United States Patent

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[54] CIRCUIT BREAKER BRACKET ASSEMBLY
4 Claims, 6 Drawing Figs.

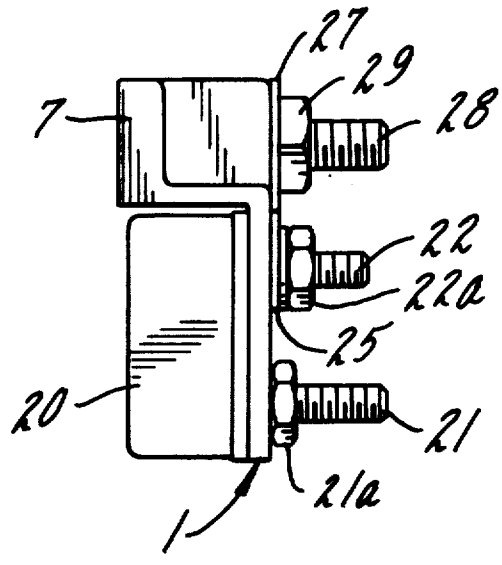
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[51] Int. Cl. H02b 1/04
[50] Field of Search ..... 174/72 A, 135; 317/99, 112, 113, 119, 118, 122; 211/60 T, 86, 87; 339/219; 200/168 A

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ABSTRACT: An elongated bracket, Z-shaped in cross section, a plurality of parallel, open-ended slots for reception of breaker terminals and mounting of breakers, bracket-mounting apertures and bus bar terminal and mounting apertures, circuit breakers and bus bars.



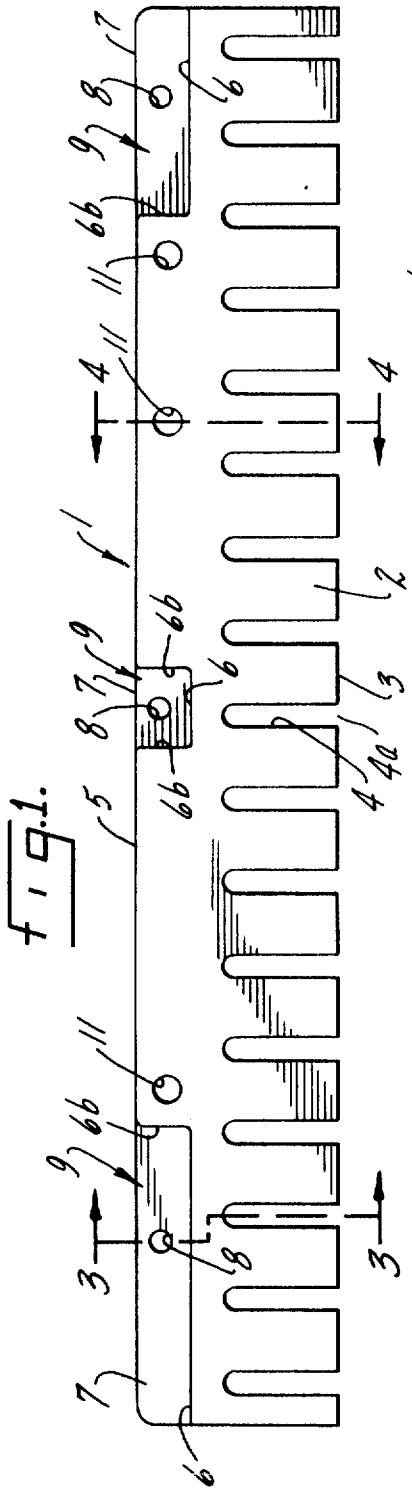


FIG. 1.

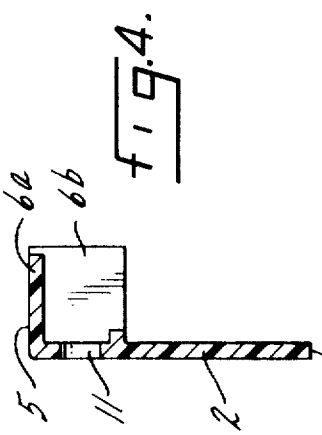


FIG. 4.

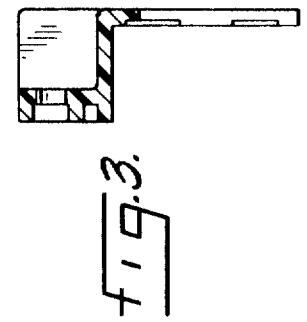


FIG. 3.

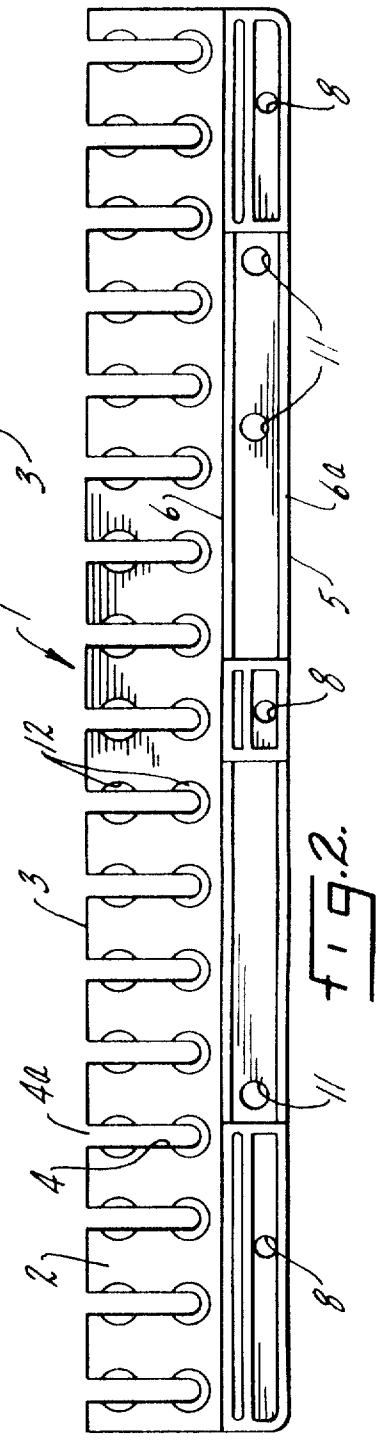


FIG. 2.

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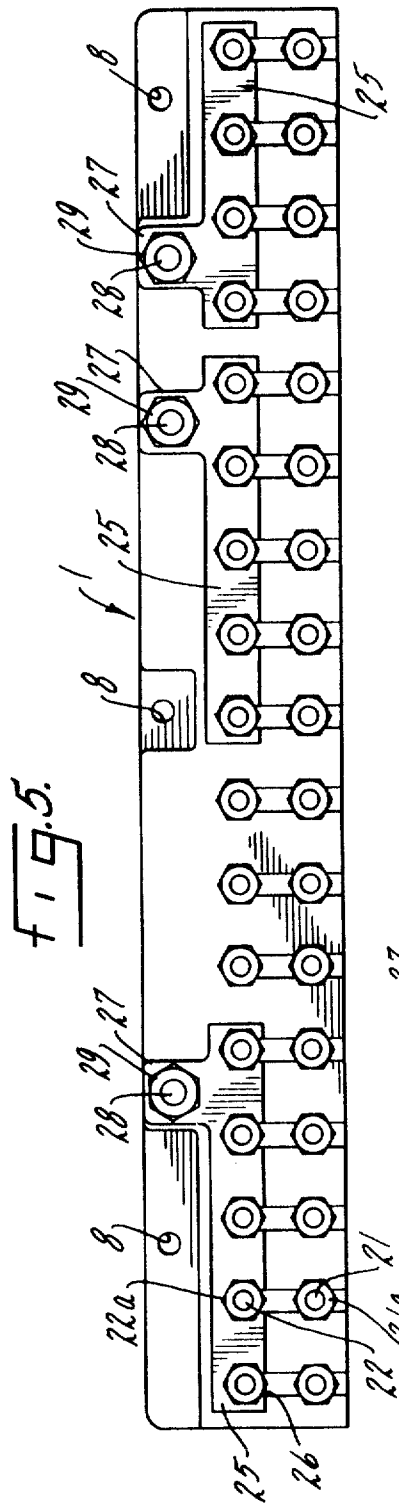


FIG. 5.

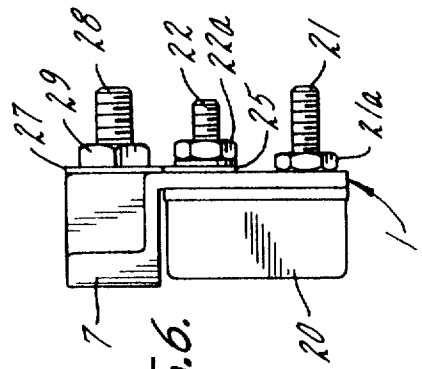


FIG. 6.

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CIRCUIT BREAKER BRACKET ASSEMBLY

SUMMARY OF THE INVENTION

This invention relates to mounting brackets and particularly to a mounting bracket for circuit breakers employed, for example, in the electrical system of truck-trailer vehicles.

One purpose of the invention is to provide a circuit breaker mounting of maximum simplicity and economy.

Another purpose is to provide a circuit breaker bracket of maximum compactness.

Another purpose is to provide a bracket and circuit breaker assembly employing the circuit breaker terminals as mounting means for the circuit breakers on the brackets.

Another purpose is to provide a bracket, circuit breaker and bus bar assembly of maximum simplicity, compactness and economy.

Another purpose is to provide a circuit breaker bracket enabling insertion, removal and replacement of circuit breakers and bus bars with maximum ease and minimum effort.

Other purposes may appear from time to time during the course of the specification and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated more or less diagrammatically in the accompanying drawings wherein:

FIG. 1 is a top plan view;

FIG. 2 is a bottom plan view;

FIG. 3 is a cross-sectional view on the line 3–3 of FIG. 1;

FIG. 4 is a cross-sectional view on the line 4–4 of FIG. 1;

FIG. 5 is a top plan view of the assembly of the invention; and

FIG. 6 is an end view of the structure illustrated in FIG. 5.

Like parts are indicated by like numerals throughout the specification and drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, and particularly to FIGS. 1—3, the bracket of the invention consists of an elongated, generally rectilinear member formed of insulating material such, for example, as Bakelite, or similar suitable plastic. The elongated bracket 1, as may be best seen in FIG. 3, for example, is generally Z-shaped in cross-sectional configuration. A major leg of the Z-shaped is constituted by the elongated, platelike portion 2, the distal longitudinal edge 3 of which is broken by the open ends 4*a* of a plurality of parallel, inwardly extending slots 4 formed in and laterally through the plate portion 2 and extending inwardly beyond the midpoint thereof.

The opposite longitudinal edge 5 of plate portion 2 joins the intermediate, perpendicular portion 6 of bracket 1. Extending from the opposite edge of intermediate portion 6 in a direction opposite from that of plate portion 2 is a mounting portion 7 in which the bracket mounting apertures 8 are formed for passage therethrough of suitable mounting fasteners (not shown) effective to secure the bracket of the invention within, for example, an electrical junction box or the like (not shown).

As may be best seen in FIG. 1, the perpendicular intermediate portions 6 extend between plate 2 and mounting portions 7 at three recessed areas of the edge 5, the areas being indicated generally by the numeral 9 and positioned at opposite ends of the edge 5 and intermediate said ends. As may be best seen in FIGS. 1 and 4, an intermediate vertical portion 6*a* joins the nonrecessed portion of plate edge 5 and depends therefrom in a plane paralleling that of the intermediate, perpendicular portions 6.

Apertures 11 are formed in plate portion 2 along and adjacent its edge portion 5 between the recessed perpendicular portions 6.

A set of crescent-shaped recesses 12 is formed in the underside of plate portion 2 for each of the slots 4, the recesses 12 of each set being spaced along the slot and located adjacent the open end 4*a* and the inner end of each of the slots 4, as may be best seen in FIG. 2. As will be noted in FIGS. 1—3, the perpendicular portions 6,6*a* are joined by perpendicular portion 6*b*.

The assembly of the invention is illustrated in FIGS. 5 and 6 wherein a plurality of circuit breakers 20, one for each of the slots 4, is shown as mounted on the bracket 1. Each of the circuit breakers 20 has a pair of spaced, aligned, upstanding terminals 21,22. The terminals 21,22 extend upwardly through their associated slot 4 and nuts 21*a*,22*a* are turned on the threads of the terminals to draw the body of circuit breaker 20 upwardly against the underside of plate portion 2, seating appropriate terminal bosses or collars (not shown) on the upper surface of the circuit breaker bodies in the recesses 12 and supporting the circuit breakers 20 on the bracket 1. It will be understood that a second nut (not shown) for each of the terminals 21,22 may be commonly provided for securing the end contacts of appropriate wires to the terminals 21,22.

Bus bar members 25, shown as three in number, are formed of elongated metallic strips. Each of the bus bar members 25 has a plurality of slots 26 formed along and having their open ends penetrating a longitudinal edge of the strip constituting the bus bar. The opposite longitudinal edge of said strip has an oppositely directed ear segment 27 formed and adapted to overlie one of the apertures 11 and having a suitable aperture therein for alignment with one of the apertures 11. A terminal member 28 is provided for passage through the aperture in the ear segment 27 and through its associated aperture 11 in bracket 1, a nut 29 being turned on the terminal 28 for securing the bus bar in place, the slots 26 being similarly positioned for alignment with the and for passage therethrough of the terminals 22, each nut on terminal 22 being drawn down upon the bus bar 25 for electrical contact therewith.

The use and operation of the invention are as follows:

Bracket 1 may be suitably and economically formed of a single piece of insulating, plasticlike material and may be conveniently molded in a single operation. Appropriate fasteners (not shown) are then supplied for passage through the apertures 8 in portions 7 for securing and mounting of the bracket 1 in a suitable junction box (not shown), for example. Thereafter circuit breakers 20 are easily and simply mounted on the bracket 1 by merely sliding the terminals 21,22 into the slots 4. The nuts carried on slots 21,22 are then drawn down a distance sufficient to clamp the circuit breaker 20 to the plate portion 2 of the bracket 1. Thereafter the breakers 20 can be easily removed, by merely loosening the nuts on the terminals 21,22 and a replacement circuit breaker installed as described. The terminals 21,22 thus form the dual function of service as terminals and as mounting means for circuit breakers 20. Bus bar members 25 serve to join the terminals 22 of a plurality of circuit breakers 20, the slots 26 being positioned for alignment with an appropriate number of slots 4 and open in the same direction as the slots 4. The bus bar terminals 28 with nuts 29 serve the dual function as terminals and as mounting means. Nuts 29 and the nuts on terminals 22 insure electrical energy-transmitting contact between terminals 22, bus bar members 25 and terminals 28.

I claim:

1. A bracket, circuit breaker and bus bar assembly including an elongated bracket formed of insulating material and having a plurality of open-ended slots formed in an edge thereof, a circuit breaker beneath each of said slots and having a pair of terminals extending upwardly through its associated slot, nut elements threaded on said terminals and clamping said circuit breakers to said bracket, bus bar members having a plurality of open-ended slots along one edge thereof in alignment with the slots in said bracket and receiving one of said terminals, the nut elements on said one of said terminals clamping said bus bar member to said bracket and in electrical energy-transmitting contact with said bus bar member.

2. The structure of claim 1 characterized by and including a bus bar terminal extending through said bus bar member and

said bracket and a nut element threaded on said bus bar terminal and clamping said bus bar member to said bracket.

3. A circuit breaker bracket formed of a single, elongated, generally rectilinear piece of insulating material, said piece being generally Z-shaped in cross-sectional configuration, one leg of said configuration comprising an elongated, generally rectilinear platelike portion, a plurality of parallel slots penetrating one longitudinal edge of said plate portion and open laterally therethrough, the opposite leg of said configuration including portions having mounting apertures therethrough, a plurality of circuit breakers mounted beneath said platelike portion and having their terminals extending upwardly through said slots and nut elements threaded on said terminals and engaging the upper side of said platelike portion.

4. The structure of claim 3 characterized by and including bus bar members, terminal elements extending through said bus bar elements and said one leg of said configuration, and nut elements threaded on said bus bar terminals and engaging said bus bar members to clamp the same against said platelike portion.