

No. 632,076.

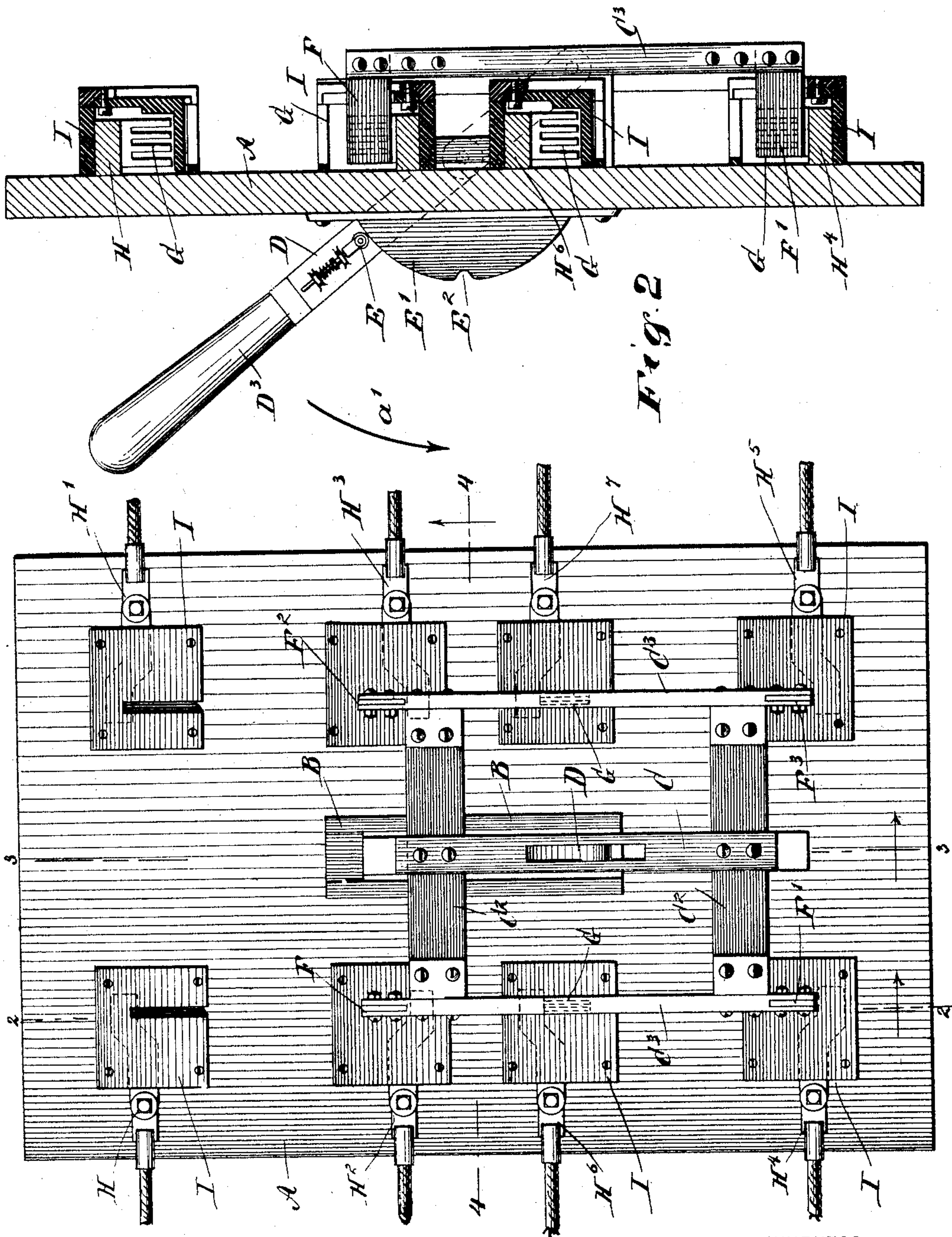
Patented Aug. 29, 1899.

A. E. WELLS.
ELECTRIC SWITCH.

(Application filed Feb. 7, 1898.)

2 Sheets—Sheet 1.

(No Model.)



WITNESSES:
John A. Simpson
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Fig. 1

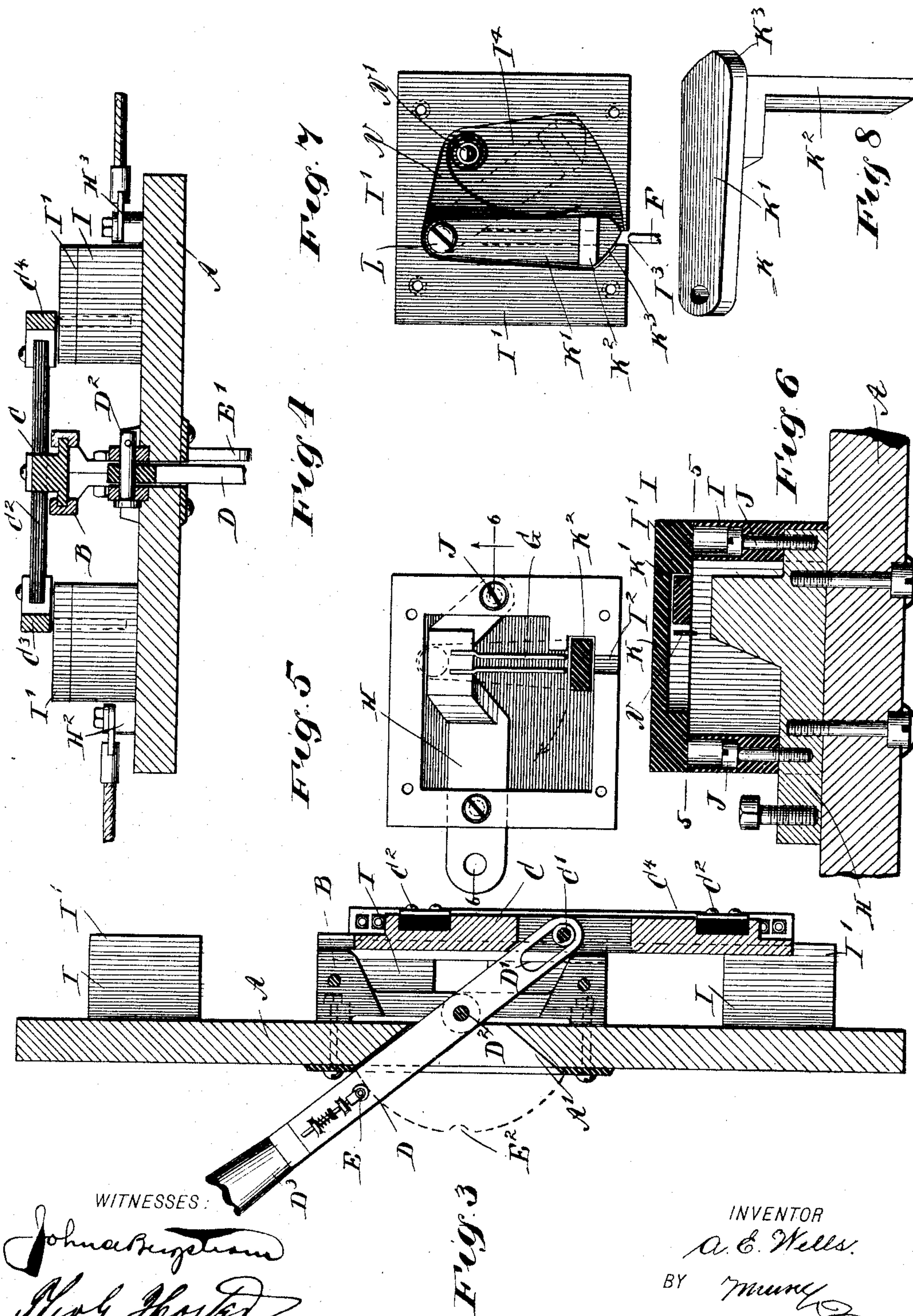
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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

ALBERT EDWARD WELLS, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO CHAUNCEY A. CORNELL AND WILLIAM J. BAUGHMAN, OF
SAME PLACE.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 632,076, dated August 29, 1899.

Application filed February 7, 1898. Serial No. 669,378. (No model.)

To all whom it may concern:

Be it known that I, ALBERT EDWARD WELLS, of Pittsfield, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Electric Switch, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved electric switch for use on switchboards in electric light, power, or other plants or places and which is simple and durable in construction, not liable to get out of order, positive in its action, and of a large capacity, and arranged to insure a simultaneous breaking of all points in a circuit, the arcing being reduced to a minimum.

The invention consists of novel features and parts and combinations of the same, as will be hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a face view of the improvement arranged for a two-pole double-throw switch. Fig. 2 is a transverse section of the same on the line 2 2 of Fig. 1. Fig. 3 is a similar view of the same on the line 3 3 of Fig. 1. Fig. 4 is a sectional plan view of the same on the line 4 4 of Fig. 1. Fig. 5 is an enlarged sectional side elevation of one of the shutter-boxes on a terminal block, the section being taken on the line 5 5 of Fig. 6. Fig. 6 is a sectional plan view of the same on the line 6 6 of Fig. 5. Fig. 7 is an inner face view of one of the shutter-box covers, and Fig. 8 is an enlarged perspective view of one of the shutters.

The switch is mounted on a suitably-constructed board or slab A, of wood, marble, or other material, and on one face of the said board is secured a guideway B, in which is fitted to slide a slide C, provided at or near its middle with a friction-roller C', engaging a slot D', formed in one end of a lever D, fulcrumed at D² on the guideway B, and extending through an opening A' to the other face of the switchboard, as is plainly indicated in the drawings. On this end of the lever D is

secured a handle D³ under the control of the operator for throwing the slide C into a lowermost, uppermost, or intermediate position to break and make contacts, as hereinafter more fully described. A friction-roller E, journaled on a spring-pressed rod held to slide on the lever D, travels on the peripheral surface of a segment E', secured to the rear face of the board A, said friction-roller being adapted to drop into a notch E², formed on the segment, to hold the lever D in a middle position, the switch-plates being completely out of contact, as hereinafter more fully described.

The slide C is provided with transversely-extending bars C² of hard rubber or other suitable material, and on the outer ends of said bars are secured arms C³, on the ends of which are removably secured by bolts or other means the contact-plates F F' F² F³, made of copper or other suitable material, the same as the arms C³. The contact-plates F F' F² F³ are adapted to make contact with pairs of contact-plates G, attached to the terminal blocks H H' H² H³ H⁴ H⁵ H⁶ H⁷, fastened by bolts or other devices to the board A, and with the contact-plates G and a portion of the blocks inclosed in shutter-boxes I, each made of rubber or other insulating material and secured by insulating-screws J to the terminal blocks, as will be readily understood by reference to Fig. 6.

Each box I is provided with a removable cover I', fastened by screws to the box, and in one side of the box is formed a slot I², registering with a slot I³ in the corresponding cover, said slots permitting the corresponding contact-plate F, F', F², or F³ to pass within the box to make contact with the contact-plate G contained in the box.

As illustrated in Fig. 1, the two uppermost contact-plates F F² of the slide are adapted to make contact with the contact-plate G on the terminal blocks H H' and H² H³, and the lowermost plates F' F³ are adapted to make contact with the contact-plates G on the terminal blocks H⁴ H⁵ and H⁶ H⁷. As shown in the drawings the lever D is in an uppermost position, the slide C being in a lowermost position and with the contact-plates F F² in engagement with the contact-plates of the ter-

minal blocks H^2 H^3 and with the contact-plates F' F^3 in contact with the contact-plates G on the terminal blocks H^4 H^5 . Now when the lever D is moved downward into a central position with the friction-roller E in engagement with the notch E^2 then an upward sliding motion is given to the slide C to move the several contact-plates F F^2 and F' F^3 out of engagement with their contact-plates and completely out of the boxes I to stand intermediate of adjacent boxes. A further downward movement in the direction of the arrow a' brings the lever D into a lowermost position and the slide C into an uppermost position, so that the contact-plates F F^2 make contact with the plates G for the terminal blocks H H' , and the other plates F' F^3 make contact with the plates G for the terminal blocks H^6 and H^7 . The slots I^2 and I^3 in each box and its cover are instantly closed on a contact-plate F , F' , F^2 , or F^3 leaving its corresponding box by means of a shutter K , so that arcing is reduced to a minimum, the shutter being arranged to readily swing open by a contact-plate F , F' , F^2 , or F^3 entering a box through the registering slots. Each shutter K is made of rubber or other similar insulating material and is provided with an arm K' and an arm K^2 , standing at an angle from the arm K' , near the free end thereof, said arm K' being hung on a pivot L , secured to the cover I' , as is plainly shown in Fig. 7. The inner side of the cover I' is formed with a recess I^4 for the reception of said arm K' . A spring N is arranged within the recess I^4 and is secured at one end by a screw N' to the box-cover, the free end pressing against the arm K' of the shutter K , so as to normally hold the latter in a closed position, as soon as the contact-plate F , F' , F^2 , or F^3 is out of the box. The free end of the arm K' is beveled, as at K^3 , so that the entering contact-plate strikes this bevel to swing the shutter to one side into the position shown in dotted lines in Fig. 7 to allow the contact-plate to pass into the box and engage the corresponding pair of contact-plates G . Now when the contact-plate passes out of the box on moving the switch-slide C , as previously explained, then the spring N will

force the shutter to close at once before the extreme outer edge of the contact-plate leaves the box, and consequently the shutter passes between the end of the contact-plates F and G to prevent arcing, especially as the entering-slots for the contact-plates F are closed by the shutters.

It will be seen that by the arrangement described a simultaneous breaking of the contact takes place when the slide is actuated by the lever D , as previously explained, and the arcing due to the breaking of the contact is reduced to a minimum.

The slot D' is of such a length that the friction-roller C' is at the end of the slot when the slide has moved into an uppermost or lowermost position, so as to prevent a further movement of the slide and its contact-plates and injury to the latter and to the terminal blocks. By having the shutter pivoted on the removable cover I' of the box I convenient access is had to all parts in the box upon removing the cover.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. An electric switch provided with a terminal-block box having a cover with a slot registering with a slot in one side of the box proper, and a two-armed shutter within the box and having one of its arms pivoted on the inside of the box, the arms of the shutter being adapted to close said slots, substantially as shown and described.

2. An electric switch provided with a terminal-block box having a cover with a slot registering with a slot in one side of the box proper, a two-armed shutter within the box and having one of its arms pivoted on the inside of the box, the arms of the shutter being adapted to close said slots, and a spring pressing the shutter to hold the same normally shut, substantially as shown and described.

ALBERT EDWARD WELLS.

Witnesses:

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 CHAUNCEY A. CORNELL.