

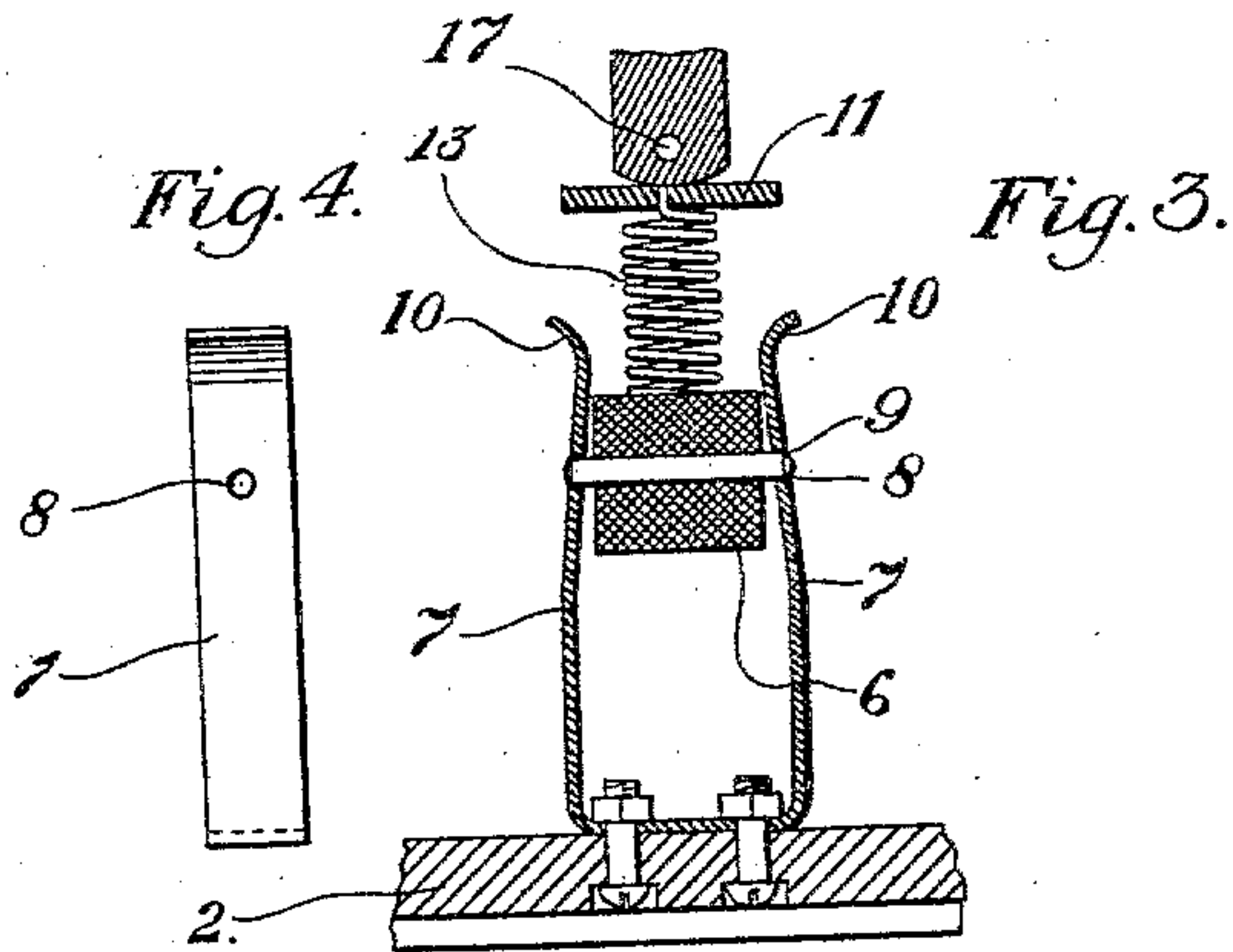
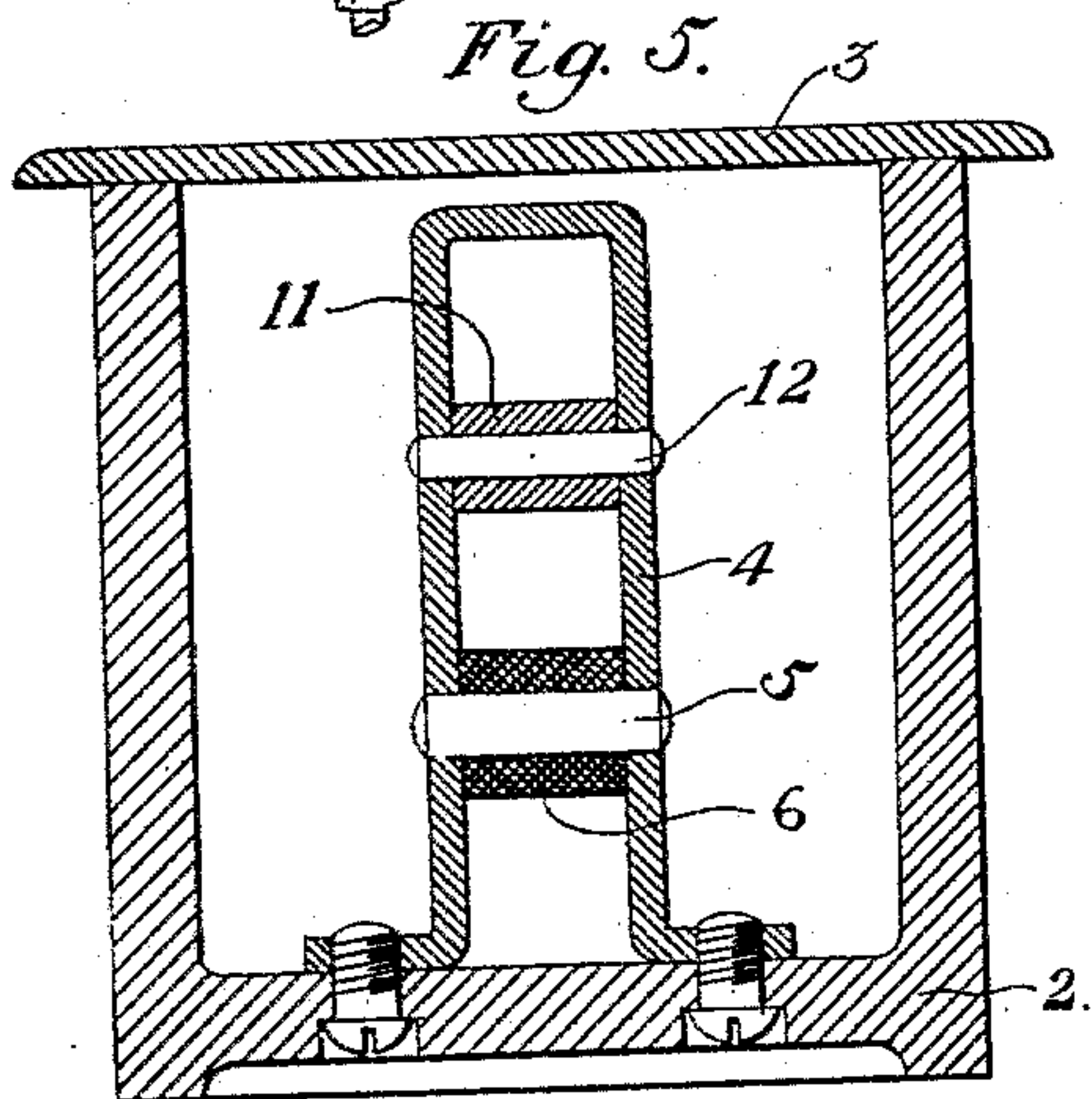
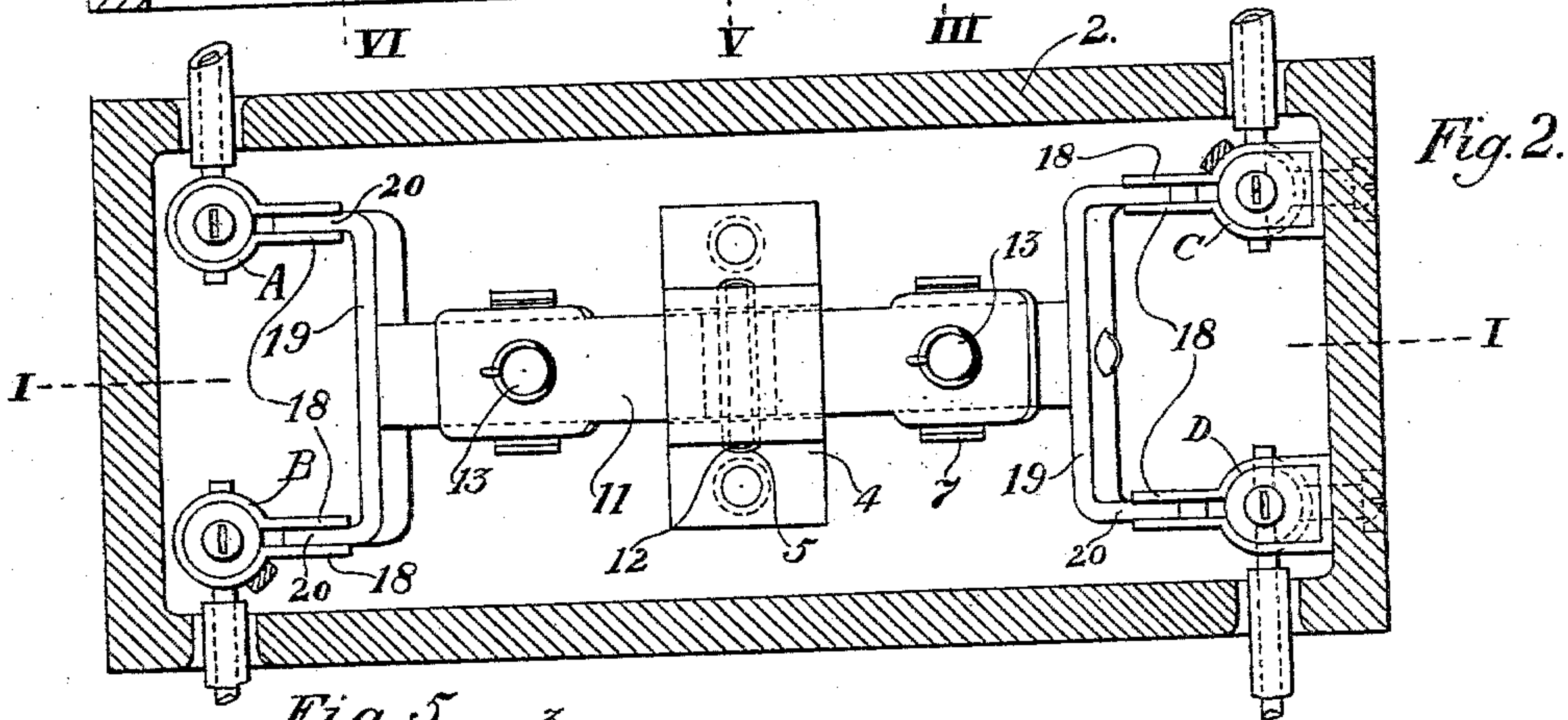
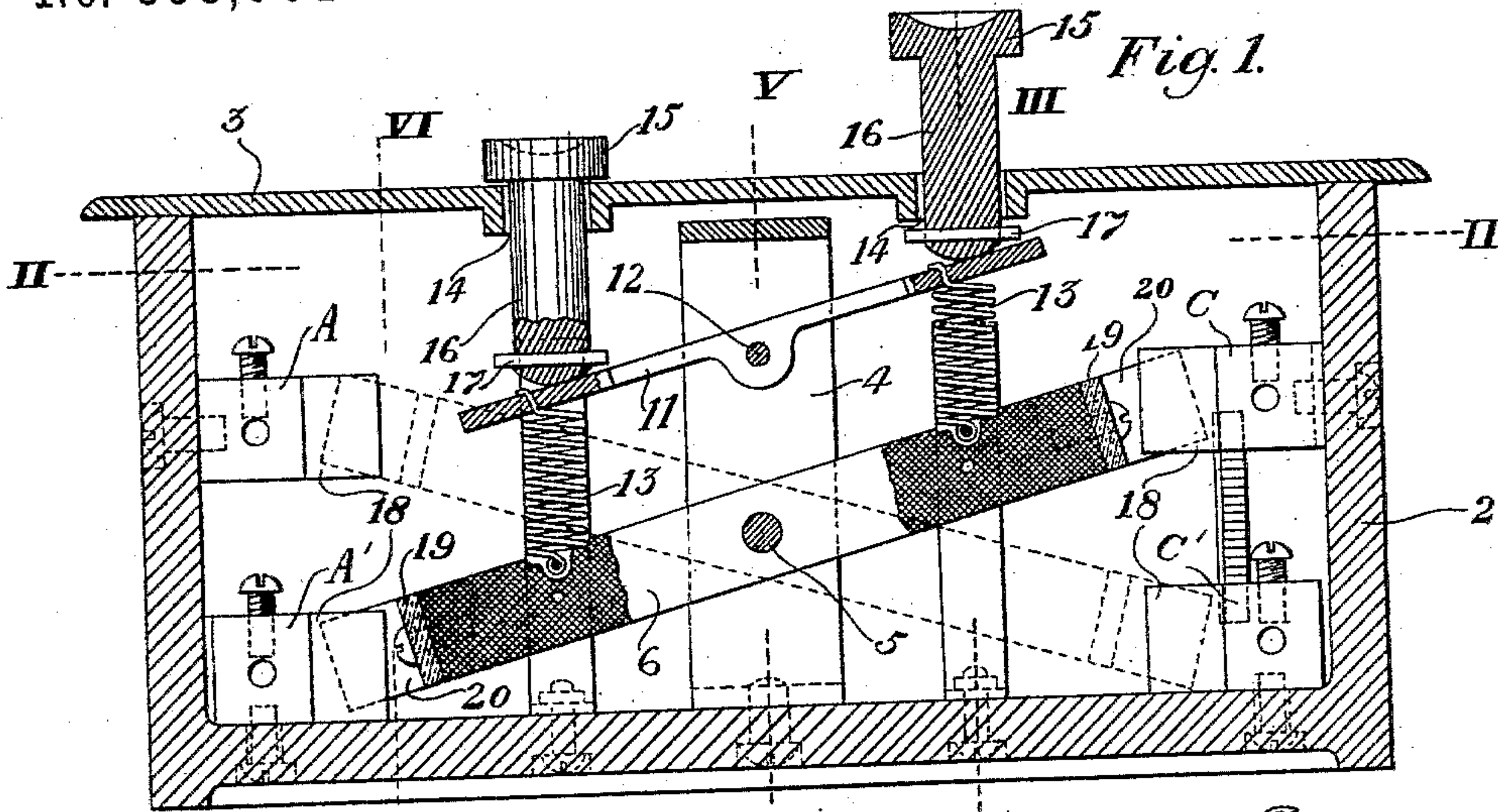
(No Model.)

2 Sheets—Sheet 1.

J. R. NEWELL.
ELECTRIC SWITCH.

No. 598,001.

Patented Jan. 25, 1898.



Witnesses:
Watery Large.
Peter Edwards

Inventor
James R. Newell
by *O. M. Clarke*
his Attorney.

(No Model.)

2 Sheets—Sheet 2.

J. R. NEWELL.
ELECTRIC SWITCH.

No. 598,001.

Patented Jan. 25, 1898.

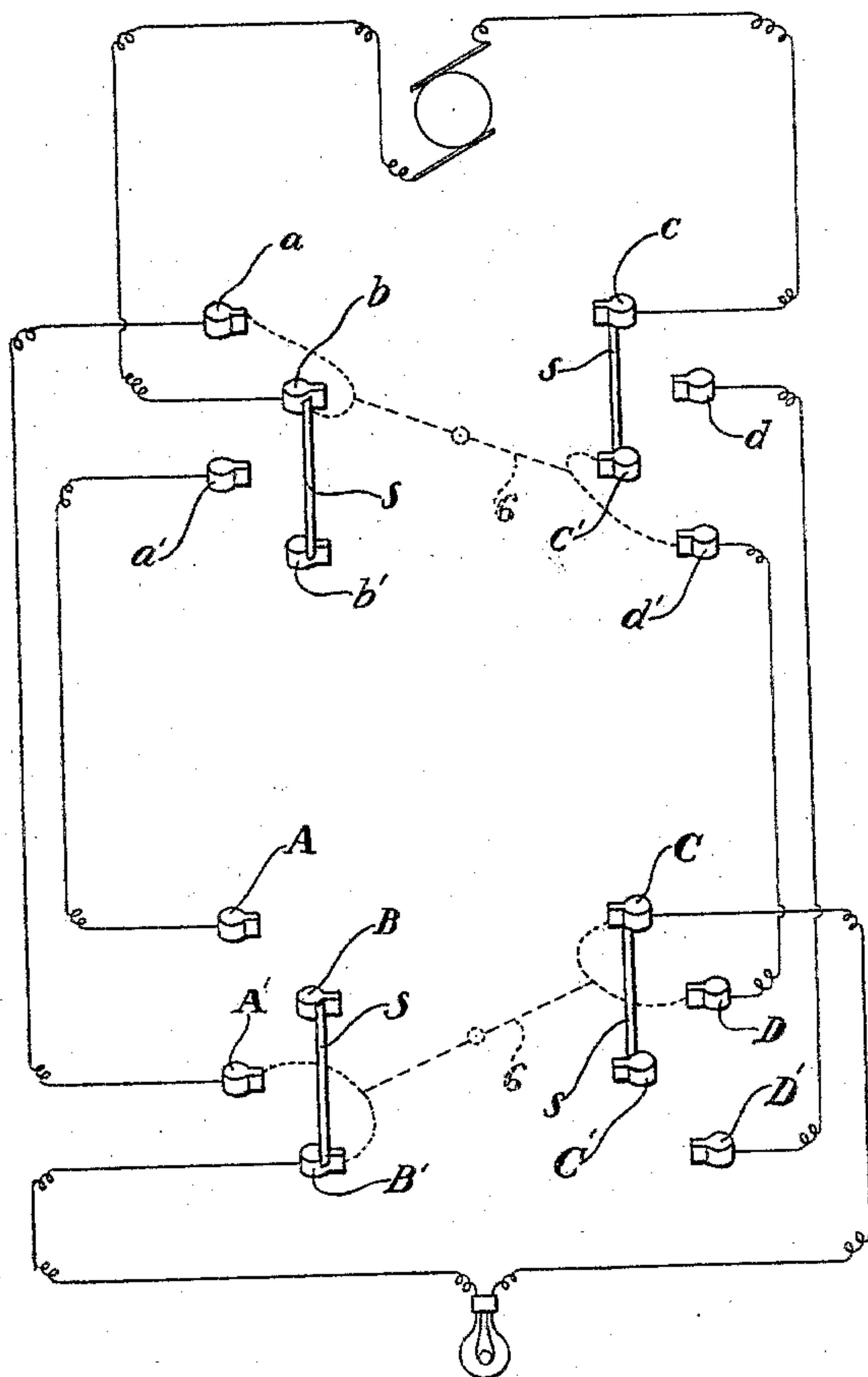


Fig. 7.

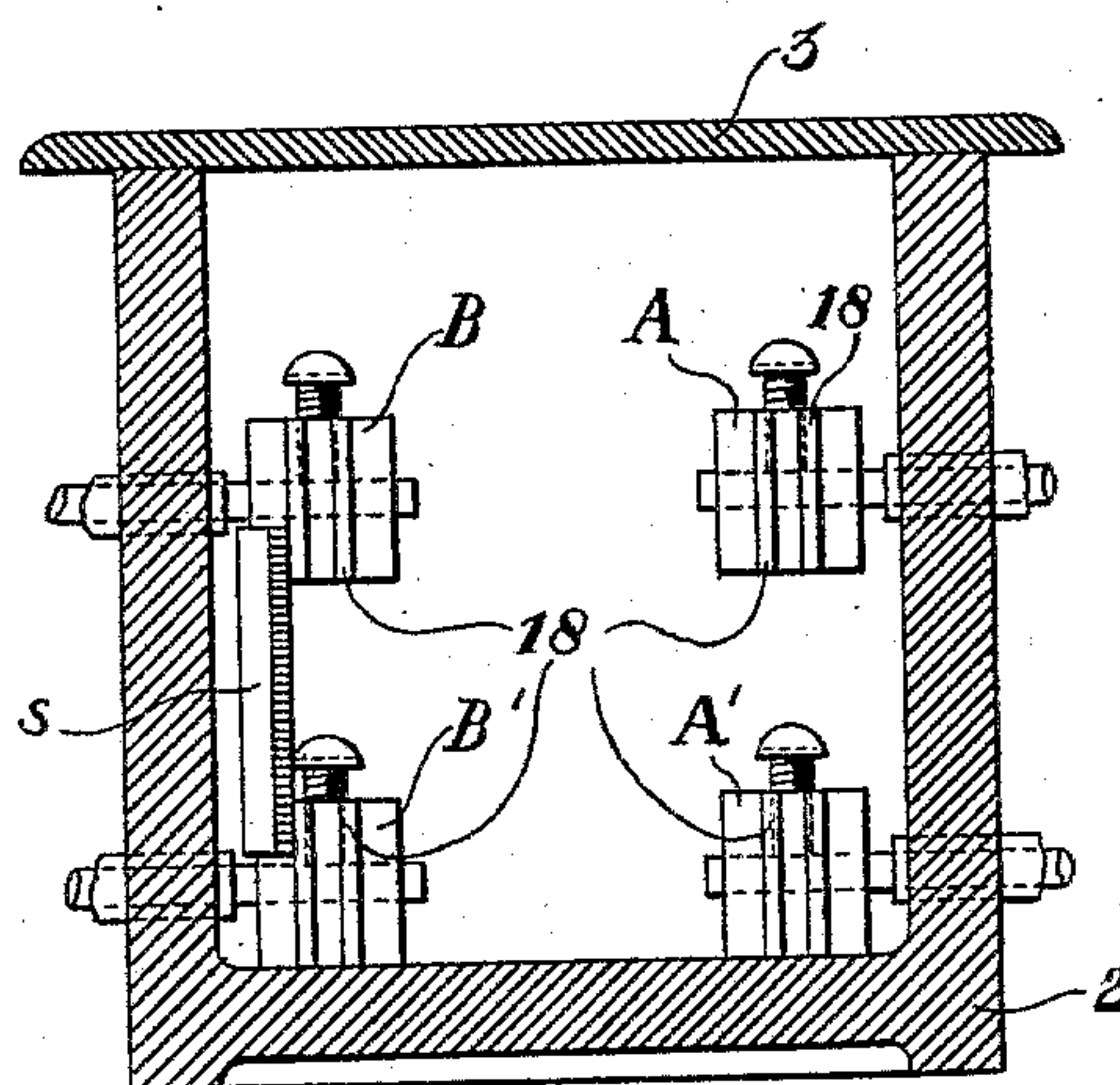


Fig. 6.

Witnesses:
Watson Large
Peter Edwards

Inventor:
James R. Newell
by *C. M. Clarke*
his Attorney

UNITED STATES PATENT OFFICE.

JAMES R. NEWELL, OF TITUSVILLE, PENNSYLVANIA.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 598,001, dated January 25, 1898.

Application filed September 15, 1897. Serial No. 651,820. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. NEWELL, a citizen of the United States, residing at Titusville, in the county of Crawford and State of Pennsylvania, have invented or discovered a new and useful Improvement in Electric Switches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central longitudinal section through my improved switch on the line I I of Fig. 2. Fig. 2 is a horizontal cross-section on the line II II of Fig. 1. Fig. 3 is a cross-section on the line III III of Fig. 1. Fig. 4 is a side elevation of one of the spring-plates shown in Fig. 3. Fig. 5 is a similar section on the line V V of Fig. 1. Fig. 6 is a similar section on the line VI VI of Fig. 1. Fig. 7 is a diagram illustrating a circuit equipped with two of my improved switches.

My invention consists of an improvement in electrical switches or circuit-breakers employed in systems of electrical distribution for turning on or off one or more incandescent lamps, motors, or other devices, or generally for making or breaking any electric circuit or branch thereof. It is designed to be used as a simple single-pole switch or as a single-pole three-way switch, or in special work as a double-pole switch, or in combination with another switch as a double-pole three-way switch.

In the diagram illustrating the use of two switches installed in a circuit the object is to provide means whereby the current may be switched to operate a lamp from either switch independent of the other while maintaining a circuit through either to the other, and vice versa, and to the lamp from either by proper manipulation. This feature is of especial advantage in the case of a lamp in a lower or upper hall, the switches being located on the first and second floors, respectively, whereby the lamp may be turned on or off from either switch, and such feature of advantage will be appreciated by those skilled in the art and readily understood by reference to the diagram shown in Fig. 6 and by the accompanying drawings, which I shall now proceed to describe.

Referring thereto, the mechanism of the

switch is entirely inclosed in a suitable box or case 2, made of insulating non-inflammable material provided with a top 3. Secured to the base of the case midway of its length and breadth is a double-sided closed-top pivoting-bracket 4, between the sides of which at 5 is pivotally supported the central longitudinal rocking switch-bar 6, made of a non-conducting material, the ends of which are free to move vertically between the sides of spring-plates 7, preferably made in one piece and secured to the base of the case. These spring-plates are provided at the upper middle portion with a small hole 8 in each side for the entrance of the projecting ends of a pin 9, inserted through the bar 6 in a position to engage the hole, rounded at the ends and projecting sufficiently far to just enter the holes 8 at each side. At the top the spring-plates are curved outwardly, as at 10, whereby they may be forced apart by the edges of the upper pivoted rocking plate 11, pivotally secured at 12 between the sides of the bracket 4 in a manner similar to the bar 6. Between the upper plate 11 and bar 6 at each end, secured to the bar and plate, respectively, and occupying a position between the spring-plates 7, are the coiled springs 13, the purpose of which will be explained later. Projecting through suitable holes 14 in the top 3 are push-buttons 15, the ends of the stems 16 of which rest on the ends of the plate 11, immediately above the coiled springs, and provided with projecting cross-pins 17 for limiting the upward movement of the buttons. Secured within the case, at the ends and adjacent to the corners, are four pairs of binding-posts, A B, upper, and A' B', lower, at one end, and C D, upper, and C' D', lower, at the other end, each binding-post being securely affixed to the interior of the case by screws or otherwise and provided with inwardly-projecting contact-plates 18. When so located, these posts and their plates 18 are within the range of radial movement of conducting-plates 19, secured at each end of the pivoted bar 6, having outwardly-turned ends 20, adapted to enter and fit between the plates 18 of the various binding-posts within their range of movement. It will be seen that when the bar 6 is thrown into the position shown in Fig. 1 the bar 19 at each end will

make electrical contact and close a circuit between binding-posts A' and B' at one end and between binding-posts C and D at the other end. When reversed, as shown in dotted lines in Fig. 1, the bar will make contact between the alternative binding-posts A and B at one end and between the posts C' and D' at the other end.

In switches of this character it is desirable that the moving member carrying the contacting plate shall act quickly and with decision, so as to insure good contact and quick break, and for this purpose the coiled springs 13 are inserted between the rocking plate 11 and bar 6. When so constructed, downward pressure upon the projecting button will act to compress one of the springs 13 and to create a tension on the other, the end of the plate 11 passing downwardly between the flared-out ends 10 10 of spring-plates 7 7, pressing the plates apart and releasing the pin 9, when the bar 6 will thus be released, the upper spring 13 exerting sufficient pressure to throw the bar downwardly with considerable force, whereby the plate 20 will be thrown quickly out of contact with one set of binding-post plates and as quickly and positively into contact with the other set. It will thus be seen that when shifted in either direction the bar will make through the plate 19 a double-pole connection at each end, and with a switch capable of such use a wide application in practice is possible.

In the construction shown in the drawings and in the diagram shown in Fig. 6 two pairs of upper and lower posts B and B' and C and C' are connected by a strip s of any conducting material, whereby in either position of the bar 6 a circuit will always be maintained through the switch, so that although the direct circuit to the lamp may be thrown out at the other end it will be possible to close a circuit by using an additional switch at another point wired in circuit, as shown in Fig. 6. It will be seen also that the circuit may be closed or broken with equal ease from either switch, and this feature will be appreciated by those skilled in the art, as will the various other applications and uses to which my invention may be applied. An especial feature of advantage is the fact that these switches may be wired double pole throughout.

It will be understood that the push-buttons may be denominated in some convenient manner, as by the words "On" or "Off," or the buttons may be made in contrasting colors, so as to indicate which is to be used.

In locating the second switch it may be found convenient to turn it end for end to the other switch, and various other applications and uses or variations and changes may be made in the construction or arrangement of my device without departing from my invention, since I do not wish to be confined to the exact construction shown and described,

but to include all such variations as are within the scope of my invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A pivoted bar of insulating material, conducting-plates at each end of the bar provided with projecting extremities, oppositely-located upper and lower pairs of binding-posts at each end of the bar provided with plates adapted to embrace the projecting extremities of the conducting-plates and to be electrically connected thereby, a pivoted plate above the bar and intervening springs secured to the bar and to the pivoted plate respectively, substantially as set forth.

2. A pivoted bar of insulating material, conducting-plates at each end of the bar, spring-plates at each side of the bar having outwardly-turned upper ends, a pin in the bar adapted to engage holes in the spring-plates and means for spreading the plates and depressing the bar, substantially as set forth.

3. A pivoted bar of insulating material, conducting-plates at each end of the bar, vertical spring-plates embracing the bar at each side of the pivoted bearing, having outwardly-turned upper ends, pins in the bar adapted to engage holes in the spring-plates, a pivoted plate above the bar, intervening springs secured to the bar and the plate respectively, and push-buttons for depressing the plate at either end, substantially as set forth.

4. A pivoted bar of insulating material, conducting-plates at each end of the bar, vertical spring-plates embracing the bar at each side of the pivotal bearing, having outwardly-turned upper ends, pins in the bar adapted to engage holes in the spring-plates, and a pivoted plate above the bar adapted to spread apart the spring-plates, substantially as set forth.

5. A case of insulating material, upper and lower oppositely-located pairs of binding-posts secured within the case, a central bracket, a pivoted bar of insulating material mounted therein, conducting-plates at each end of the bar adapted to contact with the upper and lower pairs of binding-posts alternately, vertical spring-plates embracing the bar at each side of the pivotal bearing having outwardly-turned upper ends, pins in the bar adapted to engage holes in the spring-plates, a pivoted plate above the bar adapted to spread apart the spring-plates, intervening springs secured to the bar and to the plate respectively, and push-buttons extending through the top of the case and resting on the plate whereby it may be depressed, substantially as set forth.

In testimony whereof I have hereunto set my hand this 8th day of June, 1897.

JAMES R. NEWELL.

Witnesses:

SAMUEL GRUMBINE,
J. S. BENTON.