July 19, 1927. 1,636,277

R. B. BENJAMIN

PANEL BOARD

Filed June 14, 1920 2 Sheets-Sheet 1

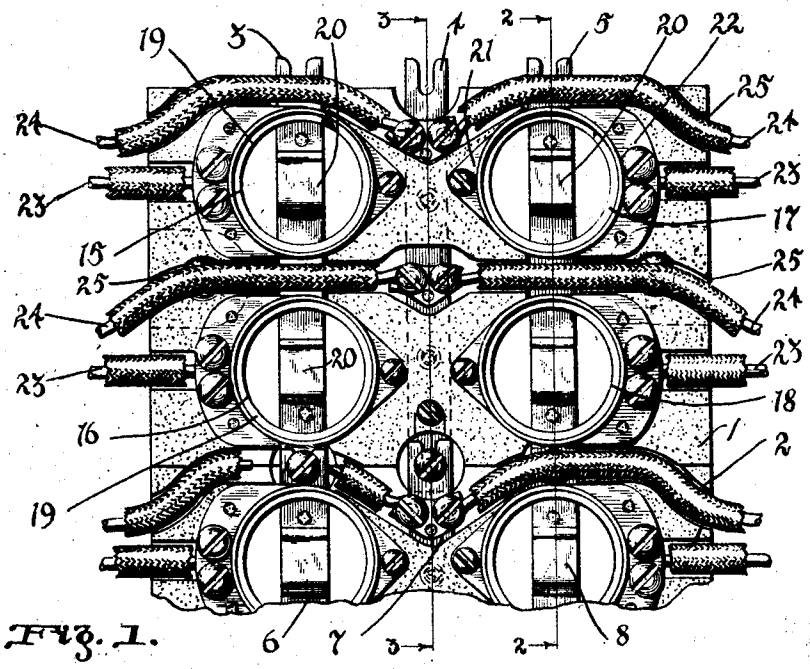


Fig. 1.

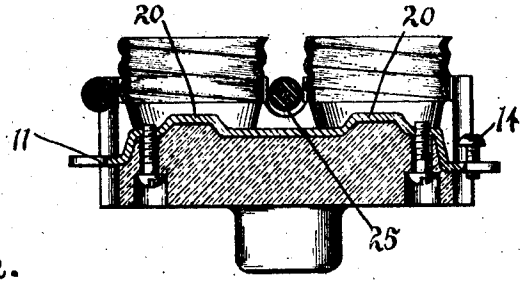


Fig 2.

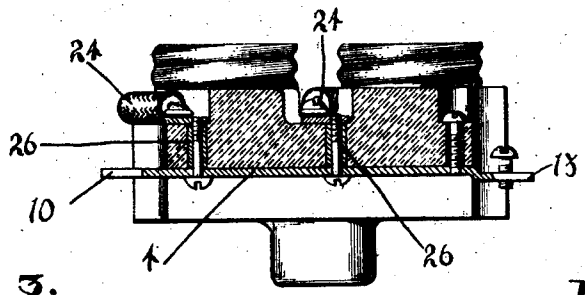


Fig. 3.

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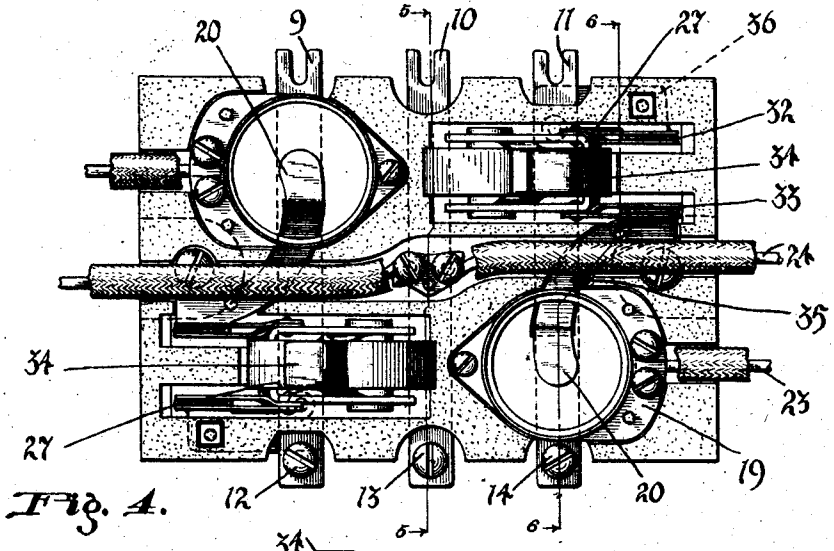


Fig. 4.

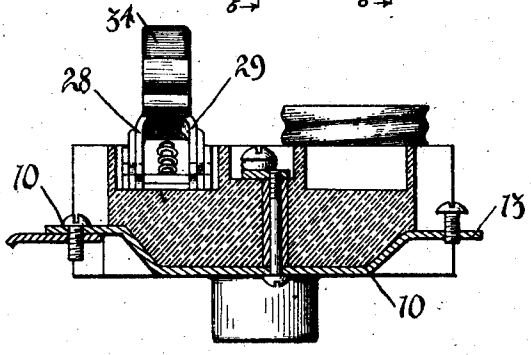


Fig. 5.

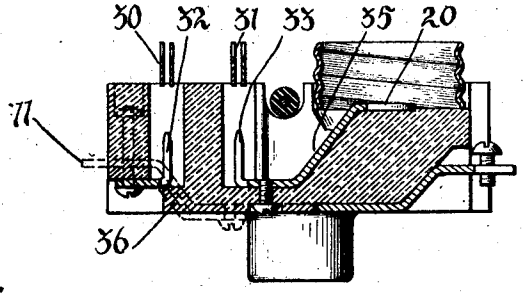


Fig. 6.

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UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PANEL BOARD.

Application filed June 14, 1920. Serial No. 388,830.

My invention relates to panel boards, having particular relation to panel boards which are used in residences or other small buildings, and has for its object to provide devices of the character designated which shall embody in a small space all of the requisite elements, whereby a number of branch circuits may be derived from main bus-bars.

For a better understanding of my invention reference may be had to the accompanying drawings in which:

Fig. 1 is a plan view of one base section and a portion of another base section embodying my invention, the manner in which the bases are made interchangeable and standard being illustrated;

Figs. 2 and 3 are elevational, sectional views of the first mentioned base section of Fig. 1, taken on lines 2—2 and 3—3 respectively;

Fig. 4 is a plan view of a base section which is interchangeable with the sections shown in Fig. 1 and which embodies switching elements as well as receptacles; and

Figs. 5 and 6 are elevational, sectional views of the base section shown in Fig. 4, taken on the lines 5—5 and 6—6, respectively.

The primary object of my invention, as above intimated, is to provide insulating base sections having bus-bars attached thereto and embodying appropriate fuse receptacles whereby branch circuits may be derived from the bus-bars. In this connection, I also provide means whereby different characteristics may be imparted to the base sections, but whereby they are all of a standard size and interchangeable one with the other. If desired, a number of said sections may be connected to form a composite panel board.

As will hereinafter appear, I impart additional advantages to base sections constructed in accordance with my invention, by making the center contacts of the receptacles mounted thereupon integrally with the bus-bars to which they are adapted to connect predetermined branch circuits. By so constructing an insulating base section embodying receptacles, a minimum number of parts are employed, and moreover, the contact resistance between various elements is reduced to a minimum. Furthermore, in connection with the hereinafter described insulating base I provide shell contacts which are constructed in a novel manner to embody outwardly projecting flanged portions and wherein the body portion is of considerably shorter length than in those heretofore employed. This last provision results in a considerable saving of material in comparison with the shell and center contacts which have heretofore been embodied in receptacles which were employed in an analogous relation.

In forming a base section embodying switching mechanism, I provide a novel-shaped member which integrally embodies a center contact for the receptacle and a pole for the switching means used. The other pole of the switching means is formed integrally with a conducting member which is attached to the bus-bar from which it is desired to derive the circuit connected to the receptacle in question.

Referring now more particularly to the accompanying drawings,—insulating base members 1 and 2 are shown, in Fig. 1, as forming portions of a composite panel board. Three bus-bars, 3, 4 and 5 respectively, are positioned in substantially parallel relation on the base 1, while corresponding bus-bars 6, 7 and 8 are associated with the base 2, the buses 3 and 6, 4 and 7, and 5 and 8, respectively, being connected together at their ends by means of cooperating screw-receiving notches 9, 10 and 11, and securing means 12, 13 and 14, as shown, (this relationship may be better observed in Fig. 4).

Mounted on the base 1 are receptacles 15, 16, 17 and 18, each embodying a shell contact 19 and center contact 20, it being observed, by reference to Fig. 2, that the center contacts 20 are integral portions of the bus-bar 5, and that the shell contacts 19 are considerably shorter than usual and are provided with outwardly projecting flange portions 21 and 22 which are utilized to secure the receptacles to the leads of branch line circuits, indicated at 23—23. These leads are connected to the shell contacts as shown, while the other leads 24—24 of the branch line circuits are connected to the centrally disposed bus-bars 4, the latter leads being disposed in depressed portions 25 formed in the base 1. It will be further noted that the centrally disposed and, as I have assumed for purposes of illustration, neutral, bus-bar 4, is positioned on the under side of the base 1 and that connection therewith is made

between the leads 24 and the bus 4 through contacting members 26.

Referring now to Figs. 4, 5 and 6, the manner in which I embody switching means in a base member, interchangeable with the bases heretofore described, is illustrated. All of the elements, with the exception of switching means 27, are designated as hereinbefore. These switching means comprise conducting arms 28 and 29 carrying clip portions 30 and 31, respectively, the latter being adapted to engage switch-poles 32 and 33, respectively. The handles 34 are provided for manual operation of the switch. The center contacts 20 are formed integral with the member 35 which is shaped to provide the pole 33, at the other end thereof from the center contact 20.

The other pole 32 comprises a right-angled portion of a conducting member 36 which is connected directly to the bus-bar 11. The outgoing branch line circuit is traced, therefore, from the bus-bar 11 through the member 36, the switch-pole 32, the conducting portions of the switch 27 and the pole 33, through the member 35 to the center contact 20, through a fuse which may be inserted in the receptacle to the shell contact 19 and thence out through the lead 23.

A panel board may be constructed, therefor, embodying as many of my interchangeable base sections as is desired. If it is desired to insert a switching means in some of the branch circuits this may be done by using a section as is illustrated in Figs. 4, 5 and 6 for the branch line circuits in question, it being observed that the interchangeable and the standard portions of the base section are, in no wise, altered by the embodiment therein of switching means. It will, moreover, be observed that the switching means have been so embodied in the base sections that a minimum number of parts are necessitated and, therefore, the contact resistance occasioned by the use in this connection of a comparatively complex switching device is eliminated.

While I have described but two embodiments of my invention it is apparent that many modifications therein may occur to those skilled in the art, and I desire, therefore, that my invention be limited only by the showing of the prior art or by the scope of the appended claims.

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

1. In a panel board, a base section having buses arranged thereupon in substantially parallel relation, means for connecting the outside buses to branch lines comprising receptacles having shell and center contacts and switches, said center contacts being formed integrally with one pole of said switches and said shell contacts embodying outwardly extending flanged portions, the other pole of said switches comprising integral conducting members connected to said outside buses, and means admitting of the connection of the branch lines to the central bus.

2. In a panel board, a base section having bus bars arranged thereupon in substantially parallel relation, a switch positioned on said base over the outside bar, a receptacle connected to said switch, a branch circuit derived from said section and controlled by said switch, one line thereof being connected to said receptacle and the other line thereof being connected directly to the central bar, and means forming a channel on said base to receive said lead connected directly to the central bar.

3. In a panel board, a base section having bus bars arranged thereupon in substantially parallel relation, a switch positioned on said base over the outside bar, a receptacle also positioned over said bar and connected to said switch, a branch circuit derived from said section and controlled by said switch, one line thereof being connected to said receptacle and the other line thereof being connected directly to the central bar, and means forming a channel on said base extending between said switch and said receptacle to receive said lead connected directly to the central bar.

4. In a panel board, an insulating base, neutral and pressure bus-bars in substantially parallel relation thereupon, a fuse receptacle and a switch positioned on said base over one of said pressure bars, said switch controlling a circuit derived from said neutral bar and the bar associated with said switch and receptacle, and means forming a channel extending between said switch and fuse to said neutral bar to receive a lead attached to said neutral bar.

5. In a panel board, an insulating base, neutral and pressure bus-bars in substantially parallel relation thereupon, a fuse receptacle and a switch positioned thereon and connected in series with one another and one of them connected to a pressure bar, and both being over said pressure bar, said switch controlling a circuit derived from said neutral bar and the bar associated with said switch and receptacle, means forming a channel extending between said switch and receptacle to said neutral bar to receive a lead attached to said neutral bar, and a binding means directly on said neutral bar to receive said lead.

6. In a panel board, an insulating base, neutral and pressure bus-bars in substantially parallel relation thereupon, a fuse receptacle and a switch positioned on said base over said pressure bar, said switch being connected to said pressure bar and to said receptacle, a branch circuit derived from

said base, one lead thereof to the load being connected to said receptacle whereby said circuit is controlled by the switch, and the return from the load being unfused and connected directly to the neutral bar, and means forming a channel in said base extending between said switch and said receptacle to receive said return lead.

7. A panel board construction comprising an insulating base, two parallel pressure bus-bars mounted on the rear of said base, a neutral bus-bar intermediate and parallel to said pressure bus-bar mounted on the rear of said base, two rows of branch circuit controlling devices mounted on the front side of said insulating base, substantially opposite and electrically connected with the pressure bus-bars, respectively, said circuit controlling devices being in rows both longitudinally and transversely of the panel, and wiring terminals for the neutral bus-bar mounted substantially at the intersection of a vertical line between the vertical rows with a horizontal line between the horizontal rows, said panel being provided with passages leading horizontally from said neutral wiring terminals in both directions between said circuit controlling devices to the edges of the board.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.