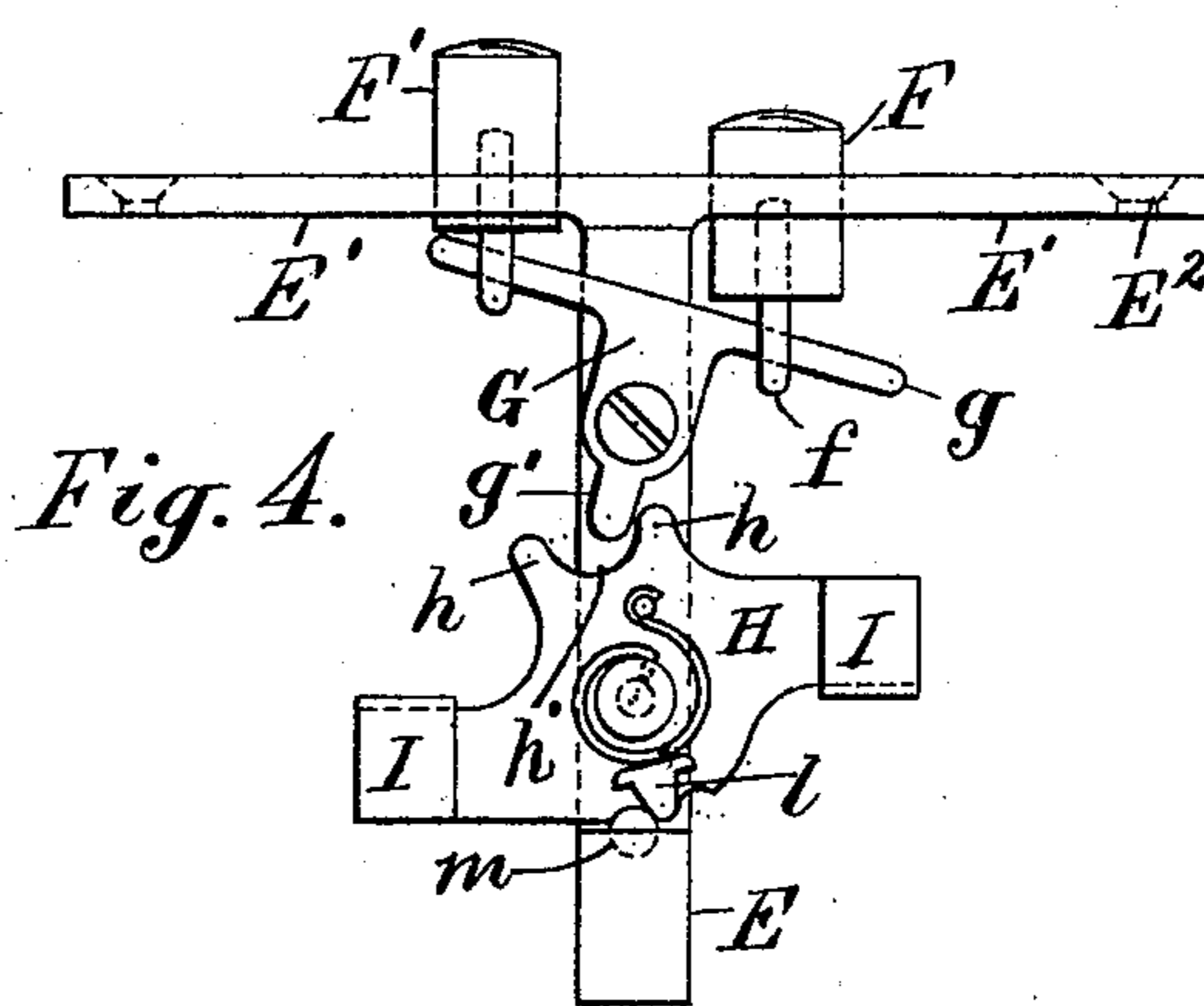
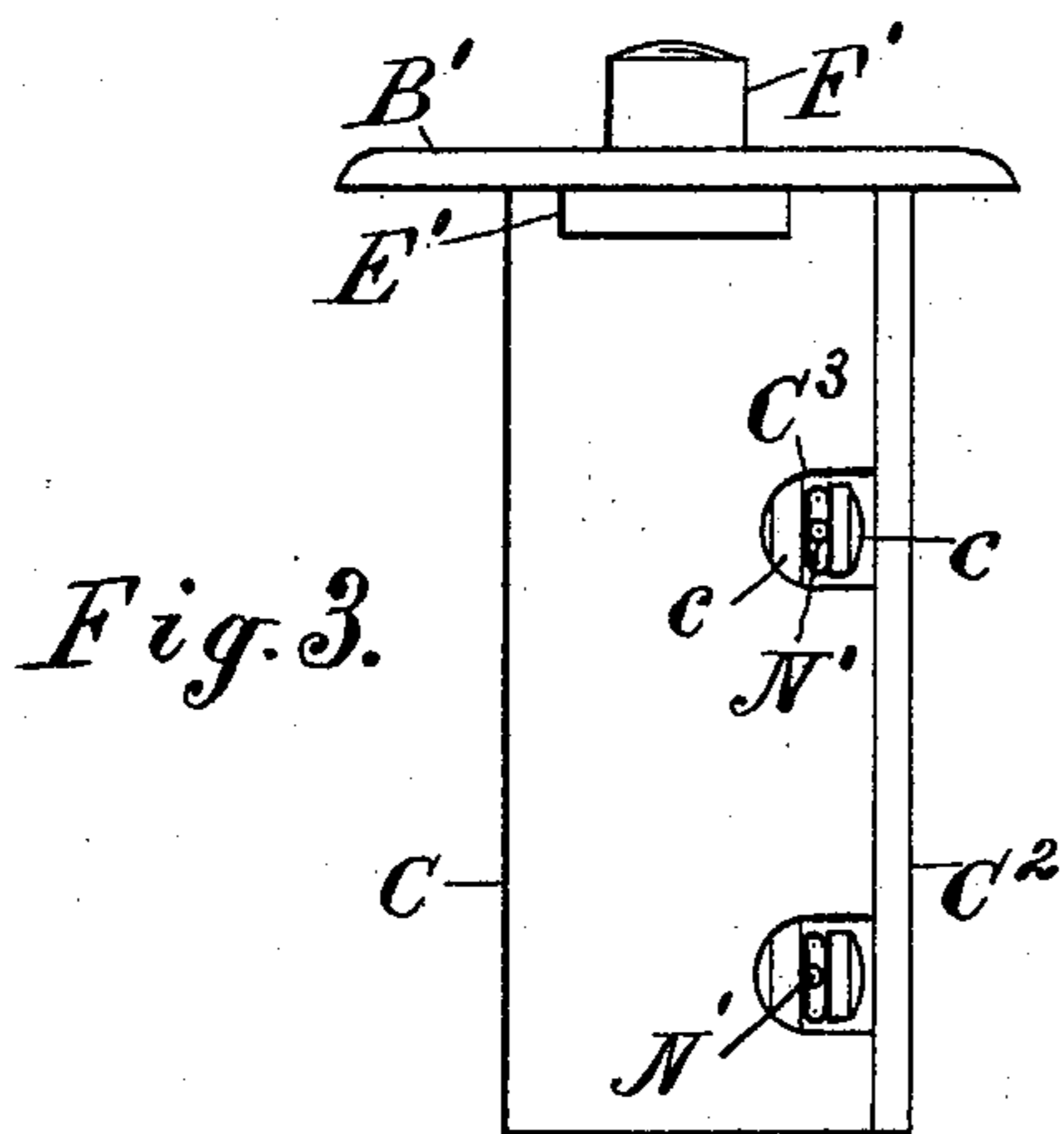
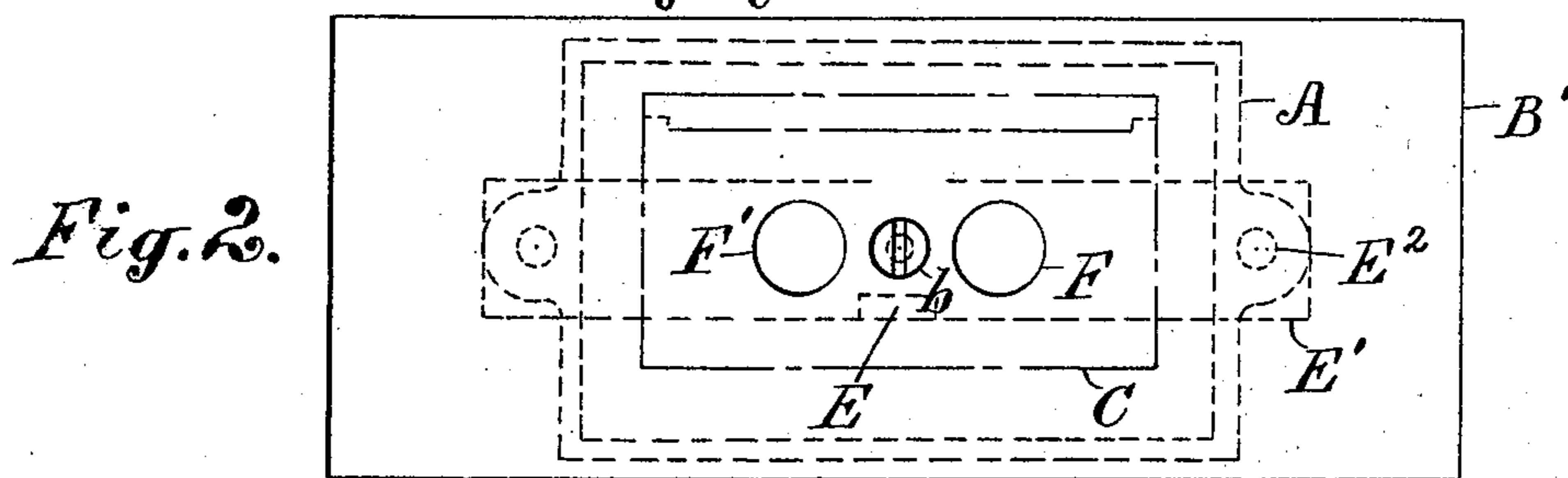
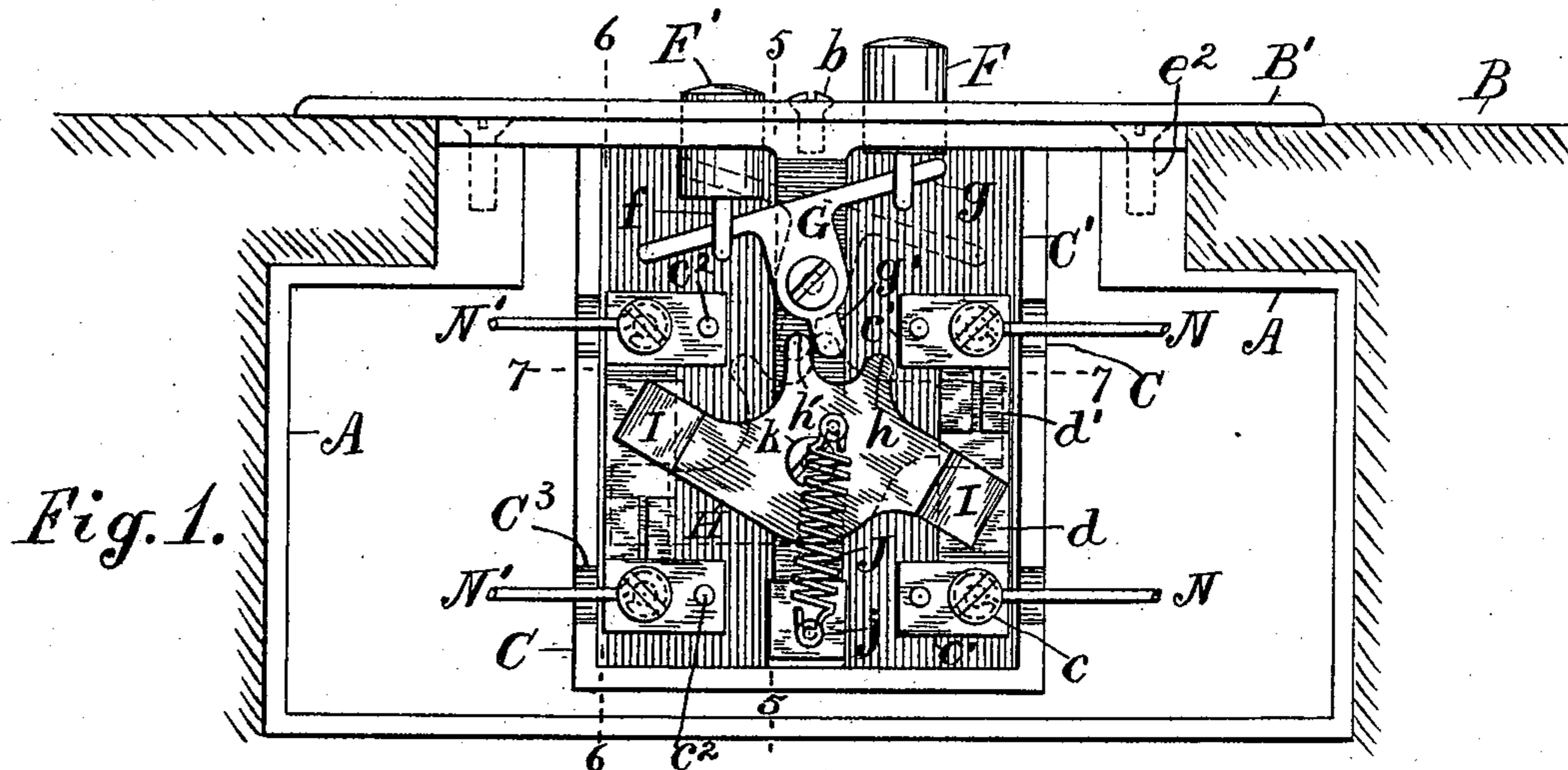


W. J. NEWTON.  
ELECTRIC SWITCH.

No. 582,303.

Patented May 11, 1897.



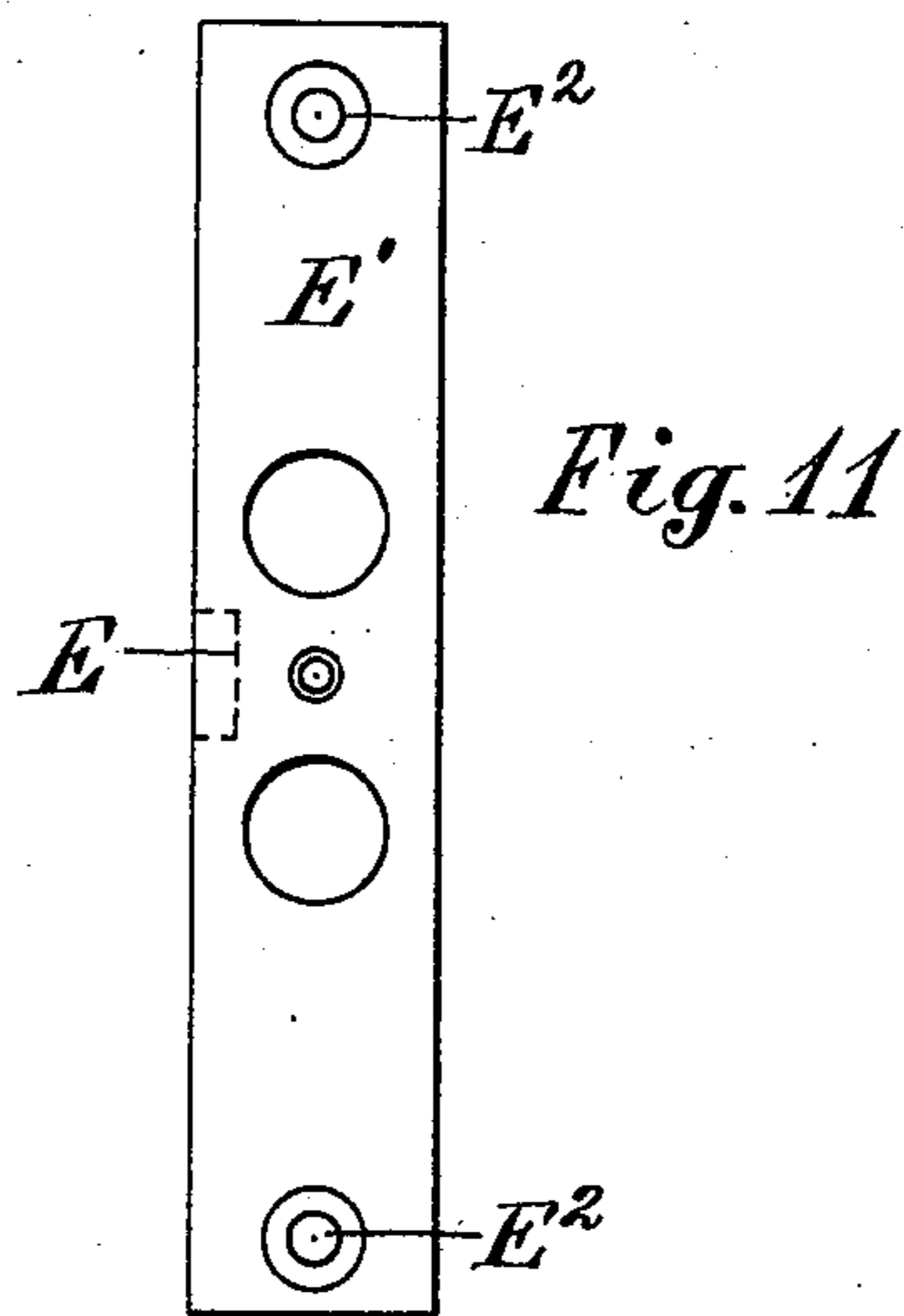
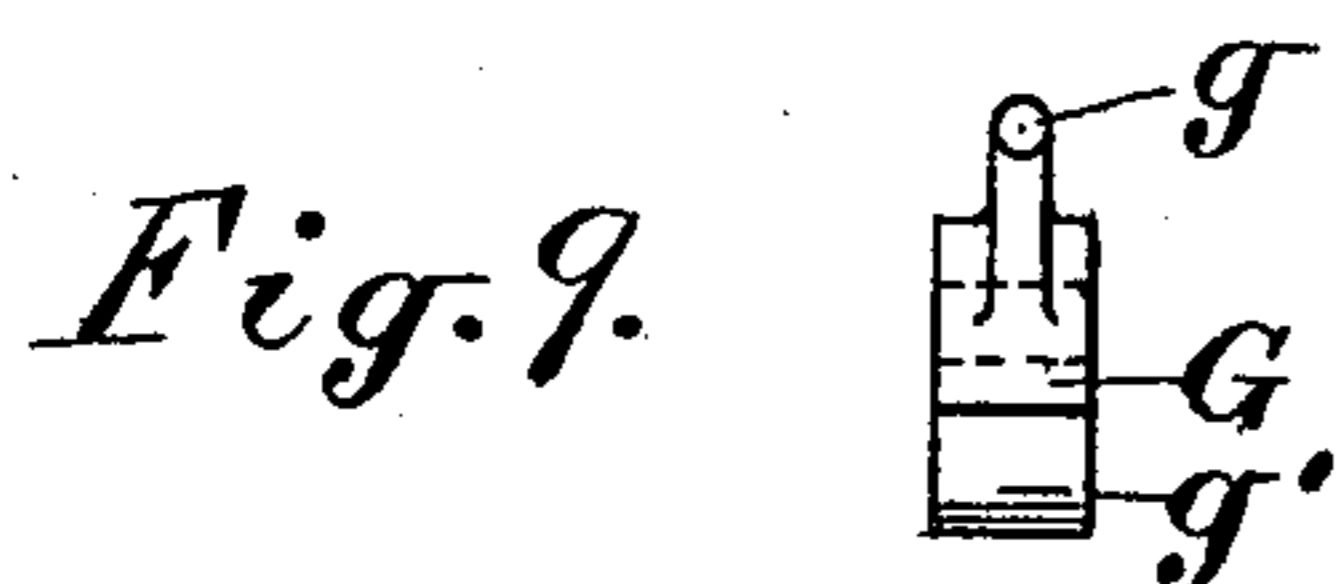
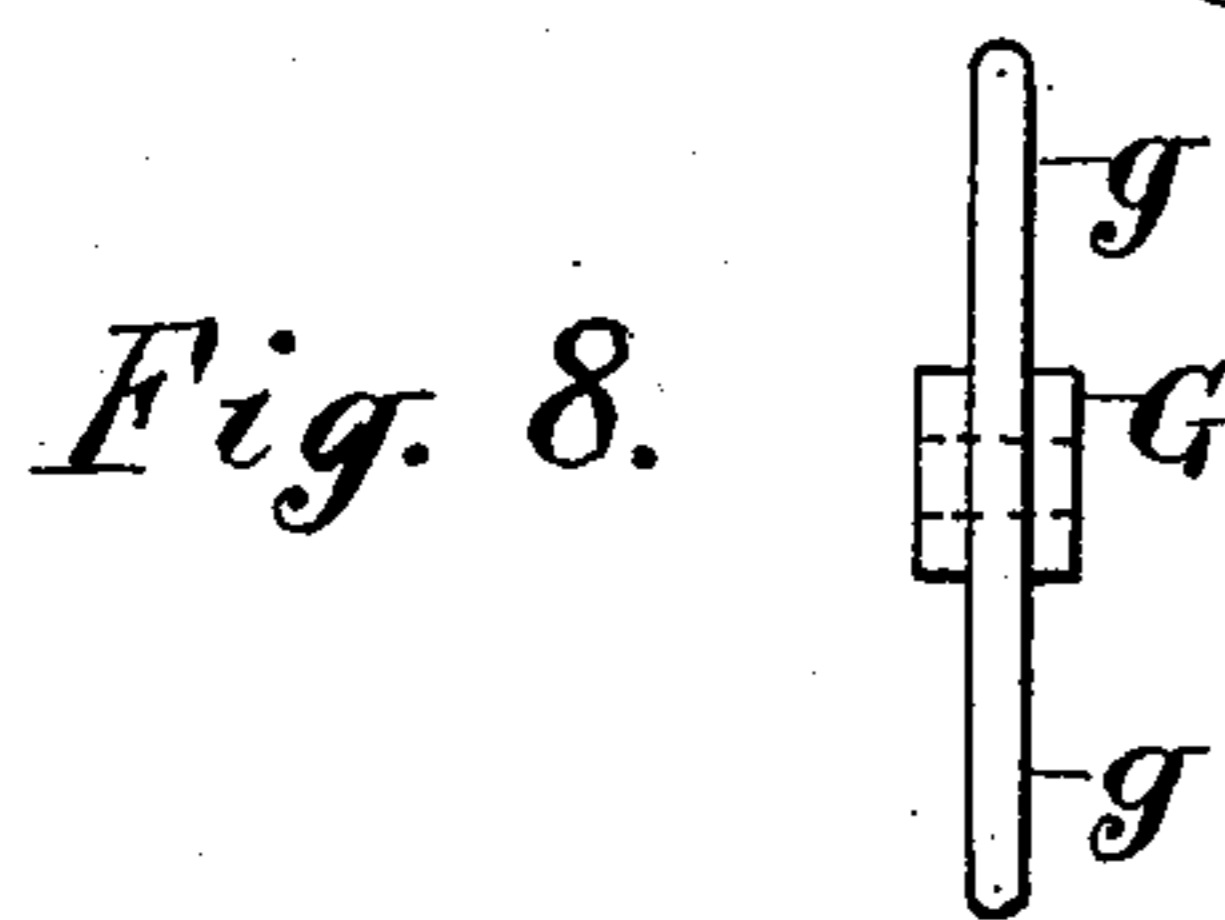
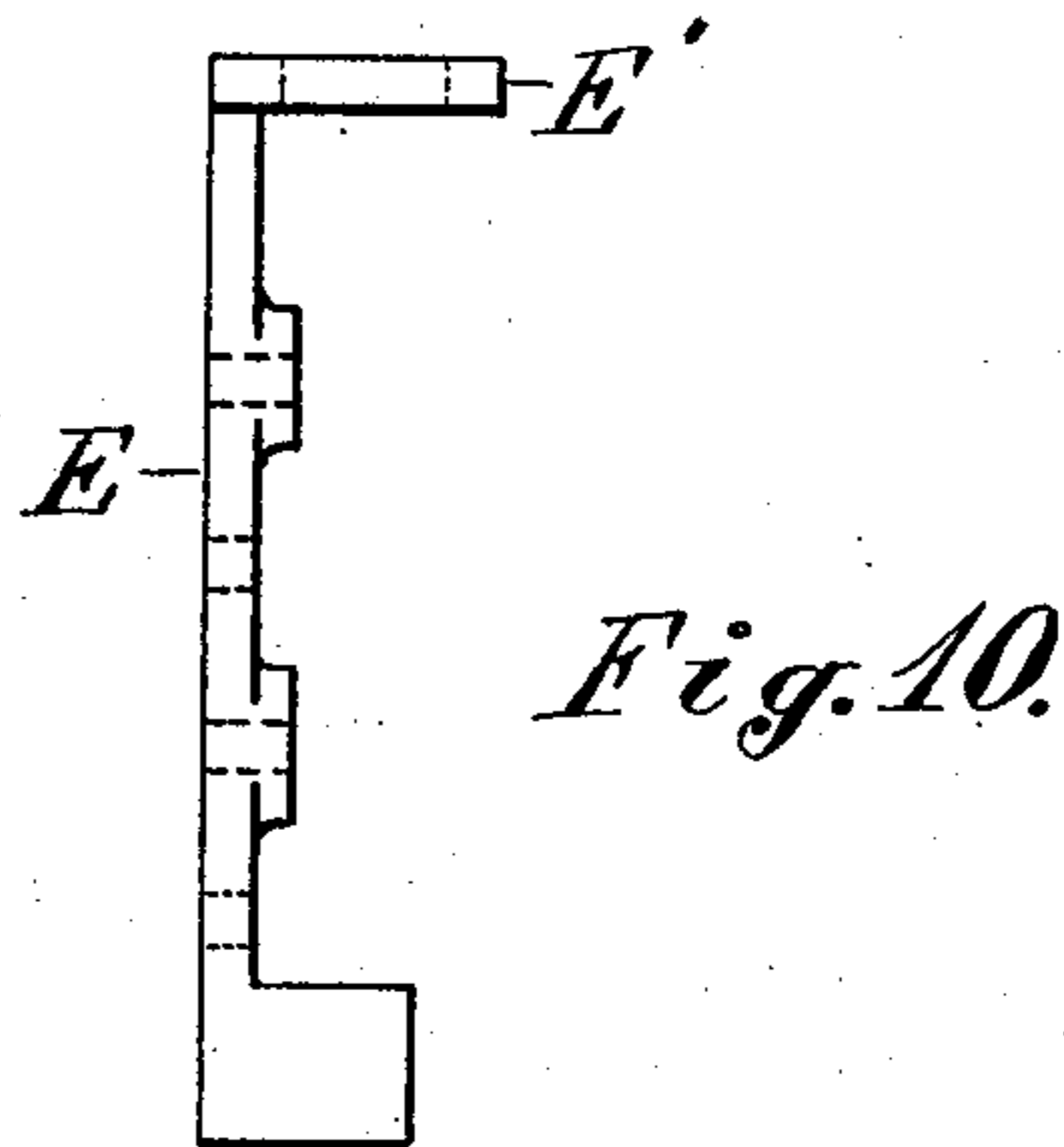
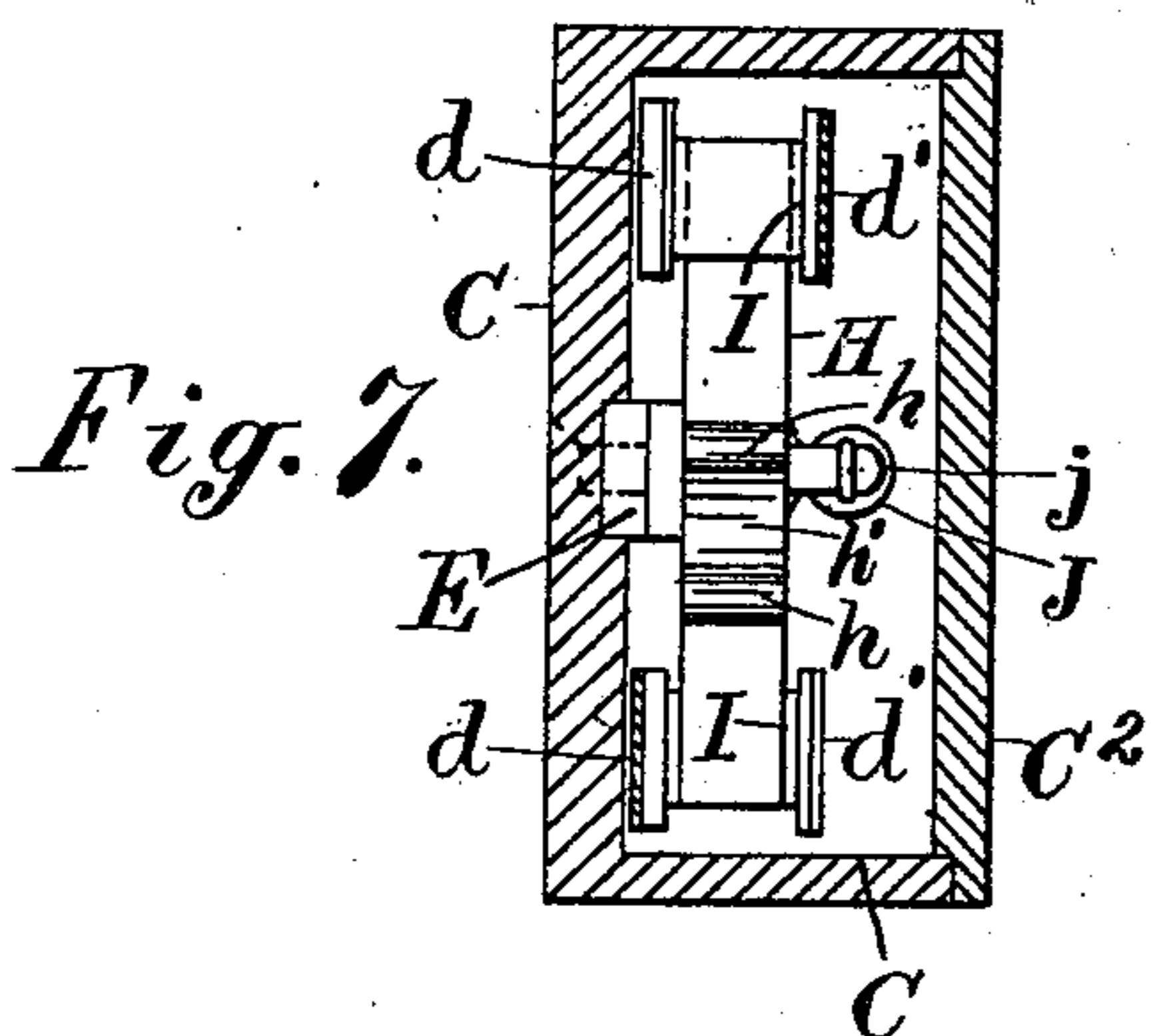
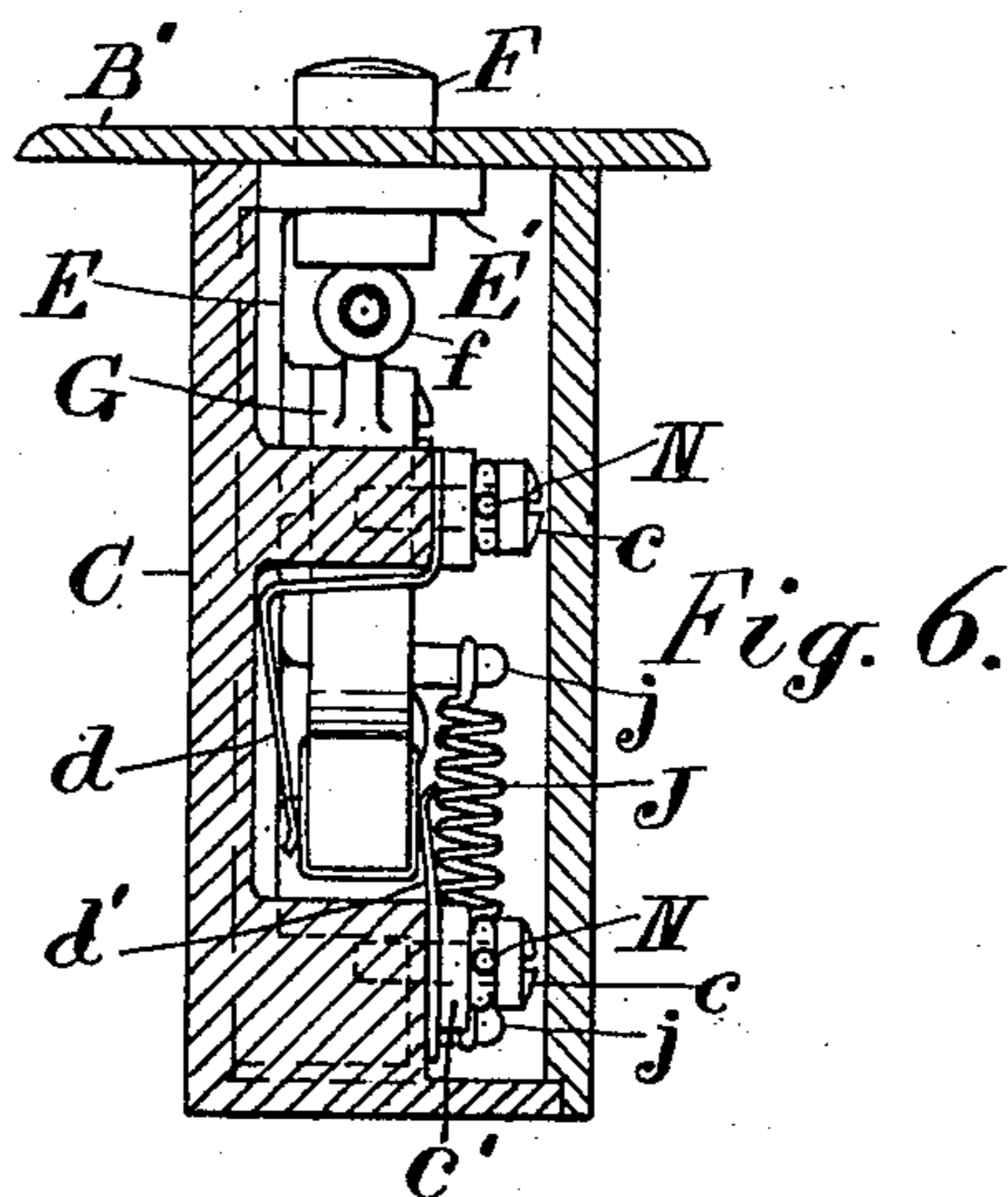
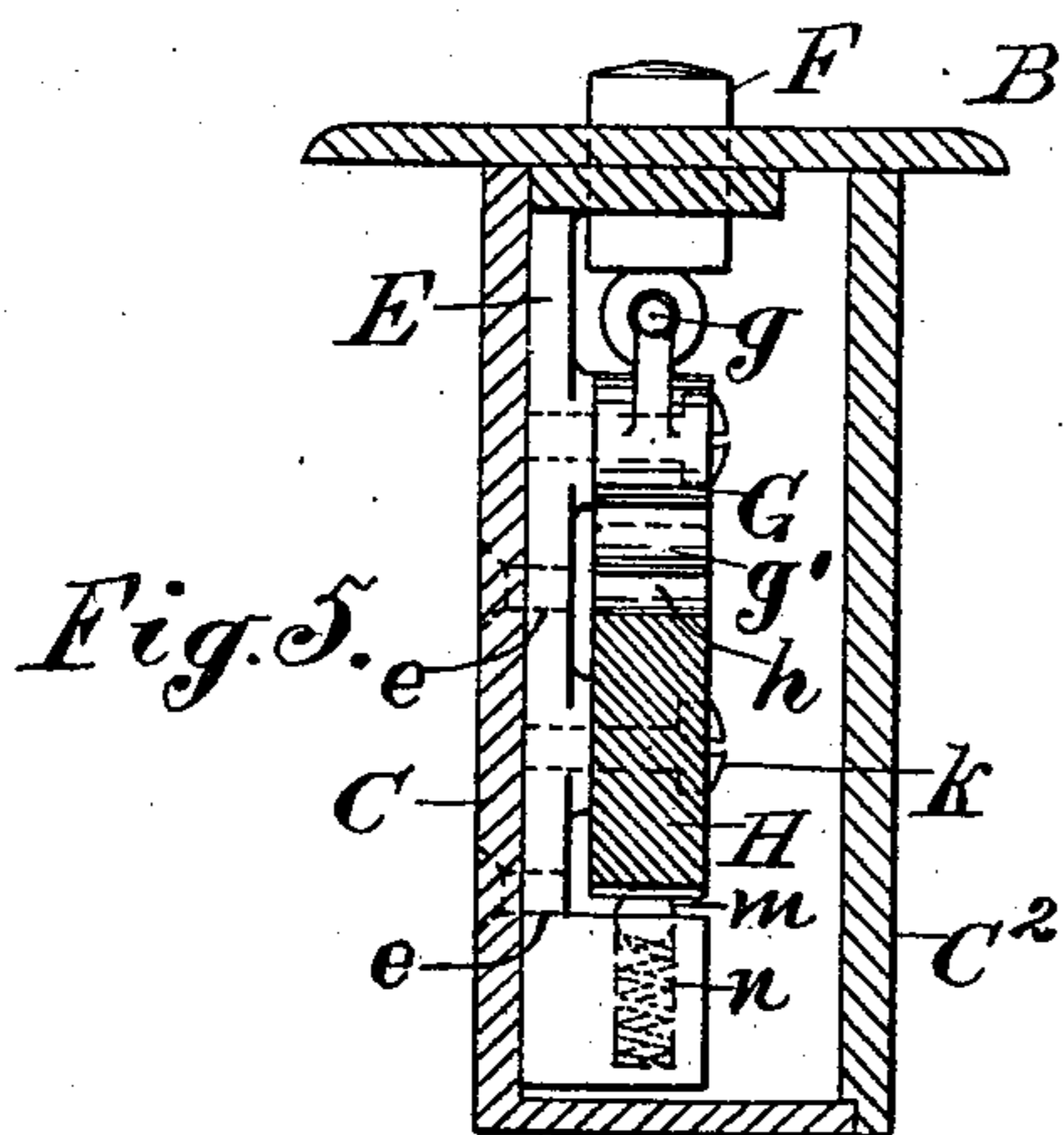
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Edw. F. Kinsey.

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William J. Newton, per  
Thomas S. Crane, Atty.

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Thomas S. Crane, atty.

# UNITED STATES PATENT OFFICE.

WILLIAM J. NEWTON, OF NEW YORK, N. Y.

## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 582,303, dated May 11, 1897.

Application filed January 28, 1897. Serial No. 621,114. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. NEWTON, a citizen of the United States, residing at New York, county of New York, State of New York, have invented certain new and useful Improvements in Electric Switches, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to insure a more positive operation of the contacts in an electric switch and to facilitate the manufacture of the switch by a particular combination of the moving parts with the body of insulating material, as porcelain, vulcanite, &c., to which the fixed contacts are attached.

In the present construction the movable connector which closes the circuit is formed upon a "rocking lever," and the same is actuated by a T-shaped lever termed a "manual lever," the opposite arms of which are connected with two push-pins. A metallic frame is secured to the insulating-body, and the movable parts of the switch are fitted to such frame, so that they may be adjusted in their proper relation before the frame is connected to such body. Two push-pins are used, so that the operator may positively move the connecting-piece into and out of connection with the fixed contacts upon the insulating-body, and the metallic frame is therefore preferably made of T shape (with a post having opposite arms at one end) and secured in the middle of such body, with the rocking lever and the manual lever pivoted upon the post, and the two push-pins extend through the lateral arms of such frame, which thus serve as guides for the pins. The extreme ends of these frame-arms are provided with holes through which screws are inserted to secure the entire switch in the wall-box, and the same arms furnish a metallic surface to which the face-plate may be secured by a single screw, the face-plate having holes corresponding with the guides in the arms, through which the push-pins are inserted.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a front elevation of the switch with the cover removed, with a spiral spring to press the rocking lever in opposite direc-

tions. Fig. 2 is a plan, and Fig. 3 an edge view. Fig. 4 is an elevation of the metallic frame and movable parts detached from the insulating-body, with a ball-shifter and a flat coiled spring to shift the rocking lever when breaking the contact only. Fig. 5 is a side elevation of the parts shown in Fig. 4 with the manual lever in its central position and a section of the other parts of the switch in vertical section adjacent to the line 5 5 in Fig. 1. Fig. 6 is a side elevation of the switch as shown in Fig. 1, with the insulating-body in section on line 6 6 in Fig. 1. Fig. 7 is a horizontal section of the switch on line 7 7 in Fig. 1. Fig. 8 is a plan, and Fig. 9 an edge view, of the manual lever detached from its support. Fig. 10 is an edge view, and Fig. 11 a plan, of the metallic frame detached from the other parts.

A designates the wall-box, and B the surface of the adjacent wall.

C is a rectangular body, of porcelain or other insulating material, having cover C<sup>2</sup> and formed with recess C' in one side, as shown in Fig. 1, to receive the fixtures of the switch and formed in the edges with notches C<sup>3</sup> to admit the conductors to the stationary contact-screws c. These screws are tapped into plates c', which are clamped to the body C by screws c<sup>2</sup> and hold the stationary copper contact-leaves d and d', which project upward and downward past one another, as shown in Fig. 6. The post E of the frame-bar is fitted to a vertical groove in the bottom of the recess C' and is held to the body by screws e. Its lateral arms E' are projected beyond the body C to rest upon the wall-box A, and holes E<sup>2</sup> are formed through the ends of the arms E, through which screws e<sup>2</sup> are inserted into the wall-box and thus secure the switch therein. Push-pins F F' are fitted to the arms adjacent to the post E, and a lever of T shape (which I term the "manual lever G", as it is operated positively by the push-pins F F') is pivoted upon the post E, with its lateral arms g fitted loosely to eyes f upon the push-pins.

The rocking lever H is pivoted upon the post E below the manual lever and is formed with two teeth h, with intervening space h', adapted to receive a toe g' upon the manual lever. The rocking lever is preferably made of insulating material to insulate the blocks

or plates I, which are fixed upon its opposite ends to contact with the leaves  $d$  and  $d'$ . The studs  $j$  are projected from the lower end of the post E of the frame-piece and from the rocking lever above its pivot  $k$ , and a spiral spring J is connected to such studs, which are so arranged that the spring operates equally when the rocking lever is moved a little past its central position to complete the movement in the same direction. The space or notch  $h'$  between the teeth  $h$  upon the rocking lever is made much wider than the toe  $g'$  to afford clearance for the spring to thus operate the lever when it has been moved a little past its central position by the toe.

A face-plate B' is shown applied to the top of the arms E' and secured thereto by a single screw  $b$ , inserted through the center of the face-plate, the face-plate being perforated to permit the passage of the push-pins, and thus serving, with the arms E', as guides for such pins. The pins prevent the face-plate from turning upon the arms, and the plate is thus secured in position by a single screw and is much less disfigured than where a large number is used.

In Fig. 1 the pin F is shown protruding from the face-plate, and the contacts upon the rocking lever are out of engagement with both the leaves  $d$  and  $d'$ , thus breaking connections at opposite sides of the switch, respectively, for the positive and negative conductors N N'. The pressure upon the push-pin F serves to push the toe against the tooth  $h'$  and thus draws the block I almost entirely from the spring by hand-pressure, the rocking lever being carried past its central position by the pressure of the push-pin, thus permitting the spring J to act upon the lever and complete the movement, so as to break the contact quickly, as is required in such switches, and carrying the rocking lever to the position indicated in dotted lines. When the lever is thus withdrawn from the stationary contacts, the tooth  $h$  is carried over into contact with the toe upon the manual lever, which is represented in dotted lines, thus adjusting the parts in readiness for the reverse movement. The pressure upon the pin F' then shifts the rocking lever again past its central position, and its movement is completed by the spring J, as before described, thus making the contact quickly, as is desired.

A modification of the means for shifting the rocking lever quickly is shown in Figs. 4 and 5, the lower side of the lever having a metallic tooth  $l$  embedded therein and a ball  $m$  mounted upon a spring  $n$  in a socket upon the posts E, the ball pressing upon the point of the tooth  $l$  when the rocking lever is in its central position and forcing it away from such central position in either direction to which it is moved by the manual lever. In addition to the spring-ball the rocking lever is furnished with a spiral-coil spring  $n'$ , having one end attached to the screw  $k$ , upon which the rocking lever is pivoted, and the

other end secured to the rocking lever with its tension arranged to assist the movement of the lever when it is moving away from the stationary contacts  $d$   $d'$ . Such quick movement of the lever obviates "sparking" and the consequent corrosion of the contact-surfaces.

Such modification of the spring which is used for shifting the rocking lever quickly operates substantially the same as the spring J except that the modification includes the supplemental or auxiliary spring  $n$ , which has necessarily such a limited tension as to permit the spring-ball to shift the rocking lever in either direction while it assists the movement of the lever in one direction, as is required.

I find a material advantage in constructing the moving parts upon a metallic frame independent of the insulating-body C, as it permits such parts to be finished, pivoted together, and adjusted separately from the insulating-body, within which it is then readily secured by the screw or screws  $e$ . (Shown in Figs. 5 and 7.)

The precise shape of the insulating-body is not material, provided it holds the stationary contact in the required relation to the rocking lever.

Having thus set forth the nature of my invention, what I claim herein is—

1. In a wall-switch, the combination, with the insulating-body C having stationary contacts at the edge, of the metallic frame secured to such body and having post E and arms E', with the rocking lever H, manual lever G, and push-pins F, F' fitted movably to such frame, such parts being adapted for adjustment apart from the body C, and for coöperation with the stationary contacts when the frame is secured to the body, substantially as herein set forth.

2. In a flush switch having the face-plate B' with pins F, F' movable through the same, the stationary contacts  $d$ ,  $d'$ , the rocking lever H with blocks I to engage such contacts, and having teeth  $h$ ,  $h'$ , with intervening space  $b'$ , and the manual lever G having toe to fit the space  $h'$ , and arms  $g$  engaged with the pins F, F', the combination, with such elements, of the insulating-body C having the stationary contacts secured thereto near opposite sides, and the metallic frame having post E secured in the middle of such body with the rocking lever and manual lever pivoted thereon, and having arms E' with screw-holes in the ends for securing the switch by screws to the wall-box, substantially as herein set forth.

3. In a double-pole wall-switch, the combination, with the insulating-body C having the stationary contacts  $d$ ,  $d'$  at opposite edges, of the metallic frame secured to the middle of such block, and having post E and arms E' with the rocking lever H, manual lever G, and push-pins F, F' constructed as described, and fitted movably to such frame, such parts

being adapted for adjustment apart from the body C and for coöperation with the stationary contacts when the frame is secured to the body, substantially as herein shown and described.

4. In a double-pole switch, the combination, with the insulating-body C having the stationary contacts  $d, d'$  at opposite edges, of the metallic frame secured to the middle of such block, and having post E and arms E' with the rocking lever H, manual lever G, and push-pins F, F' constructed as described, and fitted movably to such frame, the arms E' having screw-holes E<sup>2</sup> for screws to secure it in the wall-box, and the face-plate B' with holes to fit the pins F, F', being applied over the arms E' and secured thereto by a single screw between the pins, as and for the purpose set forth.

5. In an electric switch having insulating-

body C, contacts  $d, d'$ , rocking lever H and manual lever G as described, the combination, with such parts, of the T-shaped frame having the post E with the rocking lever H and the manual lever G pivoted thereon, and having the arms E' perforated adjacent to the arms  $g$  of the manual lever to form guides for push-pins, the face-plate B' fitted over the arms E', with holes corresponding to such guides and the push-pins F, F' fitted there-through to operate upon the arms  $g$ , as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM J. NEWTON.

Witnesses:

L. LEE,

THOMAS S. CRANE.