

No. 816,100.

PATENTED MAR. 27, 1906.

M. H. JOHNSON.
ELECTRIC SWITCH.

APPLICATION FILED APR 20, 1903.

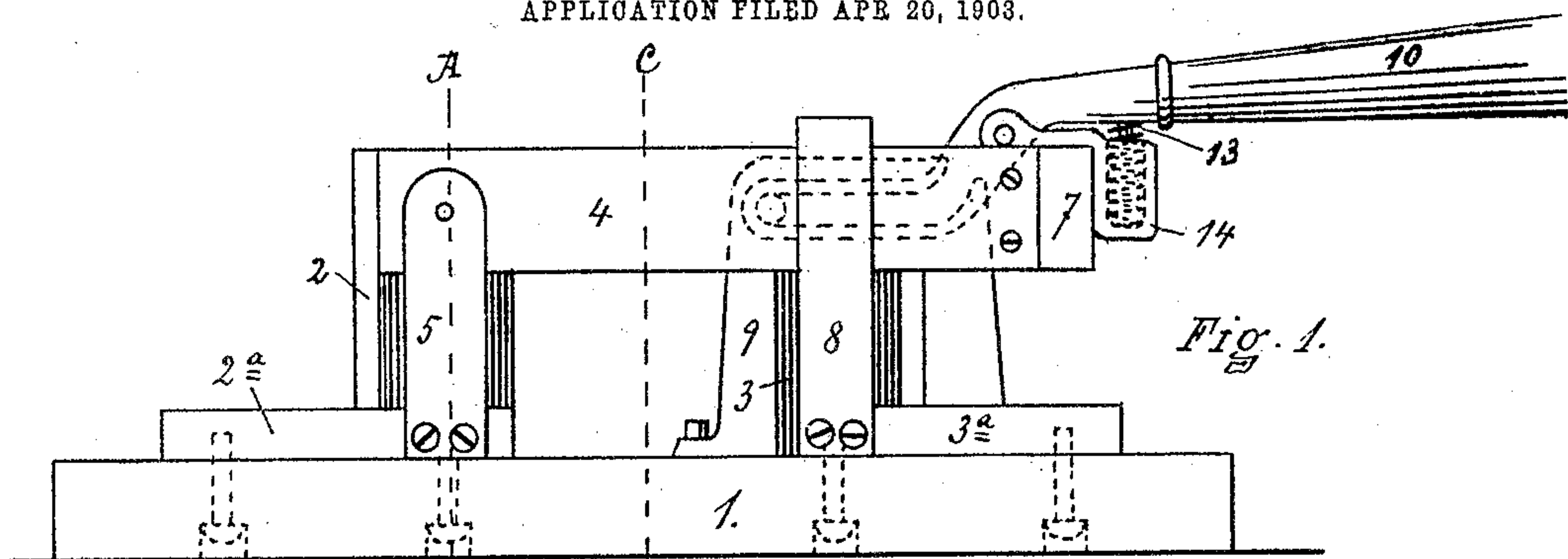


Fig. 1.

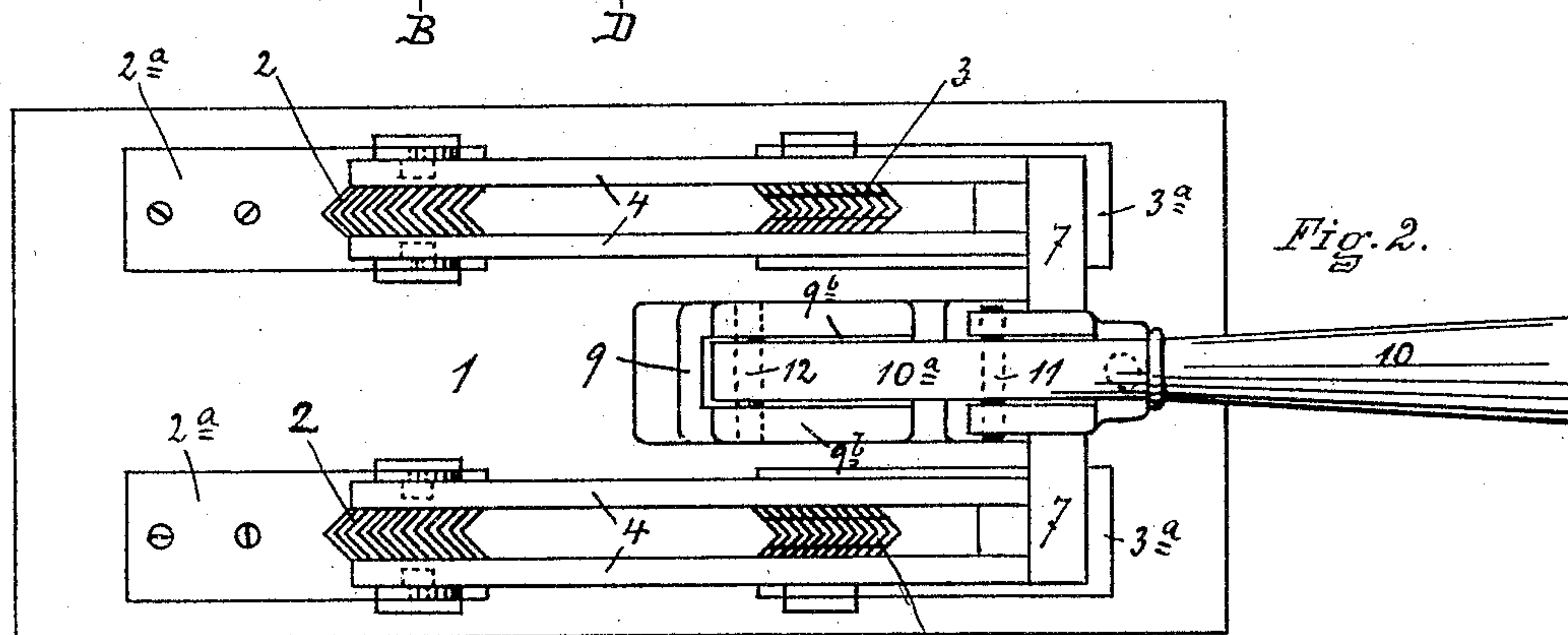


Fig. 2.

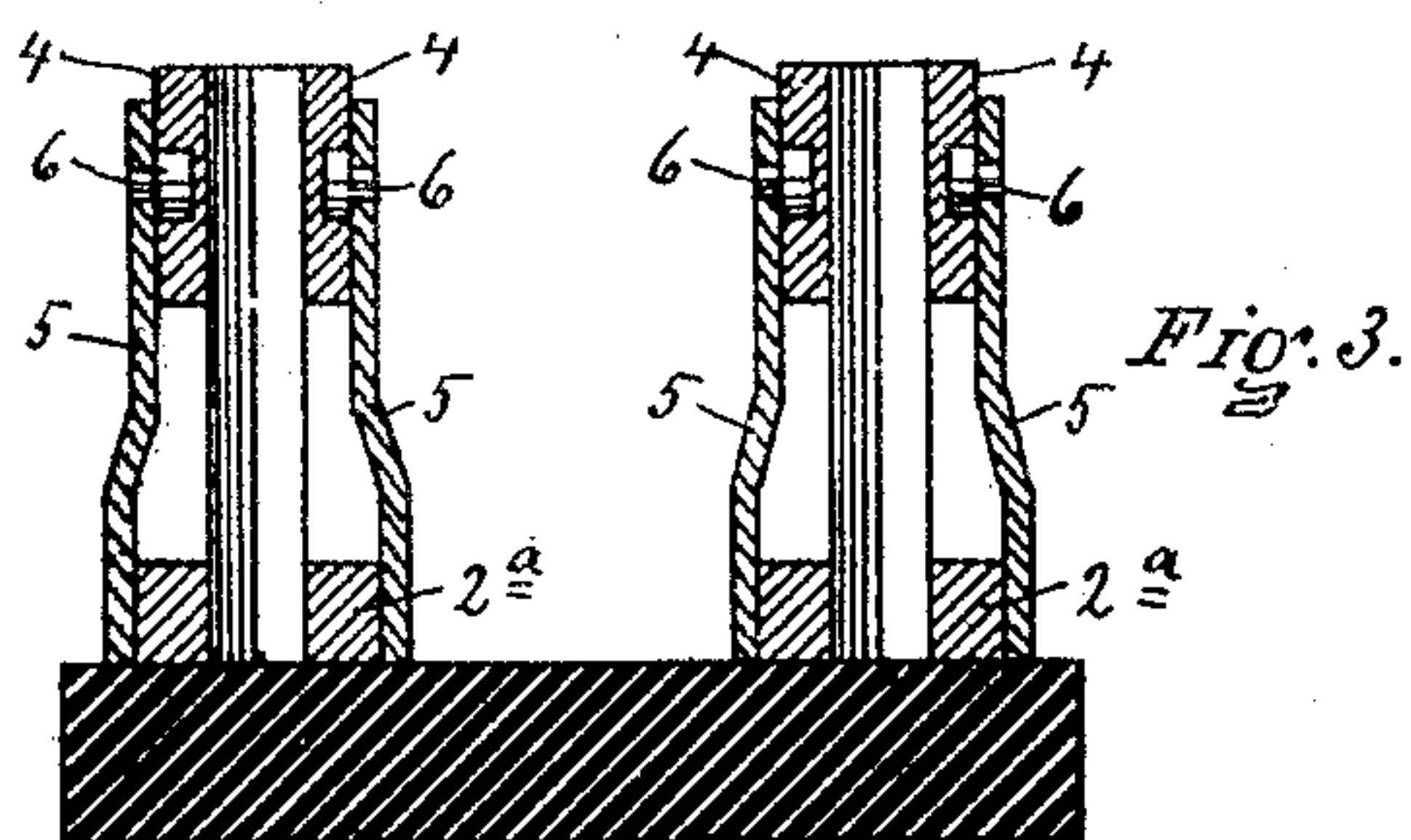


Fig. 3.

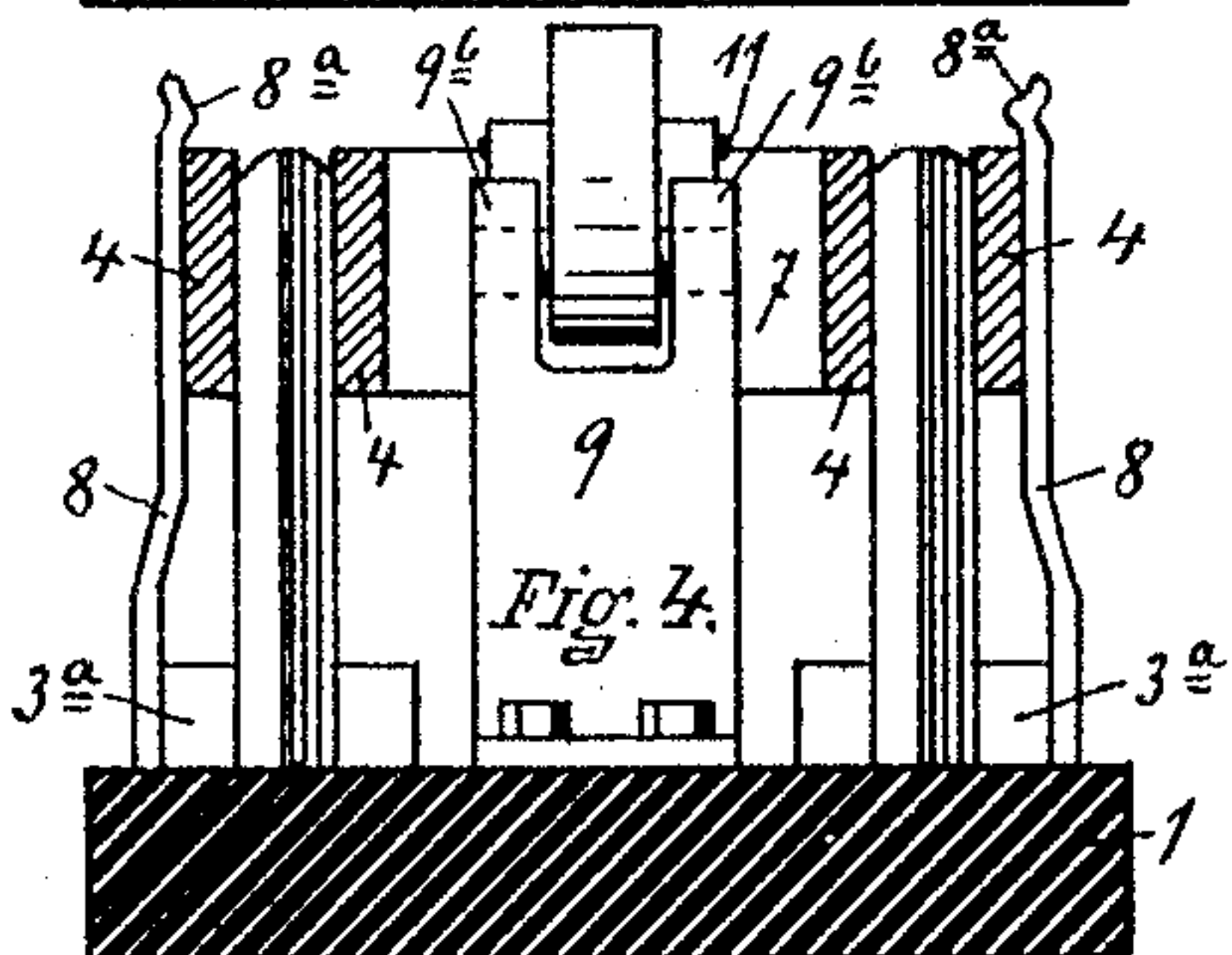


Fig. 4.

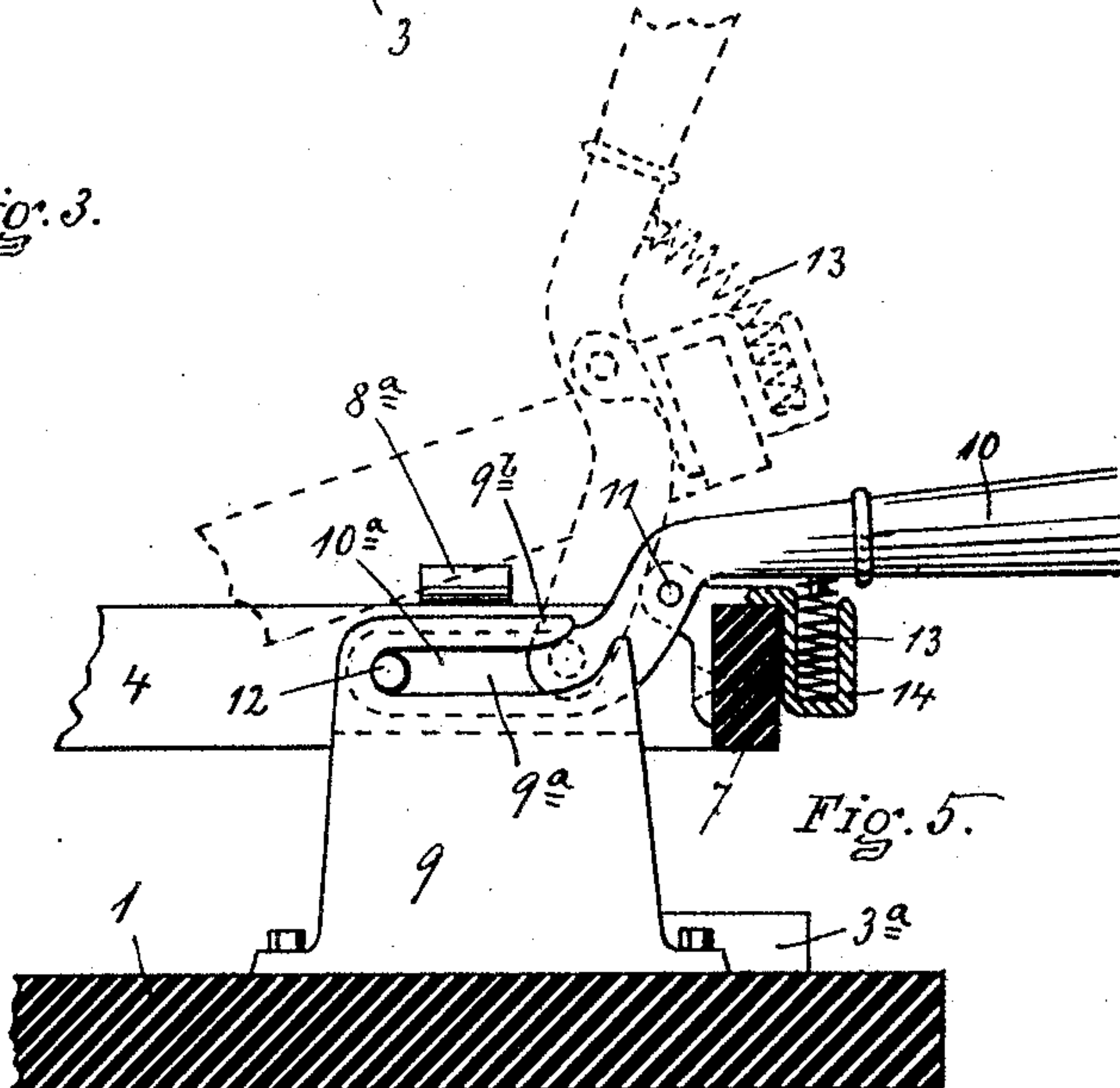


Fig. 5.

WITNESSES

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ELECTRIC SWITCH.

No. 816,100.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed April 20, 1903. Serial No. 153,467.

To all whom it may concern:

Be it known that I, MONTGOMERY H. JOHNSON, of Utica, in the county of Oneida and State of New York, have invented certain
5 new and useful Improvements in Electric Switches; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to
10 make and use the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form part of this specification.

The object of my invention is to provide
15 an electric switch which is simple in its construction, capable of being economically produced and capable of carrying the maximum amount of current on a minimum size of metal parts, and in which an operating mechanism is provided affording a powerful lever-
20 age for opening and closing the switch.

In the drawings, Figure 1 shows a side elevation of a switch embodying the features of my invention. Fig. 2 shows a plan view of
25 the same. Fig. 3 shows a section taken on line A B of Fig. 1, except as to the laminated contact-posts, which are separated between the layers. Fig. 4 shows a section taken on line C D of Fig. 1, together with the parts to
30 the right of the section-line shown in elevation. Fig. 5 shows details of the construction pertaining more particularly to the switch opening and closing mechanism.

Referring to the reference-figures in a more
35 particular description, 1 indicates the switch-base, which is preferably of insulating material. The switch, as shown, is a double or two-line switch, and in this instance there is mounted on the base 1 contact-posts 2 2 and
40 3 3. These posts consist of V-shaped or grooved thin plates or laminae secured in post-bases 2^a and 3^a, respectively. The layers or laminae of the post where they engage with the switch-blade are not secured
45 together and form a post that is somewhat yielding or compressible; but at the lower end the layers of the post may be secured in the post-bases by means of solder and what is known as the "sweating-in" process or by
50 riveting or by an other suitable means which will secure them in the base and afford a good electrical connection. In order to permit the switch-blades to more readily move into engagement therewith without injuring the
55 laminae thereof, the top of the posts 3 are beveled, as shown. The switch-blades 4 4 consist

of two parallel parts. The inner faces of these parts are adapted to engage the posts 2 and 3, and particularly on the edges of the laminae, as shown particularly in Fig. 2. One end of
60 the switch-blade is pivoted by providing the spring-arms 5, secured to the sides of the post-base 2^a, and carrying at their upper ends pivot projections 6, which engage in indenta-
65 tions on the outer sides of the switch-blade parts and are located opposite the post at the pivotal end of the blades. The spring parts 5 serve to press the pivotal end of the blades against the edges of the laminae of the post,
70 forming a most perfect electrical joint capable of carrying a maximum amount of current for the sizes of the pieces of material employed. The pivot projection 6 will preferably not extend entirely through the ends of
75 the blades, whereby no part of the blade at this point is cut out and the maximum amount of contact-surface is secured.

The swinging ends of the blades 4 4 are connected to a yoke 7 of insulating material, and the swinging end of the blades somewhat
80 back from the actual end are adapted to engage with the edges of the laminations of the posts 3. The contact at this point is also of the most perfect kind, and the relation of the blades and post is such that the blades en-
85 gage the post with a considerable binding pressure. This makes the switch comparatively hard to operate and makes it advisable to employ an operating mechanism like
90 that hereinafter described.

For the purpose of making the initial and final connections, as between the blade and post in closing and opening the switch at a point or on a surface which will not engage
95 the body of the post proper, there is provided spring contact-pieces 8, secured to the side of the post-base 3 and having the free contact-point 8^a projecting somewhat beyond the end of the laminated portion of the post and
100 adapted to engage on the outer side of one of the switch-blade parts. In opening and closing the circuit any arcing or burning of surfaces will occur between the outer side of the switch-blade and the end of the contact spring or blade 8^a and not injure the surfaces
105 which make the main contact when the switch is entirely closed. The part 8 may be renewed from time to time, and even the part on the outer side of the blade part which is burned or injured can be renewed by solder-
110 ing on or otherwise securing a contact-piece to engage with the spring or blade 8. On

the switch-base, substantially between the posts 3 3, is secured a fulcrum-piece 9. This piece projects from the switch-base sufficiently for its purpose and is provided at its outer end with slots 9^a, the outer side of which is formed by the hook-like projection 9^b. The operating-lever handle 10 is pivoted at 11 on the yoke 7, and the projecting arm of the lever-handle 10^a is provided at or near its end with a transverse pin 12, adapted to enter the slot or slots 9^a in the end of the fulcrum-piece 9 when the switch is closed. A spring 13 is interposed between the under side of the lever-handle 10 and the bar 7, and in order to suitably provide for it a socket 14 is preferably provided, as shown in Fig. 5.

In opening the switch the operator throws the handle end of the lever outwardly from the switch-base. In so doing the pin 12 bears upon the fulcrum-piece and affords a leverage for forcing the switch-blades with considerable power and withdrawing them from the contact-posts 3. The relative arrangement of the parts is such that when the switch-blades have become disengaged from the contact-posts 3 the pin 12 will be in position to pass out of the open end of the slot 9^a in the fulcrum-piece, and from this position, which is shown in dotted lines in Fig. 5, to the farther-open position the switch is moved without any leverage being secured. In closing the switch the operator moves the handle 10 toward the switch-piece. In the first part of the movement the spring 13 is sufficient to overcome the friction on the pivoted ends of the switch-blades without yielding; but when the pin 12 enters the open end 9^a in the fulcrum-piece the lever-handle then operates as a pry or lever to force the switch-blades into their closed position.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an electric switch, a contact-post consisting of a compiled body of free laminae folded or bent longitudinally into V shape and secured at one end in a post-base, and presenting on opposite sides of such post planes of the free edges of the laminae, and a flat switch-blade mounted to be moved into and out of contact with the post in a substantially longitudinal manner with reference to the laminae of the post, substantially as set forth.

2. In an electric switch, a contact-post consisting of a compiled body of free laminae folded or bent longitudinally into V shape, and secured at one end in a base, and presenting on opposite sides of the post parallel planes of the free edges of the laminae, and a

double switch-blade having flat engaging faces adapted to engage on opposite sides of the post and mounted to be moved into and out of contact with the post in a substantially longitudinal manner with reference to the laminae of the post, substantially, as set forth.

3. In an electric switch, the combination of a contact-post, a double switch-blade engaging the post on each side, springs on opposite sides of the post secured to the base of the post and pressing the blade parts against the sides of the post, and pivot-studs or projections on said springs entering openings in the blade, substantially as set forth.

4. In an electric switch, the combination of a contact-post, a switch-blade having a plain engaging surface, a spring mounted on the base and pressing the blade against the side of the post, and a pivot projection on the spring engaging the blade and supporting the blade for pivotal movement in contact with the post, substantially as set forth.

5. The combination in an electric switch of a contact-post consisting of free laminae, a switch-blade adapted to engage the post on the edges of the laminae, a spring mounted on the base and operating to press the blade against the post and having a pivot projection engaging the blade, substantially as set forth.

6. The combination in an electric switch, having a movable switch-blade and contact-posts, of an operating mechanism consisting of a lever pivoted on the switch-blade, constituting in part an operating-handle, a fulcrum-piece secured on the switch-base, having provision for attachable and detachable connection with the lever, and providing fulcrum-bearings for the lever in opening and closing the switch, substantially as set forth.

7. The combination in an electric switch of the switch-blade and operating mechanism, consisting of a lever pivoted on the swinging end of the blade, the outer end of which lever serves as a handle, a fulcrum-piece mounted on the base adjacent to the blade, having means for attachable and detachable engagement with the inner end of the lever and providing fulcrum-bearings for the lever in opening and closing the switch, and a spring for holding the lever normally in open position, substantially as set forth.

In witness whereof I have affixed my signature, in presence of two witnesses, this 18th day of April, 1903.

M. H. JOHNSON.

Witnesses:

J. BENJ. BRADY,
M. E. ROBINSON