June 20, 1950 W. ROBERTSON ET AL 2,511,995

PANEL BOARD

Filed Aug. 6, 1948 4 Sheets-Sheet 1

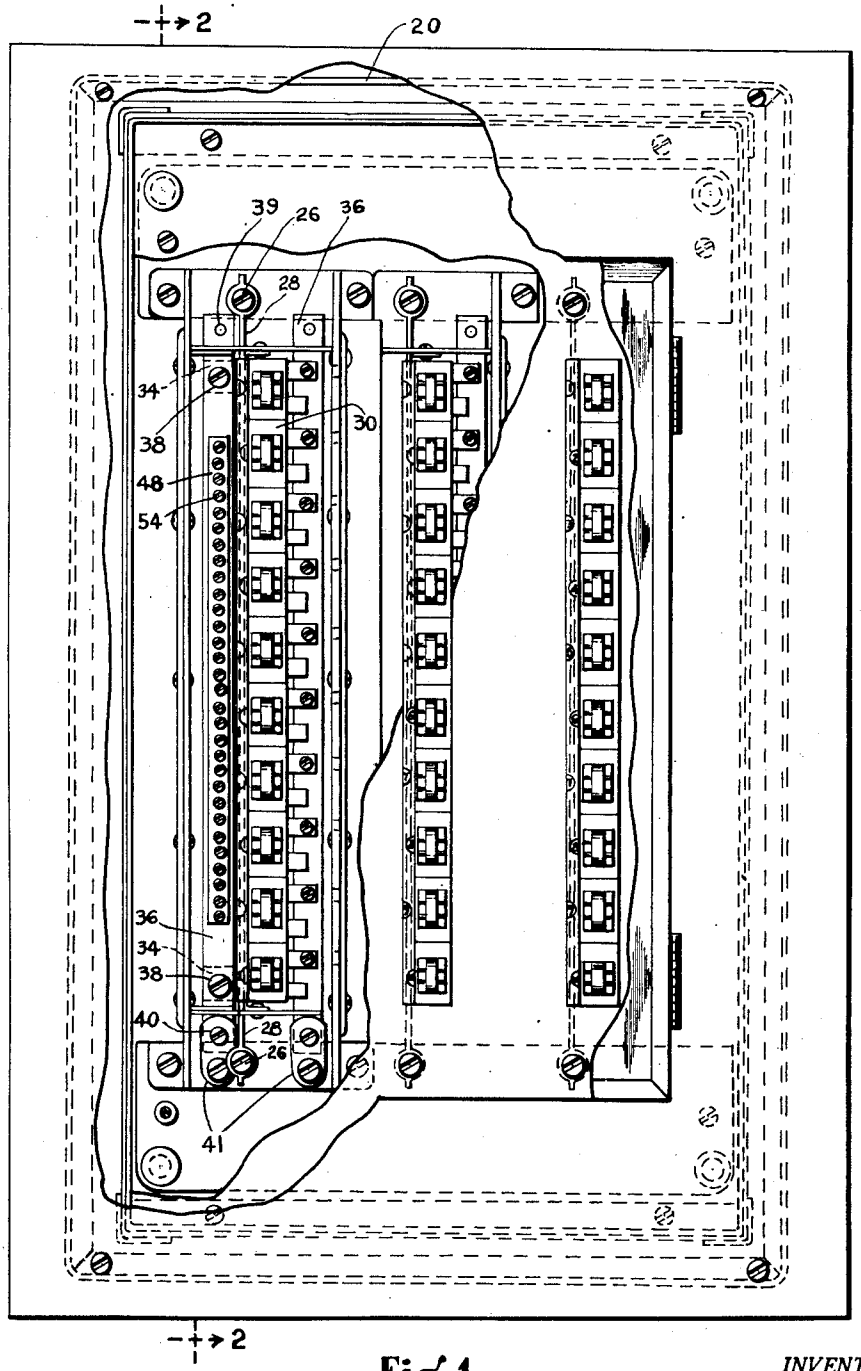


Fig. 1

INVENTORS
William Robertson
BY and Louis W. Higgins
Daniel A. Cullen
Attorney

June 20, 1950 W. ROBERTSON ET AL 2,511,995

PANEL BOARD

Filed Aug. 6, 1948 4 Sheets-Sheet 2

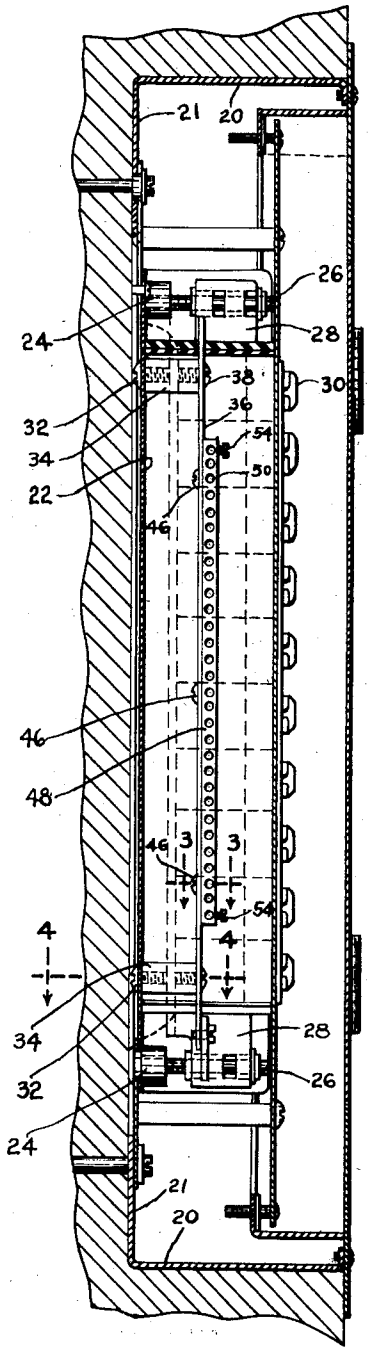


Fig. 2

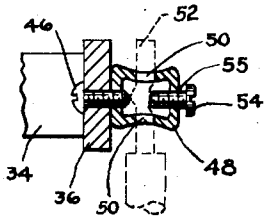


Fig. 3

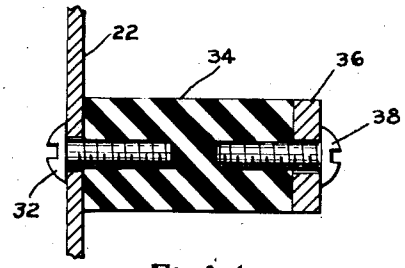


Fig. 4

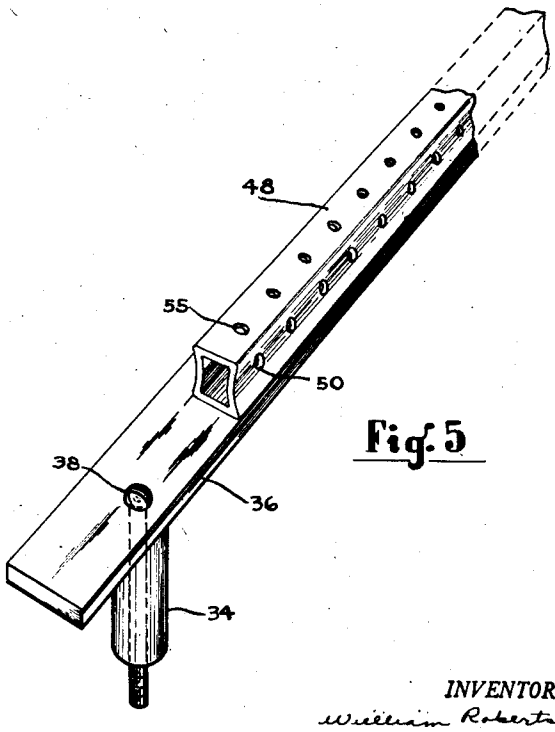


Fig. 5

INVENTORS
William Robertson
BY and Louis W. Higgins
Daniel G. Cullen
Attorney

June 20, 1950 W. ROBERTSON ET AL 2,511,995

PANEL BOARD

Filed Aug. 6, 1948 4 Sheets-Sheet 3

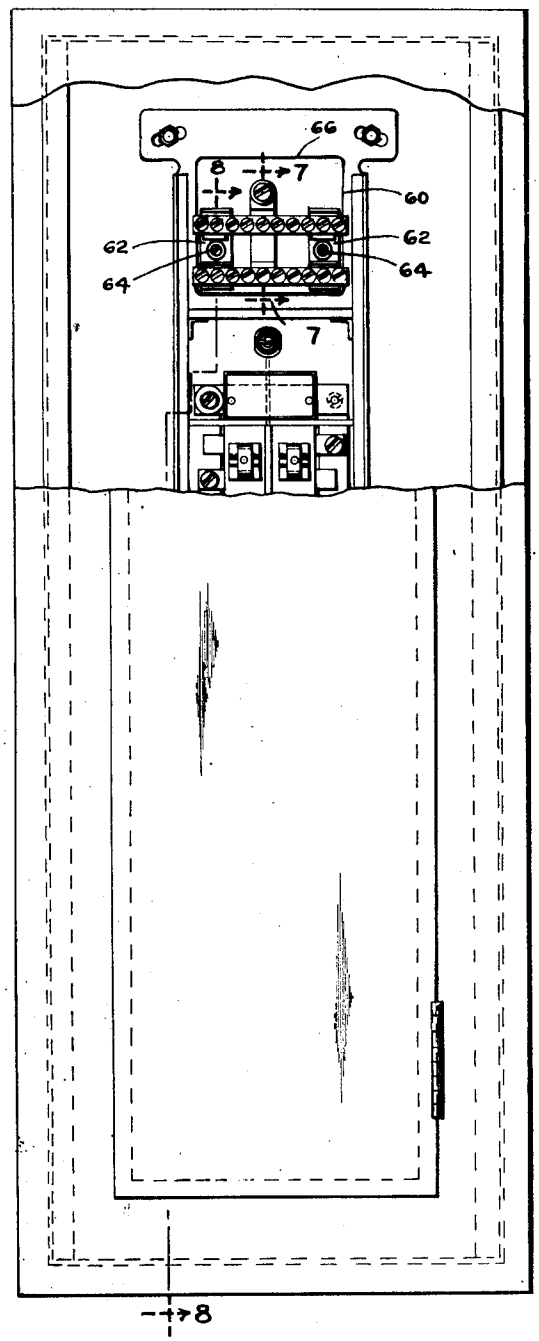


Fig. 6

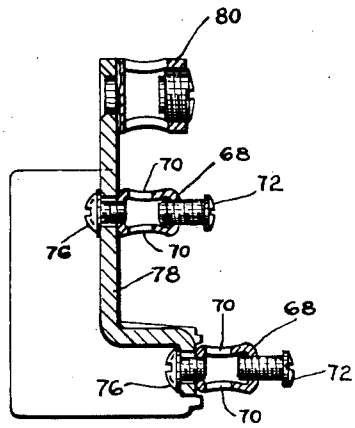


Fig. 7

INVENTORS
William Robertson
BY and Louis W. Higgins
Daniel G. Cullen
Attorney

June 20, 1950 W. ROBERTSON ET AL 2,511,995

PANEL BOARD

Filed Aug. 6, 1948 4 Sheets-Sheet 4

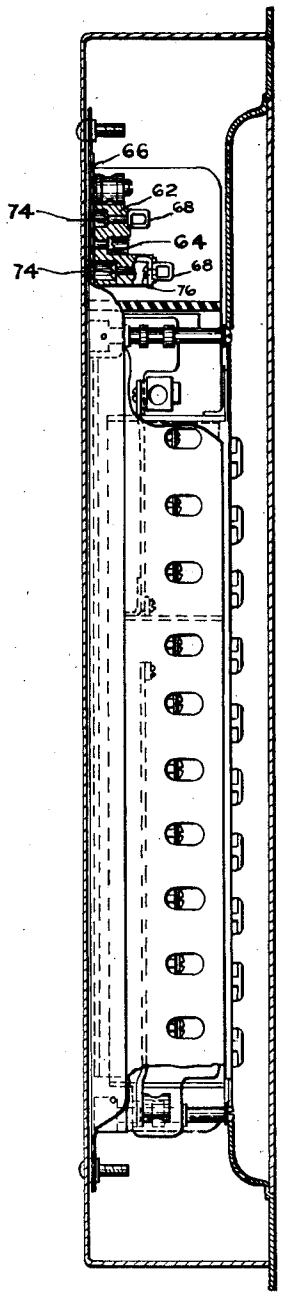


Fig. 8

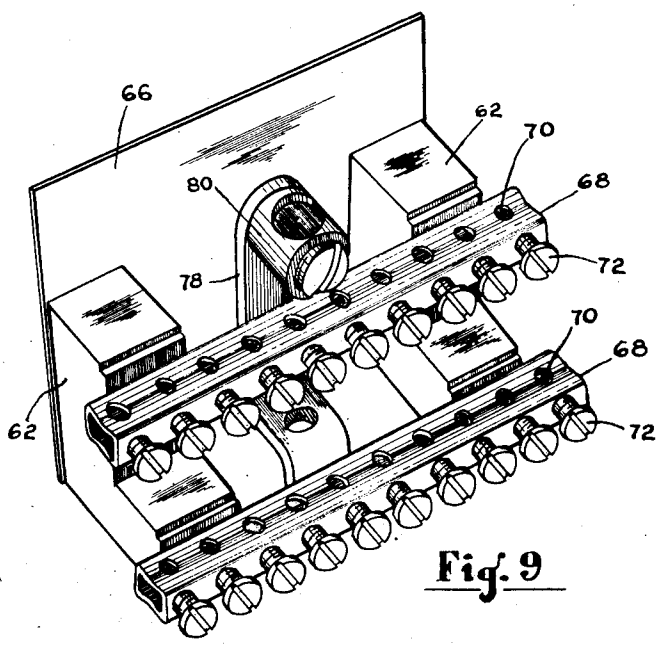


Fig. 9

INVENTORS
William Robertson
BY and Louis W. Higgins
Daniel J. Cullen
Attorney

Patented June 20, 1950

2,511,995

UNITED STATES PATENT OFFICE

2,511,995

PANEL BOARD

William Robertson and Louis W. Higgins, Detroit, Mich., assignors to Bulldog Electric Products Company, Detroit, Mich., a corporation of West Virginia

Application August 6, 1948, Serial No. 42,974

1 Claim. (Cl. 173—324)

1

Be it known that certain new and useful inventions in panel boards have been invented by the undersigned and the following is a specification of such inventions.

This application relates to panel boards and particularly to neutral constructions of panel boards.

Generally, in panel boards, it has been customary to provide a neutral construction consisting of a bar or strap which is adapted to be connected to a neutral wire of a wiring system and provided with a number of binding posts permitting a number of branch lines to be connected individually to the neutral bar and thus to the neutral wire of the system. In this application are disclosed several different arrangements of neutral constructions for panel boards.

For an understanding of the panel boards herein disclosed and their neutral constructions particularly, reference should be had to the appended drawings. In these drawings:

Fig. 1 is a front view of a panel board having three rows of branch circuit units with the front cut away to expose the neutral construction shown at the left of the panel board.

Fig. 2 is a section view as if on line 2—2 of Fig. 1.

Figs. 3 and 4 are section views as if on lines 3—3 and 4—4 of Fig. 2.

Fig. 5 is a perspective view of the neutral bar construction of Figs. 1 to 4.

Fig. 6 is a front view of a second panel board with a double row neutral construction shown where the figure is cut away.

Figs. 7 and 8 are section views as if on lines 7—7 and 8—8 of Fig. 6.

Fig. 9 is a perspective view of the double row neutral construction of Figs. 6 to 8.

Referring to the drawings it will be observed that Fig. 1 shows a panel board including a box 20 against whose back wall 21 is disposed a mounting plate 22 to which are riveted threaded blocks 24 into which are threaded studs 26 which mount mounting plates or backbones 28 against which are mounted branch circuit units 30, these being in the form of circuit breakers.

Secured to the back wall mounting plate 22 as by means of screws 32, Fig. 4, are tapped insulation blocks 34 against which a neutral strap 36 is secured by screws 38. Both ends of strap 36 have tapped holes 39 for screws 40 which fasten to strap 38 connectors 41 enabling a neutral wire terminal to be secured to the strap 36 at either end. The drawing shows a connector 41 only at the lower end, but it will be observed

2

that the upper end of the strap is formed with a hole 39 corresponding to the hole 39 at the lower end of the strap which receives the screw 40 for mounting the connector 41 on the strap whereby the connector 41 may be mounted at either end of the strap to connect a neutral wire terminal to either end of the strap 36.

Secured to the strap 36, as by screws 46, is a tube 48, of square cross section which has transversely alined holes 50 in two of its free sides arranged in numerous pairs to enable numerous wire terminals 52 of branch circuits to be passed through the tube 48 and thus clamped in place by the binding screws 54 which thread into tapped holes 55 on the third free side of bar 48 and which distort or kink the terminal 52 as indicated in Fig. 3 to enable these terminals to be interlocked to the tube 48.

Fig. 6 shows a panel board against whose back wall mounting plate 60 are secured stepped blocks 62 of insulation, these blocks being secured to the mounting plate by screws 64 which pass through the blocks and through a shielding plate 66 also of insulation, and which thread into the mounting plate. Bridging the blocks in bleachers-like fashion are the square cross section tubes 68 which form the neutral bars, these like bar 48 of Fig. 5, having numerous pairs of transversely alined holes 70 for the branch wire terminals and having numerous binding screws 72 for these terminals. Each tube 68 is secured by screws 74 to steps of the blocks 62. To the tubes 68 is secured as by screws 76 a stepped strap 78 which has at its end a wire terminal connector 80 whereby the terminal of a neutral wire may be fastened to and thus connected to the neutral bars or tubes 68.

Common to all of the constructions is the neutral bar 48. It is a length or section of substantially square tubing of copper or the like extruded to the shape shown and having holes in all four sides. The holes in one side receive the neutral bar mounting screws, 46 of Fig. 2 and 74 of Fig. 8, which mount the neutral bars in place. The transversely alined holes 50—70 in the sides receive the wire terminals of the branch circuit wires. The tapped holes in the fourth side receive the binding screws 54—72.

It will be seen from the foregoing that these drawings disclose neutral constructions having many common characteristics but useful in different forms as here disclosed and with different constructional elements to form complete neutral constructions for panel boards.

Now having described the neutral constructions

herein disclosed reference should be had to the claim which follows for a determination of the inventions hereof.

We claim:

A neutral bar construction comprising a pair of longitudinally spaced stepped blocks of insulation, means mounting said blocks, a neutral bar bridging each pair of steps of said blocks, each bar comprising a tube of conducting material having numerous pairs of transversely alined holes in two parallel sides for receiving wire terminals, the holes having their edges spaced from a third side of the tube, the fourth side of the tube having numerous binding screws, a strap arranged to conform to the steps of said blocks and connected to said bars, and a wire terminal connector mounted on said strap.

WILLIAM ROBERTSON.
LOUIS W. HIGGINS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,608,184	Rumble	Nov. 23, 1926
2,282,316	Albert	May 12, 1942
2,411,014	Warnke	Nov. 12, 1946
2,431,999	Engelhardt	Dec. 2, 1947

FOREIGN PATENTS

Number	Country	Date
145,356	Great Britain	July 2, 1920
216,926	Great Britain	June 4, 1924
242,509	Great Britain	Nov. 12, 1925