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Patented July 2, 1901.

A. COWPERTHWAIT & N. O. LINDSTROM.

ELECTRIC SWITCH.

(Application filed Feb. 4, 1901.)

(No Model.)

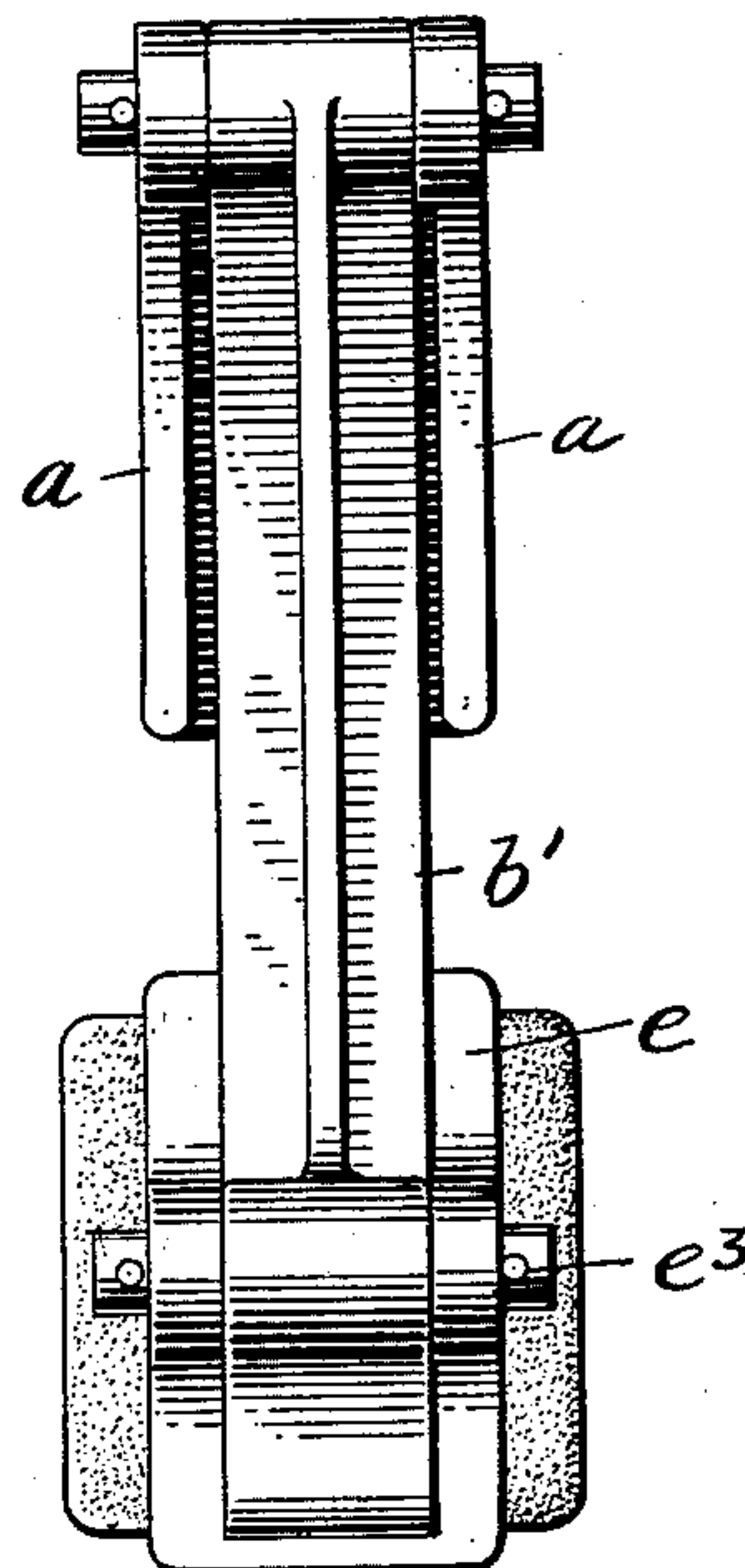
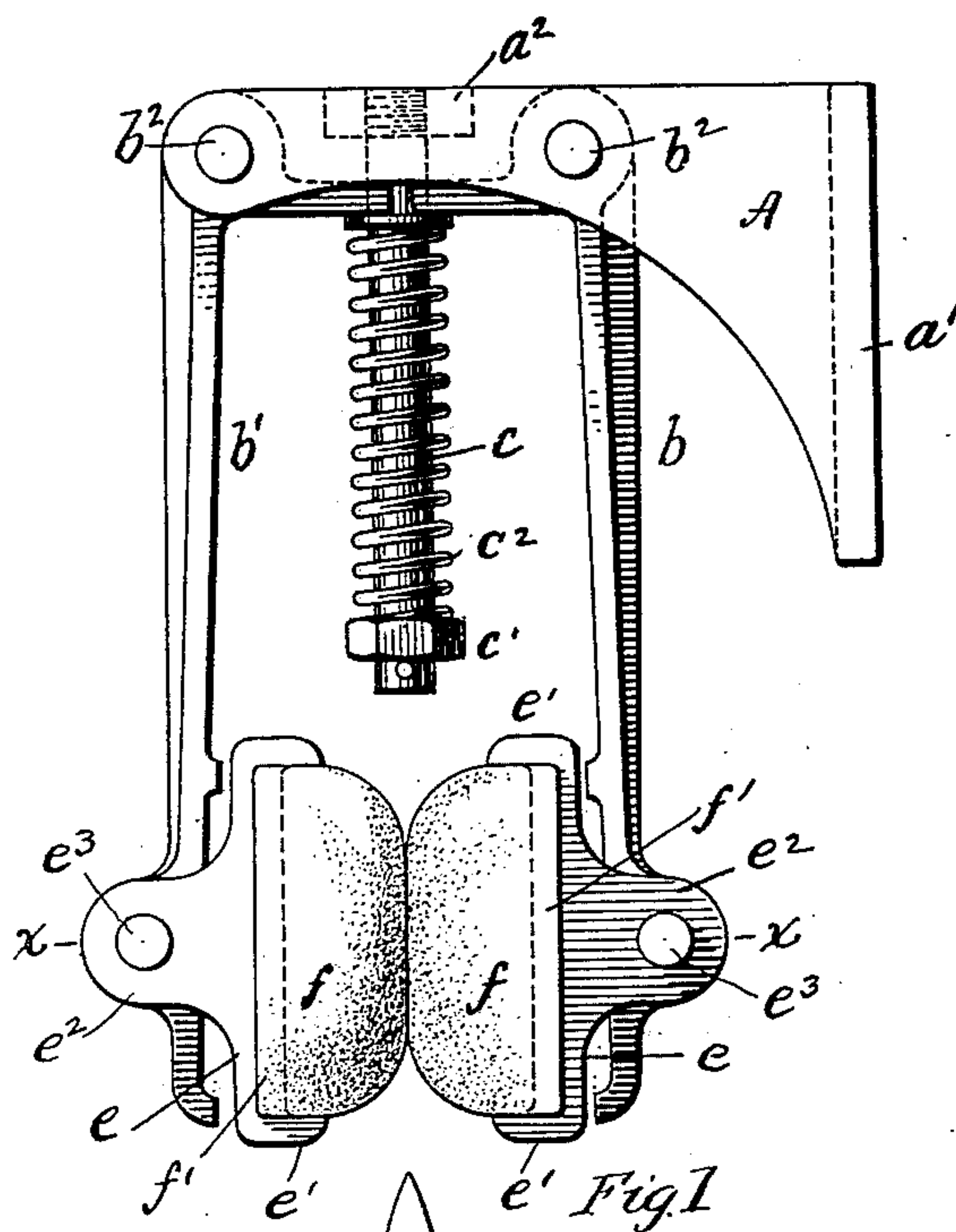


Fig. 2

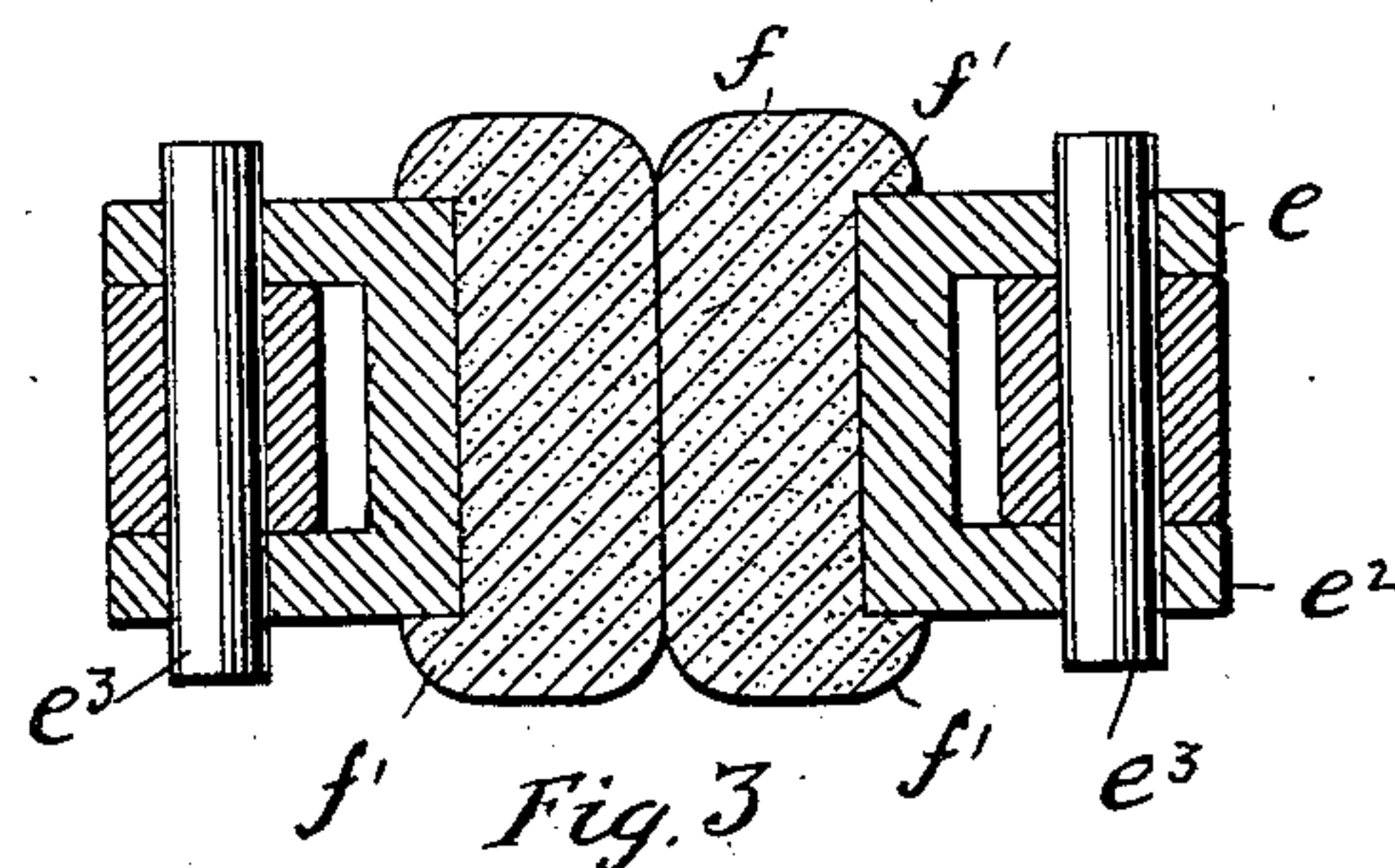


Fig. 3

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ALLAN COWPERTHWAIT AND NILS O. LINDSTROM, OF NEW YORK, N. Y.,
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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 677,340, dated July 2, 1901.

Application filed February 4, 1901. Serial No. 45,829. (No model.)

To all whom it may concern:

Be it known that we, ALLAN COWPERTHWAIT, residing in the city of New York, borough of Brooklyn, and NILS O. LINDSTROM, residing in the city of New York, borough of Queens, State of New York, citizens of the United States, have invented certain new and useful Improvements in Electric Switches, of which the following is a full, clear, and exact description.

This invention relates to the contacts of electrical switches adapted to carry heavy currents and to that class of switches known as "knife" switches, in which a blade enters between a pair of yielding or spring-pressed contacts.

One object of the invention is to provide a construction of contacts which will insure of good and large surface contact between the coacting parts and to insure that the median line between the two spring-pressed contacts shall always be directly opposite the blade, so that the blade in moving into engagement with the contacts will strike exactly between them.

Another object of the invention is to provide carbon contacts which can be easily removed and replaced from the switch when necessary and will make good contact with the metallic parts when in position.

The invention consists of the details of construction hereinafter described and claimed.

Referring to the accompanying drawings, Figure 1 is a side elevation of the improved switch-contact, showing a portion of the switch-blade. Fig. 2 is a front elevation of the same, and Fig. 3 is a section on line $x x$ of Fig. 1.

Referring to the drawings by letter, A represents a bracket consisting of two arms a , connected to the front of a plate a' and joined together near their outer ends by a cross-piece a^2 . (Shown in dotted lines in Fig. 1.) This bracket is adapted to be secured to a slate or other suitable base. Between the arms of the bracket are pivoted two bell-crank levers $b b'$, respectively, their pivots being horizontal and indicated at b^2 . Each bell-crank has a long arm and a short arm, the former being arranged substantially parallel to each other and the latter substantially in

line with each other, but terminating a short distance apart. In the center of the cross-piece a^2 of the bracket is secured a rod c , which extends midway between and parallel to the longer arms of the bell-cranks and at its extremity is provided with a nut c' . The rod passes between the adjacent ends of the short arms of the bell-crank, they being slightly forked to give the rod clearance. Upon the rod is placed a spiral spring c^2 , which bears against the nut c' at one end and against the extremities of both of the short arms of the bell-cranks, the spring being thereby held under compression and exerting an equal pressure on the levers to force the ends of the long arms toward each other.

At the extremity of each long arm is fitted a tilting seat consisting of a rectangular plate e , having flanges e' at opposite sides or above and below, as shown, and having ears e^2 , through which pivot-pins e^3 pass to secure the seats to the arms. In each of the seats is placed a carbon block f , having flanges f' adapted to overlap the two sides of the seat which are not flanged. When the block is in place in the seat, it is prevented from moving in one direction by the flanges e' on the seat and in the other direction by the flanges f' on the block. The action of the spring c^2 holds the two blocks in contact with each other or in contact with the blade, which is adapted to pass between them constantly, so that the blocks cannot by any possibility become unseated. Yet when it is desired to move either of the blocks for examination or substitution it is easily accomplished by simply separating the long arms of the levers and allowing the blocks to drop out. The pivot-pins e^3 permit the blocks and seats to tilt or rock slightly, there being sufficient space between the back of the seats and the arms to permit this, for the purpose of making the blocks self-adjusting. In operation the blade of the switch (indicated by B) is caused to pass between the two carbon blocks, thus separating them and establishing contact therewith on the opposite sides of the blade. It will be seen that with a single spring acting thus uniformly upon both bell-cranks the junction between the two carbon blocks will always be in the same plane and directly

opposite the switch-blade, so that in closing the switch the blade will go easily and smoothly to its seat between the blocks of carbon, and in opening the switch the blade will retreat
5 from the blocks directly and avoid unnecessary sparking.

When the carbon blocks and seats are constructed in the manner described, a good contact between the block and seat can be in-
10 sured by making smooth flat surfaces between them.

Having described our invention, we claim—

1. A switch-contact consisting of a pair of bell-crank levers, a tilting contact-seat at the
15 free end of each lever, a carbon block in each seat and means for yieldingly holding the blocks in contact with each other.

2. A switch-contact consisting of a pair of bell-crank levers, a spring acting against ad-
20 jacent ends of said levers to throw the other

ends together and contact-surfaces on the abutting faces of said other ends, substantially as described.

3. A switch-contact consisting of a pair of bell-crank levers, having arms substantially 25 parallel to each other, and other arms substantially in line and projecting toward each other, facing contacts on the parallel arms, a rod passing between the ends of the other arms, a nut on the end of said rod and a spring 30 on the rod inserted between the nut and the ends of said arms in line with each other.

In witness whereof we subscribe our signatures in presence of two witnesses.

ALLAN COWPERTHWAIT.
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Witnesses:

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