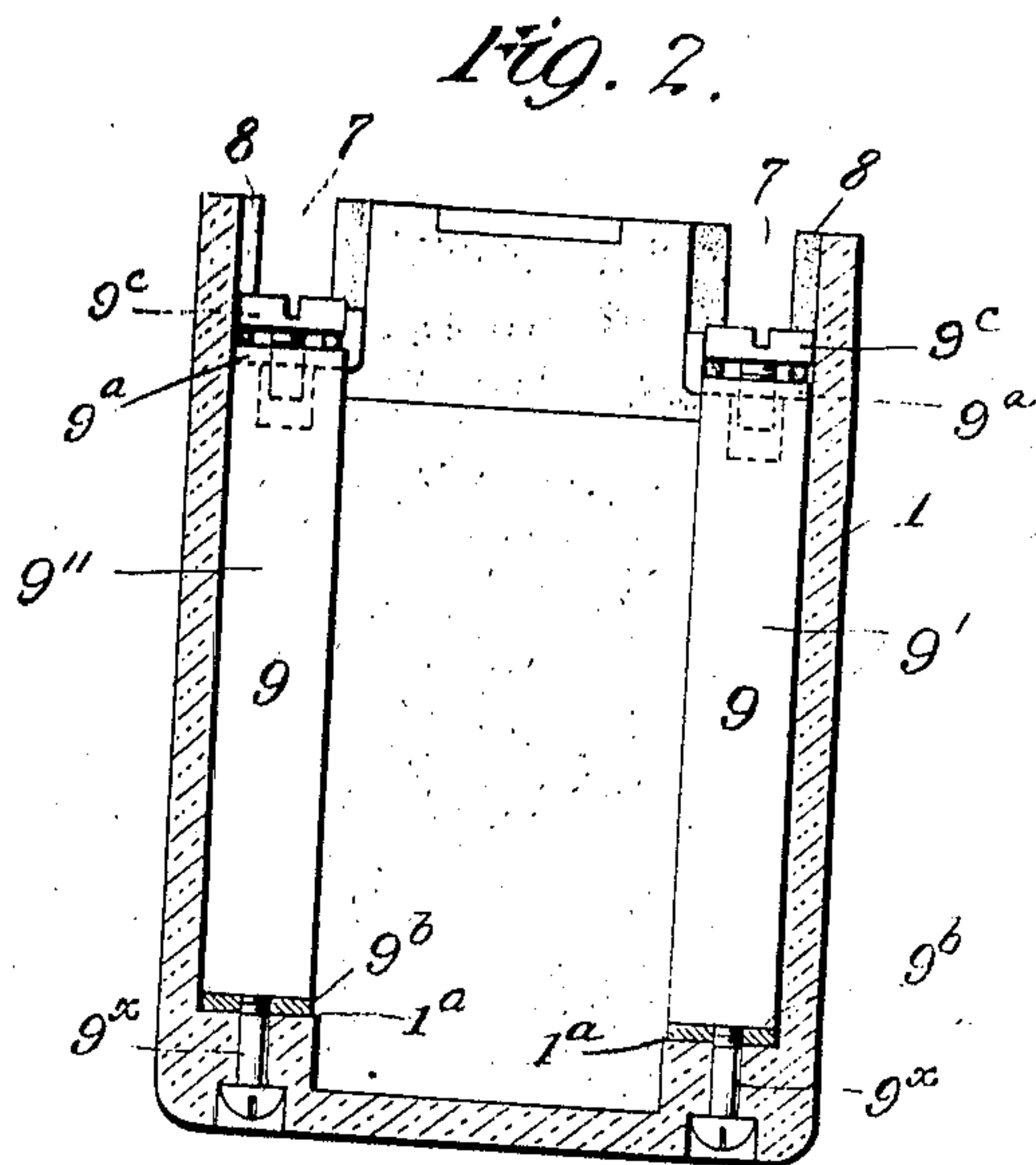
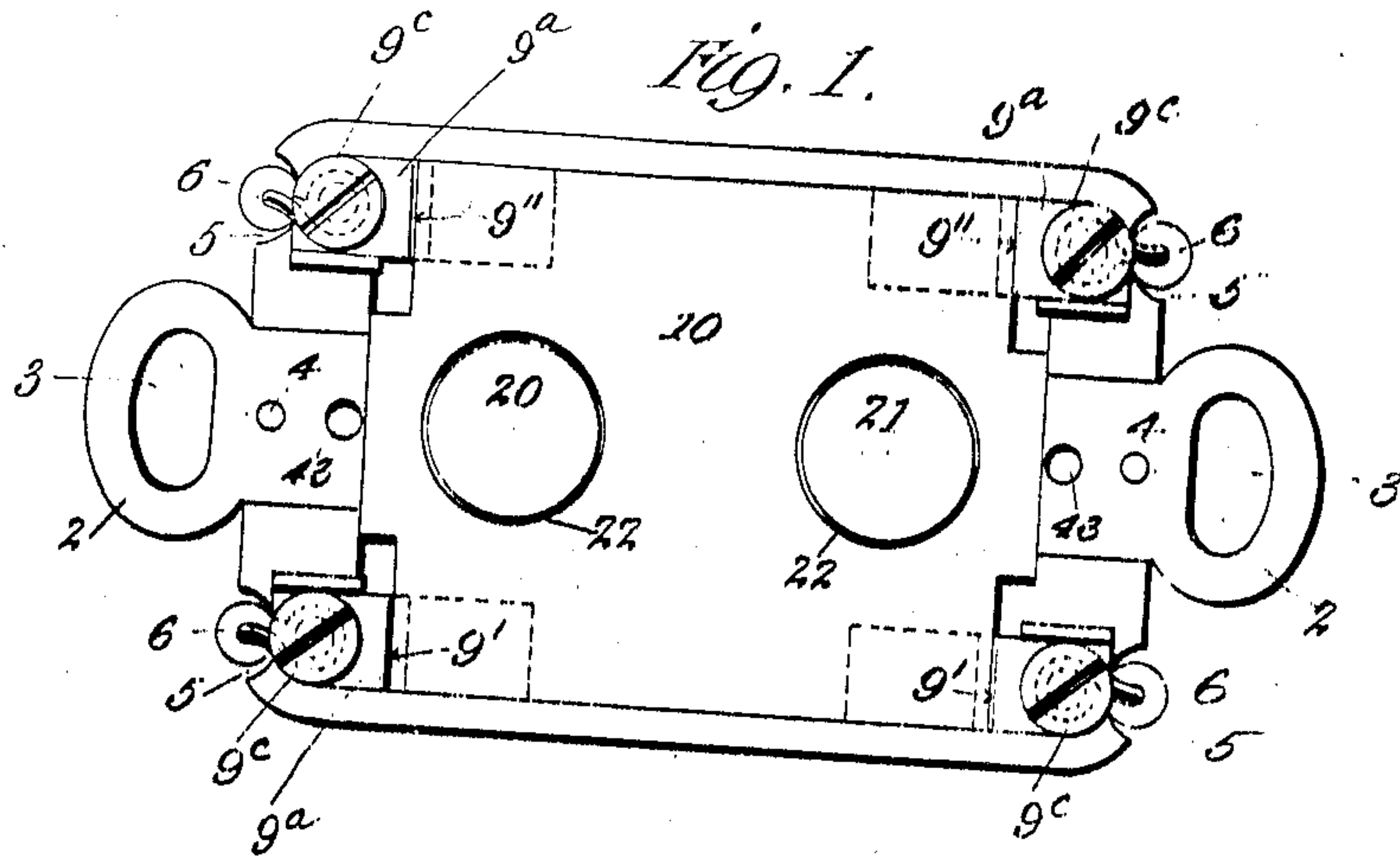


917,348.

W. J. NEWTON.
WALL SWITCH.
APPLICATION FILED JULY 21, 1908.

Patented Apr. 6, 1909.
2 SHEETS—SHEET 1.

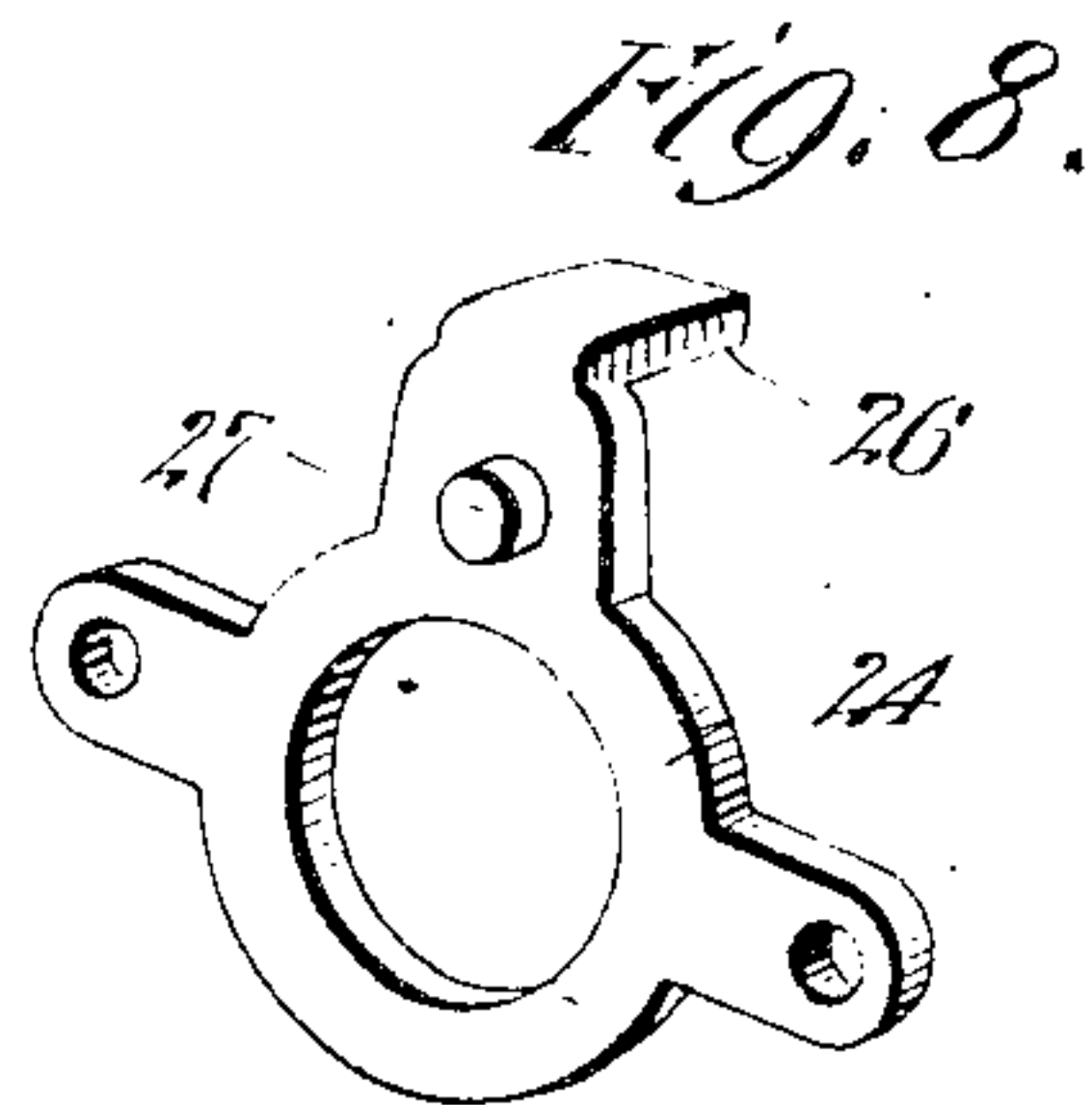
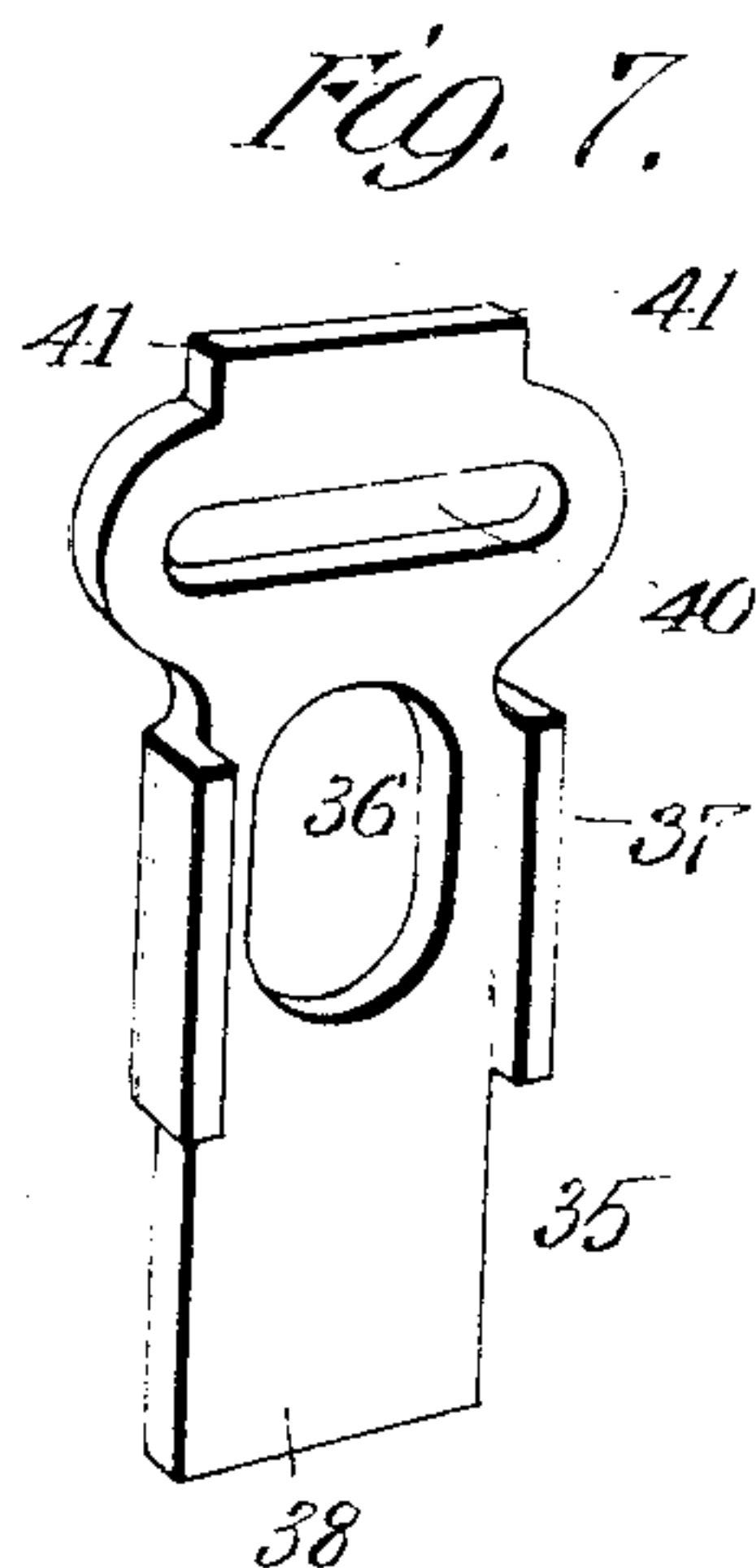
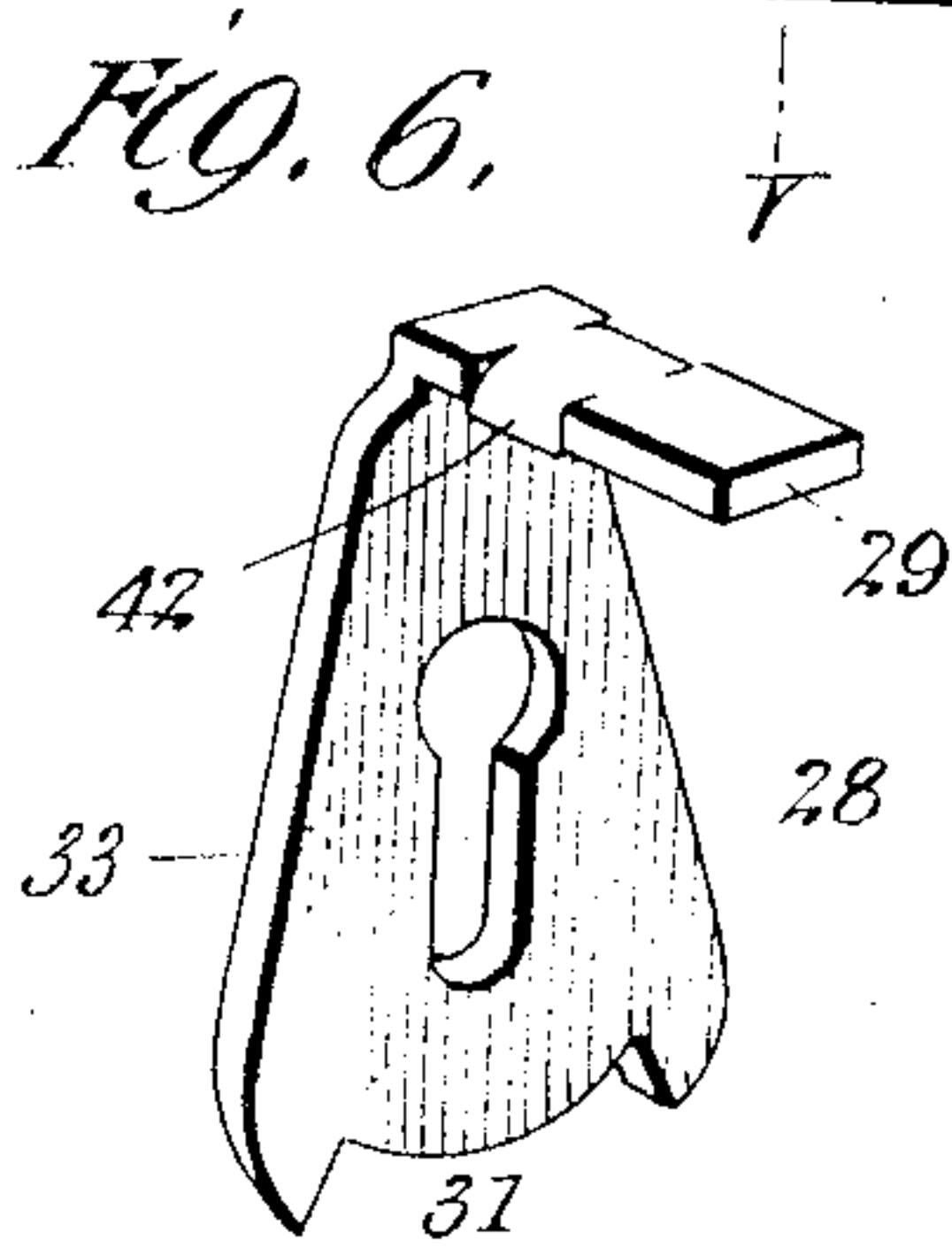
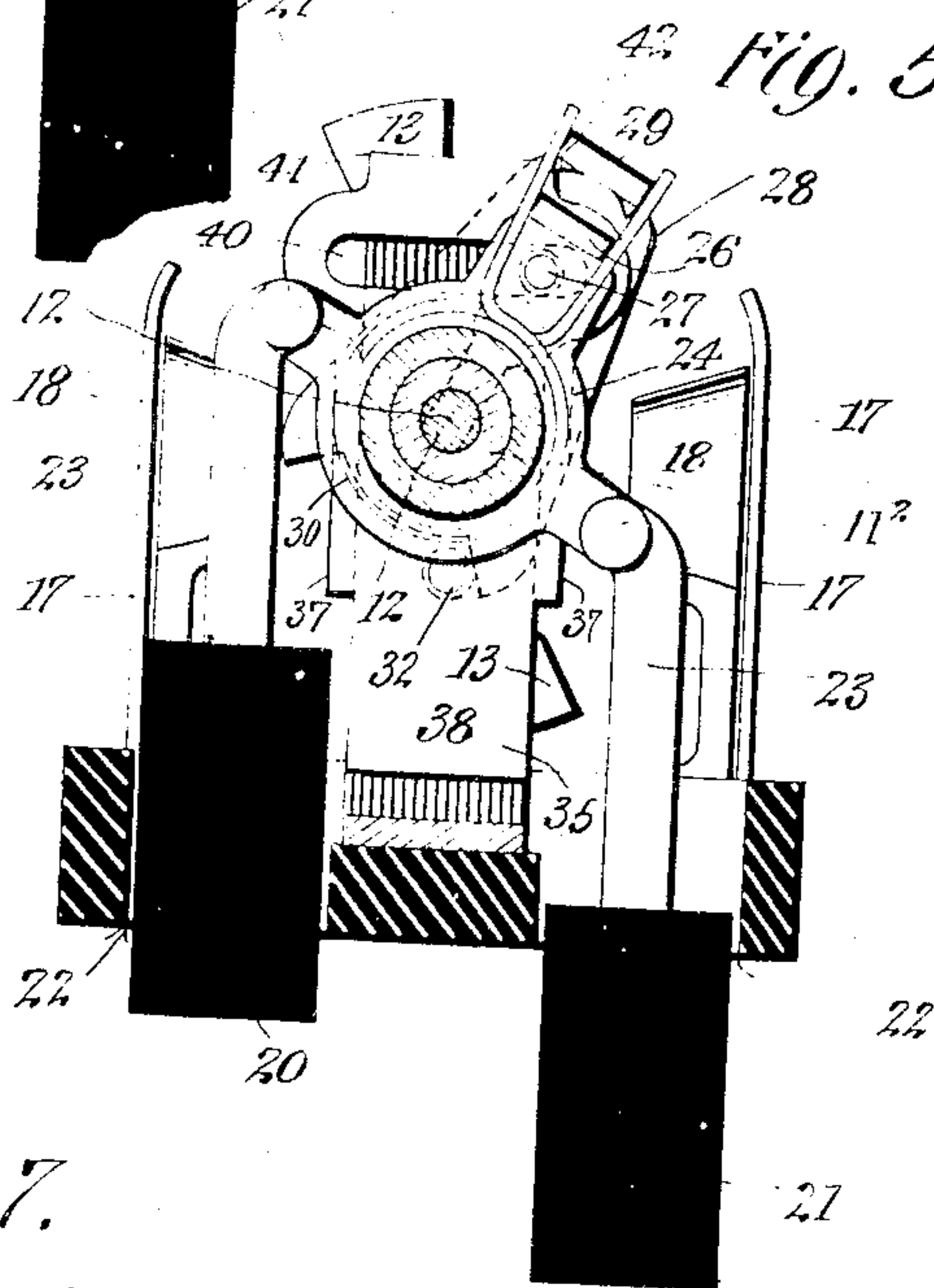
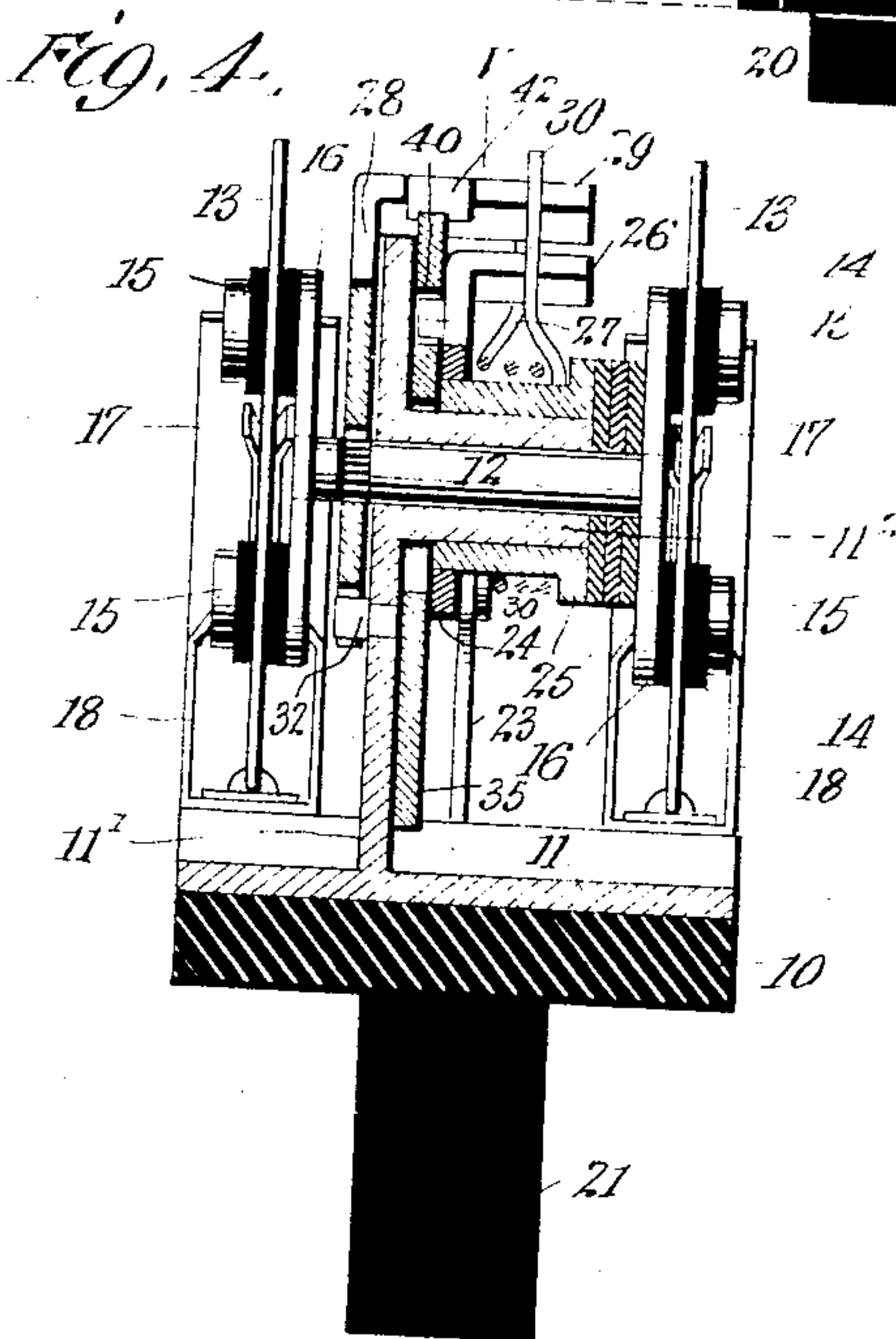
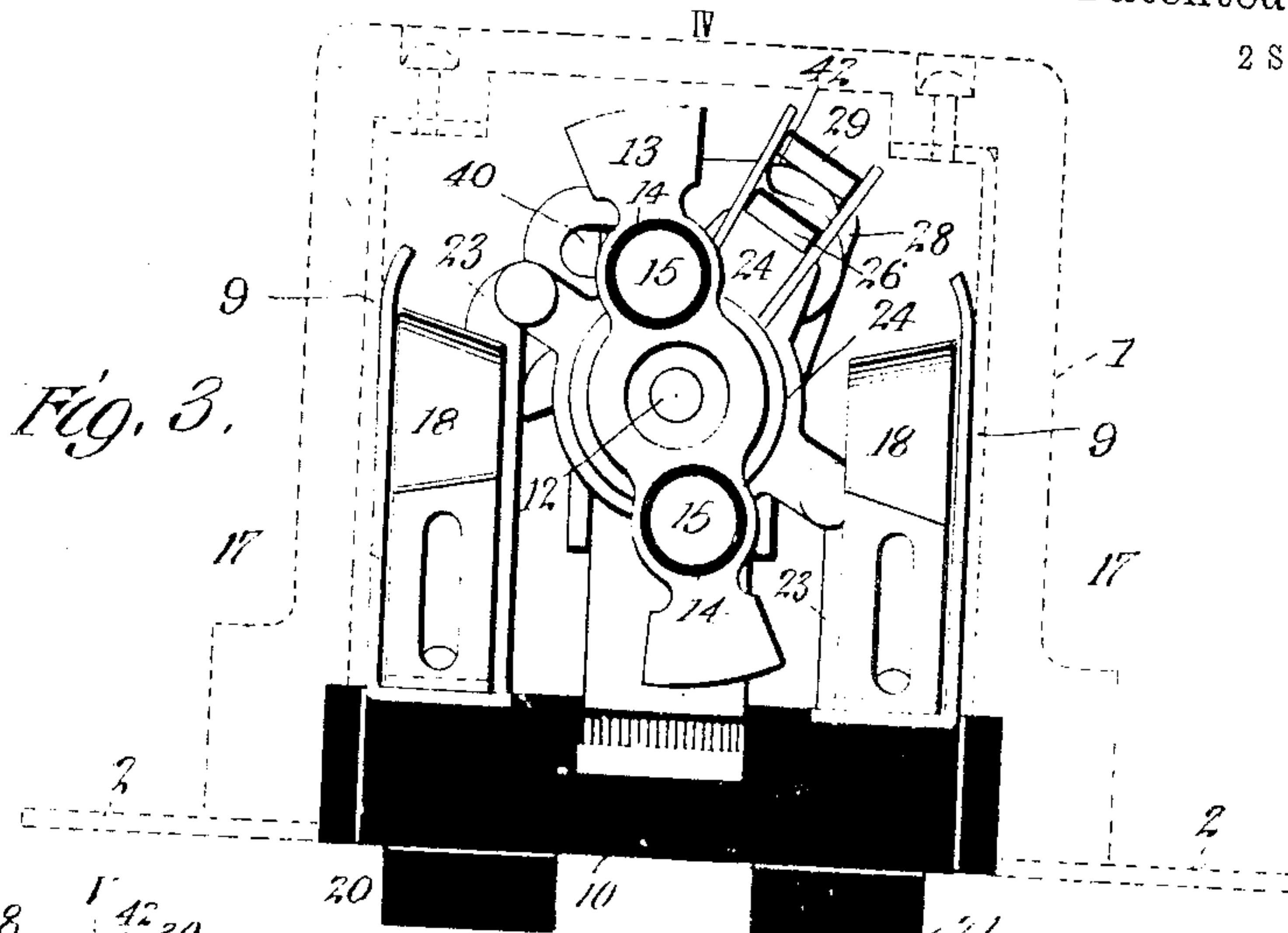


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917,348.

Patented Apr. 6, 1909.
2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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WALL-SWITCH.

No. 917,348.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed July 21, 1908. Serial No. 444,673.

To all whom it may concern:

Be it known that I, WILLIAM J. NEWTON, a citizen of the United States, residing at Lynbrook, in the county of Nassau and State of New York, have invented certain new and useful Improvements in Wall-Switches, of which the following is a full, clear, and exact description.

My invention relates to wall switches, particularly that type which is embedded in the wall so as to be substantially flush with the surface thereof, and including a two-button snap switch by which a circuit or a plurality of circuits are controlled.

In some aspects, the present invention is in the nature of an improvement over my prior construction set forth in Patents Nos. 702,989 and 707,622. In other aspects, the present invention includes broadly new subject matter as will be later set forth.

In the present invention I provide a form of retaining box which is permanently embedded in a wall or other location desired, and which may have any suitable lugs or fastening devices. The form of the box is such that the circuit wires are led toward the front open side thereof on the exterior of the box, and the terminal connection screws are so located as to be accessible from the front side thereof, whether or not the switch mechanism is in place. The switch mechanism is a self-contained plug or unit and freely removable from the retaining box whenever desired, the electric connections all being properly established by a mere insertion of the mechanism in the box.

In the present invention I make use of a form of fastening means for the switch mechanism which holds the same with great security in use, and which establishes the electrical connections in a particularly efficient way. By this means only a single cover plate is required, which may be of any ordinary or ornamental construction. This cover is adapted to be secured to the retaining box and coöperates therewith to permanently secure the switch mechanism in place without the use of any other fastening devices. I make use of a switch mechanism having a spring-impelled switch element which is constrained to make an abrupt movement by a cam-operated detent put in action at the completion of each throw of the switch element.

With these various and other objects in

view my invention consists in the features of construction and combination as hereinafter set forth and claimed.

In the drawings: Figure 1 is a plan view of a wall switch embodying the principles of my invention. Fig. 2 is a vertical sectional view of the retaining box. Fig. 3 is a side elevation of the switch mechanism, the retaining box being shown in dotted lines. Fig. 4 is a vertical sectional view on the line IV—IV of Fig. 3. Fig. 5 is a vertical sectional view on the line V—V of Fig. 4. Fig. 6 is a perspective view of one of the parts of the switch. Fig. 7 is a perspective view of the detent for controlling the movement of the switch element. Fig. 8 is a detail perspective view of the rocker to which the operating buttons are connected.

Referring to the drawings, in which like parts are designated by the same reference sign, 1 indicates the casing or retaining box in which the switch mechanism is adapted to be contained, and which is received in a wall of a building or any other desired location. I prefer to construct the box 1 of porcelain or insulating material throughout and of rectangular outline, with a pair of clips or lugs 2 projecting laterally from the edges of its open side and having holes 3 to receive any ordinary screws or fastening devices. The clips 2 may be conveniently stamped from metal and secured to the retaining box 1 by screws or rivets 4.

5 designate grooves extending along the side edges of the retaining box on the exterior surface thereof, and adapted to receive the circuit wires 6, of which one or two pairs may be provided, depending on the number of circuits to be controlled. The grooves 5 extend forward toward the open side of the retaining box and terminate in notches 7 in the side edges of the box at points preferably near the corners thereof. The interior of the box 1 is of substantially rectangular outline throughout, but near the open side at points adjacent to the notches 7, the casing is recessed to form small rectangular chambers 8.

9 designate metallic strips bent right-angulantly in opposite directions at their respective ends, thereby forming the ears or lugs 9^a and 9^b. The ears or lugs 9^b rest against the bottom of the retaining box or against a ledge 1^a near the bottom thereof, in which relation they are secured by the

screws 9^x which pass upward through the bottom of the box. The outer ears 9^a have ordinary terminal screws 9^o and are adapted to be received in the rectangular chambers 8 above referred to, in which relation their terminal screws are adjacent to the notches 7 through which the circuit wires are received. The circuit wires 6 are, therefore, adapted to be led forwardly in their grooves 5 or on the exterior surface of the retaining box, so as to enter the box through the notches 7 and be conveniently engaged under the terminal screws 9^o, and these connections may all be made after the box is permanently in place in its containing wall. The strips 9 present four faces in opposing pairs 9' and 9'' respectively. These faces constitute engaging means to mechanically support the switch mechanism and establish all the electrical connections thereof.

The switch mechanism is particularly illustrated in Figs. 3 to 8 inclusive. 10 designates the base or plug of the switch, on which all of the operating parts are secured. This base is conveniently made of porcelain or other insulating material. 11 designates a frame member having a central standard 11' with a lateral cylindrical extension 11² which constitutes a journal or bearing for a spindle 12 loosely received therein. The spindle 12 has switch blades or elements 13 secured thereto and insulated from the spindle and from one another by insulating bushings 14 supported by studs 15 on the arms 16 forming part of the spindle 12. The switch blades or elements 13 are located in planes substantially corresponding to the oppositely directed faces 9' and 9'' respectively of the metallic strips 9, and means are provided to establish an electric connection with these strips and furnishing contacts for the respective switch elements. For this purpose I preferably make use of metallic spring blades 17 secured upon the base 10 and projecting inward therefrom at points adapted to cooperate with the metallic strips 9. 18 designate U-shaped spring clips fixed to the bases of the spring blades 17 and projecting upward therefrom behind the blades 17 and in positions adapted to be engaged by the switch elements 13 in their movement. The blades 17 are preferably supported on the base or plug 10 in a plane behind or offset from the frame member 11 (see Fig. 4) so as to insure an adequate protection against grounds and short circuits. The relation of the switch blades or elements 13 to the spring clips 18 is such that each switch blade is capable of swinging into a horizontal position, where its extremities engage both of a corresponding pair of the clips 18, or the switch blade may swing to a substantially vertical position, where both of its extremi-

ties are widely separated from said spring clips 18.

The mechanism for operating the switch blades is most clearly shown in Figs. 4 and 5. 20 and 21 designate the respective operating buttons guided in holes 22 in the base 10 and having stems 23 with laterally directed extremities pivoted to a rocker 24 (see Fig. 8) and which has a hub 25 loosely surrounding the cylindrical frame part 11² (see Fig. 4.) The rocker 24 has an ear 26 and a pin 27 projecting in opposite axial directions therefrom. 28 (see Fig. 6) designates an arm which is attached upon the switch spindle 12 so as to control the angular movement thereof. The arm 28 has a laterally extending ear 29 which overlies the ear 26 in the manner shown in Figs. 4 and 5. 30 designates a spring spirally surrounding the hub 25 and having prongs or extensions which embrace the respective ears 26 and 29 and tend to constrain these parts to assume the same radial position. The fastening of the arm 28 to the spindle 12 may be of any desired sort, but I prefer to make use of a key-hole slot 33 in the arm 28, which is received upon a flattened portion of the spindle 12. 31 designates a segment-shaped notch in the arm 28, which cooperates with a pin 32 on the frame 11' so as to limit the angular displacement of the arm and switch spindle to a predetermined throw or arc of movement. 35 designates a detent or slider having an elongated central hole 36 which surrounds the cylindrical part 11² of the frame member. The detent has laterally bent edges 37 which embrace a portion of the standard 11' so as to guide the detent in a rectilinear path normal to the base 10. The upper end of the detent 35 is enlarged and has a transverse slot 40 adapted to engage and cooperate with the pin 27 of the rocker 24. The upper end of the detent 35 also has a pair of corners 41, preferably square or slightly inclined inward, and adapted to engage a portion of the ear 29 of the arm 28 above described. For this purpose the ear 29 has portions of its sides bent downwardly at 42 and sharpened to an acute edge.

The use and operation are as follows: The retaining box being received in a wall or other location, the circuit wires 6 are connected to the strips 9 in a manner which has already been described. The switch mechanism is inserted so that the spring blades 17 engage the various strips 9 and establish electrical contact therewith, at the same time firmly holding the switch mechanism within the box. The usual cover plate (not shown) is then applied, and fastened in place by screws received in the threaded openings 43 of the clips 2. In this relation the cover is adapted to hold the switch mechanism against withdrawal. When either of the

buttons 20 or 21 is depressed, the rocker 24 is correspondingly oscillated and the arm 28 impelled to make a corresponding movement on account of the spring 30 which embraces the ears 26 and 29 of the rocker and arm 28 respectively. The arm 28 is, however, initially prevented from movement by the detent 35 which has a corner 41 engaging the edge 42 of the arm 28 at this time. The detent 35 is displaced upwardly in the drawings by the engagement of the pin 27 during the first part of the movement of the rocker, which movement still further insures a positive retention of the arm 28. As the rocker 24 approaches the latter end of its movement, however, the pin 27 begins to depress the detent 35 and eventually, when the rocker has substantially completed its movement, the detent 35 is so much depressed that its corner 41 passes out of engagement with the edge 42 of the arm 28, which immediately makes an abrupt movement to its other extreme position of throw under the influence of its impelling spring 30. When the other button is depressed, a corresponding sequence of movements takes place in the reverse direction. The movement of the detent 35 takes place immediately on the depression of either button and before the lost motion of the spring 31 has been overcome enough to impel the arm 28 to any extent. Accordingly, the detent 35 is sure to be displaced sufficiently to intercept the movement of the arm 28 by the time the latter is impelled to leave its extreme position.

It will be observed that the terminal posts or screws 9^c are exposed at the open side of the box 1 under all circumstances, whether or not the switch mechanism is in place. In other words, these terminal posts are so arranged adjacent to the notches 7 which receive the circuit wires, that they are not cov-

ered or obstructed by the base or plug 10 of the switch mechanism when the latter is inserted in the box. Accordingly all circuit connections can be made or changed or inspected without removing the switch mechanism from the box; which is a highly desirable feature, as will be obvious.

What I claim, is:

1. In a wall switch, a switch blade, an arm having a laterally projecting ear connected thereto, said ear having sharpened side edges, a rocker, a spring connecting said rocker and said arm, and a detent having a pair of square corners on its upper end and having a horizontal cam slot, and a pin on said rocker in said cam slot whereby said detent is vertically displaced by said rocker to engage said sharpened edges and intercept the movement of said arm during the preliminary movement of the rocker.

2. In a wall switch, a spindle having a flattened portion and a rigidly connected switch blade, an arm having a keyhole slot connection with the flattened portion of said spindle and having a laterally projecting ear with sharpened side edges, a rocker, push buttons for oscillating said rocker, a spring connecting said rocker and said arm, and a detent having a pair of square corners on its upper end and having a horizontal cam slot, and a pin on said rocker in said cam slot whereby said detent is vertically displaced by said rocker to engage said sharpened edges and intercept the movement of said arm during the preliminary movement of the rocker.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

WILLIAM J. NEWTON.

Witnesses:

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MARY S. HANDY.