

No. 693,550.

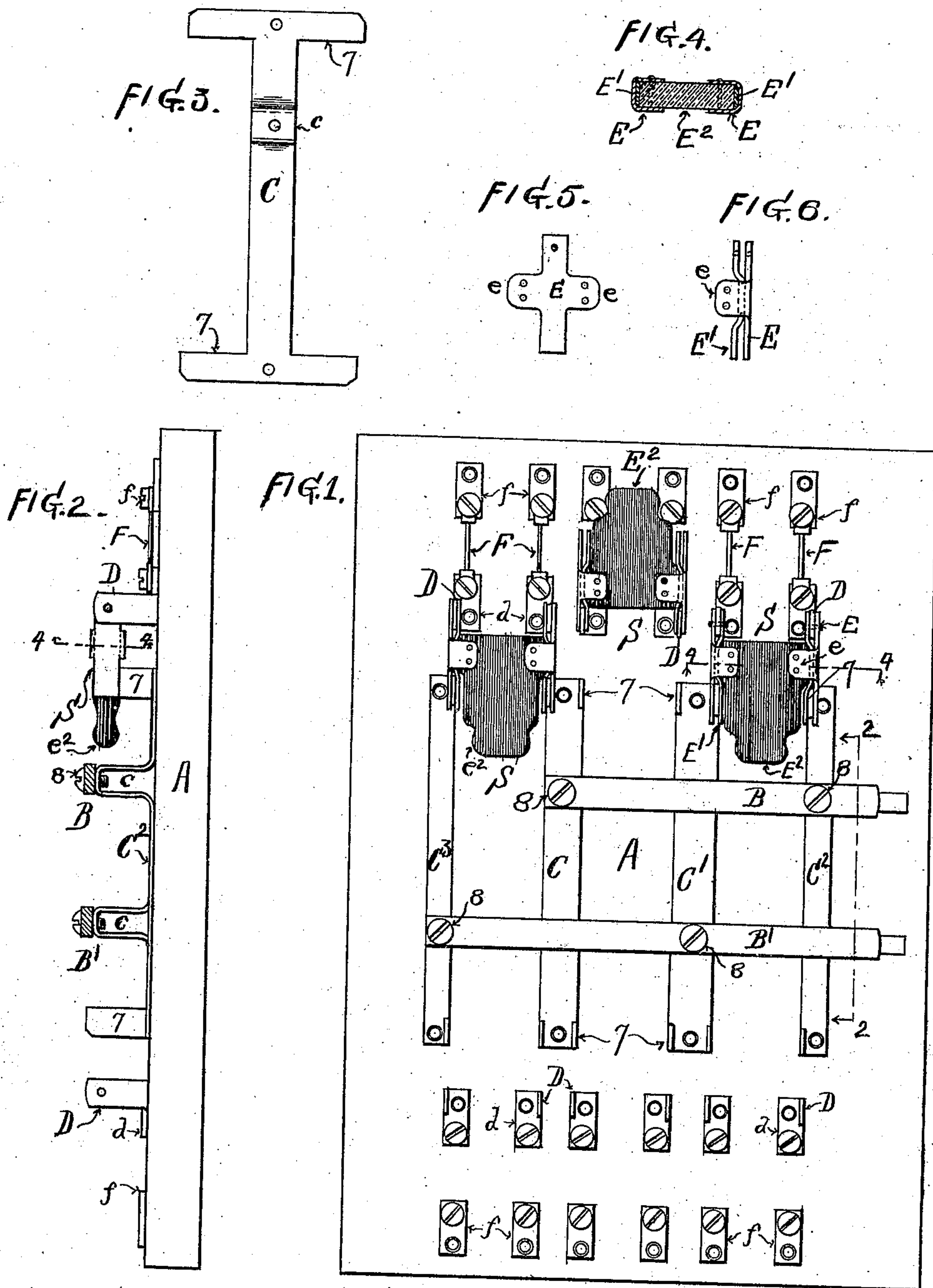
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H. KRANTZ.

ELECTRICAL SWITCH MECHANISM.

(Application filed May 8, 1901.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## ELECTRICAL SWITCH MECHANISM.

SPECIFICATION forming part of Letters Patent No. 693,550, dated February 18, 1902.

Application filed May 8, 1901. Serial No. 59,343. (No model.)

*To all whom it may concern:*

Be it known that I, HUBERT KRANTZ, a citizen of the United States of America, residing in the borough of Brooklyn, county of Kings, in the State of New York, have invented Improvements in Electrical Switch Mechanism, of which the following is a specification.

The main object of my invention is to simplify and strengthen the construction of electrical switchboard connections and their switches and to reduce the number of parts and joints in such electrical connections.

In the accompanying drawings, Figure 1 is a face view of a switch or panel board embodying my improvements. Fig. 2 is a corresponding edge view with the bus-bars in section on the line 2 2, Fig. 1. Fig. 3 is a detached view of one of the cross-bars partially formed. Fig. 4 is a cross-sectional view on the line 4 4, Figs. 1 and 2; and Figs. 5 and 6 are views of the metallic blades of the switch in process of formation.

Referring to Figs. 1 and 2, A is the insulating base-plate of the switchboard or panel-board, which may be made of slate or other suitable material. B and B' represent two bus-bars, and C, C', C<sup>2</sup>, and C<sup>3</sup> are four cross-bars to which the bus-bars are alternately connected. SS are the jack-switches, hinged to lugs D D, secured to the base-plate, and connected by fuses F F to terminals f f. I have indicated the hinging-lugs and terminal plates at the lower part of the panel-board as well as the top; but for the sake of simplicity I have omitted the switches at the lower part, since they would simply be duplicates of those represented at the top of the board. At the upper part I have shown the two outer switches S S as closed and the middle one as thrown back to break connections.

The bus-bars B B' may be of the usual construction; but in order to reduce the number of electrical joints and to simplify the construction I make the cross-bars C C', &c., in a special manner. I construct these bars C C', &c., so that they can be connected directly to their respective bus-bars, and for this purpose I form in that part of each bar which will come under the bus-bar to which it is to be connected a U-shaped bend or upward loop c, Figs. 2 and 3, which can then be directly connected to the bus-bar by a

screw 8 or other suitable means. The usual construction is to have a separate connecting-piece between the cross-bar and bus-bar; but that means two electrical joints, where by my invention only one is needed. Ordinarily the lugs with which the blades of the jack-switches make contact to connect up with the cross-bars are spring-clips fastened to the ends of the cross-bars by screws or otherwise. To get rid of a joint or joints at this point, I make each lug a single blade, which I stamp out of the same piece of sheet metal as the body of the bar C, as shown in Fig. 3, and I then bend these lugs up at right angles to the body of the bar, as shown in Figs. 1 and 2. The cross-bars C C' have each four blades 7 at the four corners; but the end cross-bars C<sup>2</sup> and C<sup>3</sup>, Fig. 1, need contact-blades 7 at one side only, as seen in Fig. 1. In the same manner each hinging-lug D is a single blade formed in one with and bent up from its base-piece d. By the direct connection of the bus-bar to the cross-bar and the provision of four contact-lugs 7 in one with the body of the cross-bar I am enabled to supply current to four different switches with but the one joint—at the screw 8—between the bus-bar and the ends of the lugs 7.

To cooperate with the single-bladed contact and hinging lugs 7 and D the hinged part of each jack-switch S is provided with pairs of spring-clips carried by a block E<sup>2</sup> of suitable insulating material, such as slate. On each side of the block E<sup>2</sup> is a pair of plates E and E', formed as illustrated in Figs. 4, 5, and 6, as well as Fig. 1. The outer plate E is stamped out of sheet metal, with wings e e, Fig. 5, which are bent at right angles to the body of the plate to embrace the edge of the block E<sup>2</sup>, Fig. 4. The ends of the plates E' beyond the wings e have offset bends, as shown in Fig. 6, so as to produce at the free ends of the plates spring-clips to embrace at one end the hinging-lugs D and at the other the contact-lugs 7 of the cross-bars. The pairs of plates are secured to the blocks by the wings e, as shown in Fig. 4. The free end of the block E<sup>2</sup> of each switch may be provided or formed with a suitable handle e<sup>3</sup>. By constructing the moving part of the jack-switch in the manner described, with a block E<sup>2</sup> secured to the side plates between the hinging



end and the contact end of the plates, I provide a stronger and more rigid construction than the common form of two-blade jack-switch, where the blades are hinged at one end and united by an insulating cross-bar at the other end, allowing side play, due to the elasticity of the blades, and involving danger of the blades being bent and getting out of relation to the fixed clips.

10 I claim as my invention—

1. In an electrical switchboard, the combination of hinged switches carrying spring-clips with cross-bars having at their opposite ends contact-lugs, each a single blade, formed in one with and bent up from the body of the cross-bar, substantially as described.

2. In an electrical switchboard, the combination of a bus-bar with a cross-bar connected to the bus-bar and having at its opposite ends contact-lugs, each being a single blade, formed in one with and bent up from the body of the cross-bar, and switches having clips to contact with said blades, substantially as described.

3. In an electrical switchboard, the combination of four switches with a bus-bar and a cross-bar connected to the bus-bar, said cross-bar having four contact-lugs for said four switches, each such lug being a single blade in one with and bent up from the body of the bar.

4. An electrical jack-switch, comprising an insulating base-plate carrying hinging-lugs, each a single blade in one with and bent up from its base-piece, contact-lugs also each of a single blade in one with its base-piece, in combination with the hinged part of the

switch comprising an insulating-block carrying spring-clips, to make the hinge connections with said hinging-lugs at one end and to make contact with said contact-lugs at the other end, substantially as described.

5. The combination of the hinging and contact lugs of a jack-switch with the hinged part consisting of an insulating-block having secured to each of its opposite edges two plates between their hinging and contact ends, each pair of plates forming spring-clips, substantially as and for the purpose described.

6. The combination of the hinging and contact lugs of a jack-switch with the hinged part consisting of an insulating-block having secured to its opposite edges plates with wings bent over and secured to said block between the hinging and contact ends of said plates, the latter having ends projecting beyond the insulating-block for connection with the hinging and contact lugs.

7. The combination of the hinging and contact lugs of a jack-switch with a hinged part, consisting of an insulating-block having secured to each of its opposite edges a pair of plates, one of said plates having wings to embrace the other plate and also the edge of the insulating-block to secure the plates to the latter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HUBERT KRANTZ.

Witnesses:

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JOSEPH A. NEWTON.