side walls, respectively, in the space therebetween and disposed below said stationary contact member and externally of said transversely extending wall forming an arc chute having its inner end adjacent said contacts and its outer end adjacent the outer ends of said side walls.

8. In an automatic circuit breaker, a housing formed of insulation material and comprising means including opposed side walls forming a chamber, a circuit breaker mechanism mounted in said chamber between said side walls and including a movable contact member mounted within the chamber for movement between and parallel to said side walls, said housing having a chamber defining wall extending transversely of said side walls therebetween, said side walls having portions projecting outwardly beyond said transverse wall and defining an external open recess at one end of the housing, a stationary contact member mounted in a portion of said external recess and defining a boundary for the remaining portion of said recess, said remaining recess portion constituting an arcing chamber, a slot defined in said transverse wall through which said movable contact member projects into said arcing chamber, a contact carried by said movable contact member for movement in said arcing chamber, and a contact carried by said stationary contact member and disposed in said arcing chamber for releasable engagement by said movable contact.

9. In an automatic circuit breaker, a housing formed of insulation material and consisting essentially of two symmetrical parts disposed in abutting side by side relation and each having a recess at its inner side forming a chamber with the recess of the other part, a circuit breaker mechanism including a pivotally movable contact member mounted in said chamber, said two casing parts having abutting portions forming a transverse outer end wall of said chamber, each of said abutting portions having a recess which confronts the recess of the other abutting portion forming a slot open at both ends thereof, said two casing parts having portions projecting outwardly beyond said transverse wall and defining an external open recess laterally of said chamber, a stationary contact member mounted in said external recess and dividing the latter to form an arcing chamber, said movable contact member projecting through said slot from the interior of said first mentioned chamber into said arcing chamber, a contact carried by said movable contact member at the part thereof which is disposed in said arcing chamber, and a contact carried by said stationary contact member and disposed in said arcing chamber for releasable engagement by said movable contact.

10. In an automatic circuit breaker, a housing formed of insulation material and consisting essentially of two symmetrical parts disposed in abutting side by side relation and each having a recess at its inner side forming a chamber with the recess of the other part, a circuit breaker mechanism including a pivotally movable contact member mounted in said chamber, said two casing parts having abutting portions forming a transverse outer end wall of said chamber, each of said abutting portions having a recess which confronts the recess of the other abutting portion forming a slot open at both ends thereof, said two casing parts having portions projecting outwardly beyond said transverse wall and defining an external open recess laterally of said chamber, a combined terminal and stationary contact member mounted in said external recess and dividing the latter to form an arcing chamber, said movable contact member projecting through said slot from the interior of said first mentioned chamber into said arcing chamber, a contact carried by said movable contact member at the part thereof which is disposed in said arcing chamber, and a contact carried by said stationary contact member and disposed in said arcing chamber for releasable engagement by said movable contact, said projecting wall portions having aligned recesses therein and said combined member having oppositely extending portions engaging said projecting wall portions in said recesses respectively, and thereby securing said combined members in said housing.

11. In an automatic circuit breaker, a housing formed of insulation material and comprising means including opposed side walls forming a chamber, a circuit breaker mechanism mounted in said chamber between said side walls and including a movable contact member mounted within the chamber for movement between and parallel to said side walls, said housing having a chamber defining wall extending transversely of said side walls therebetween and provided with a slot through which said movable contact member projects from the interior to the exterior of the chamber and which constitutes a guide for said member, said side walls having portions projecting outwardly beyond said transversely extending wall and defining therewith an external recess open at one end of the housing, a stationary contact member mounted in said external recess and disposed entirely externally of said chamber beyond said transverse wall, and a terminal connector member positioned in said recess and secured directly to said stationary contact member in said external recess, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker.

12. In an automatic circuit breaker, a housing formed of insulation material and comprising means including opposed side walls forming a chamber, a circuit breaker mechanism mounted in said chamber between said side walls and including a movable contact member mounted within the chamber for movement between and parallel to said side walls, said housing having a chamber defining wall extending transversely of said side walls therebetween and provided with a slot through which said movable contact member projects from the interior to the exterior of the

chamber and which constitutes a guide for said member, said side walls having portions projecting outwardly beyond said transversely extending wall and defining therewith an external recess open at one end of the housing, a stationary contact member mounted in said external recess and disposed entirely externally of said chamber beyond said transverse wall, and a terminal connector member positioned in said recess and secured directly to said stationary contact member in said external recess, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker, and cooperating formations on said projecting portions of said side walls, said formations being disposed in said external recess relative to both said stationary contact member and said terminal connector member, said formations being positioned laterally of and adjacent to said companion contacts and forming an arc chute open to the space between said contacts in the disengaged condition of the latter.

13. In an automatic circuit breaker, a housing consisting essentially of two symmetrical parts formed of insulation material, each of said parts having an outer side wall and having thickened edge portions projecting from the inner side of the side wall and extending peripherally thereof and abutting the similar thickened edge portions of the other side wall thereby forming a chamber internally of the housing, the thickened portions of the two casing parts having opposed recesses therein defining a guide slot, a circuit breaker mechanism mounted in said chamber and including a movable contact member movable in said slot and guided thereby, said side walls having integral portions projecting outwardly beyond said guide slot and defining with said guide slot defining portions an external open recess at one end of the housing, a stationary contact member mounted in said external recess and disposed entirely externally of said chamber beyond said guide slot, and a terminal connector member positioned in said recess and secured directly to said stationary contact member in said external recess, said stationary and movable contact members having companion contacts which engage and disengage each other in said recess in the operation of the circuit breaker.

14. In an automatic circuit breaker, a housing formed of insulation material and consisting essentially of two symmetrical parts disposed in abutting side by side relation and each having a recess at its inner side forming a chamber with the recess of the other part, a circuit breaker mechanism including a pivotally movable contact member mounted in said chamber, said two casing parts having abutting portions forming a transverse outer end wall of said chamber, each of said abutting portions having a recess which confronts the recess of the other abutting portion forming a slot open at both ends thereof, said parts having portions projecting outwardly beyond said transverse wall and defining therewith an external recess open at one end of the housing, said movable contact member projecting through said slot from the interior of said chamber into said external recess, a contact carried by said movable contact member at the part thereof which is disposed in said external recess, a stationary contact member mounted in said external recess for releasable engagement by said contact of the movable contact member, and a terminal connector member positioned in said recess and secured directly to said stationary contact member.

15. In an automatic circuit breaker, a housing formed of insulation material and consisting essentially of two symmetrical parts disposed in abutting side by side relation and each having a recess at its inner side forming a chamber with the recess of the other part, a circuit breaker mechanism including a pivotally movable contact member mounted in said chamber, said two casing parts having abutting portions forming a transverse outer end wall of said chamber, each of said abutting portions having a recess which confronts the recess of the other abutting portion forming a slot open at both ends thereof, said parts having portions projecting outwardly beyond said transverse wall and defining therewith an external recess open at one end of the housing, said movable contact member projecting through said slot from the interior of said chamber into said external recess, a contact carried by said movable contact member at the part thereof which is disposed in said external recess, and a stationary contact member mounted in said external recess for releasable engagement by said contact of the movable contact member.

16. In an automatic circuit breaker comprising an insulation housing and a circuit breaker mechanism disposed therein, said mechanism including a movable contact member provided with a contact, and said housing comprising opposed side walls between which said movable contact is mounted for movement, a combined terminal and stationary contact member positioned externally of said housing and disposed between said side walls and provided with a contact positioned for releasable engagement by said movable contact, portions of said opposed walls on the outer side of the housing having aligned similarly dimensioned recesses therein and said combined member having oppositely extending portions each substantially similarly dimensioned, said portions engaging said opposite side walls in said recesses, respectively, and thereby securing said combined member to said housing.

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