

J. P. HAYES.

SWITCH BOARD OR MOUNTING.
APPLICATION FILED OCT. 5, 1914.

1,228,362.

Patented May 29, 1917.

FIG. 1.

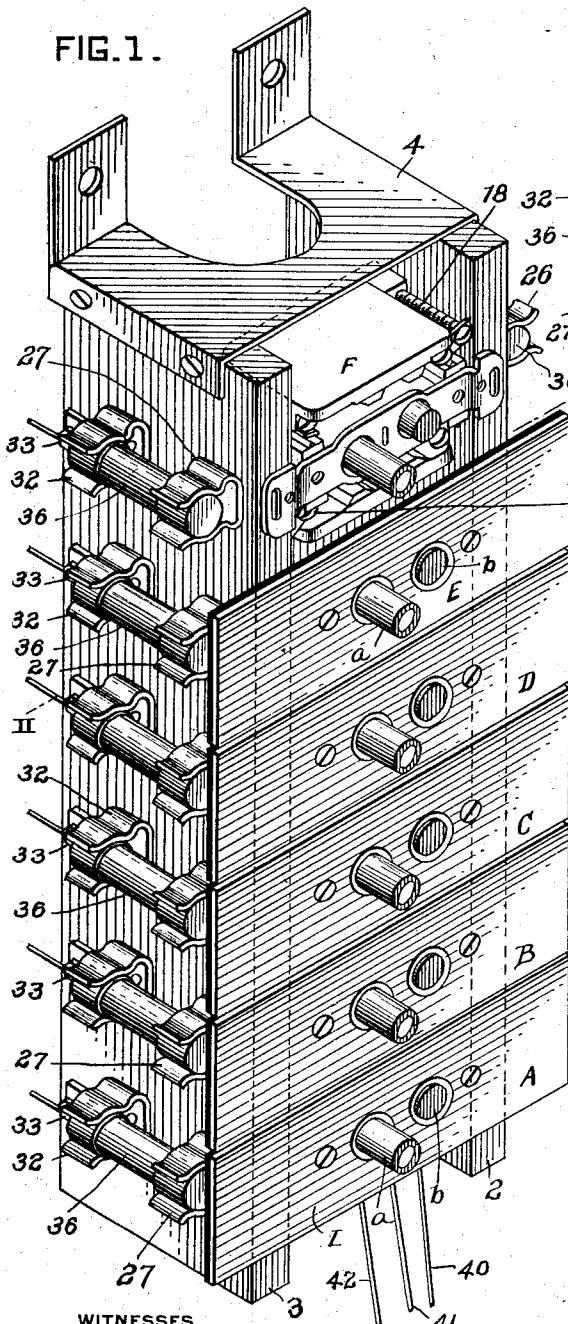


FIG. 2.

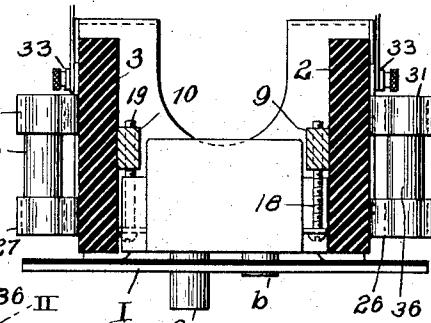
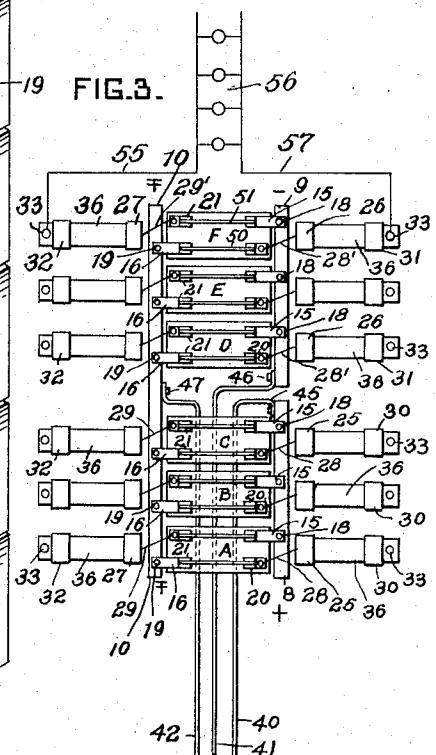


FIG. 3.



WITNESSES

J. Herbert Bradley
Washburn

INVENTOR

INVENTOR
John D. Hayes
by C. M. Clark
his attorney

UNITED STATES PATENT OFFICE.

JOHN P. HAYES, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JOHN E. BARNHART, OF PITTSBURGH, PENNSYLVANIA.

SWITCH BOARD OR MOUNTING.

1,228,362.

Specification of Letters Patent.

Patented May 29, 1917.

Application filed October 5, 1914. Serial No. 865,006.

To all whom it may concern:

Be it known that I, JOHN P. HAYES, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and 5 State of Pennsylvania, have invented certain new and useful Improvements in Switch Boards or Mountings, of which the following is a specification.

My invention relates to improvements in 10 electric switch boards or mountings adapted to carry or support the elements necessary for receiving or distribution of electrical circuits.

The objects in view are to construct such 15 an apparatus in a simple, compact and readily available form, providing ample room and capacity for attachments and connections of the various conductor elements, with economy of material and space.

20 To mount the elements on bases or boards so as to eliminate the bus bars and the conductor parts from the face thereof.

To reduce the amount of copper and insulating material and to so arrange the 25 switches as to act coöperatively with the main bus bars and to eliminate sub bus bars between the main bus bars and the branch circuit terminals.

To arrange the fuse devices adjacently 30 and successively so as to be of the same polarity.

To mount the switches between panels and on the bus bars and to arrange the fuse attachments on the outer sides of said panels 35 so that a terminal pole of each of the various circuits will have a terminal pole on each of the panels.

Such an arrangement enables me to arrange the switches and fuse devices in such 40 a manner as to utilize all the available space of the bus bars and the insulator panels and also, in such an arrangement, to arrange front plates covering all the conductor parts so that persons operating the switches will 45 not come into contact therewith.

In a two wire distribution of a three wire system, I preferably arrange the plus (+) and minus (—) bars in the same line, and the neutral (±) bus bars parallel to the 50 plus and minus bus bars. In such arrangement, and with the arrangement of the base-boards, switches and fuse devices as herein-

after described, it will be seen that there is a resulting general economy in regard to material, workmanship, space and efficiency, 55 due to the reduction of the number of conductor joints and the shortening of space between the bus bars and the branch circuit terminals.

The switch board or mounting, *per se*, 60 is compactly constructed in a simple manner and all parts are easy of access in case of derangement.

In the accompanying drawings showing preferred constructions or adaptations of 65 the invention,—

Figure 1 is a perspective view of a complete switch board or mounting, one of the switch covering plates being removed.

Fig. 2 is a cross sectional view, indicated 70 by the section line II. II. of Fig. 1.

Fig. 3 is a diagram showing the relative arrangement and wiring for the circuits.

Referring to the drawings, the insulating bases 2 and 3, of suitable insulating material, are mounted in any convenient manner and preferably connected by endmost brackets 4, one at each end, whereby the board may be mounted upon any supporting frame or wall. As thus arranged, the bases 75 2, 3 confront each other, extending edge-wise outwardly from the wall or other support, or from the back surface of an inclosing cabinet, if used.

Arranged along the inner face of one of 85 the insulating bases 2, are the bus bars 8, 9, of different polarity, as indicated by the signs + and — respectively. On the inner side of the opposite base 3, opposite bus bars 8 and 9 and parallel therewith, is the neutral 90 bus bar 10, its polarity being indicated by the plus or minus sign ±.

Located between the bases 2, 3, and for the purpose of connecting the bus bars 8 and 10 are switches A, B, C, each having one 95 of its terminals 15 connected to bus bar 8 by bolt 18 and the opposite terminal 16 connected to bus bar 10 by bolt 19. The terminals 20 of the same switches are connected to fuse contacts 25 by wire 28 or may be 100 connected directly by bolts, if desired, while the opposite terminals 21 are connected to fuse contacts 27 by wire 29, or otherwise.

Said switches are of well-known construc-

tion and operation, having contact making and breaking blades operable by the usual push buttons *a*, *b*, respectively.

Similar switches D, E, F, are mounted 5 between the bases 2, 3, in a like manner, connecting bus bars 9 and 10, as shown, each having one of its terminals 15 connected to bus bar 9 by bolts 18 and its other terminal 16 connected to bus bar 10 by bolt 19.

10 The other terminals 20 of said switch are connected to the fuse contacts 26 by wire 28', and the opposite terminals 21 of the same switches are connected to fuse contacts 27 by wire 29'. Outer fuse contacts

15 30, 31 and 32 are spaced beyond fuse contacts 25, 26 and 27 and are each provided with a suitable branch circuit terminal binding post 33. Between fuse contacts 25—30, 26—31, and 27—32 are inserted the usual 20 fuses 36. Said fuse contacts and their fuses are mounted on the opposite outer sides of bases 2, 3, as shown, the wiring being indicated in the diagram Fig. 3.

Referring to such diagram, numerals 40, 25 41 and 42 represent the feeders connected to the bus bars 8, 9 and 10 by bolts 45, 46, 47, or in any other suitable manner. In said diagram I show one switch wired to a lamp circuit which will be sufficient to give an 30 understanding of the circuit wiring and connections.

Assuming the bus bars to be energized by the feeders 40, 41, 42, from a suitable source, the circuit will be from plus or minus bus 35 bar 10 through bolt 19 of switch F to terminal 16, blade 50 to terminal 20, to wire 28', to fuse clip 26, fuse 36 to clip 31, to branch terminal binding post 33, by wire 57, through lamps 56 and wire 55 to binding 40 post 33 to fuse clip 32, fuse 36, fuse clip 27, to wire 29' to switch terminal 21, through blade 51, to terminal 15 and bolt 18 to bus bar 9. Similar connections through the other switches, bus bars and fuses to a lamp circuit 45 will be readily understood without further description.

The construction and operation of the invention will be readily understood from the foregoing description. The switches intervening 50 between the bases 2, 3, are preferably covered by a suitable face plate I, for each switch, whereby the switches and the fuses are concealed.

It will be understood, of course, that any 55 suitable type or construction of switch other than the push button type may be substituted therefor and used with equally good results.

The bases, being mounted face-wise with 60 relation to each other, provide ample space for location of the several parts very economically, and admit of the wiring connections being easily made with readiness of access throughout.

65 It will be understood that the construc-

tion may be greatly varied, changed or modified in size or other details by the skilled electrician, but that all such changes are to be considered as within the scope of the following claims.

What I claim is:

1. In a switch board or mounting of the class described, the combination of a pair of confronting insulating bases forming side wall members; bus bars on the inner faces 70 thereof, switches arranged between said bases connected to said bus bars, and cover plates for the switches lying across the edges of said bases.

2. In a switch board or mounting of the 80 class described, the combination of a pair of insulating bases arranged face-wise and forming side wall members, bus bars mounted on the inner side of said bases, switches arranged between said bases connected to said bus bars, and circuit conducting devices mounted on the outer side of 85 said bases and connected with the bus bars, substantially as set forth.

3. In a switch board or mounting of the 90 class described, the combination of a pair of insulating bases arranged face-wise to each other and forming side walls, a bus bar mounted on the inner side of one of said bases, a plurality of bus bars in alinement 95 on the other of said bases confronting and parallel with said bus bar, and switches arranged between said bases and connected to said bus bars.

4. In a switch board or mounting of the 100 class described, the combination of a pair of insulating bases, a positive and a negative bus bar arranged in alinement on the inner side of one of said bases, a neutral bus bar similarly arranged on the other of said bases, 105 and switches arranged between said bases connected to said bus bars, substantially as set forth.

5. In a switch board or mounting of the 110 class described, the combination of a pair of insulating bases, a positive and a negative bus bar arranged in alinement on the inner side of one of said bases, a neutral bus bar similarly arranged on the other of said bases, 115 switches arranged between said bases connected to said bus bars, and outermost fuse devices and connections connected with said switches, substantially as set forth.

6. In a switch board or mounting of the 120 class described, the combination of a pair of insulating bases arranged parallel and face-wise to each other and forming side wall members, a plurality of bus bars secured to the inner faces of said bases, a plurality of fuse devices on the outer side of each of said 125 bases connected with said bus bars, switches mounted on said bus bars and connecting the same between the bases, connecting end plates for the bases providing wall attaching means, the successively arranged ter- 130

minals of the fuse devices being adapted to connect one pole of each circuit, substantially as set forth.

7. In a switch board or mounting of the class described, the combination of a pair of parallel insulating bases arranged face-wise, a minus and plus bus bar supported on the inner side of one of said bases, a neutral bus bar supported on the inner side of the other of said bases, switches mounted on the bus bars and connecting them, and connections from the bus bars to the fuse devices.

8. In a switch board or mounting of the class described provided with a pair of insulating bases or panels parallel with and face-wise to each other and forming side wall members, a plurality of bus bars mounted on the inner sides thereof, switches arranged between said bases and connected to said bus bars, and a plurality of fuse devices on the outer sides thereof, said fuse devices being arranged on the said panels adjacently and successively, the adjacent and successive fuse devices being adapted to have the same polarity, substantially as set forth.

9. In a switch board or mounting of the class described, the combination of a plurality of bus bars, a plurality of fuse devices, a base intervening between said bus bars and fuse devices, a bus bar confronting and parallel with said bus bars, a corresponding plurality of fuse devices arranged on a plane parallel with said first named fuse devices, a base intervening between said bus bar and fuse devices, and confronting said first named base, switches mounted between said bases and connecting said bus bars and fuse devices, substantially as set forth.

10. In a switch board or mounting of the class described, the combination of a pair of face-to-face insulating panels connected to a pair of terminal panel brackets forming a rectangular inclosing frame, a plurality of bus bars and a plurality of connected switches supported upon and between said panels respectively, the said bus bars being arranged between the said switches and the said insulator panels at each side of the switches, the terminals of said switches having established connections to said bus bars, substantially as set forth.

11. In a switch board or mounting of the class described, the combination of two face-to-face insulating panels connected to two L-shaped terminal panel brackets forming a rectangular inclosing frame, said panel brackets having suitable openings between the panels, bus bars supported on the inner faces of said insulator panels, switches between and connecting said bus bars, a plurality of fuse devices having branch circuit terminals supported on the outside of said insulator panels in a dif-

ferent plane to said bus bars, a plurality of branch circuit switches mounted on the bus bars within said insulator panels and bracket panels, the terminals of said switches having established connections to said bus bars and to said fuse devices, substantially as set forth.

12. In a switch board or mounting of the class described, the combination of a pair of insulator panels connected to a pair of endmost panel brackets forming a rectangular frame, a plus and a minus bus bar arranged in alinement on the inner face of one of said insulator panels, a neutral bus bar arranged on the inner face of the other of said panels, switches arranged within said panels mounted on and connected to said bus bars, and terminal connecting devices for making connection with branch circuits beyond said bus bars.

13. In a switch board or mounting of the class described, the combination of longitudinal panels and panel brackets forming a frame, a plus and a minus bus bar arranged in alinement on the inner face of one of said longitudinal panels, a neutral bus bar arranged on the inner face of the other of said longitudinal panels, branch circuit switches mounted on the bus bars between and adjacent to the inner faces of said longitudinal panels, a plurality of fuse devices arranged on each of said longitudinal panels in a different plane from said bus bars, said branch circuit switches being connected to said bus bars and to said fuse devices.

14. In a switch board of the class described, the combination of longitudinal insulator panels connected to a pair of endmost connecting panel brackets forming a frame, a plurality of bus bars arranged within said frame comprising a plus, a minus, and a neutral bar respectively, means for supporting them on the inner confronting faces of the panels, a plurality of switches mounted on the said bus bars and adjacent to the inner faces of said insulator panels, a plurality of fuse devices arranged on the outer sides of said insulator panels, means for supporting them, said switches being connected to said bus bars and to said fuse devices, each of the said switches and bus bars intervening between a pair of said fuse devices and adapted to be connected in a circuit in series therewith, and a cover for each switch and each pair of fuse devices extending across the front edges of the panels.

15. In a switch board of the class described, the combination of a pair of insulating bases or panels arranged face-wise to each other, a pair of connecting panel brackets covering the ends of the panels and forming a frame, a plurality of bus bars of plus, minus, and neutral polarity

respectively, a plurality of branch circuit switches and a plurality of fuse devices having branch circuit terminals supported by and between the panels forming said frame, said bus bars being arranged adjacent to said switches and on the inner faces of said insulator panels and covered thereby, each of the said switches, bus bars, and the said insulator panels intervening between the respective branch circuits in series with said bus bars and said switch, and

a cover for each of said switches and for said respective branch circuit terminals extending across the front edges of the panels.

In testimony whereof I hereunto affix 15 my signature in the presence of two witnesses.

JOHN P. HAYES.

Witnesses:

C. M. CLARKE,
FRED'K STAUB.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."