Sept. 7, 1937. H. A. BAKKE ET AL 2,092,631

CONNECTION BLOCK

Filed Jan. 17, 1936 2 Sheets-Sheet 1

Fig. 1.

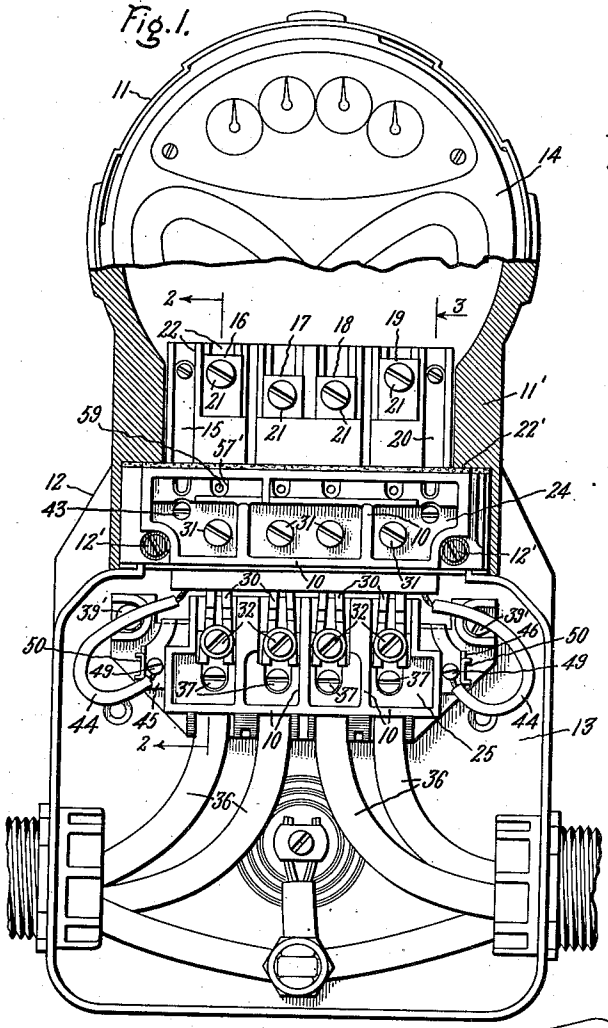


Fig. 10.

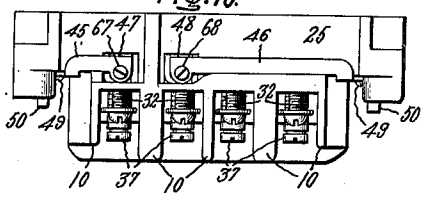


Fig. 2.

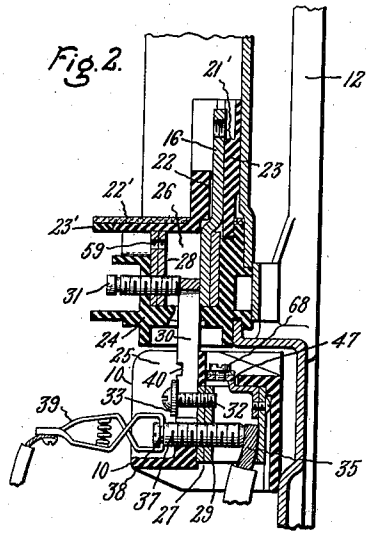


Fig. 3.

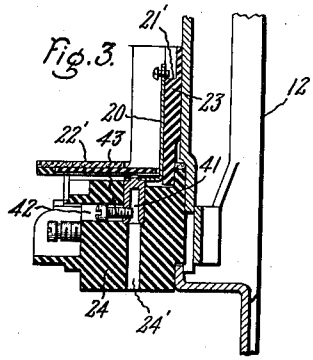
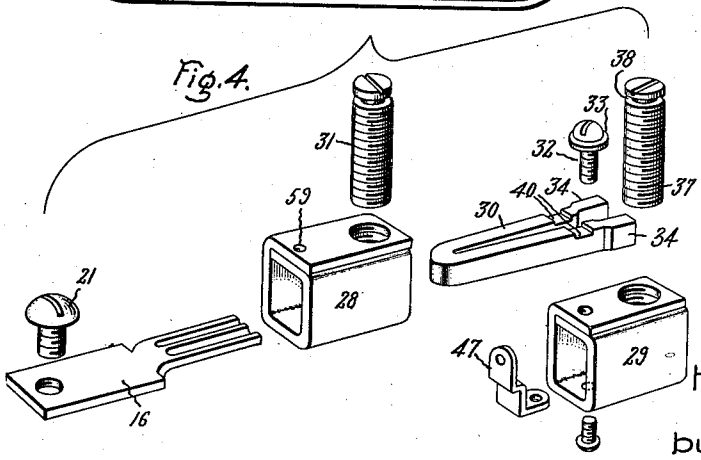


Fig. 4.



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Fig. 5.

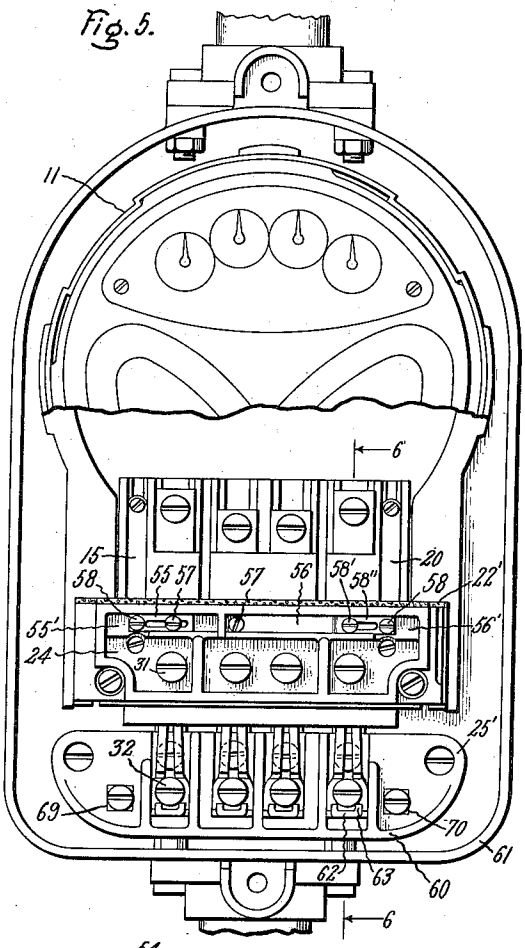


Fig. 11.

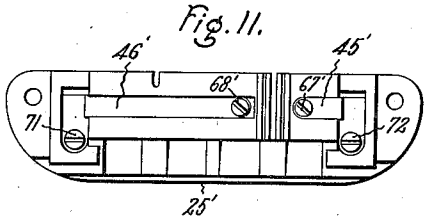


Fig. 6.

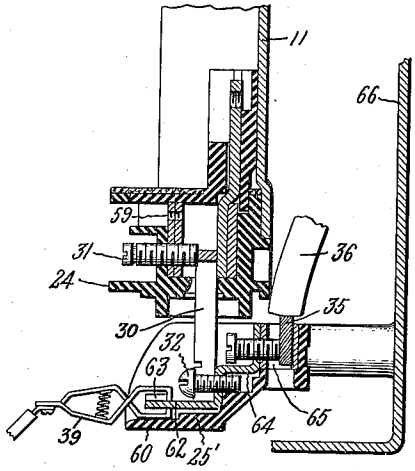


Fig. 7.

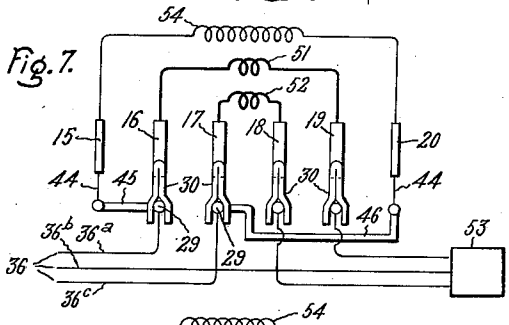


Fig. 8.

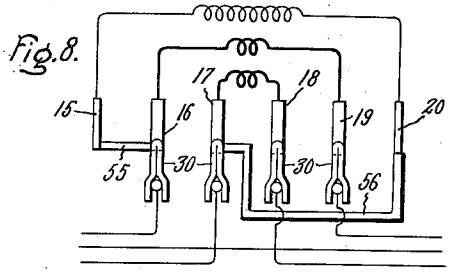
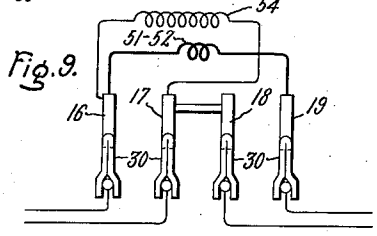


Fig. 9.



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UNITED STATES PATENT OFFICE

2,092,631

CONNECTION BLOCK

Hans A. Bakke, Swampscott, and Harold F. Crotty, Boston, Mass., assignors to General Electric Company, a corporation of New York

Application January 17, 1936, Serial No. 59,580

15 Claims. (Cl. 175—183)

Our invention relates to connection and terminal blocks for electrical devices and to connecting links for use in such blocks.

It is an object of our invention to provide a simple, reliable, easily constructed, and relatively inexpensive connecting and disconnecting device for testing and other purposes in connection with electrical apparatus.

It is another object of our invention to provide a test block for use with electrical meters, instruments, and other devices, which will permit the isolation of the electrical device from an electrical system without handling the permanent wiring of the system.

It is also an object of our invention to provide a terminal block for electrical devices which not only permits electrical isolation of the device from an electrical system for test purposes but will also permit the device to be removed readily from its operating position and replaced therein without the necessity for handling any of the permanent wiring of the electrical system with which the device is used.

It is still another object of our invention to provide a simple arrangement of connecting links which may be moved in and out of position with one hand by an operator and without coming in contact with the electrical circuit.

Other and further objects and advantages will become apparent as the description proceeds.

In carrying out our invention in its preferred form, we provide a connection block of insulating material having two parts, each containing electrical terminals. The terminals of one part are adapted for connection to the internal leads of an electrical device and the corresponding terminals of the other part are adapted for connection to the wiring of an electrical system with which the electrical device is to be used. The terminals of one part are hollow and adapted to receive self-gripping sliding connecting links for making and interrupting electrical connections between the corresponding terminals of the parts of the connection block.

Our invention will be understood more readily from the following detailed description when considered in connection with the accompanying drawings and the features of our invention which are believed to be novel and patentable will be pointed out in the claims appended hereto. In the drawings, Fig. 1 is a front elevation, partially in section, of an electric watt-hour meter and connection box containing a connection block in accordance with one embodiment of our invention and having a portion of the apparatus removed for the sake of clearness; Fig. 2 is a cross-sectional view of the portion of the apparatus of Fig. 1 cut by the plane 2—2; Fig. 3 is a cross-sectional view of the portion of the apparatus of Fig. 1 cut by the plane 3; Fig. 4 is an exploded view illustrating the terminal and connector arrangement of the apparatus of Figs. 1, 2 and 3; Fig. 5 is a front elevation of an enclosed electrical meter with the cover of the enclosure and a portion of the electrical meter removed for the sake of clearness and illustrating another embodiment of our invention; Fig. 6 is a cross-sectional view of the portion of the apparatus of Fig. 5 cut by the plane 6—6 when viewed in the direction of the arrow; Figs. 7, 8, and 9 are diagrams representing the circuits of a six-terminal three-wire meter, a four-terminal three-wire meter, and a two-wire meter, respectively; Fig. 10 is a top view of the lower part of the connection block of Fig. 1; and Fig. 11 is a rear view of the lower part of the connection block of Fig. 5.

Referring now more in detail to the drawings in which like reference characters are utilized to designate like parts throughout, in Figs. 1 to 3, we have shown one embodiment of our invention employed in connection with an electric meter and connection box of the type disclosed in the copending application of Isaac F. Kinnard, filed January 17, 1936, Serial No. 59,598 and assigned to the same assignee as the present invention. An electrical watt-hour meter 11 is shown mounted upon a frame 12 including a terminal connection box 13. The meter 11 is of a well known type having a cup-shaped glass protecting cover 14. The lower portion of the glass cover 14 has been broken away and the mechanism of the meter 11 has been removed in order to show more clearly the connection strips of the meter. It will be understood that watt-hour meters are customarily provided with a potential coil, and one or two current coils, depending upon whether the meter is to be used on a two-wire or a three wire electric system. These coils are not shown in Fig. 1, but we have illustrated the conducting strips 15—20 utilized for bringing out the connections from such coils. The two ends of one current coil are connected to one pair of copper strips 16 and 19 by means of screws 21 and, in a similar manner, the other current coil is connected to the copper strips 17 and 18. The lighter copper strips 15 and 20 are provided for bringing out the connections of the potential coil. All of the strips 15 to 20 are carried in suitable recesses 22 of an insulating plate 23. The recesses 22 have shoulders 21' adapted to engage the ends of screws 21, thus preventing the terminal strips 15 to 20 from dropping out of their recesses 22. A gasket 22' of cork or other suitable material may be provided between the lower portion 23' of the plate 23 and the portion of the meter base 11' against which the insulator plate portion 23' abuts.

The connection block, itself, to which our application particularly relates is in two parts, 24 and 25, which are preferably two independent

pieces for reasons which will be explained hereinafter, but the parts 24 and 25 need not necessarily be separate and may be integral if desired. Each of the parts 24 and 25 has suitable cavities or chambers 26 and 27, containing current terminals 28 and 29, respectively, formed from sheets of electrical conducting material. In order to close the tops of the cavities 26, the lower portion 23' of the insulating plate 23 is arranged to fit into the top portion of the insulating piece 24 as shown in Fig. 2. We have found that the construction of our connection block permits making the meter terminals 28 and the line terminals 29 identical, thereby simplifying manufacturing operations and reducing the number of different parts required to be kept in stock by meter manufacturers or power companies using electrical meters. The connection block pieces 24 and 25 have raised or rib portions 10 forming separate pockets for external conducting members between which difference in potential may exist. Connectors 30 are provided for connecting corresponding terminals of the parts 24 and 25.

The connectors 30 are composed of resilient electrically-conducting material and comprise long narrow U-shaped links somewhat similar to hairpins in shape. The terminals 28 being hollow, they provide openings in which the connecting links 30 may be caused to slide and the dimensions are such that the connectors 30, which are sprung apart in a wedge shape, tend to wedge themselves resiliently into the hollow terminals 28 and thus hold themselves frictionally in any position in which they may be left in the terminals 28. The strips 16, 17, 18, and 19 for bringing out the electrical connections from the current windings are also slipped into the terminals 28. In order to secure good electrical connections when it is desired to have the electrical circuits closed, screws 31 are provided which are carried in threaded holes in the meter terminals 28. As seen in Fig. 2, when the link 30 is slid into its lower position, the screw 31 serves to clamp the upper end of the link 30 against the current lead or strip 16 which, in turn, is clamped against the back of the terminal 28.

In order to insure good electrical contact between the connecting links 30 and the line terminals 29, suitable screws 32 having relatively large diameter heads 33 are provided. The lower ends 34 of the connecting links 30 may be spread somewhat in order to form forks fitting around the shanks of the screws 32, and the heads 33 of these screws serve to clamp the fork portions 34 against the terminals 29. The terminals 29 in the lower part 25 of the connecting block being hollow, they provide openings for receiving the ends 35 of the line conductors 36, serving to connect the meter with the electrical system in which the consumption of energy is to be measured. Suitable screws 37 cooperating with threaded holes in the terminals 29 serve to clamp the ends 35 of supply and load line conductors 36 against the back of the terminals 29 and make close electrical contact.

Annular slots 38 may be provided under the heads of the screws 37 to receive the jaws of test clips 39, which may be used for the purpose of providing jumpers or for making connections to watt-hour meter standards when the meter 11 is removed or when it is being tested. It will be apparent that the slots 38 prevent test clips 39 from being jerked off and either making electrical contacts or forming arcs causing damage to the apparatus or injury to the operators.

In order to promote the safety and convenience of those whose duty it is to test or disconnect the meter 11, the connecting links 30 are preferably provided near their forked ends 34 with notches 40 which permit sliding the links 30 up and down by means of a screw driver. It will be understood that screw drivers with insulated handles are to be employed and, if this is done, the meter 11 can be connected or disconnected by an operator without touching any live terminals. Furthermore, the arrangement is such that the operator can open and close the connections with only one hand, thus providing a further precaution against closing an electrical circuit through his body.

When it is desired to open the electrical circuit, the connection links 30 are moved one at a time from the lower position shown in Fig. 2 to an upper position with the forked portion 34 disengaged from the screw 33 and the terminal 29. It will be understood, of course, that the screws 31 and 32 are first loosened and the link 30 is then slid upwards by means of a screw driver with its point inserted in the slot 40. If desired, the screws 31 may then be tightened to guard against the link 30 being jarred out of its upward position in the terminal 28, although this is generally unnecessary as the sides of the resilient terminals 30 become wedged between the inner surfaces of hollow terminal chambers 28. It is evident that this operation may be performed with one hand since the meter 11 and the connection box 13 will be attached to the wall or panel on which the apparatus is mounted and need not be held.

The insulated pieces 23, 24 and 25 may be composed of any suitable molded insulating compound and, therefore, no difficulty will be experienced in producing them in the shape shown. It will be seen that the screws 31 and 37 serve to hold the terminals 28 and 29 in the cavities 26 and 27, respectively, and that the assembly of the connection block is a relatively simple operation.

When the connection block is composed of the two separate pieces 24 and 25, the connection block also provides a means for disconnecting the meter 11 and permitting it to be removed from the connection box 13 and from the wall or panel on which it is mounted without any necessity for the operator to handle the line wires 36 of the electrical system or to touch any live parts. The part 24 is for this purpose fastened in the meter base 11' by means of screws, not shown, and forms a part of the meter, serving as a terminal block. In fact, if desired, the meter 11 with the terminal block 24 may be used in the conventional manner in other installations as an indoor unprotected meter. The tips of line wires, similar to that shown at 35, are under such circumstances inserted in the terminal 28 and fastened by the screw 31 in the manner illustrated by terminals 29 and the screw 37.

The insulating piece 25, on the other hand, which is added when connecting and disconnecting or testing facilities are desired, is fastened to the back of connection box 13 by screws 39' so that, when the screws 31 and 37 are loosened and the links 30 are free, being in either their upper or lower positions, the meter 11 may be removed from its position by removing its supporting screws 12' and moving it upwards, and it will be unnecessary to remove or

handle any of the line wires 36. In case the line wires 36 are alive, it will be preferable, of course, to move the connectors 30 upwards in their upper position in the terminal block 24 before removing or replacing the meter 11 in order that no electrical circuits will be made or broken while the meter is being removed or replaced.

On the three-wire systems of some electric distribution companies, it is customary to bring all six leads from the two current coils and the potential coil of the meter 11 to the outside for testing purposes. For systems where this practice prevails, we may provide openings 24' (Fig. 3) in the insulating piece 24 opposite the potential lead-strips 15 and 20. Hollow cylindrical conducting pieces 41 are provided in the upper ends of the openings 24' and the potential winding lead strips 15 and 20 are bent around to make contact with the pieces 41, preferably being riveted thereto or otherwise fastened. Transverse openings 42 are also provided in the insulating piece 24 to accommodate screws 43 carried by the conducting pieces 41. The openings 41 permit separate insulation covered flexible leads 44 for test purposes to be inserted and held in contact with the potential windings by the screws 43. Suitably bent electrically-conducting strips 45 and 46 are carried on the insulated piece 25 and are adapted to make contact with the two lefthand terminals 29 (see Figs. 1 and 10). For this purpose, two of the lefthand terminals 29 have angular strips 47 and 48 fastened therein (Figs. 2 and 4). The conducting strip 45 is screwed to the angular strip 47 (and the conducting strip 46 is screwed to the angular strip 48.. The conducting strips 45 and 46 are provided with screws 49 for fastening the lower ends of the flexible leads 44 and are provided with winged lugs 50 for receiving test clips of the jaw type similar to the clip 39.

The electrical circuits of the six-terminal arrangement illustrated in Fig. 1 are shown schematically in Fig. 7. It will be seen that circuits through the outer line conductors 36*a* and 36*c* are completed through the sliding links 30 and the meter current coils 51 and 52 to the load 53. The potential winding 54 of the meter is connected to the outer pair 36*a* and 36*c* of the line conductors 36 on the input or supply side through the strips 15 and 20, the flexible leads 44, the conducting strips 45 and 46, and the line terminals 29.

If the electric power distributing companies utilizing the meters do not desire to have separate potential connections brought out, the strips 45 and 46, furnishing potential posts, may be omitted. The circuit from the input side of the line to the potential windings is then completed as illustrated in Fig. 5 by straps 55 and 56, the strap 55 providing an electrical connection between the potential lead 15 and the lefthand terminal 28 and the strap 56 providing an electrical connection between the potential lead 20 and the terminal 28 adjacent to the lefthand terminal. The electrical circuits are represented in Fig. 8. The straps 55 and 56 may be electrically connected to the leads 15 and 20 and the terminals 28 in any suitable manner, as by means of the screws 57 engaging threaded openings 59 (Fig. 2) in the terminals 28, and screws 58 threaded into the strips 15 and 20 (Fig. 5). If desired, the potential connections may be made in such a manner as to be readily opened, as by making the straps 55 and 56 slidable or with portions such as a portion 58'' slidable in the slots 55' and 56' in the insulating piece 24 or simply by removing the screws 57. The screws 57 (Fig. 5) pass through openings 57' (Fig. 1) in the piece 24 to engage the threaded openings 59 in the terminals 28. The screw 58', however, is threaded only into an insulating plug, not shown.

In case the meter is used on a two-wire circuit, it will be understood that the current windings 51 and 52 may be connected in series or a single current winding may be employed, which is connected to the outer current leads 16 and 19, the two inner leads 17 and 18 being short-circuited. In this case, the potential winding 54 is connected directly to the current leads 16 and 17 and separate potential leads 15 and 20 are not needed. The circuit connections are shown schematically in Fig. 9.

Our connection blocks are not limited to use in meters of the type illustrated in Fig. 1 but may also be employed in any other desired type of electrical apparatus. In Fig. 5, we have illustrated the use of a connection block constructed in accordance with our invention but with the lower piece 25' modified to conform to the space available in a meter casing of the type disclosed in United States Design Patent 94,322 to Bakke. It will be observed that, in this case, the piece 25' has its vertical dimension diminished and an insulating ridge 60 is provided around the piece 25' to guard against short circuits between the enclosing casing 61 and the exposed live parts in the piece 25' or test clamps which may be employed for testing the meter. To facilitate the connection of test clamps and to prevent them from being jerked loose, we provide lugs 62 having transverse projections or wings 63 similar to the potential lugs 50 shown in Fig. 1.

In the arrangement of Figs. 5 and 6, a modified type of terminal 64 is employed in the lower insulated piece 25'. This terminal carries a large headed screw 32, as in the arrangement of Figs. 1 to 4, and has a hollow portion 65 providing an opening for receiving the tip 35 of one of the line conductors 36. The portion 65, however, is at the back of the insulating piece 25' and the insulating piece 25' has openings extending both upward and downward, such that line terminal tips 35 may be inserted either from below or from above. In case they are inserted from above, they may be passed along the back of the meter 11. In installations of the type illustrated in Figs. 5 and 6, the meters 11 are ordinarily spaced somewhat from the back 66 of the enclosing casing 61.

For the sake of convenience, the arrangement of our connection block for six-terminal service has been shown in Fig. 1 and the arrangement for four-terminal service has been shown in Fig. 5, which also illustrates a modified embodiment of the invention. However, the embodiment of Fig. 1 may be employed in four-terminal service by adding the straps 55 and 56 of Fig. 5, omitting the flexible leads 44 and omitting or not using the potential posts 45 and 46. Similarly, the embodiment of Fig. 5 may be employed in six-terminal service by removing or disconnecting the straps 55 and 56, and adding flexible leads 44 and potential posts 45' and 46'. The bent strips forming the potential posts 45' and 46' of Figs. 5 and 11 differ from the corresponding parts 45 and 46 of Figs. 1 and 10 in that the strips 45' and 46' pass along the back of the insulating piece 25' instead of along the top. In either

type of insulating piece, 25 or 25', knock-outs are provided in the portion of the insulating wall between the terminals 29 or 65 and the ends of the bent strips 45 and 46 or 45' and 46' to permit making openings for the screws 67 and 68 or 67' and 68'. In the embodiment of Figs. 1 and 10, the strips 45 and 46 are connected to the angular piece 47 and 48 by means of screws 67 and 68, respectively, whereas, in the embodiment of Figs. 5 and 11, the strips 45' and 46' are connected directly to two of the terminals 29 by means of the screws 67' and 68', respectively.

In the embodiment of Figs. 5 and 11, the bent strips 45' and 46' may, instead of coming through to the front of the piece 25', be screwed to internally threaded metal inserts 69 and 70 in the piece 25' by means of screws 71 and 72. The inserts 69 and 70, may, if desired, carry clip-holding lugs, such as those shown at 50 in Fig. 1. We have herein shown and particularly described certain embodiments of our invention and certain methods of operation embraced therein for the purpose of explaining its principle and showing its application but it will be obvious to those skilled in the art that many modifications and variations are possible and we aim, therefore, to cover all such modifications and variations as fall within the scope of our invention which is defined in the appended claims.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. A connection block for an electrical device comprising in combination, insulating means in two parts, each carrying a terminal of conducting material, and a U-shaped connector of resilient conducting material, one of said terminals having an opening adapted to receive said connector slidably in frictional engagement with the open end of said U extending toward the other of said terminals, said latter terminal carrying a screw with a head adapted to clamp down the open end of said U when said connector is slid toward said latter terminal.

2. In a connection block for an electrical device, a pair of terminals, one of which has an opening facing toward the other, and a connector resiliently receivable in said opening and slidable in said opening away from and toward the other of said terminals, said latter terminal including means for clamping down said connector when slid toward said latter terminal, said connector being of such length as to remain partially within said opening when engaging said latter terminal.

3. In a connection block for an electrical device, a pair of terminals, one of which has an opening facing toward the other, and a connecting link resiliently receivable in said opening, slidable in said opening away from and toward the other of said terminals, and having, in a portion protruding from said opening, a transverse slot for receiving an implement for sliding said link, said latter terminal including means for engaging said connecting link when slid toward said latter terminal, said connecting link being of such length as to remain partially within said opening when engaging said latter terminal.

4. In a connection block for an electrical device, a pair of terminals, one of which has an opening facing toward the other, and an elongated U-shaped connecting link of resilient electrically conducting material receivable in said opening, resiliently spreading against the sides of said opening, slidable in said opening away from and toward the other of said terminals with the open portion of the U extending toward the other of said terminals, said latter terminal including means for engaging said connecting link when slid toward said latter terminal, said connecting link being of such length as to remain partially within said opening when engaging said latter terminal.

5. In a connection block for an electrical device, a pair of terminals, one of which has an opening facing toward the other, and an elongated U-shaped connecting link of resilient electrically conducting material, resiliently receivable in said opening, tending to spread against the sides of said opening, slidable in said opening away from and toward the other of said terminals with the open end of the U toward the other of said terminals and having a tool-receiving notch in a portion protruding from said opening to facilitate sliding the link, said latter terminal including means for engaging said connecting link when slid toward said latter terminal, said connecting link being of such length as to remain partially within said opening when engaging said latter terminal.

6. In a connection block for an electrical device, a pair of terminals, one of which has an opening extending in alignment with and toward an outer surface of the other, and a connector resiliently receivable in said opening and slidable in said opening away from and toward the other of said terminals, said latter terminal being positioned so that said outer surface of said connector is coplanar with said surface of said latter terminal, said latter terminal including means for securing said connector when slid toward said latter terminal, said connector being of such length as to remain partially within said opening when engaging said latter terminal.

7. In a connection block for an electrical device, a pair of terminals, one of which has an opening extending vertically toward the other, and an elongated U-shaped connector of resilient electrically conducting material receivable in said opening, tending to spread against the sides thereof, and slidable in said opening away from and toward the other of said terminals, said latter terminal being horizontally offset so as to make its front surface coplanar with the back surface of said connector, said latter terminal including means for clamping said connector when slid toward said latter terminal, said connector being of such length as to remain partially within said opening when engaging said latter terminal.

8. In a connection block for an electrical device, a pair of terminals, one of which has an opening facing toward the other, and an elongated U-shaped connector of resilient electrically conducting material receivable in said opening, tending to spread against the sides thereof, and slidable in said opening away from and toward the other of said terminals, the open end of said connector being spread to form a fork, said latter terminal carrying a large headed screw adapted to receive the forked portion of said connector under its head and to clamp the same to the latter terminal when the connector is slid toward said latter terminal, said connector being of such length as to remain partially within said opening when engaging said latter terminal.

9. A movable connecting link for an electrical connecting and disconnecting device comprising, a strip of resilient electrically conducting material bent in the middle around a short radius arc approximately 180 degrees in length to form an elongated U, the portion of said strip at the open end of said U being split further apart

than the remainder of said U in order to provide a portion adapted to engage a clamping screw, the portion of said connector near said clamping screw receiving portion being transversely slotted to receive the tip of a screw driver.

10. A connection block for a three-wire four-terminal type watt-hour meter having two current coils and a potential coil with two leads from each of said coils, said connection block comprising in combination, an insulating member having two adjacent groups of four chambers each, current terminals in said chambers, slidable current connecting links, and potential connecting straps, the current terminals in one of said groups of chambers each being connectible to one of the leads from the current coils and having an opening adaptable to receive one of said connecting links in resilient engagement, slidable toward and away from a corresponding current terminal in one of said second group of chambers, said links being of such length as to remain in engagement with the terminals of the first group when slid toward and in engagement with the terminals of the second group, one of said potential straps being connected at one end to one of said potential-coil leads and extending along said insulating member with the other end of said strap over one of said current terminal receiving chambers, the terminal therein having a screw through said insulating member connecting said terminal and said potential strap, the other of said potential straps being connected at one end to the other of said potential-coil leads and having its other end over another of said terminal receiving chambers, the terminal in said latter chamber also having a screw through said insulating member and connecting the other end of the latter potential strap to said latter current terminal.

11. A connection block for a three-wire six-terminal type watt-hour meter having two current coils and a potential coil with two leads from each of said coils, said connection block comprising in combination, an insulating member having two adjacent rows of four chambers each, current terminals in each of said chambers, being meter terminals in one row and line terminals in the other row, slidable current-connecting links, a pair of potential connection strips with potential posts, and a pair of flexible potential connecting links, said current terminals identified as meter terminals, each being electrically connected to one of the current-coil leads and having an opening adapted to receive one of said connecting links in resilient engagement slidable toward and away from a corresponding line terminal, said links being of such length as to remain in engagement with the current terminals when slid toward and in engagement with the line terminals, one of said potential connection strips being electrically connected to one of said line terminals and the other being electrically connected to another of said line terminals, said flexible potential connecting links each being connectible at one end to one of the potential leads and connectible at the other end to one of the potential posts.

12. A separable connection block for an electrical device having current-conducting leads therein, said connection block comprising a pair of cooperating insulating pieces, each having a row of chambers, device terminals in each of the chambers of one piece, line terminals in each of the chambers of the other piece, and slidable connecting links, each of said device terminals being electrically connected to one of said leads and having an opening adapted to receive one of said connecting links in resilient engagement, slidable toward and away from a corresponding line terminal, said links being of such length that, if the two pieces of said block are together, the links will remain in engagement with the device terminals when slid toward and in engagement with the line terminals, said line terminals being connected to the permanent wiring of an electrical system.

13. A separable connection block for an electrical device having current-conducting leads therein, said connection block comprising a pair of cooperating insulating pieces, each having a row of chambers, terminals in each of the chambers of one of said pieces for connection to the leads of the electrical device, line terminals in each of the chambers of the other piece for connection to the permanent wiring of an electric system, and slidable connecting links, each of the terminals in one of said pieces having an opening adapted to receive one of said connecting links in resilient engagement, slidable toward and away from a corresponding terminal in the other piece, said links being of such length that, if the two pieces of said block are together, the links will remain in engagement with the terminals supporting them when slid toward and in engagement with the corresponding terminals in the other piece.

14. In combination, an electrical device having a plurality of leads and a test block for said device comprising an insulating upper piece, a plurality of terminals supported therein and each attached to one of said leads, a removable insulating lower piece, a plurality of terminals supported therein and connectible to the conductors of an electrical circuit with which said device is to be used, and a plurality of connecting links, the terminals of said upper piece having openings therein toward corresponding terminals of said lower piece, said connecting links being resiliently removable in said opening, slidable therein toward and away from the positions of the terminals of said lower piece when the two pieces are together, and of such lengths that, if said two pieces are together, the links will remain in engagement with the terminals of the lower piece when slid toward and in engagement with the latter terminals.

15. In combination with an electric wiring system having permanent wiring, a removable electrical device for use with said system having a connection block with two parts, and a plurality of connecting links, one part of said connection block being rigidly attached to said device and including terminals electrically connected to said device, and the other part of said terminal block being independently separable from said device and including terminals connected to the wiring of said electrical system, the terminal in one part of said terminal block having openings therein adapted to receive said connecting links resiliently, said connecting links being slidable in and out of said opening away from and toward the positions occupied by the terminals in the other block parts when the two parts are together, said links also being of such length that, if said two block parts are together, the links remain in engagement with one terminal when slid toward and in engagement with a corresponding terminal of the cooperating block part.

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HAROLD F. CROTTY.

CERTIFICATE OF CORRECTION.

Patent No. 2,092,631. September 7, 1937.

HANS A. BAKKE, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, first column, line 17, claim 10, for the word "adaptable" read adapted; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 19th day of October, A. D. 1937.

(Seal)

Henry Van Arsdale.
Acting Commissioner of Patents.