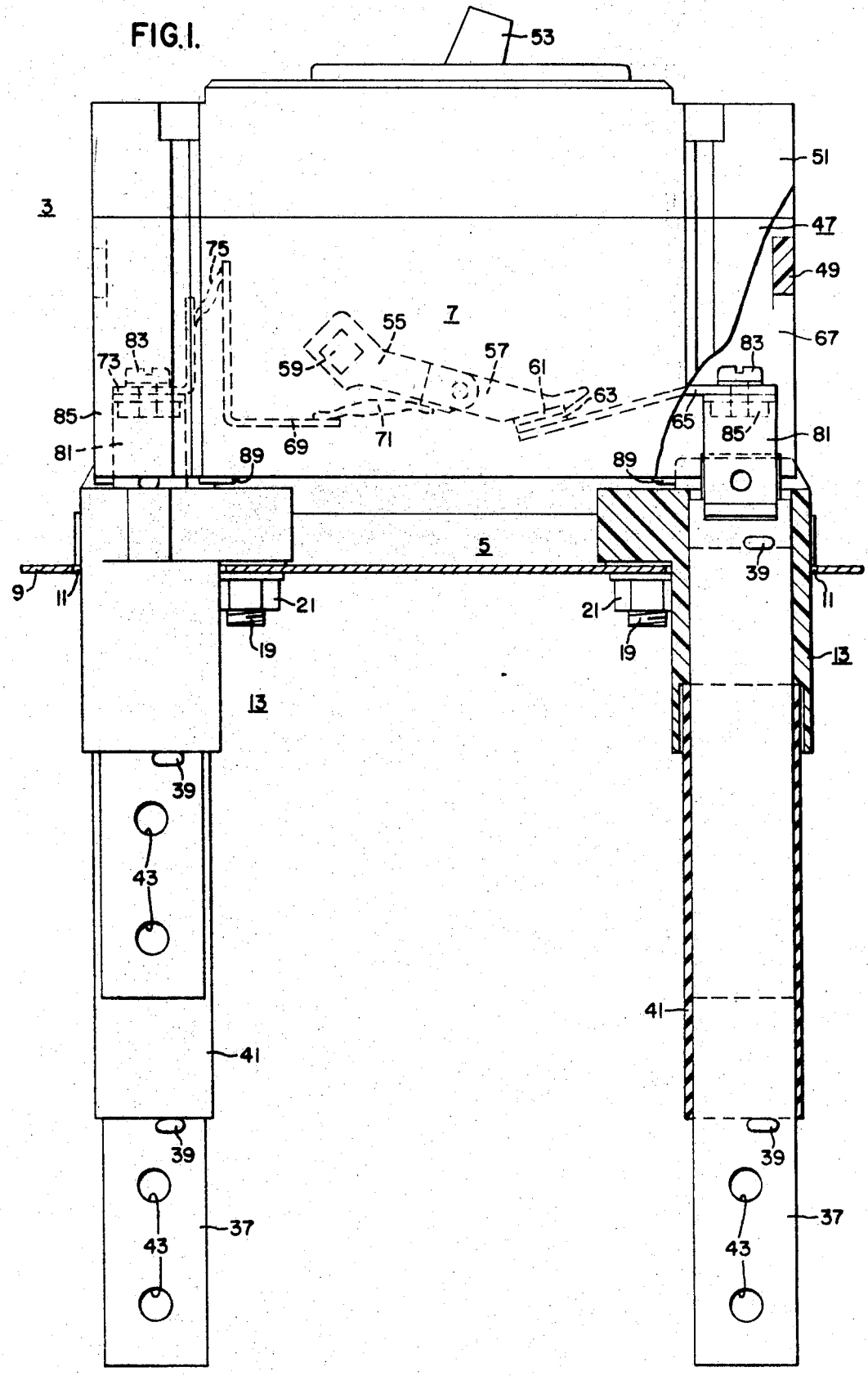
Nov. 3, 1970 N. YORGIN ET AL 3,538,390

CIRCUIT BREAKER AND BUS CONDUCTOR COMBINATION

Filed Nov. 13, 1967 4 Sheets-Sheet 1

FIG. 1.



CIRCUIT BREAKER AND BUS CONDUCTOR COMBINATION

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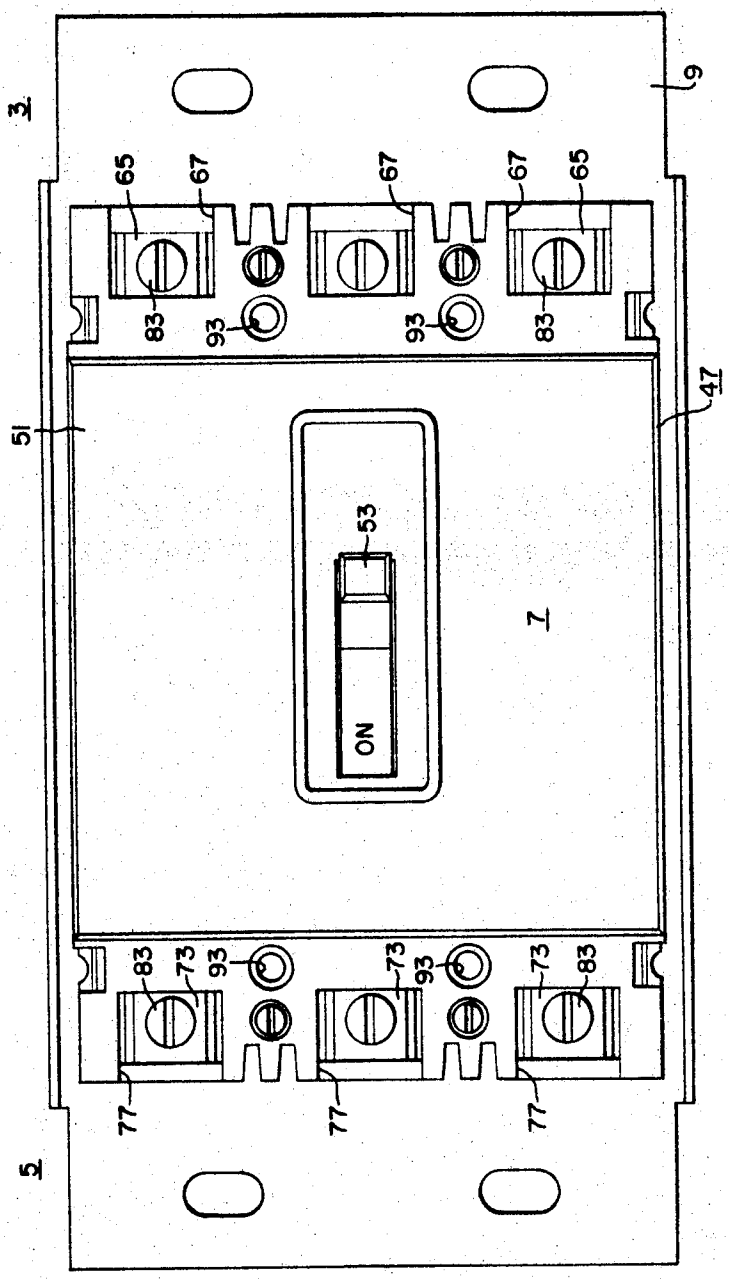


FIG. 2.

WITNESSES

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Robert H. Flick

BY

William A. Elchik

ATTORNEY

CIRCUIT BREAKER AND BUS CONDUCTOR COMBINATION

Filed Nov. 13, 1967 4 Sheets-Sheet 3

FIG. 3.

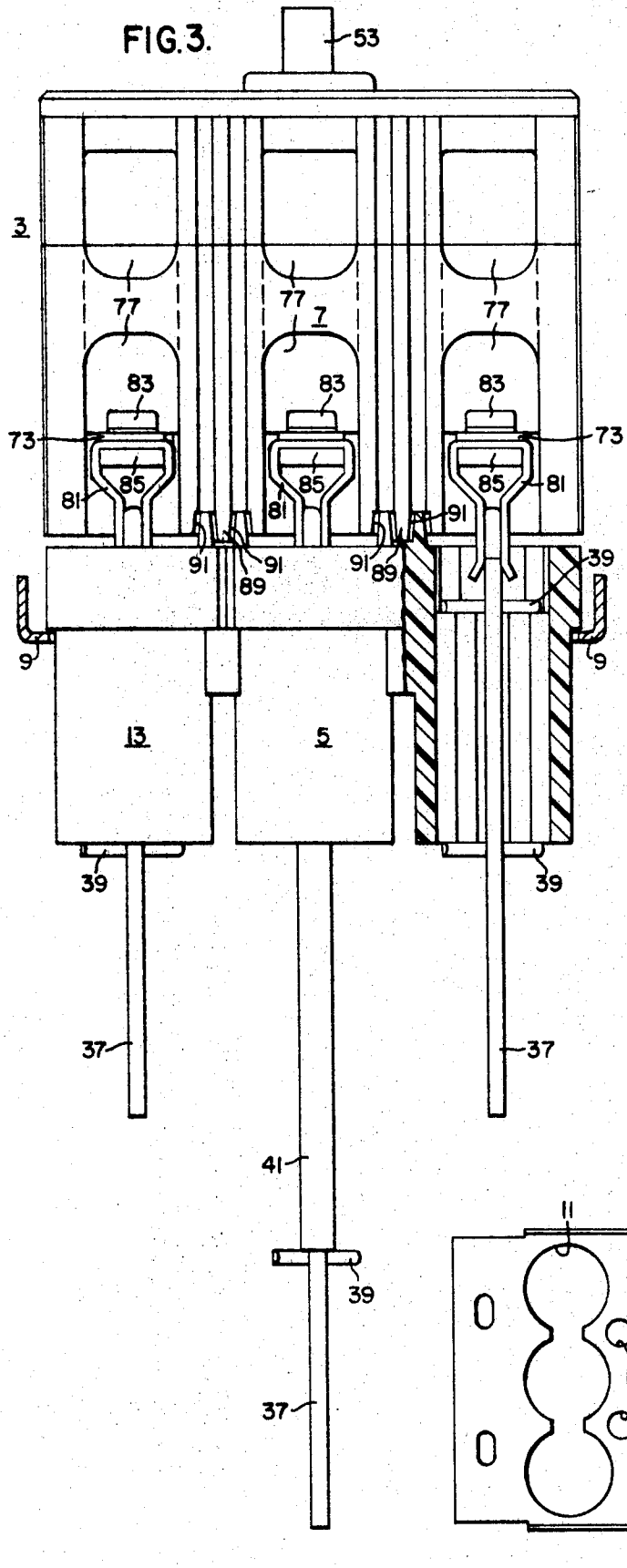


FIG. 11.

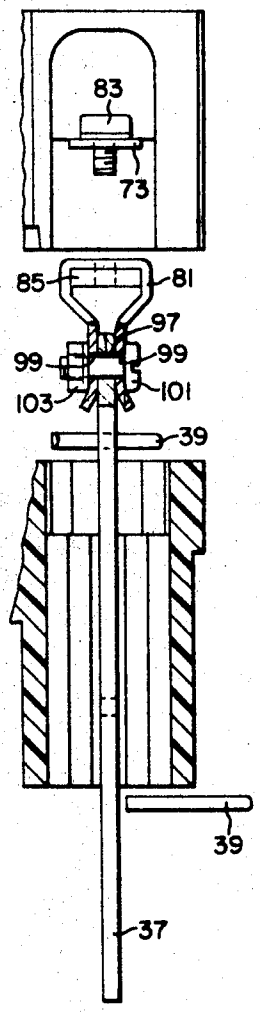
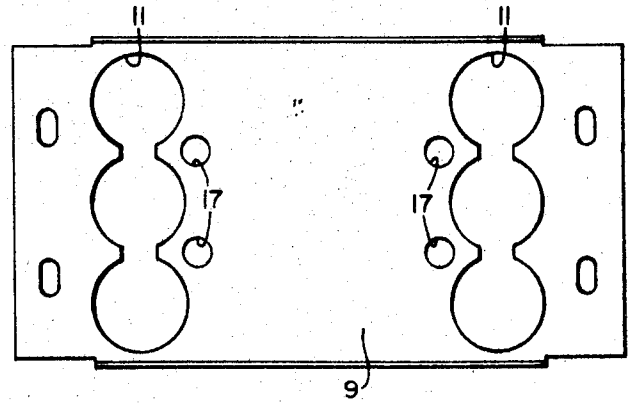


FIG. 4.



CIRCUIT BREAKER AND BUS CONDUCTOR COMBINATION

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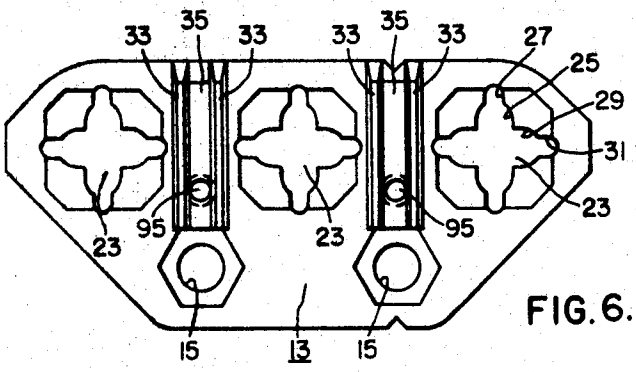


FIG. 6.

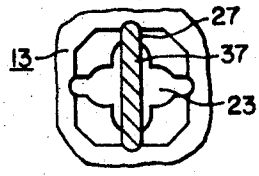
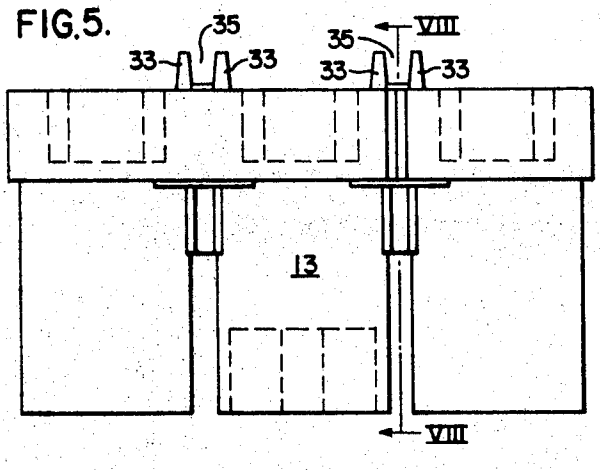


FIG. 9.

FIG. 5.



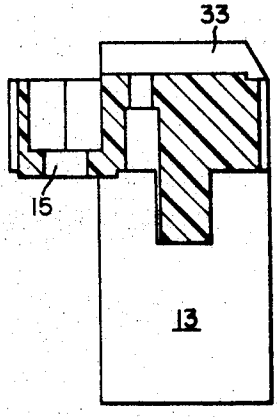


FIG. 8.

FIG. 7.

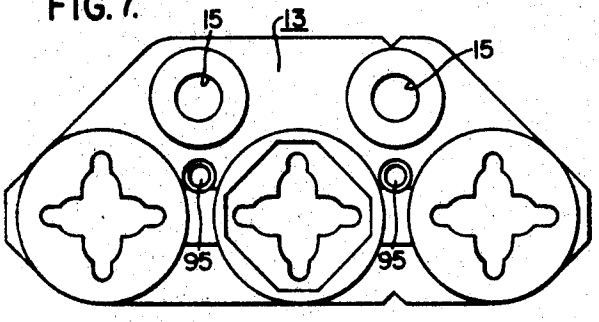
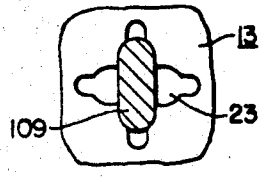


FIG. 13.



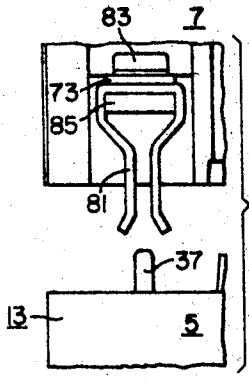


FIG. 10.

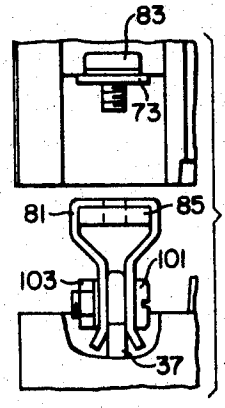
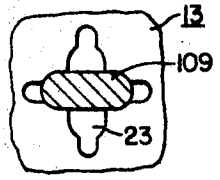


FIG. 12.

FIG. 14.



United States Patent Office 3,538,390 Patented Nov. 3, 1970

3,538,390

CIRCUIT BREAKER AND BUS CONDUCTOR COMBINATION

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Filed Nov. 13, 1967, Ser. No. 682,357
Int. Cl. H02b 1/04
U.S. Cl. 317—112 14 Claims

ABSTRACT OF THE DISCLOSURE

An improved circuit breaker and bus conductor combination is convertible to provide either a quick-detachable type connection or a bolt-on type connection. An improved insulating support block is constructed to support either of two different sized bus conductors in two diffferent orientations.

SUMMARY OF THE INVENTION

The combination comprises a molded-case type circuit breaker and a plurality of stab conductors supported on insulating support means separate from the breaker. A plurality of clip-on type terminals are provided to electrically connect the breaker and stab conductors. The clip-on type terminals can be bolted to the breaker for quick-detachable connection with the stab conductors, or bolted to the stab conductors for bolt-on type connection with the breaker. An insulating support block is constructed to support either of two different sized bus conductors in two different orientations.

OBJECTS OF THE INVENTION

An object of this invention is to provide an improved combination comprising a pair of spaced conductors and a separate circuit breaker in quick-detachable connection with the conductors, which combination is readily converitble to provide a bolt-on type connection.

Another object of this invention is to provide an improved combination comprising a pair of spaced conductors and a separate circuit breaker connected to the conductors by means of a bolt-on type connection which combination is readily convertible to provide a plug-in type connection.

Another object of this invention is to provide an improved combination comprising an insulating support block and a bus conductor supported on the support block with means for supporting a different sized bus conductor on the support block.

Another object of this invention is to provide an improved combination comprising a support block with means for supporting either of two different sized bus conductors on the support block in either of two different orientations.

A general object of this invention is to provide improved convertible switchgear limiting the number of parts that a supplier is required to stock.

These and other objects of the invention will be apparent from the following description when read in conjunction with the accompanying drawings.

In said drawings:

FIG. 1 is a side elevational view, with parts broken away, of switchgear constructed in accordance with principles of this invention;

FIG. 2 is a top plan view of the switchgear seen in FIG. 1;

FIG. 3 is an end view, with parts broken away, of the switchgear seen in FIG. 1;

FIG. 4 is a top plan view of the supporting pan seen in FIGS. 1–3;

FIG. 5 is an end view of one of the insulating support blocks seen in FIG. 1;

FIG. 6 is a top plan view of the insulating block seen in FIG. 5;

FIG. 7 is a bottom plan view of the insulating block seen in FIG. 5;

FIG. 8 is a sectional view taken generally along the line VIII—VIII of FIG. 5;

FIG. 9 is a top view of part of the insulating block of FIG. 6 with a bus bar, shown in section, supported on the block;

FIG. 10 is a partial end view of the switchgear seen in FIG. 3 with the circuit breaker in the disconnected position when the combination is adapted for quick-detachable connection;

FIG. 11 is an exploded view of certain parts of the switchgear of FIG. 3 when the switchgear is adapted for bolt-on type connection;

FIG. 12 is a view similar to FIG. 10 when the switchgear is adapted for bolt-on type connection;

FIG. 13 is a view similar to FIG. 9 with a different sized bus bar on the support block; and

FIG. 14 is a view similar to FIG. 13 with the bus bar supported in a different orientation.

Referring to the drawings, there is shown, in FIGS. 1–3, a switchgear combination **3** comprising a stationary support assembly **5** and a molded-case type circuit breaker **7** supported on the assembly **5**.

The stationary support assembly **5** comprises a metallic supporting pan **9** (FIG. 4) having a pair of openings **11** therein, and a pair of insulating support blocks **13** supported on the pan **9** in the openings **11**. The pan **9** is stationarily supported at a control center or panelboard installation in a suitable manner. As can be seen in FIGS. 6 and 7, each of the support blocks **13** is provided with a pair of openings **15** which align with openings **17** (FIG. 4) in the support pan **9** for receiving bolts **19** (FIG. 1). As can be seen in FIG. 6, a hexagonal depression is provided in each insulating block at each of the openings **15** for receiving the bolt head of the bolt **19**, and a separate nut **21** (FIG. 1) is threaded onto each of the bolts **19** to fixedly secure each insulating support block **13** on the support pan **9**.

Each of the support blocks **13** is a rigid molded insulating block having three openings **23** (FIG. 6) extending lengthwise therethrough from front to back (FIG. 3). Each of the openings **23** comprises a first slot **25** having a particular breadth and thickness, and a second slot **27**, that is concentric and coextensive with the associated slot **25**, with each slot **27** having a greater breadth than the associated slot **25** and a lesser thickness than the associated slot **25**. Each of the openings **23** comprises a slot **29** having the same dimensions as the associated slot **25**, and a slot **31** concentric and coextensive with the slots **29** which slot **31** has the same dimensions as the associated slot **27**. As can be understood with reference to FIG. 6, the center point of each opening **23** is the center point for each of the four identified slots that are formed with the opening **23**. As can be seen in FIG. 6, the breadth direction of the slots **25**, **27** is transverse to the breadth direction of the slots **29**, **31**. It can be understood with reference to FIG. 6 that each of the openings **23** in each of the support blocks **13** is formed with the same dimensions as those hereinbefore specifically described with reference to the opening **23** that is seen on the right in FIG. 6. Each insulating block **13** is formed with a separate pair of barriers **33** (FIGS. 5 and 6) that project upward from the front of the support block **13** forming a slot **35** therebetween. As can be seen in FIGS. 5 and 6, there is a separate pair of barriers **33** between each pair of adjacent openings **23**.

Three stationary stab conductors **37** (FIG. 3) are supported on each of the support blocks **13** with each stab conductor **37** being positioned in a separate one of the openings **23**. As can be seen in FIG. 9, each of the stab conductors **37** has a breadth dimension and thickness dimension that are such as to fit snugly within the associated slot **27** (FIG. 6) in the associated opening **23**. Each of the stab conductors **37** is mounted on the associated block **13** by being passed lengthwise through the associated slot **27**, and a pair of cotter pins **39** (FIG. 3) are thereafter passed through openings in each stab conductor **37** and spread out at the free end thereof to support each stab conductor **37** against longitudinal movement on the support block **13**. Each stab conductor **37** fits snugly within the associated slot **27** to prevent substantial lateral movement of the bus bar **37** on the support block **13**. Each center stab conductor **37** is longer than the associated two outer stab conductors **37** (FIG. 3), and a stiff insulating tube **41** is positioned over the center stab conductor **37** to provide adequate electrical clearance between adjacent stab conductors which are of opposite polarity. The lower cotter pin **39** for each center stab conductor **37** is positioned under the associated insulating tube **41**, and the associated insulating tube **41** engages a stop surface (FIG. 1) on the associated insulating block **13** to cooperate with the upper cotter pin, which engages the block **13**, to prevent substantial longitudinal movement of the insulating tube **41** and center stab conductor **37** on the support block **13**. The cotter pins **39** of the two outer stab conductors **37** engage the associated insulating block **13** to prevent substantial longitudinal movement of the outer stab conductors **37** on the block **13**. As can be understood with reference to FIG. 1, each of the stab conductors **37** is provided with a pair of openings **43** therein for receiving suitable bolt means that are used to connect the stab conductors **37** to bus bars at the installation. Each of the stab conouctors **37** is a generally flat rigid conducting member, and at the installation, a flat bus bar is positioned adjacent each of the stab conductors **37** and with a large flat face of the conductor **37** abutting the large flat face of the bus bar and the parts are bolted together in a manner well known in the art.

The circuit breaker **7** is a molded-case type three pole circuit breaker of the type more specifically described in the copending patent application of Nick Yorgin et al., Ser. No. 621,321, filed Mar. 7, 1967 and assigned to the assignee of the subject application. The circuit breaker **7** comprises a molded insulating housing **47** comprising an insulating base **49** and an insulating cover **51** suitably secured to the base **49**. The cover **51** has an opening in the front thereof, and an insulating handle **53** extends out through the opening in **51** to permit manual operation of the breaker. A circuit-breaker mechanism, part of which is shown in dotted lines at **55**, is mounted within the housing **47**. The mechanism **55** comprises a separate switch arm **57** for each pole, and a common tie bar **59** operatively connecting the switch arms **57** for simultaneous operation. A movable contact **61** is supported on the free end of each of the switch arms **57**. In each pole unit, a stationary contact **63** is supported on a stationary circuit-breaker terminal conductor **65** that is fixedly mounted in the housing **47** and that extends out through a suitable opening in the housing **47** into a cavity **67**. Each of the switch arms **57** is connected to a stationary conductor **69**, by means of a flexible conductor **71**, and each of the conductors **69** is connected to a generally L-shaped circuit-breaker terminal conductor **73** by means of a flexible conductor **75**. The lower leg is of each L-shaped circuit-breaker terminal conductor **73** extends into an associated cavity **77** (FIGS. 2 and 3) at the other end of the housing **47**. As can be understood with reference to FIGS. 1–3, the insulating housing **47** is provided with three cavities **67** at one end thereof and three cavities **77** at the other end thereof for receiving

the circuit-breaker terminal conductors **65**, **73** of the three pole units of the circuit breaker. As can be understood with reference to FIGS. 1–3, each of the cavities **67**, **77** is open at the associated end of the breaker, and at the top and bottom of the breaker. The circuit-breaker terminal conductors **65**, **73** are fixedly and stationarily supported on the breaker housing **47**. For a more detailed description of the circuit-breaker mechanism including the trip means and operation of the circuit breaker, the reader is referred to the above-mentioned application Ser. No. 621,321.

As can be seen in FIGS. 1 and 3, a separate conducting clip-on type terminal **81** is connected to each of the flat circuit-breaker terminal conductors **65**, **73** by means of a separate connecting means comprising a separate bolt **83** and separate nut **85**. Each of the clip-on or plug-in type terminals **81** is a generally U-shaped member of a conducting resilient material that clips on to the associated stab conductor to provide an electrical connection. At a panelboard or control center installation, the stationary support assembly **5** is mounted in a fixed position with the stationary stab conductors **37** connected to bus bars. When it is desired to connect the circuit breaker **7**, the circuit breaker is merely moved down from the position illustrated in FIG. 10 into the position shown in FIGS. 1–3 with the clip-on or plug-in terminals **81**, that are connected to the circuit breaker, being automatically clipped on to the stab conductors **37** to electrically connect the circuit breaker **7** in the circuit of the bus bars at the installation. As can be seen in FIGS. 1 and 3, the insulating housing base **49** of the circuit breaker **7** is provided with a pair of projections **89** at each end of the circuit breaker with a pair of slots **91** on opposite sides of each projection **89**. The projections **89** and slots **91** are positioned between adjacent terminals **81**. The projections **89** fit in the slots **35** (FIGS. 5 and 6) of the insulating support block **13**, and the projections **33** (FIGS. 5 and 6) of the insulating support block **13** fit within the slots **91** (FIG. 3) of the circuit breaker to provide insulation between adjacent terminals **81** and adjacent stab conductors **37**. The projections **89** engage the insulating block **23** at the bottom of the slots **35** and the projections **33** of the insulating block **13** engage the circuit breaker at the top of the slots **91** to support the circuit breaker **7** on the insulating suport blocks **13**. Part of the circuit breaker **7** is shown in FIG. 10 in the position disconnected from the stationary assembly **5**, and the circuit breaker **7** is shown in a mounted and connected position in FIGS. 1–3. As shown in FIGS. 1–3 and 10, the quick-detachable clip-on or plug-in terminals **81** are connected to the circuit breaker in order to provide for quick-detachable connection between the circuit breaker and the support block. If it is desired to fixedly secure the circuit breaker **7** on the stationary support assembly **5**, four bolts can be passed through four openings **93** (FIG. 2) in the circuit-breaker housing **47** and screwed into tapped inserts in openings **95** (FIGS. 6 and 7) in the insulating blocks **13** to thereby fixedly mount the circuit breaker **7** on the stationary support assembly **5**. The circuit breaker **7**, however, is not bolted to the stationary support assembly **5** when it is desired to provide ready removal of the circuit breaker **7** from the fixed assembly **5**.

The switchgear combination **3** can be readily converted from the quick-detachable structure described with reference to FIGS. 1–3 and 10 to a bolt-on type structure that will be hereinafter described with reference to FIGS. 11 and 12. As will be understood with reference to FIGS. 11 and 12, each of the stab conductors **37** is provided with an opening **97** therein, and each of the clip-on type terminals **81** is provided with a pair of openings **99** in the legs thereof. The openings **97** and **99** are positioned such that they will be aligned when the circuit breaker is in the fully mounted position shown in FIGS. 1 and 3. When it is desired to provide the bolt-on combination,

each of the terminals **81** is fastened or bolted to the associated stab conductor **37** by means of a separate fastening means comprising a bolt **101** and nut **103** with the shank of the bolt passing through the aligned openings **97**, **99** (FIG. 11). As will be understood with regard to FIGS. 11 and 12, each of the nuts **85** is fixedly secured to the associated terminal **81** at all times whether the switchgear combination is provided for plug-in or bolt-on type connection. Each nut **85** can be forced into position with a tight fit or welded or otherwise suitably secured in position on the associated terminal **81**. With the terminals **81** bolted to the stab conductors **37**, the circuit breaker **7** can be moved into and out of the bolt-on position, and when the circuit breaker **7** is moved to the bolt-on position the circuit-breaker terminal conductors **65**, **73** (FIG. 1) of the circuit breaker rest on top of the terminals **81**, and the circuit breaker is bolted to the terminals **81** at the installation by means of the bolts **83**. Each of the bolts **83** passes through an opening in the bight portion of the associated terminal **81** and is threaded into the associated nut **85**. If it is desired to further bolt and secure the circuit breaker **7** to the stationary assembly **5**, bolts can be passed through the openings **93** (FIG. 2) in the circuit-breaker housing **47**; through the openings **95** (FIGS. 6 and 7) in the insulating blocks **13** and through the openings **17** (FIG. 4) in the supporting pan **9** whereupon nuts can be attached to the bolts under the supporting pan **9** to further fixedly secure the circuit breaker in place.

As will be understood with reference to FIGS. 1, 3, and 9 each of the stab conductors **37** is supported on the associated insulating block **13** in the associated slot **27**. When the stab conductors **37** are so supported, they are in an orientation to be connected to bus bars that will have their flat sides parallel to the side walls of the circuit breaker. In this case, the bus bars would be oriented in the direction of the length of the circuit breaker. If it is desired to mount the stab conductors **37** on the insulating blocks **13** to be connected to bus bars that would be oriented with their flat sides parallel to the ends of the circuit breaker, each of the stab conductors **37** would be mounted in the associated slot **31** (FIG. 6) of the associated opening **23** in the same manner hereinbefore described. Each of the stab conductors **37** extends lengthwise through the associated opening **23**, and the breadth and thickness of each stab conductor **37** is received in the associated slot **27** or **31**, with a snug fit to prevent substantial lateral movement of the bus bar **37** in the associated slot **27** or **31**. As was previously described, substantial lengthwise movement of each bus bar **37** is limited by means of the cotter pins **39** that engage the associated insulating block **13**, and in the case of the center bus bar or stab conductor **37** by means of the cotter pins **39** and insulating tube **41** in the manner hereinbefore described. As was previously set forth, each of the insulating blocks **13** is constructed to receive another stab conductor **109** (FIGS. 13 and 14) in each of the openings **23**. Each stab conductor **109** is provided with less breadth and a greater thickness than the bus bar **37**, and each opening **23** (FIG. 6) is provided with slots **25** (each slot **25** being concentric and coextensive with the associated slot **27**) and slots **29** (each slot **29** being concentric and coextensive with the associated slot **31**) for receiving the stab conductor **109** in either of the two orientations shown in FIGS. 13 and 14 depending upon the orientation of the bus bars at the installation. The slots **25**, **29** are provided to receive the stab conductor **109** (FIGS. 13 and 14) with a snug fit to prevent substantial lateral movement of the stab conductor **109**, and the cotter pins **39** (FIGS. 1–3) and insulating tube **41** prevent substantial lengthwise movement of the stab conductors **109** in the same manner hereinbefore described with reference to the stab conductors **37**.

From the foregoing, it will be understood that there is provided, by this invention, an improved switchgear combination comprising a supporting stationary assembly **5** and a circuit breaker **7**. The combination is readily convertible from a quick-detachable type combination to a bolt-on type combination and from the bolt-on type combination to the quick-detachable type combination. The stationary assembly **5** comprises a plurality of stationary stab conductors supported on a pair of insulating support blocks, and when the combination is adapted for quick-detachable connection a plurality of clip-type terminals are bolted to the circuit-breaker terminal conductors to be moved into and out of quick-detachable connection with the stab conductors as the circuit breaker is moved into and out of the mounted position on the stationary assembly. When it is desired to provide a bolt-on type arrangement, the clip-on type terminals are bolted to the stab conductors to be part of the stationary assembly, and the circuit-breaker terminal conductors are removably bolted to the clip-on type terminals. The insulating housing of the circuit breaker is provided with slots and projections that cooperate with projections and slots on the insulating support blocks to provide adequate insulation between adjacent pole units at the terminals and to support the circuit breaker on the insulating support blocks. Each of the support blocks is provided with opening means formed to support either of two different sized conductors in either of two different orientations.

We claim as our invention:

1. In combination, a circuit breaker comprising an insulating housing and a pair of contacts supported within said housing, means operable to open and close said contacts, said circuit breaker comprising a pair of spaced circuit-breaker terminal conductors with each circuit-breaker terminal conductor being electrically connected to a different one of said contacts, a stationary assembly separate from said circuit breaker and comprising a pair of spaced stationary conductors said stationary assembly comprising a separate terminal for each of said stationary conductors and a separate fastening means for each terminal, each of said fastening means being in a fastening position fastening the associated terminal to the associated stationary conductor and being operable to an unfastening position to unfasten the associated terminal from the associated stationary conductor, means supporting said circuit breaker in proximity to said stationary assembly with each of said circuit-breaker terminal conductors being adjacent a different one of said terminals, a separate connecting means for each of said circuit-breaker terminal conductors in a connecting position removably connecting the associated circuit-breaker terminal conductor to the associated terminal and being operable to a disconnected position to disconnect the associated circuit-breaker terminal conductor from the associated terminal, each of said terminals and the associated stationary conductor comprising a plug-type quick-detachable connecting structure whereby each of said fastening means can be operated to a non-fastening position to unfasten the associated terminal from the associated stationary conductor and each of said connecting means can be maintained in the connecting position so that each terminal will become a part of the circuit-breaker movable with the circuit-breaker into and out of plug-type quick-detachable connection with the associated stationary conductor that is part of said stationary assembly.

2. The combination according to claim **1**, each of said stationary conductors comprising a stab conductor, and each of said terminals comprising a clip-on type terminal clipped onto the associated stab conductor.

3. The combination according to claim **2**, each of said fastening means comprising a bolt-type fastening means for bolting the associated clip-on type terminal to the associated stationary conductor, and each of said connecting means comprising a bolt-type connecting means

for bolting each of said circuit-breaker terminal conductors to the associated clip-on type terminal.

4. The combination according to claim 3, said stationary assembly comprising insulating support means supporting said stationary conductors, and said insulating support means engaging said insulating housing to support said circuit breaker on said insulating support means when said circuit breaker is in the mounted position connected to said stationary conductors.

5. The combination according to claim 2, each of said clip-on type terminals comprising a pair of opposite legs connected by a bight portion, each of said circuit-breaker terminal conductors engaging the bight portion of the associated clip-on type terminal, each of said circuit-breaker terminal conductors and the associated bight portion having aligned openings therein, each of said separate connecting means comprising tapped means on the associated clip-on type terminal and a bolt extending through the associated aligned openings and being threaded into the associated tapped means to removably connect the circuit-breaker terminal conductor to the associated clip-on type terminal.

6. The combination according to claim 5, each of said clip-on type terminals and the associated stationary conductor having aligned opening means therein extending through the two legs of the clip-on type terminal and through the stationary conductor, and each of said fastening means comprising bolt means extending through the opening means in the associated two legs and stationary conductor.

7. The combination according to claim 6, and each of said tapped means comprising a nut captured under the bight portion and between the legs of the associated clip-on type terminal.

8. In combination, a circuit-breaker comprising an insulating housing and a pair of contacts supported within said housing, means operable to open and close said contacts, said circuit breaker comprising a pair of spaced circuit-breaker terminal conductors with each circuit-breaker terminal conductor being electrically connected to a different one of said contacts, a terminal for each of said circuit-breaker terminal conductors, connecting means for each of said circuit-breaker terminal conductors in a connecting position connecting each of said circuit-breaker terminal conductors to the associated terminal and operable to a disconnected position to disconnect the associated circuit-breaker terminal conductor from the associated terminal, a stationary assembly separate from said circuit-breaker and comprising a pair of spaced stationary conductors, said terminals and said stationary conductors comprising plug-type quick-detachable connecting structures with each of said terminals cooperating with a separate one of said stationary conductors, means supporting said circuit breaker in proximity to said stationary assembly with each of said terminals being in plug-type quick-detachable connection with a different one of said stationary conductors, and each of said terminals and the associated stationary conductor being adapted to receive fastening means for fastening the terminal to the associated stationary conductor whereby each of said terminals can be fastened to the associated stationary conductor to become a part of said stationary assembly whereupon said circuit-breaker can thereafter be removably connected to and disconnected from said stationary assembly with said connecting means being operable to connect and disconnect said circuit-breaker terminal conductors with said terminals.

9. The combination according to claim 8, each of said terminals and the associated stationary conductor having aligned opening means therein for receiving a bolt-type fastening means for fastening the terminal to the associated stationary conductor.

10. The combination according to claim 9, each of said stationary conductors comprising a stab-type conductor, each of said terminals comprising a clip-on type terminal for quick-detachable clip-on type connection with the associated stationary stab conductor, and said opening means comprising an opening in each stab conductor and an opening in each leg of the clip-on type terminal which openings are aligned for receiving a bolt-type fastening means when the clip-on type terminal is in quick-detachable clip-on type engagement with the associated stab-type stationary conductor.

11. The combination according to claim 10, and each of said connecting means for removably connecting the associated circuit-breaker terminal conductor to the associated clip-on type terminal comprising a bolt-type connecting means.

12. In combination, a molded insulating support block having opening means therein, a generally flat conducting bar having a length, a breadth and a thickness, means supporting said generally flat conducting bar against substantial lengthwise movement in said opening means, said opening means comprising a first slot means receiving said generally flat conducting bar which first slot means has a breadth dimension and a thickness dimension receiving the opposite breadthwise ends of said generally flat conducting bar with a snug fit to prevent substantial lateral movement of said generally flat conducting bar in said first slot means, said opening means comprising a second slot means coextensive with said first slot means and having a breadthwise dimension less than the breadthwise dimension of said first slot means and a thickness dimension greater than the thickness dimension of said first slot means whereby said insulating support block can support a second generally flat conducting bar that has a breadthwise dimension less than the breadthwise dimension of the first generally flat conducting bar and a thickness dimension greater than the thickness dimension of the first generally flat conducting bar in said second slot means with a snug fit to prevent substantial lateral movement of said second generally flat conducting bar in said second slot means, said opening means comprising a third slot means having the same dimensions as said first slot means and a fourth slot means having the same dimensions as said second slot means which fourth slot means is coextensive with said third slot means and which third and fourth slot means extend breadthwise in a direction normal to the breadthwise direction of said first and second slot means and with all of said first, second, third and fourth slot means having a common center point whereby said insulating support block can support each of two different sized generally flat conducting bars in said opening means in either of two orientations.

13. In combination, a molded insulating support block having opening means therein, a generally flat conducting bar having a length, a breadth and a thickness, means supporting said generally flat conducting bar against substantial lengthwise movement in said opening means, said opening means comprising a first slot means receiving said generally flat conducting bar and having a breadth dimension and thickness dimension receiving the opposite breadthwise ends of said generally flat conducting bar with a snug fit to prevent substantial lateral movement of said generally flat conducting bar in said first slot means, said opening means comprising a second slot means coextensive with said first slot means and having a breadthwise dimension greater than the breadthwise dimension of said first slot means and a thickness dimension less than the thickness dimension of said first slot means whereby said insulating support block can support a second generally flat conducting bar having a breadthwise dimension greater than the breadthwise dimension of the first generally flat conducting bar and a thickness dimension less than the thickness dimension of the first generally flat conducting bar in said second slot means with a snug fit to prevent substantial lateral movement of said second generally flat conducting bar in said second slot means.

14. The combination according to claim 13, said opening means comprising a third slot means having the same dimensions as said first slot means and a fourth slot means coextensive with said third slot means and having the same dimensions as said second slot means which third and fourth slot means extend breadthwise in a direction normal to the breadthwise direction of said first and second slot means and which first, second, third and fourth slot means have a common center point whereby said insulating support block can support each of two different sized generally flat conducting bars in said opening means in either of two orientations.

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