Nov. 14, 1961 E. C. GOODWIN, JR., ET AL 3,009,043

DISCONNECTING CONTACT

Filed Aug. 27, 1959 2 Sheets-Sheet 1

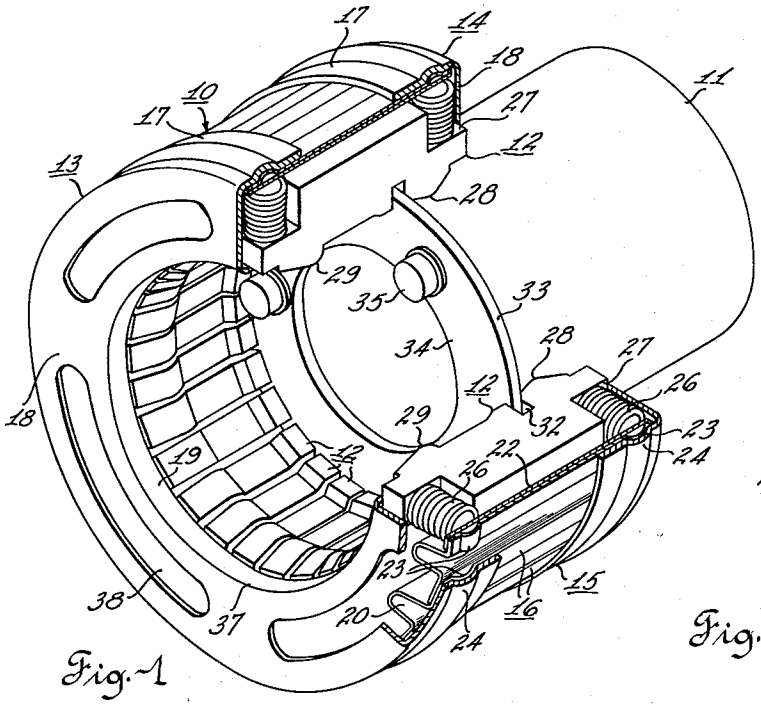


Fig. 1

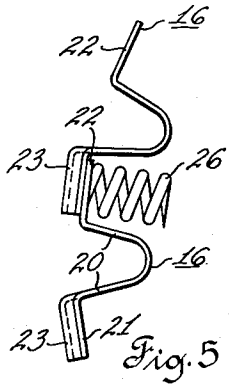


Fig. 5

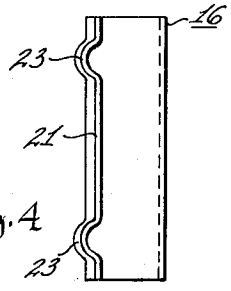


Fig. 4

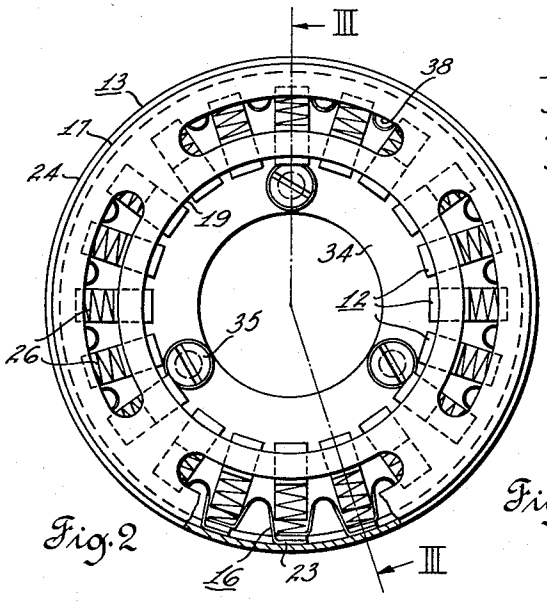


Fig. 2

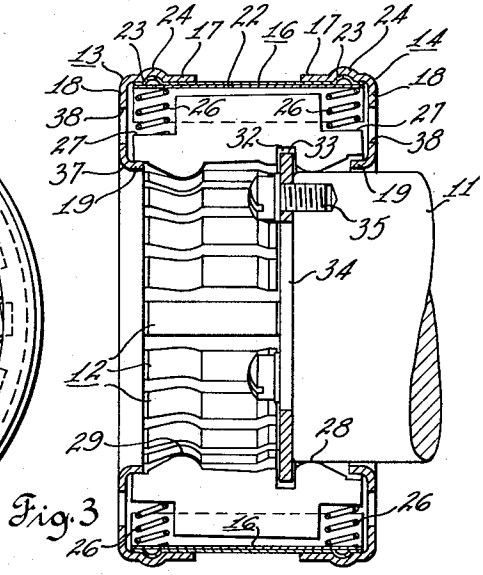


Fig. 3

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Nov. 14, 1961 E. C. GOODWIN, JR., ET AL 3,009,043

DISCONNECTING CONTACT

Filed Aug. 27, 1959 2 Sheets-Sheet 2

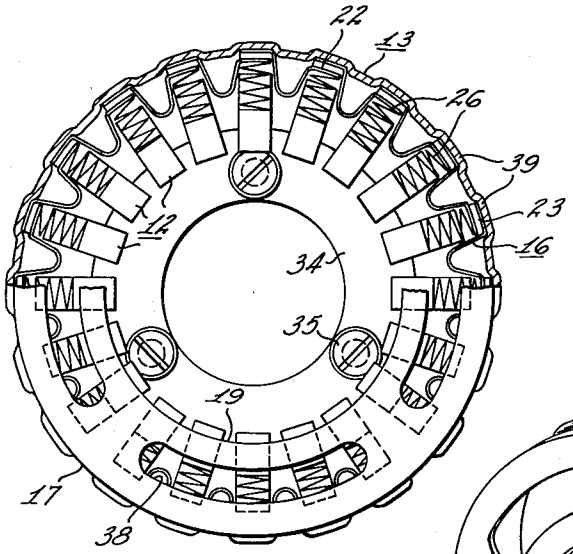


Fig. 7

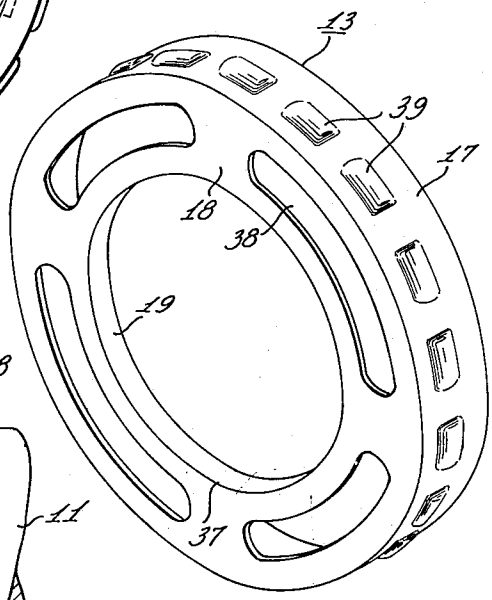


Fig. 8

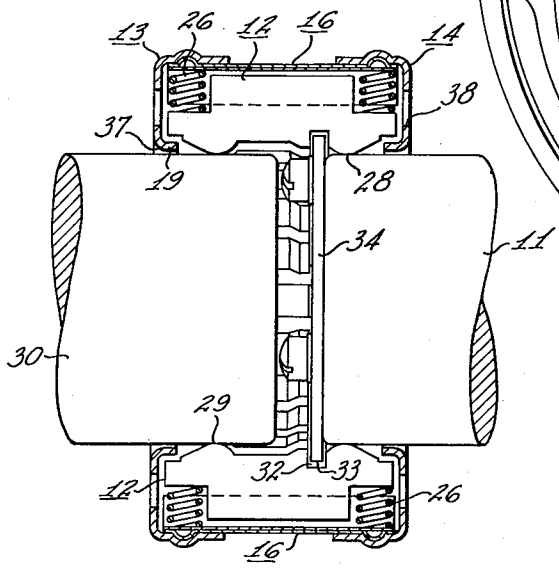


Fig. 6

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3,009,043

DISCONNECTING CONTACT

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14 Claims. (Cl. 200—166)

This invention relates to electric circuit interrupters and more particularly to a new and improved arrangement for primary disconnect contacts wherein each of a plurality of finger contacts is guided and retained within a housing.

In electrical circuit interrupting devices such as high voltage circuit breakers it is necessary to provide primary disconnect contacts so that the circuit breaker can be selectively connected and disconnected from the electrical circuit it protects. Heretofore primary disconnect contacts have been used employing a plurality of finger contacts designed and constructed so that each finger contact may be individually biased by coil springs arranged within a housing. This housing merely serves as an enclosure. It is not flexible enough to compensate for misalignment of the breaker and its cubicle while providing uniform spacing for the contact fingers and springs. The prior art structures are costly to manufacture and require expensive tools to assemble and disassemble in the field.

In accordance with the invention claimed a new and improved primary disconnect contact is provided which employs an interleaved substantially dustproof enclosure which is flexible enough to compensate for misalignment of the circuit breaker and its cubicle. The disconnect contact structure is completely self-contained having no loose parts and the biasing springs located at each end of the contact fingers serve the dual purpose of providing contact finger pressure and the force which locks the parts of the assembly together. The new and improved contact structure provides uniform spacing for the contact fingers and springs, and improved conduction and radiation surfaces are arranged in intimate contact with the side walls of the current carrying finger contacts.

It is, therefore, an object of this invention to provide a new and improved primary disconnect contact structure.

Another object of this invention is to provide a new and improved primary disconnect contact in which a housing serves as a positioning, pivoting and retaining means for a plurality of finger contacts.

A further object of this invention is to provide a new and improved primary disconnect contact in which the housing comprising a plurality of interleaved parts is locked together by the contact biasing means.

A still further object of this invention is to provide a housing for a plurality of finger contacts employing improved conduction and radiation surfaces in intimate contact wtih the side walls of the finger contacts.

Objects and advantages other than those set forth will be apparent from the following description when read in connection with the accompanying drawing, in which:

FIG. 1 is an isometric view with parts broken away of a primary disconnect contact embodying the present invention;

FIG. 2 is a left end view of the structure shown in FIG. 1 with parts broken away;

FIG. 3 is a cross sectional view of the structure shown in FIG. 2 taken along the line III—III;

FIG. 4 is an elevational view of one of the spacer members forming the interleaved housing structure shown in FIGS. 1–3;

FIG. 5 is a plan view illustrating the manner in which two adjacent spacer members interlock together;

FIG. 6 is a cross sectional view illustrating the invention with the movable primary disconnect contact in engagement with the stationary contact.

FIG. 7 is a left end view of a modification of the structure shown in FIG. 1 with parts broken away; and

FIG. 8 is an isometric view of the ring shape member shown in FIG. 7.

Referring more particularly to the drawing by characters of reference, FIGS. 1, 2 and 3 illustrate an electric switch and more particularly a primary disconnect contact **10** for a circuit breaker structure. Contact **10** is attached to an electric conductor or stud **11** usually forming a part of a circuit breaker. The primary disconnect contact **10** comprises a plurality of finger type contacts **12** which are spacedly mounted around stud **11** for independent limited movement in a housing **15**. Housing **15** comprises a first ring shaped member **13** and a second ring shaped member **14** with member **14** being mounted at least partly around stud **11** and in spaced relationship with member **13**. Members **13** and **14** are pivotally interconnected by a plurality of interleaved spacer members **16** which are arranged to extend substantially longitudinally of stud **11**.

Each of the ring shaped members **13** and **14** is provided with a first arcuate surface **17** extending around its periphery with surface **17** facing the center of the ring, and a flange **18** extending inwardly of surface **17** providing a second arcuate surface **19** spaced from and facing surface **17**.

Each of the spacer members **16** may have, for example, a troughlike shape **20** having flanges **21** and **22** extending therefrom (as shown in FIGS. 4 and 5) along its longitudinal edges. Flange **21** is provided with arcuate projections **23** which fit into a continuous annular recess **24** extending around the circumference of each of the ring shaped members **13** and **14**. Projections **23** of spacer members **16** are loosely arranged or pivotally mounted in recess **24** in ring shaped members **13** and **14** for providing limited lateral movement of these ring members relative to each other. When spacer members **16** are arranged around ring shaped members **13** and **14** to form the unitary housing **15**, flange **22** of one spacer member overlaps flange **21** of an adjacent spacer member so that an interleaved structure is created interconnecting ring shaped members **13** and **14**. The troughs **20** of spacer members **16** project inwardly of ring shaped members **13** and **14** (as shown in FIG. 1) to form a plurality of cooling cavities extending longitudinally of housing **15** and stud **11**. By interleaving spacer members **16**, as shown, a predetermined space is provided between adjacent spacer members which space is partially enclosed by the walls forming troughs **20**.

Finger contacts **12** are each mounted to extend within flanges **18** of ring shaped members **13** and **14**. A pair of spring biasing means such as coil springs are arranged one at each end of finger contacts **12** within flanges **18** of each ring shaped member and within the space between adjacent troughs **20**. Finger contacts **12** are provided at each end thereof with a flat surface **27**, and coil springs **26** are each arranged between a surface **27** and a flange **22**. These coil springs bias the finger contacts **12** radially inward toward the center of the assembly against the arcuate surfaces **19** of flange **18**. Each of the finger contacts **12** is provided with a pair of spaced contact engaging surfaces **28** and **29** one of which is arranged to engage stud **11** and the other of which is arranged to engage a movable contact stud **30** shown in FIG. 6. In order to firmly attach the disconnect contact structure **10** to stud **11** finger contacts **12** are each provided with a groove **32** into which the outer periphery **33** of ring shaped yoke **34** is arranged to extend. Yoke **34** is threadedly attached to the terminal end of stud **11** by means

of bolts 35 spacedly arranged around the periphery of yoke 34.

Since electrical engagement between finger contacts 12 and stud 11 will move contacts 12 radially outward against the bias of coil springs 26 mounted in ring shaped member 14, the arcuate surface 19 of ring shaped member 13 controls the movement of contacts 12. Finger contacts 12 pivot around their contact surfaces 28 and around the outer edge of yoke 34 arranged in groove 32. Surface 19 of ring shaped member 14 controls the movement of finger contacts 12 when stud 30 is forced between the contact surfaces 29 of finger contacts 12.

The greater the force of the spring biasing means 26 for each finger contact the greater will be the entering force required for electrical engagement between the primary disconnect contact assembly 10 and stud 30.

As noted from FIG. 2 of the drawing, housing 15 comprises a plurality of interleaved spacer members 16 which provide spring openings therebetween evenly spaced around the inside of the periphery of ring shaped members 13 and 14. Into these openings are arranged coil springs 26 which not only bias the finger contacts toward the longitudinal axis of the housing but bind the primary disconnect contact structure into a unitary device. The finger contacts 12 comprise substantially flat conducting members having their contact surfaces 28 and 29 spaced from each other at different ends thereof on different sides of groove 32. The periphery of yoke 34 loosely fits into groove 32 and the conducting surfaces 28 are brought into high pressure electrical contact with stud 11 when the primary disconnect contact 10 is assembled on stud 11. When the primary conductor stud 30 is moved into engagement with the primary disconnect contact 10 coil springs 26 in ring shaped member 13 bias the contact surfaces 29 of finger contacts 12 into high pressure electrical engagement with primary conductor stud 30. Finger contacts 12 are individually movable and each are pivotally mounted about either of its surfaces 28 or 29 depending on the alignment of studs 11 and 30. Each finger contact is provided with its individual biasing means such as coil springs 26 to bias it into high pressure electrical engagement with the contact studs 11 and 30. Thus, in the event any one of the plurality of coil springs should fail there will be sufficient force from the remaining coil springs on other finger contacts 12 to maintain high pressure electrical engagement. Since each coil spring 26 maintains its individual finger contact 12 in high pressure contact with studs 11 and 30 loss of any one spring merely causes loss of only one point of high pressure contact.

It is further noted that when stud 30 is removed from the primary disconnect contact 10 the coil springs 26 arranged within ring shaped member 13 combine with the arcuate surface 19 of flange 18 to maintain finger contacts 12 in their given circular configuration. The inner rim of the ring shaped members 13 and 14 and particularly their arcuate surfaces 19 act as stops to limit the positions of the finger contacts 12 in the stud disengaged positions. Thus limited, the force required to initiate contact engagement is held to a minimum. This condition also provides the required electrical clearance in the test position of the circuit breaker using this disconnect contact structure with a minimum of breaker withdrawal motion.

In view of the fact that rings 13 and 14 are flexibly supported by the interleaved spacer members 16 in a lateral plane independently of each other, they provide outer support for the finger contacts and thereby maintain continuous equalized pressure of each individual finger contact within the prescribed limits of misalignment of the circuit breaker and its associated contact studs. These limits are defined by the engagement clearances between the mounting plate or yoke 34 and the slots or grooves 32 in the finger contacts 16 with which yoke 34 mates. The leading edge 37 of flange 18 of ring shaped member 13 may also be contoured to readily engage cubicle stud 30 and flexibly align the primary disconnect contact 10 therewith to assure substantially concentric engagement of the stud with the finger contact assembly.

As readily noted from the drawing the primary disconnect contact when completely assembled provides relatively large surface areas for dissipation of heat. In order to further increase the heat dissipation of the contact, assembly flanges 18 of ring shaped members 13 and 14 are each provided with a plurality of apertures or slots 38 which in combination with the spaces between the finger contacts 12 provides venting passageways through the primary disconnect contact longitudinally thereof. These passageways provide additional heat dissipation by convection.

FIGS. 7 and 8 illustrate a modification of the structure shown in FIGS. 1–6 wherein the annular ring shaped members 13 and 14 are provided with a plurality of indentations 39 spaced around their circumferences in place of the continuous annular recess 24 shown in FIGS. 1, 2 and 3. Indentations 39 form pockets for loosely receiving projections 23 of spacer members 16 thereby providing pivotal connections of spacer members 16 to ring shaped members 13 and 14. Indentations 39 also form a given position for the mounting of spacer members 16 around ring shaped members 13 and 14 and assures a given space between each of the spacer members.

Although but two embodiments of the present invention have been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of invention or from the scope of the appended claims.

What is claimed is:

1. A contact structure for a circuit breaker stud comprising a plurality of contacts, means for mounting said contacts around said stud for independent limited movement, said means comprising a pair of spaced members one at least partly surrounding said stud and spacer members for pivotally interconnecting said spaced members for limited lateral movement of said spaced members, each of said spaced members having a first surface extending substantially longitudinally of said stud and a flange extending inwardly of said first surface, said flange providing a second surface spaced from and facing said first surface, said contacts each being mounted to extend within said flange of each of said spaced members, and a plurality of spring biasing means one arranged at each end of said contacts within said flange of each of said spaced members and between said first surfaces and said contacts, said biasing means biasing the ends of said contacts toward said second surface of said spaced members, at least a part of said contacts engaging said stud when said stud is inserted within one of said spaced members.

2. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts around said stud for independent limited movement, said means comprising a pair of arcuate spaced members one at least partly surrounding said stud and spacer members for pivotally interconnecting said spaced members, each of said spaced members having a first surface extending substantially longitudinally of said stud and a flange extending inwardly of said first surface, said flange providing a second surface spaced from and facing said first surface, said finger contacts each being mounted to extend within said flange of each of said spaced members, and a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said spaced members and between said first surfaces and said finger contacts, said biasing means biasing the ends of said finger contacts toward said second surface of said spaced members, said finger contacts each being provided with a pair of spaced contact engaging surfaces, one of said sur-

faces of each of said finger contacts engaging said stud when said stud is inserted within one of said spaced members.

3. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for indepedent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for pivotally interconnecting said first and second ring shaped members for limited lateral movement, each of said ring shaped members having a first surface extending substantially longitudinally of said stud and a flange extending inwardly of said first surface, said flange providing a second surface spaced from and facing said first surface, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, and a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said first surfaces and said finger contacts, said biasing means biasing the ends of said finger contacts toward said second surface of said ring shaped members, said finger contacts each being provided with a pair of spaced contact engaging surfaces, one of said surfaces of each of said finger contacts engaging said stud when said stud is inserted within one of said ring shaped members.

4. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for pivotally interconnecting said first and second ring shaped members for limited lateral movement of said ring shaped members, each of said ring shaped members having a first surface extending substantially longitudinally of said stud and a flange extending inwardly of said first surface, said flange providing a second surface spaced from and facing said first surface, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, and a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said biasing means biasing the ends of said finger contacts toward said second surface of said ring shaped members, said finger contacts each being provided with a pair of spaced contact engaging surfaces, one of said surfaces of each of said finger contacts engaging said stud when said stud is inserted within one of said ring shaped members.

5. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first surface extending substantially longitudinally of said stud and a flange extending inwardly of said first surface, said flange providing a second surface spaced from and facing said first surface, each of said spacer members being pivotally connected at different ends thereof to said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said means biasing the ends of said finger contacts toward said second surface of said ring shaped members, said finger contacts each being provided with a pair of spaced contact engaging surfaces, one of said surfaces of each of said finger contacts engaging said stud when said stud is inserted within one of said ring shaped members.

6. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first surface extending substantially longitudinally of said stud and a flange extending inwardly of said first surface, said flange providing a second surface spaced from and facing said first surface, each of said spacer members being pivotally connected at different ends thereof to said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said biasing means biasing the ends of said finger contacts toward said second surface of said ring shaped members, said finger contacts each being provided with a pair of spaced contact engaging surfaces, a groove arranged within each of said finger contacts between said contact engaging surfaces, and a ring shaped yoke arranged to extend within said grooves of each of said finger contacts for mounting said structure to an end of said stud.

7. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first arcuate surface extending around its periphery with said first surface facing the center of said ring shaped member and a flange extending inwardly of said first surface, said flange providing a second arcuate surface spaced from and facing said first surface, each of said first surfaces being provided with a plurality of spaced indentations extending around its circumference, each of said spacer members being provided with a protrusion at each end thereof for connecting with said indentations of said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said means biasing the ends of said finger contacts toward said second surface of said ring shaped members and said protrusions into said indentations, said finger contacts each being provided with a pair of spaced contact engaging surfaces, one of said surfaces of each of said finger contacts engaging said stud when said stud is inserted within one of said ring shaped members.

8. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first arcuate surface extending around its periphery with said first surface facing the center of said ring shaped member and a flange extending inwardly of said first surface, said flange providing a second arcuate surface spaced from and facing said first surface, each of said first surfaces being provided with a plurality of spaced indentations extending around its circumference, each of

said spacer members being provided with a protrusion at each end thereof for pivotally connecting with said indentation of said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said means biasing the ends of said finger contacts toward said second surface of said ring shaped members and said protrusions into said indentations, said finger contacts being provided with a pair of spaced contact engaging surfaces, a groove arranged within each of said finger contacts between said contact engaging surfaces, and a ring shaped yoke arranged to extend within said grooves of each of said finger contacts for mountnig said structure to an end of said stud.

9. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and parallelly arranged spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first arcuate surface extending around its periphery with said first surface facing the center of said ring shaped member and a flange providing a second arcuate surface spaced from and facing said first surface, each of said first surfaces being provided with a plurality of indentations equally spaced around its circumference, each of said spacer members being provided with a protrusion at each end thereof pivotally connected with said indentation of said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said means biasing the ends of said finger contacts toward said second surface of said ring shaped members and said protrusions into said indentations, said finger contacts each being provided with a pair of spaced contact engaging surfaces, a groove arranged within each of said finger contacts between said contact engaging surfaces, and a ring shaped yoke arranged to extend within said grooves of each of said finger contacts for mounting said structure to an end of said stud.

10. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and interleaved spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first arcuate surface extending around its periphery with said first surface facing the center of said ring shaped member and a flange extending inwardly of said first surface, said flange providing a second arcuate surface spaced from and facing said first surface, each of said spacer members being pivotally connected at different ends thereof to said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, each of said spacer members being formed to provide a trough extending longitudinally of said spacer member inwardly of said ring shaped members and a pair of flanges one on each side of and extending along said trough, said flanges of said spacer members overlapping to provide a space between adjacent troughs, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts between adjacent troughs and within said flange of each of said ring shaped members and between said flanges of said spacer members and said finger contacts, said finger contacts each being provided with a pair of spaced contact engaging surfaces, a groove arranged within each of said finger contacts between said contact engaging surfaces, and a ring shaped yoke arranged to extend within said grooves of each of said finger contacts for mounting said structure to an end of said stud.

11. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first arcuate surface extending around its periphery with said first surface facing the center of said ring shaped member and a flange extending inwardly of said first surface, said flange providing a second arcuate surface spaced from and facing said first surface, each of said first surfaces being provided with an annular recess extending around its circumference, each of said spacer members being provided with a protrusion at each end thereof for connecting with said recess of said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said means biasing the ends of said finger contacts toward said second surface of said ring shaped members and said protrusions into said recesses, said finger contacts each being provided with a pair of spaced contact engaging surfaces, one of said surfaces of each of said finger contacts engaging said stud when said stud is inserted within one of said ring shaped members.

12. A contact structure for a circuit breaker stud comprising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first arcuate surface extending around its periphery with said first surface facing the center of said ring shaped member and a flange extending inwardly of said first surface, said flange providing a second arcuate surface spaced from and facing said first surface, each of said first surfaces being provided with an annular recess extending around its circumference, each of said spacer members being provided with a protrusion at each end thereof for pivotally connecting with said recess of said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said means biasing the ends of said finger contacts toward said second surface of said ring shaped members and said protrusions into said recesses, said finger contacts being provided with a pair of spaced contact engaging surfaces, a groove arranged within each of said finger contacts between said contact engaging surfaces, and a ring shaped yoke arranged to extend within said grooves of each of said finger contacts for mounting said structure to an end of said stud.

13. A contact structure for a circuit breaker stud com-

prising a plurality of finger contacts, means for mounting said finger contacts on said stud for independent limited movement, said means comprising a first ring shaped member, a second ring shaped member and parallelly arranged spacer members for interconnecting said first and second ring shaped members, each of said ring shaped members having a first arcuate surface extending around its periphery with said first surface facing the center of said ring shaped member and a flange providing a second arcuate surface spaced from and facing said first surface, each of said first surfaces being provided with an annular recess spaced around its circumference, each of said spacer members being provided with a protrusion at each end thereof pivotally connected with said recess of said first surface of different ones of said ring shaped members for providing limited lateral movement of said ring shaped members, said finger contacts each being mounted to extend within said flange of each of said ring shaped members, a plurality of spring biasing means one arranged at each end of said finger contacts within said flange of each of said ring shaped members and between said spacer members and said finger contacts, said biasing means biasing the ends of said finger contacts toward said second surface of said ring shaped members and said protrusions into said recesses, said

finger contacts each being provided with a pair of spaced contact engage surfaces, a groove arranged within each of said finger contacts between said contact engaging surfaces, and a ring shaped yoke arranged to extend within said grooves of each of said finger contacts for mounting said structure to an end of said stud.

14. A contact structure for a circuit breaker stud employing a plurality of movable finger contacts mounted for independent limited movement around said stud and a resilient housing for surrounding said contacts, said housing comprising a pair of spaced ringlike members interconnected by a plurality of pivotally mounted spaced members, said housing retaining said finger contacts in a given geometrical configuration and forming cooling surfaces for dissipating the heat of current conduction.

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