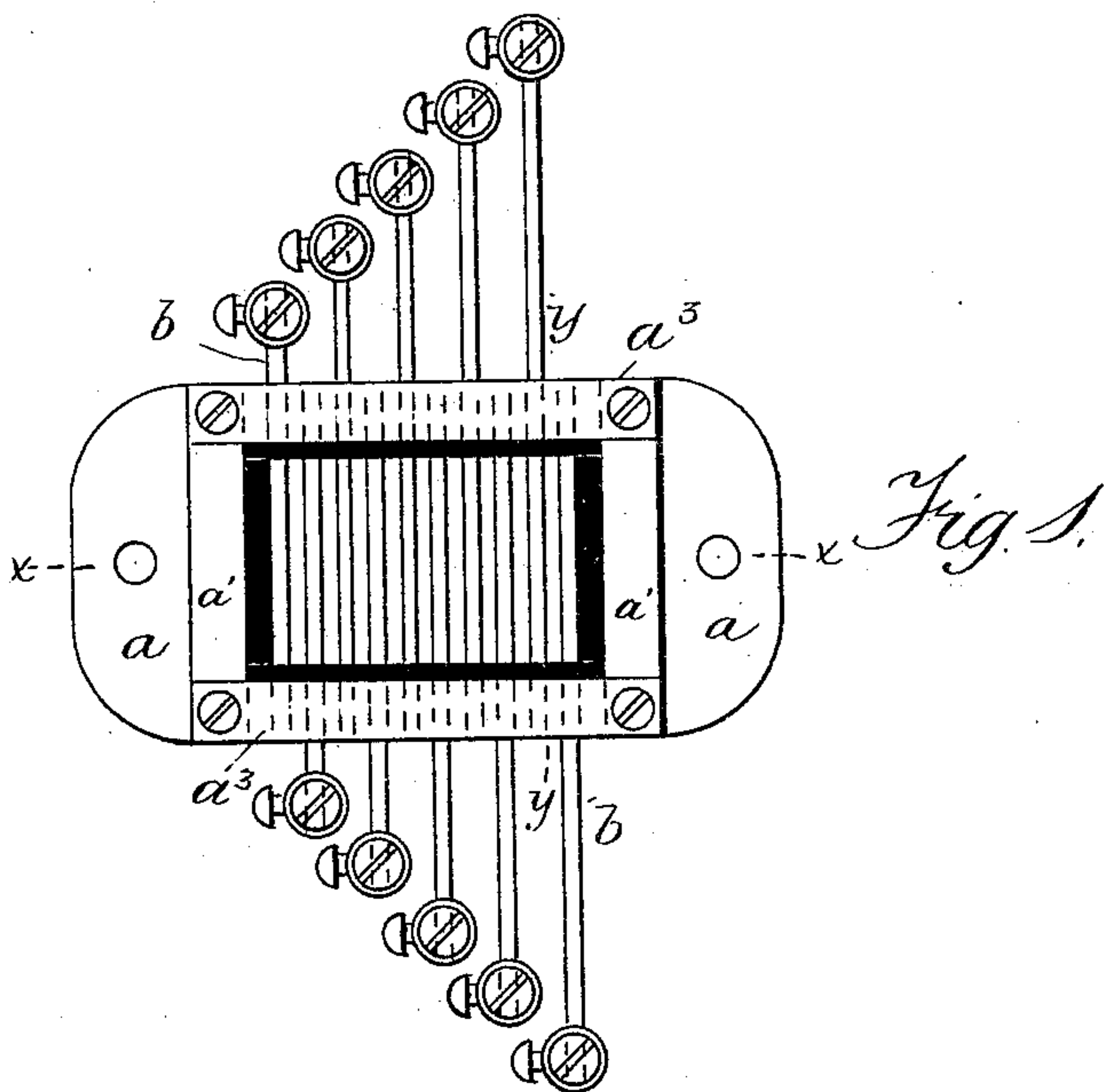
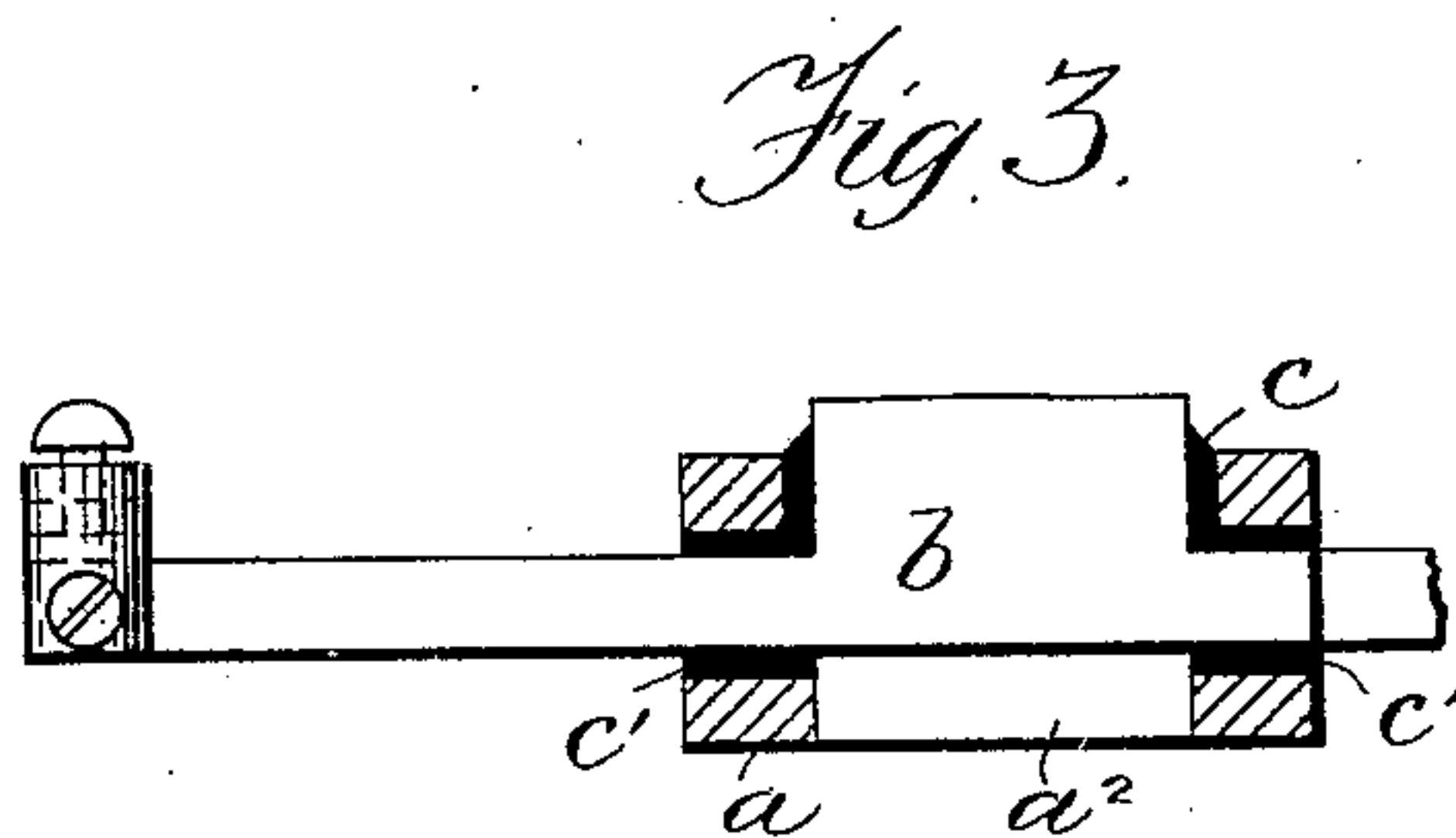
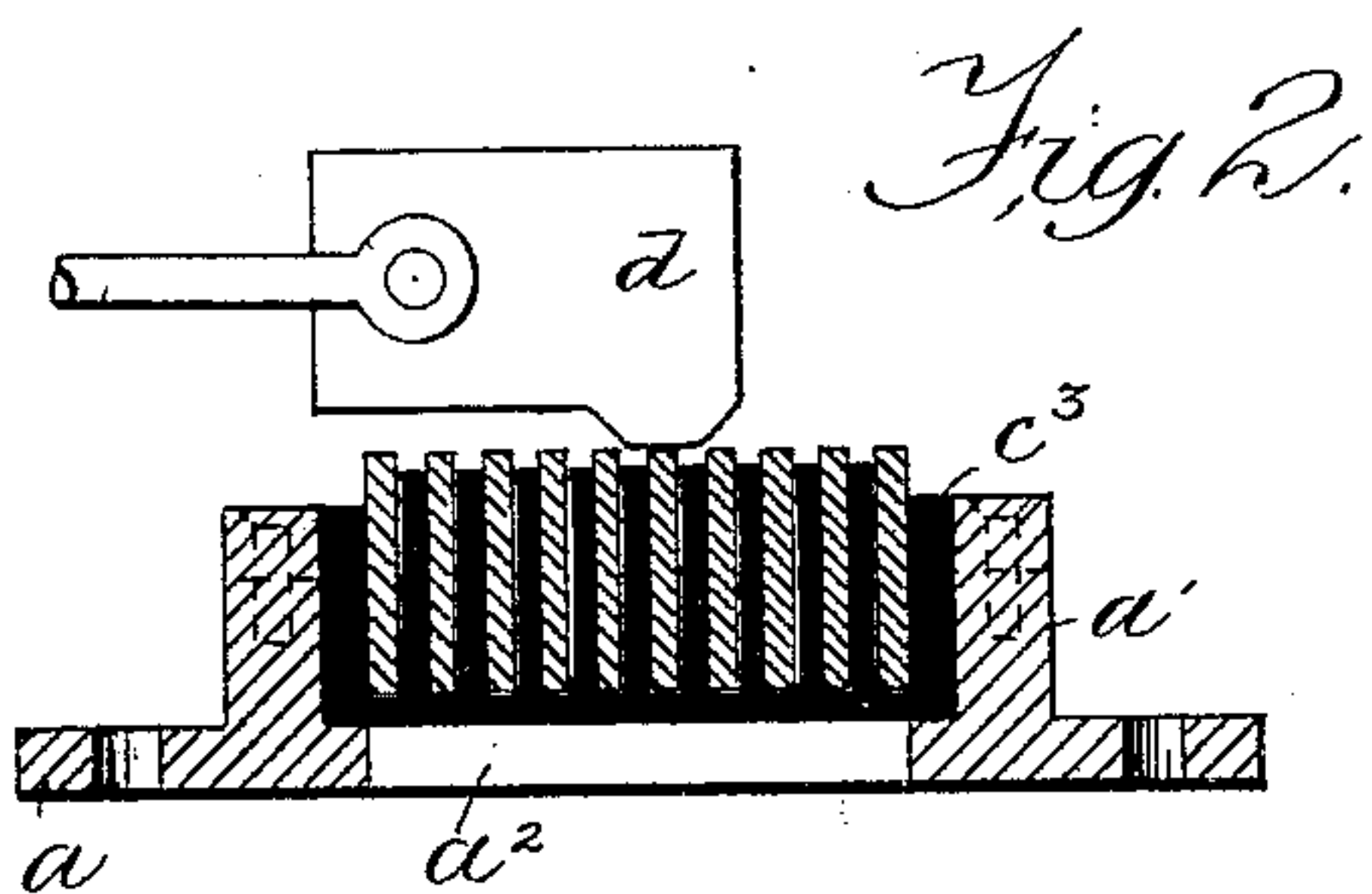


(No Model.)

O. DAHL.
ELECTRIC SWITCH.

No. 405,248.

Patented June 18, 1889.



witnesses:
F. C. Green
Wm. Rosenbaum

Inventor:
Olof Dahl.
by his Atty.
W. J. Johnston

UNITED STATES PATENT OFFICE.

OLOF DAHL, OF BROOKLYN, ASSIGNOR TO THE CLEVELAND MOTOR COMPANY, OF NEW YORK, N. Y.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 405,248, dated June 18, 1889.

Application filed October 10, 1888. Serial No. 287,716. (No model.)

To all whom it may concern:

Be it known that I, OLOF DAHL, a subject of the King of Sweden, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to electric switches of that class in which a sliding contact-piece moves over the surfaces of a number of contacts.

The object is to provide a switch of this nature which will prevent all danger of short-circuiting and which will maintain itself clean and bright under all conditions to which such devices are subject.

In the accompanying drawings, Figure 1 represents a plan of the switch; Fig. 2, a section taken on line xx , and Fig. 3 a section taken on line yy .

Switches of this character have usually been constructed with the contacts arranged a trifle above the base of insulating material in which they are fixed; but it is found in practice that the gaps between the contacts oftentimes become filled with the material scraped from the contacts by the operation of the switch or by collecting dust. This gives rise to cross-connection and often renders the switch inoperative or ineffective.

Referring to the drawings by letter, a represents a frame or base supporting the parts of the switch. This frame is of general rectangular shape and is provided with lugs at the ends, through which screws pass to secure the switch in place. The frame has two upwardly-extending end pieces a' , and the bottom or flooring of the frame is cut out, forming a square opening a^2 . I have fixed by screws or otherwise two strips a^3 , one upon each side of the switch, which are secured to the upper face of the frame. Underneath these strips the frame is left open. This completes the construction of the frame proper, and it produces a kind of skeleton frame or box, the ends being closed by the pieces a' , the top and bottom being open, and the sides each formed of two strips with a space between.

The contact strips or pieces of the switch are shaped preferably as shown in Fig. 3—

that is, with an enlarged portion located within the frame, and having a side extension which passes through the side openings of the frame and carries on its outer end a binding-post. These contacts are made of metal plates and are thoroughly insulated from the metallic frame by the angular piece of insulation c on either side, which insulates the plates from the side strips, the non-conducting strips c' , which insulate the lower edge of the plates, and the blocks of non-conducting material c^2 , which are placed between the adjacent plates directly beneath the strips a^3 . The end plates are insulated from the end pieces of the frame by blocks of non-conducting material c^3 . This leaves a clear air-space between the plates b of the switch at the point where the sliding contact moves. From this construction it will be seen that any particles of metal resulting from the abrading action of the moving contact d will fall between the plates and entirely through the frame of the switch, and cannot in any way interfere with the operation thereof. Dust or foreign material of any kind cannot collect and give rise to short-circuiting.

The contact-plates b are placed in the manner shown in Fig. 1—that is to say, with the lateral extensions on every alternate plate extended to one side of the switch and all the intervening plates to the opposite side. This allows of convenience in connecting the wires of the circuits which the switch is to control. The lateral extensions of the plates are made successively longer, for an obvious purpose.

The object of the two side strips a^3 is obviously to facilitate the removal and replacing of the contact-plates and of the insulating material which aids in their support.

It is the intention to use this switch in connection with an electric motor for controlling sections of winding upon the field-magnet thereof. The moving contact d will be operated automatically by movements of the motor or by the strength of the current and more or less of the sections on the field-magnet will be thrown into circuit, as the work requires. This function of the switch is only mentioned as one of its uses; but it is obviously useful in any capacity where a switch of this character is required.

Having now described my invention, I claim—

1. A skeleton frame of general rectangular shape having an opening at the top and bottom and single openings in two of its sides, in combination with a series of contact-plates located in a parallel position and extending through the openings in the sides, substantially as described.
2. In an electric switch, a series of plates having lateral extensions thereon, in combination with a skeleton frame, the extensions on said plates passing through openings in said frame to the outside thereof, the extensions being arranged alternately on opposite sides of the frame, for the purpose of making circuit-connections therewith.
3. An electric switch consisting of a skeleton frame having its top and bottom open, in combination with a series of approximately-rectangular contact-plates suitably mounted on edge within said frame with their flat surfaces parallel to each other and with a space between each plate.
4. In an electric switch, the combination of the skeleton frame, the two movable side strips a^3 a^3 , and a series of contact-plates se-

cured within said frame by the said side strips, as described.

5. In an electric switch, a series of contact-plates mounted in parallel position with a space between each, mounted in a skeleton frame, the upper edges of the contact-plates being in the same plane and extending some distance above the frame, in combination with a sliding contact adapted to move into contact with any of said contact-plates.

6. In an electric switch, the combination, with a skeleton metallic frame having openings above and below, of a series of approximately-rectangular contact-plates in a vertical position parallel to each other, with an air-space between every two plates, said plates being insulated from the frame and from each other by strips of insulating material interposed between the frame and the plates, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

OLOF DAHL.

Witnesses:

E. B. GETHIN,

WM. A. ROSENBAUM.