H. F. KRANTZ.

PANEL BOARD.

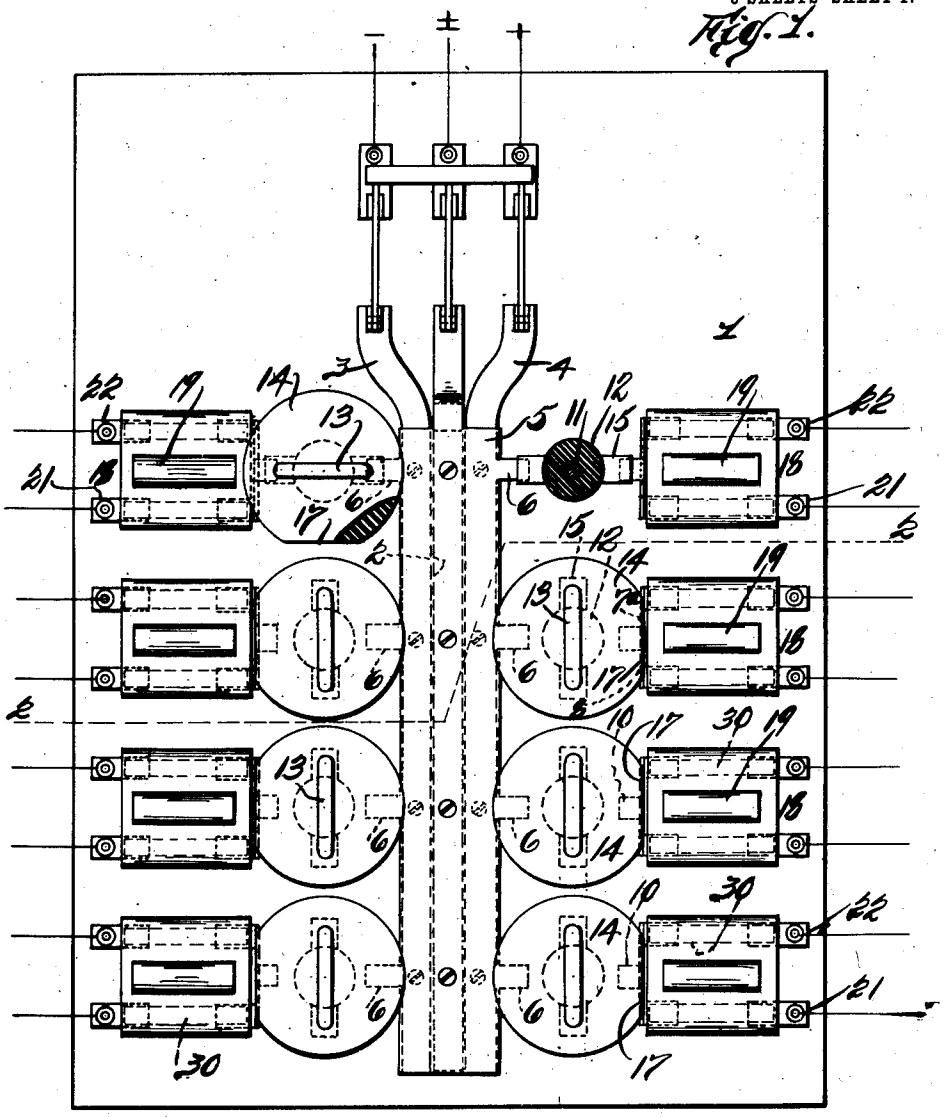
APPLICATION FILED NOV. 10, 1911.

1,047,086.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



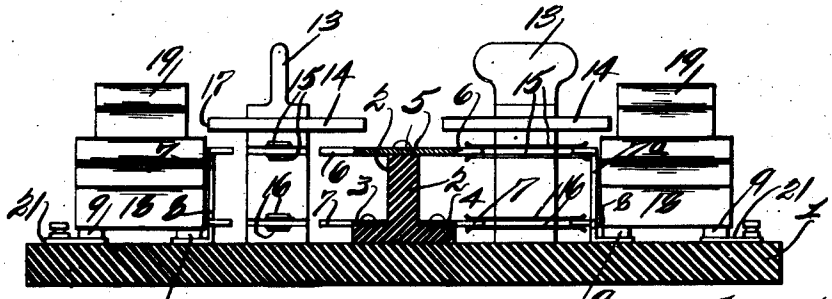


Fig. 2.

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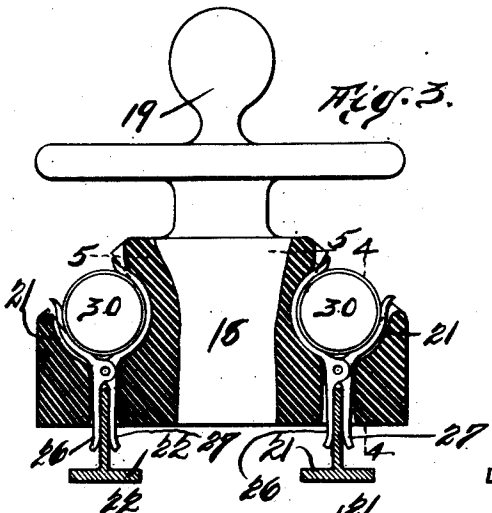


Fig. 3.

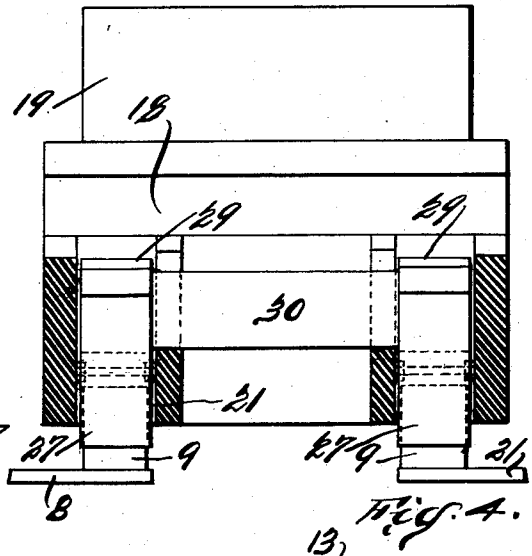


Fig. 4.

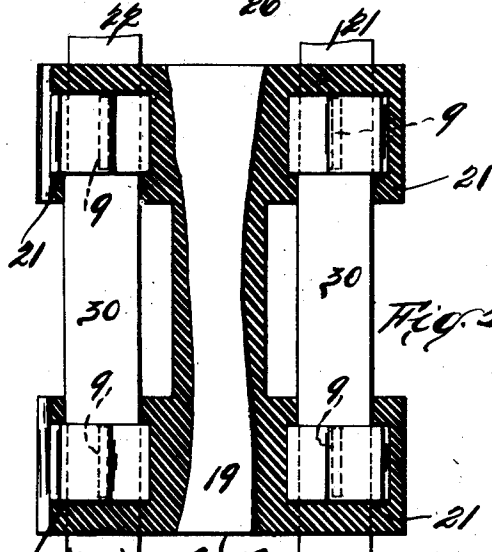


Fig. 5.

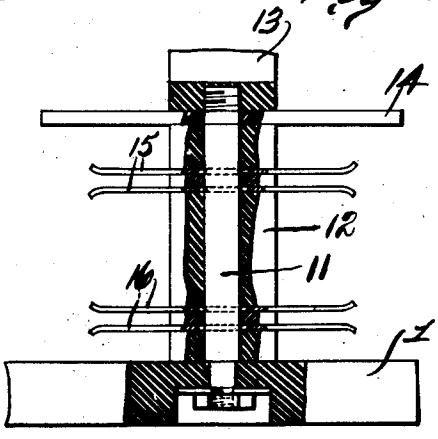
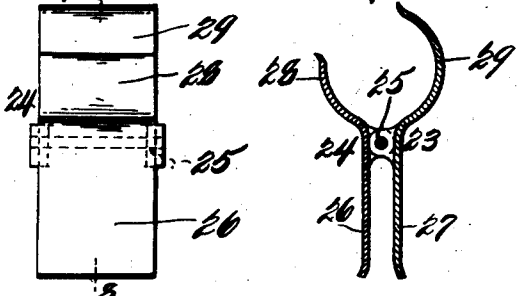


Fig. 6.

Fig. 7.

Fig. 8.



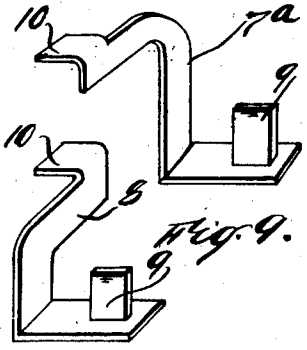


Fig. 9.

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3 SHEETS—SHEET 3.

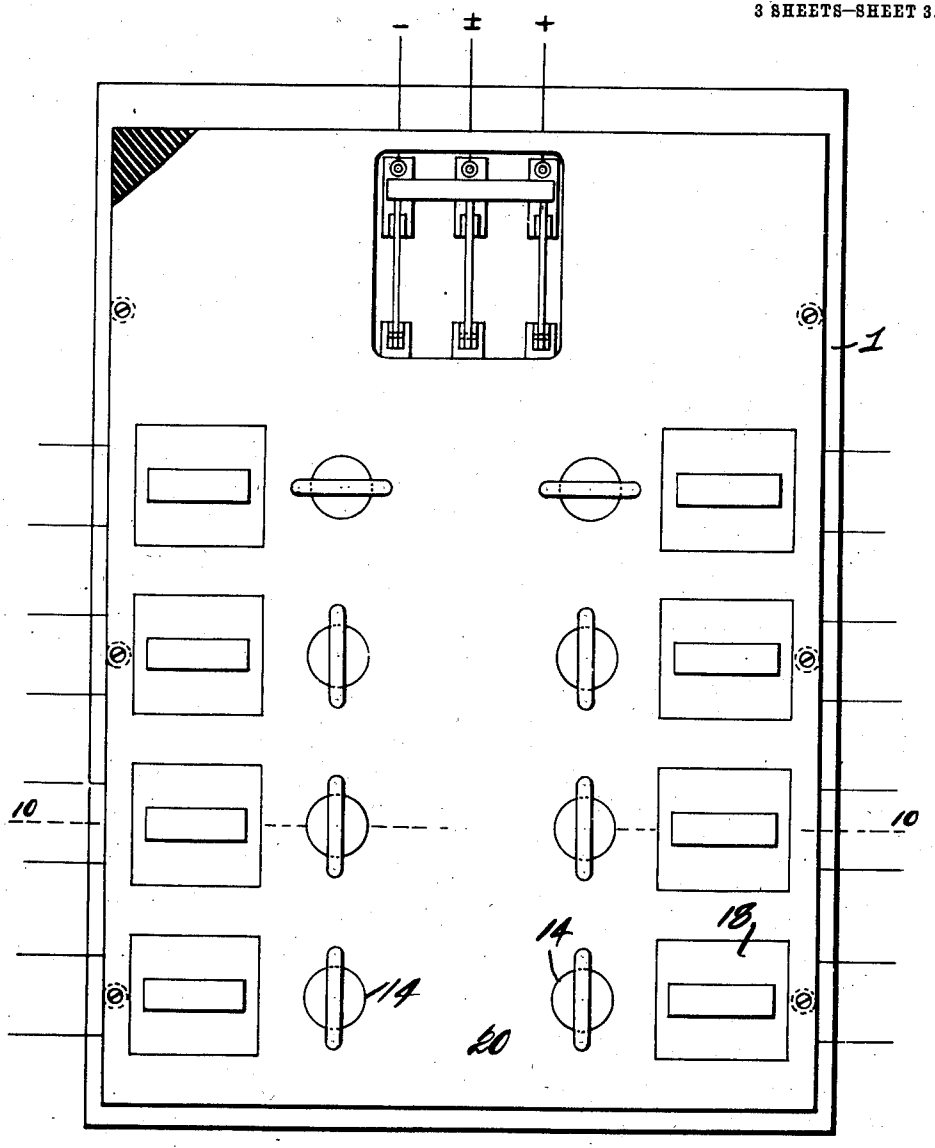

Fig. 10.

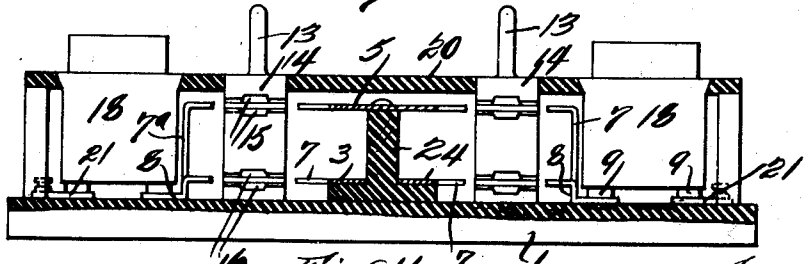

Fig. 11.

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UNITED STATES PATENT OFFICE.

HUBERT F. KRANTZ, OF NEW YORK, N. Y.

PANEL-BOARD.

1,047,086. Specification of Letters Patent. Patented Dec. 10, 1912.

Application filed November 10, 1911. Serial No. 659,459.

To all whom it may concern:

Be it known that I, HUBERT F. KRANTZ, a citizen of the United States, residing at Brooklyn, in the county of Kings, city and State of New York, have invented certain new and useful Improvements in Panel-Boards, of which the following is a clear, full, and exact description.

The object of this invention is to provide new and improved type of panel board, that type where switches are used to control the branch circuits.

A further object of the invention is to manufacture such a board that the switches will contact directly with the bus bars, and with the branch circuit connections.

A still further object is to provide the switches of such type as to prevent the withdrawal of the fuse holders, except when the switches are turned off, and no current is on the branch circuit.

A still further object of the invention is to provide such panel board with a protective plate to prevent the contact by the operator with any live current carrying parts.

A still further object of the invention is to provide an improved fuse holder, in which the act of putting the fuses in position will serve to securely contact the same with the branch circuit connections.

In carrying out my invention, I provide a back plate for the panel board, which may be housed in any way convenient and known to the art, and I lead from the terminal bus bars, which are secured to the back on different planes, the bus bars being themselves provided preferably with integral projecting switch contact arms, the contact arm of one bus bar being above a contact arm of the other bus bar. Adjacent to the bus bars for the different branch circuits are arranged switches with movable switch arms adapted to contact with the bus bar contacts, and at the same time with contacts in two planes connecting with the branch circuit. These branch circuit contacts preferably lead to terminals for fuses carried by a fuse block which may be removed only when the switches themselves are in an off position. I further prefer that the fuse holders be provided with recesses, through which a pair of hinged jaws may project, one end of the jaws being widely open and the other end being close together, so that a fuse, when placed within the wide jaws, will bring the legs of the other jaws close together, and upon placing the fuse holder in position, these close-together jaws will act as knife switch contacts to firmly grasp lugs of the branch circuit connections, at the same time more forcibly holding the fuses in place. I further may provide an inclosed face plate of insulating material or properly insulated from the current carrying parts, through which the fuse holders and the switches, or the fuse holders or the switches may project, that one handling the circuits may not come into contact with the current carrying parts.

The scope of my invention will be pointed out in the claims.

In the accompanying drawings: Figure 1 is a front elevation, with parts broken away, showing my improved panel board. Fig. 2 is a section on line 2—2 Fig. 1. Fig. 3 is a detail sectional view, the section being taken so as to expose the clips of my fuse holder. Fig. 4 is a side elevation, partly in section, of the fuse holder, the section being taken on line 4—4, Fig. 3. Fig. 5 is a sectional plan on line 5—5, Fig. 3. Fig. 6 is a side elevation of my improved switch with part broken away. Fig. 7 is a side view of my improved fuse holder clamp. Fig. 8 is a section on line 8—8 Fig. 7. Fig. 9 is a perspective view of the two detail branch circuit contacts for the switch. Fig. 10 is a face view of a protected type of panel board of the same species as Fig. 1. Fig. 11 is a section on line 10—10 Fig. 10.

As shown in the drawings, the back plate 1 of suitable insulating material has mounted upon it an inverted T shaped insulating rail 2, which provides a surface a short distance above the back plate, on which are mounted the plus and minus bus bars 3 and 4. On the top of the rail the neutral bus bar 5 is secured. The neutral bus bar I prefer to have of a flat sheet of conducting material, preferably copper, having at equally distant points along both its edges projecting contact lugs 6. The plus and minus bus bars have similar projecting contact lugs 7. Immediately opposite each pair of contact lugs (and they are mounted one immediately above the other, that is, a neutral above a plus or minus lug) I secure to the board a pair of contact branch circuit connections 7^a and 8, as shown in perspective Fig. 9. These branch circuit connections are secured to the back plates in pairs, and are provided with upstanding lugs 9 for connection with fuse holder to be here-

inafter described. They are provided with upstanding members, which are turned over so that adjacent members will project toward each other, and their out-turned switch lugs 10 come in line one under the other, and on a level with the switch contact lugs 6 and 7 of the bus bars. Immediately between the contact lugs I mount a rotatable switch shown in detail in Fig. 6. The switch consists of the post 11 and insulating sleeve 12, the operating handle 13 and the protecting plate 14, the switch blades 15 and 16 of a simple rotary construction so that upon turning the switch in one position the blades will contact with the four abutments 6, 7 and 10—10 to make contact between the bus bars, and the branch circuits, but when turned in the opposite direction the circuit will be broken at four points. I prefer that the insulating plate 14 be provided so that the operator cannot readily come in contact with current carrying parts, and I prefer that it have a slab side as at 17, so that when in the position of the second from the top switch on the right hand side of Fig. 1, the fuse holder 18 can be withdrawn, but when in the position where current is flowing the protecting plate 14 will overlap the fuse holder and prevent its withdrawal as is obviously a very great protection.

As shown in Figs. 10 and 11, I have shown a board practically the same construction as Figs. 1 and 2, but I have displaced the switch with the protecting disk by a plate 20 of insulating material, having apertures through which the switches and fuse plates may be withdrawn, thus entirely protecting the operator from any parts by contact with the current carrying parts. The particular type of fuse holder shown in this application is possessed of safe features of novelty. The branch circuit connections 21 and 22 are provided with lugs similar to lugs 9 of Fig. 9, and each fuse holder is provided with four clamping jaws, each one adapted to clamp one of the lugs and make good contact therewith, the fuse holder carrying cartridge fuses extending from lug 9 to lug 22, and from lug 9 to lug 21 in the body of the fuse block. The fuse block is provided with an operating handle 19. The clamping jaws consist of two members 23 and 24 hinged together at 25, and provided with two depending lugs 26 and 27, and semi-circular jaws 28 and 29, the lugs adapted to grasp the parts 9 and the jaws adapted to encircle each a little more than half of the cartridge fuse 30. The jaws pass through apertures 21 in the fuse block 18, and when in the block, and the block is removed from the board the cartridges may be placed in the cradle formed by the two jaws, which will open to receive them, but upon placing the fuse in a position with the jaw legs 26 and 27 tightly gripping the lugs 9, 9, 21, 22, the jaw members 28 and 29 will be caused to tightly grip the cartridge fuses, make good contact with their terminals, and at the same time hold them solidly within the recesses of the fuse holders.

In carrying out this invention, details of construction may be varied from those shown, and yet the essence of the invention be retained; some parts might be employed without others, and new features thereof might be combined with elements old in the art in diverse ways, although the herein described type is regarded as embodying substantial improvements over such modifications.

As many changes could be made in the above construction, and many apparently widely different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above described or shown in the accompanying drawings shall be interpreted in an illustrative and not in a limiting sense. It is furthermore desired to be understood that the language used in the following claims is intended to cover all the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

I claim as my invention:

1. The herein described panel board, consisting of a back plate, branch circuit connections, bus bars, the bus bars arranged in different planes parallel with the back plate, switches and contacting blades therefor between the bus bars and branch circuit connections, the switches having their contacting blades in different planes, so arranged and located that the blades will make contact each with a different bus bar.

2. The herein described panel board consisting of a back plate, a plurality of bus bars having contact surfaces in at least two planes above the back plate, a switch having two switch plates adapted to contact with said contact surfaces and branch circuit contacts for the switch.

3. The herein described panel board consisting of a back plate, a plurality of bus bars having contact surfaces in at least two planes above the back plate, a switch having two switch plates adapted to contact with said contact surfaces and branch circuit contacts for the switch, said branch circuit contacts also being in two planes.

4. The herein described panel board consisting of a back plate, bus bars having two contact surfaces for each branch circuit, two contact surfaces for the branch circuit connections, a switch having two switch arms, at least one pair of said contact surfaces having one of its members in a different plane from the other.

5. The herein described panel board consisting of the back plate, bus bars arranged in at least two planes above the back plate, a switch having two switch blades adapted to contact directly with said bus bars and branch circuit contacts for the switch.

Signed at New York city, this 8th day of November, in the year one thousand nine hundred and eleven.

HUBERT F. KRANTZ.

Witnesses:
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F. WARREN WRIGHT.