

No. 629,638.

Patented July 25, 1899.

A. F. T. WIECHERS.
ELECTRIC DOOR OPENER.

(Application filed Sept. 15, 1898.)

(No Model.)

3 Sheets—Sheet 1.

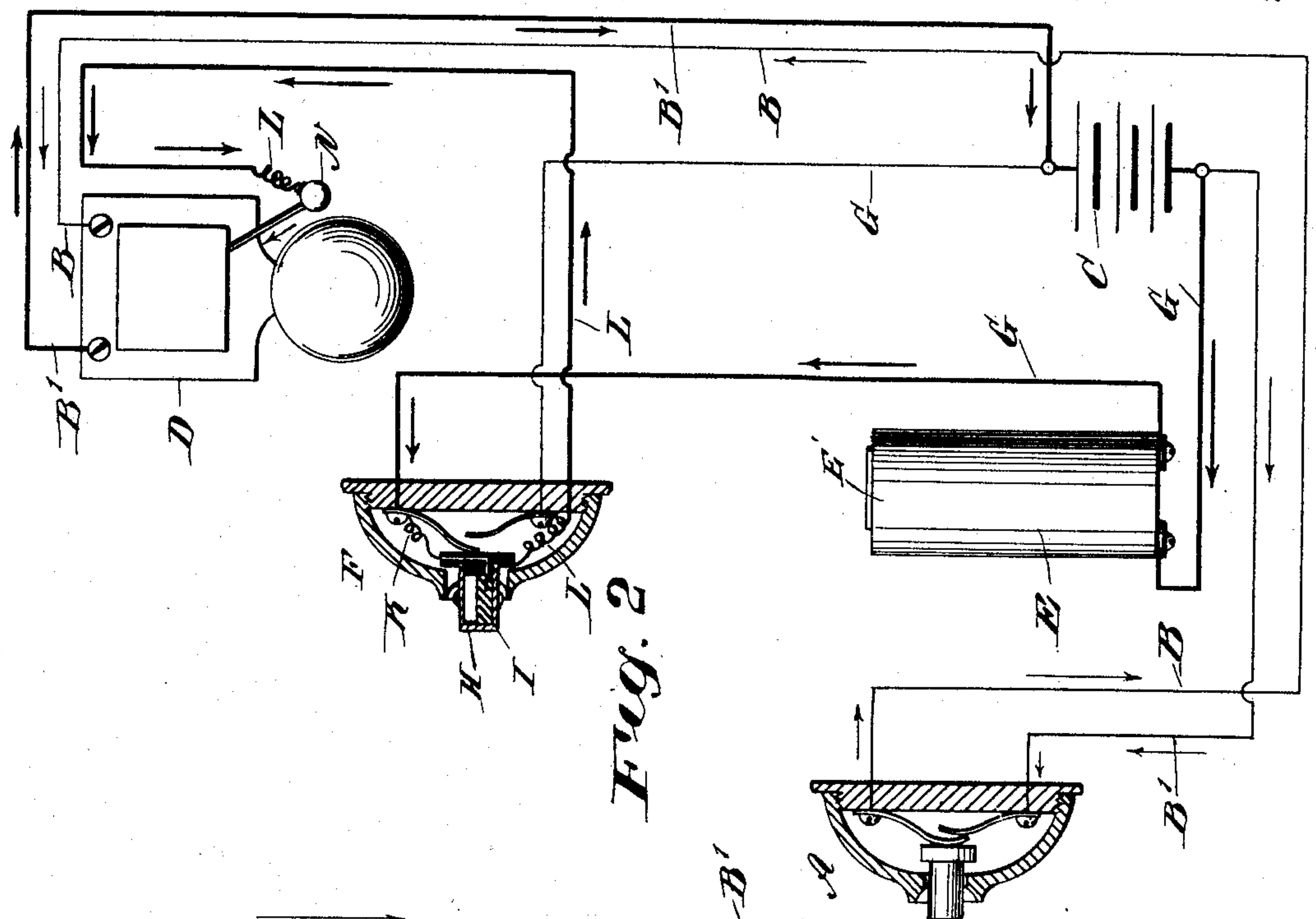


Fig. 2

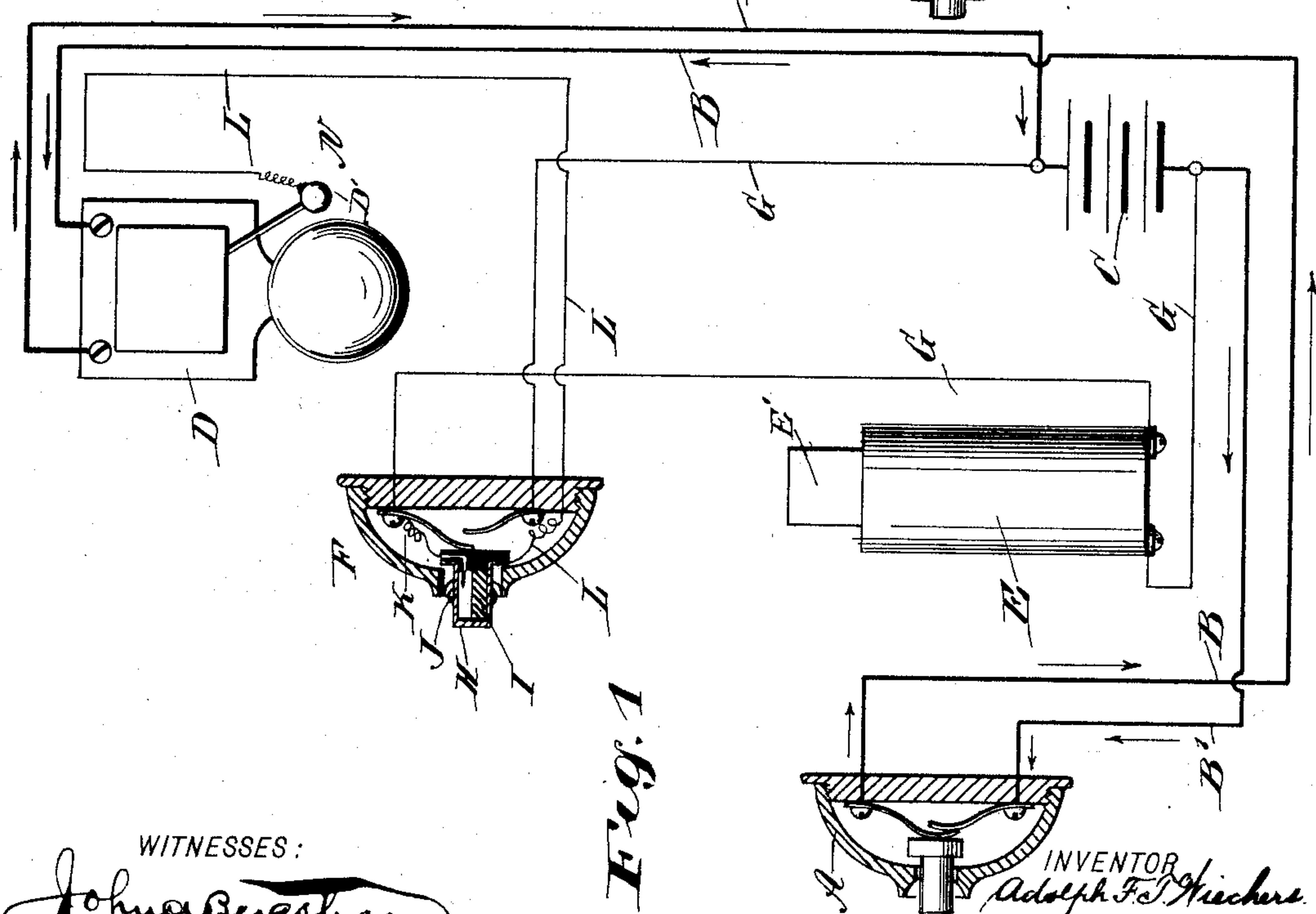


Fig. 1

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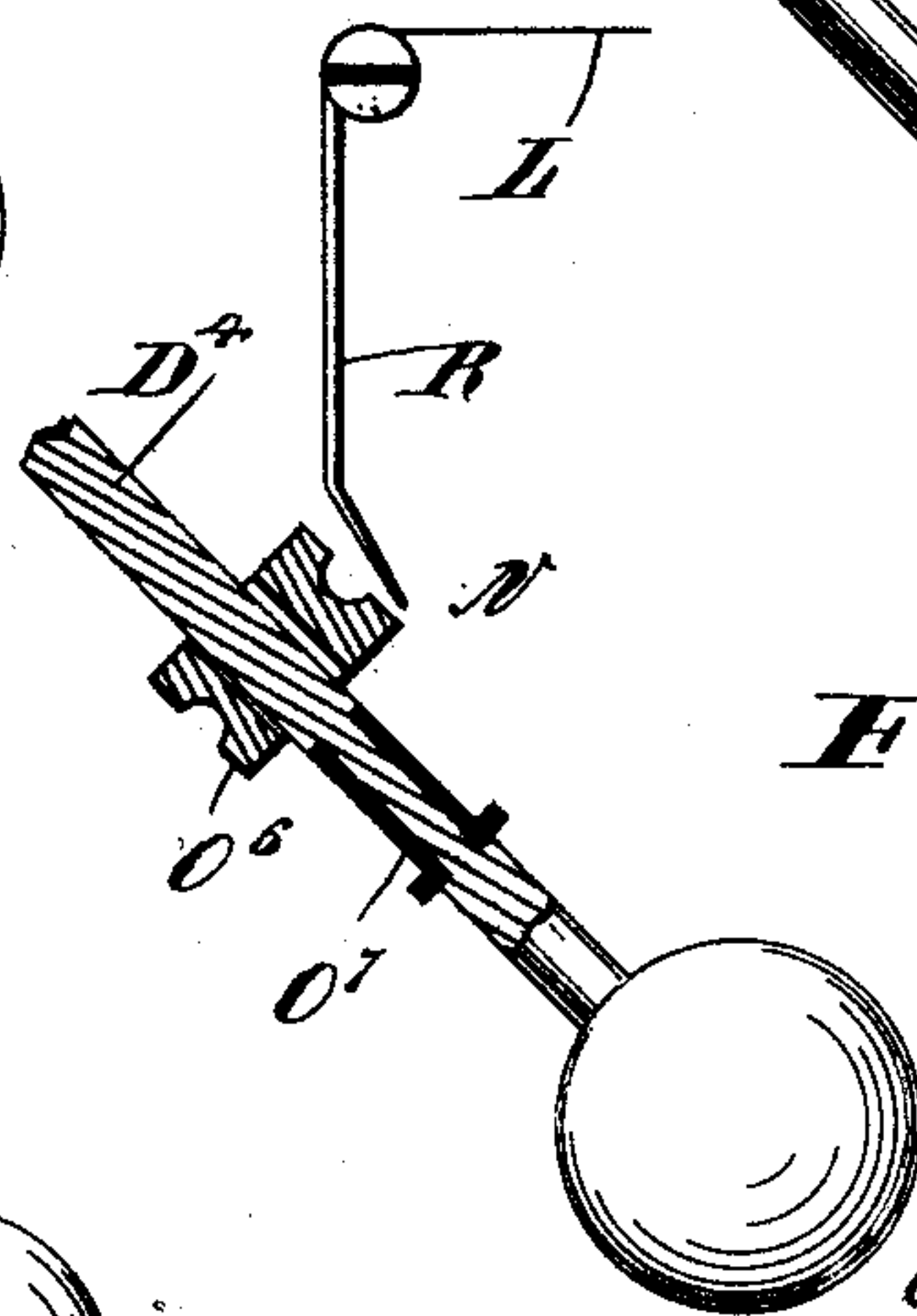
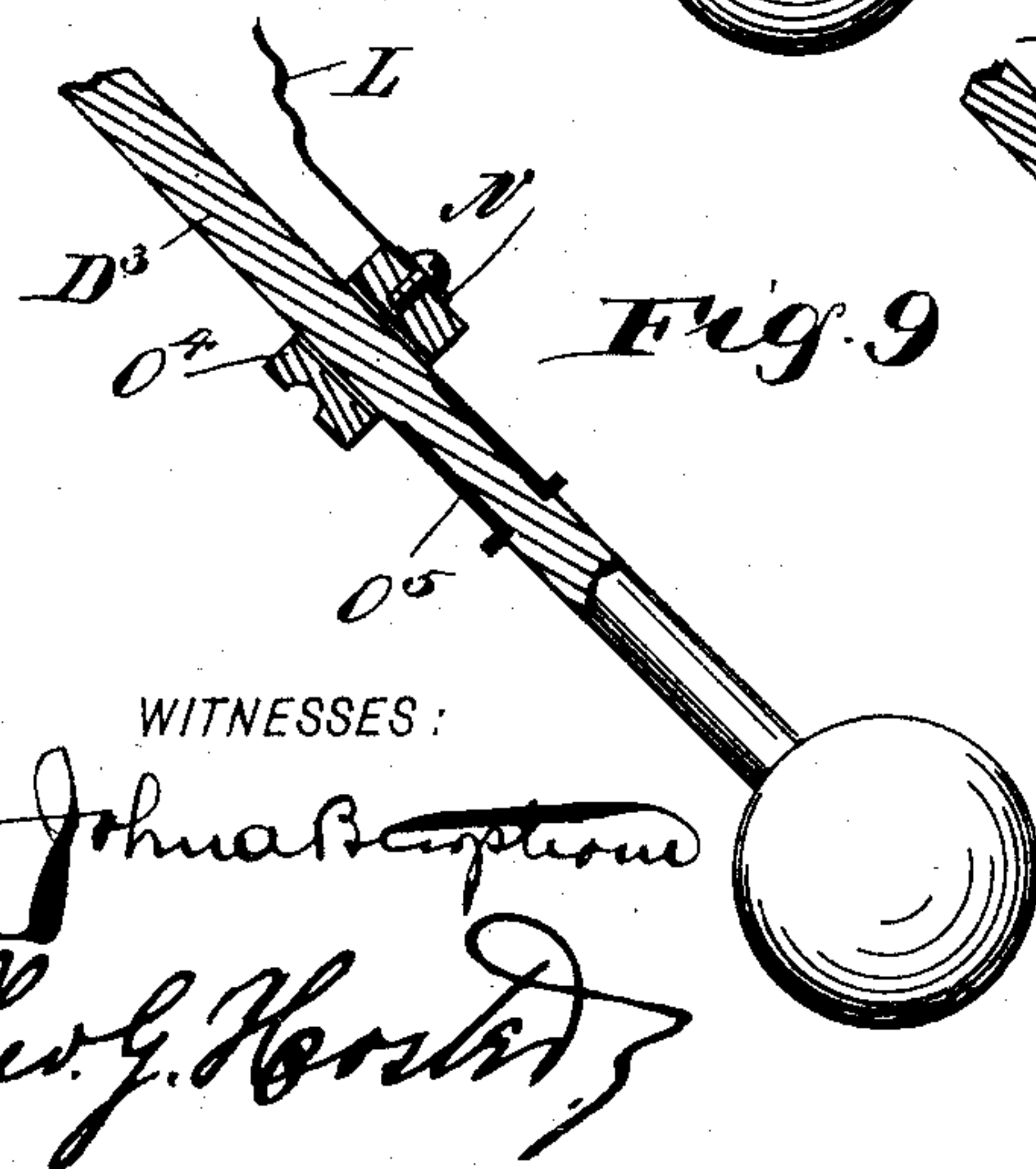
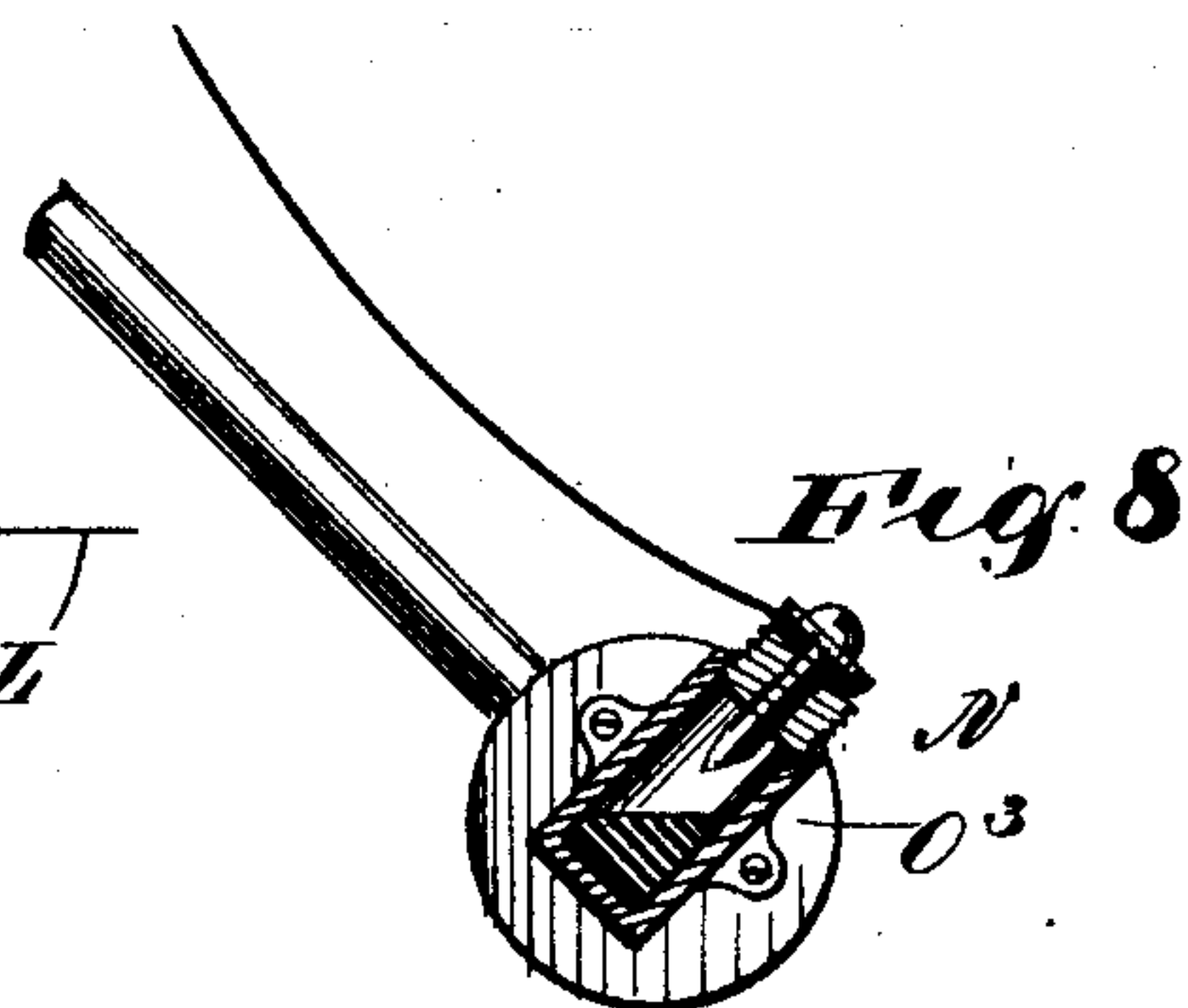
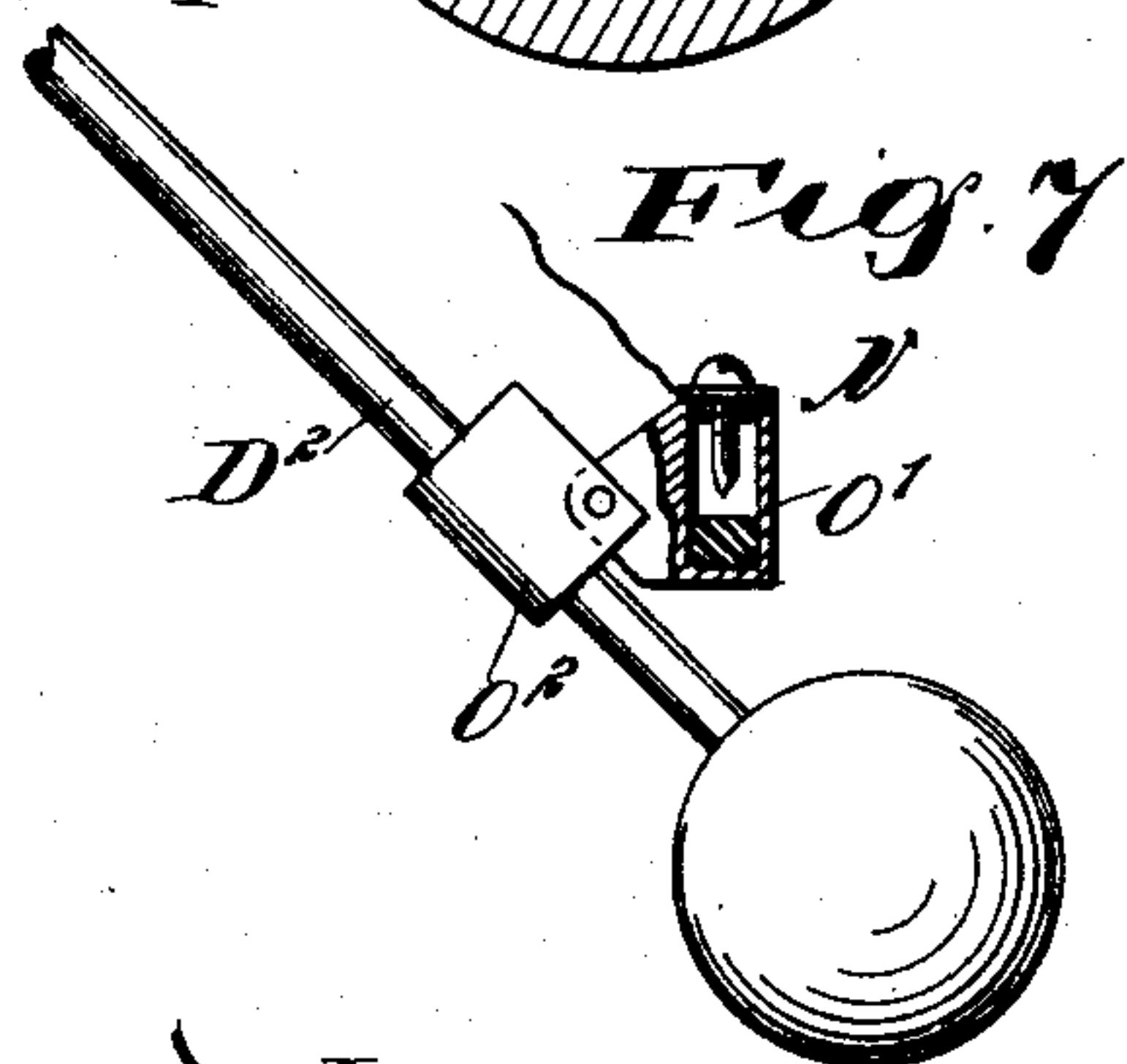
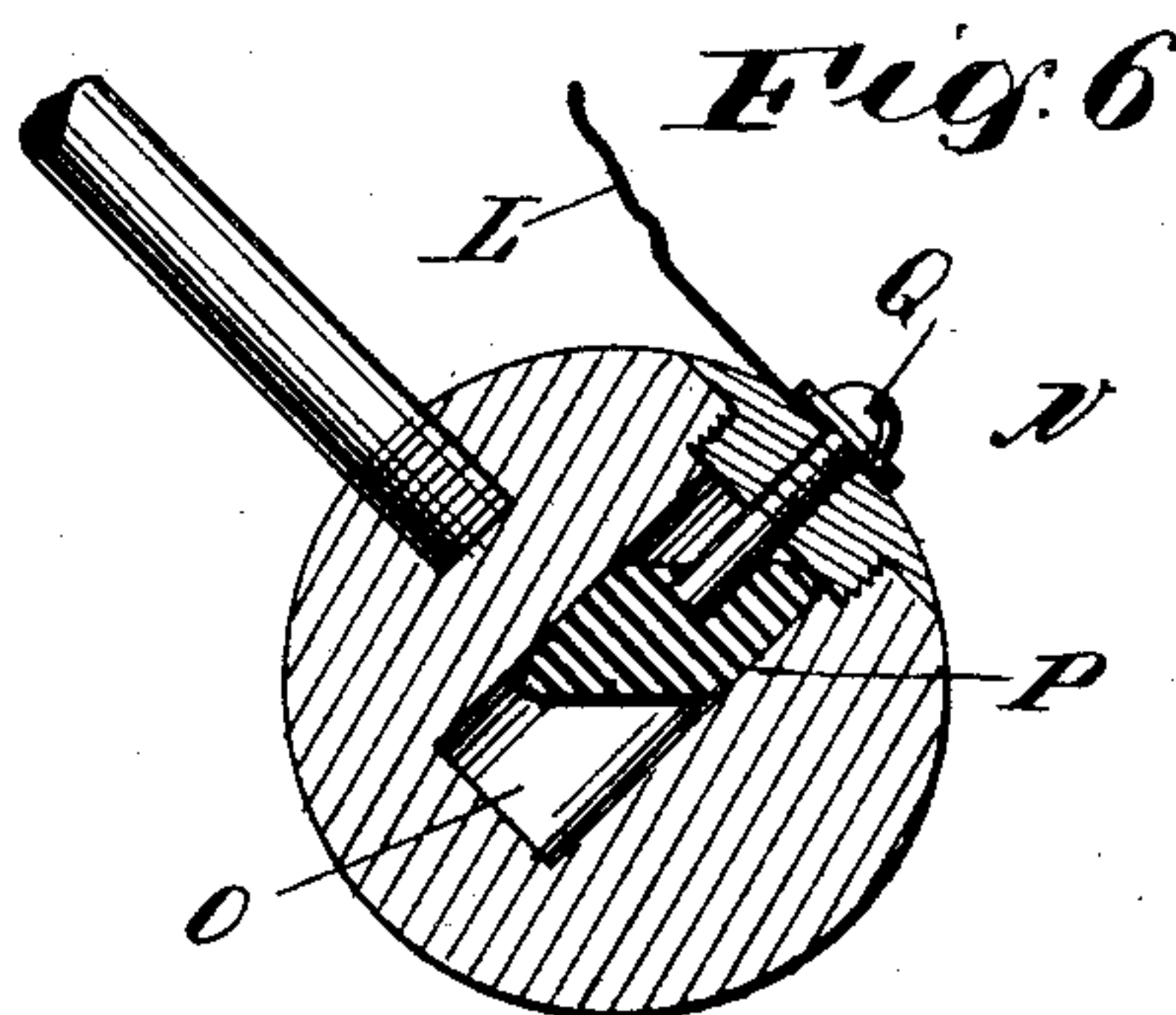
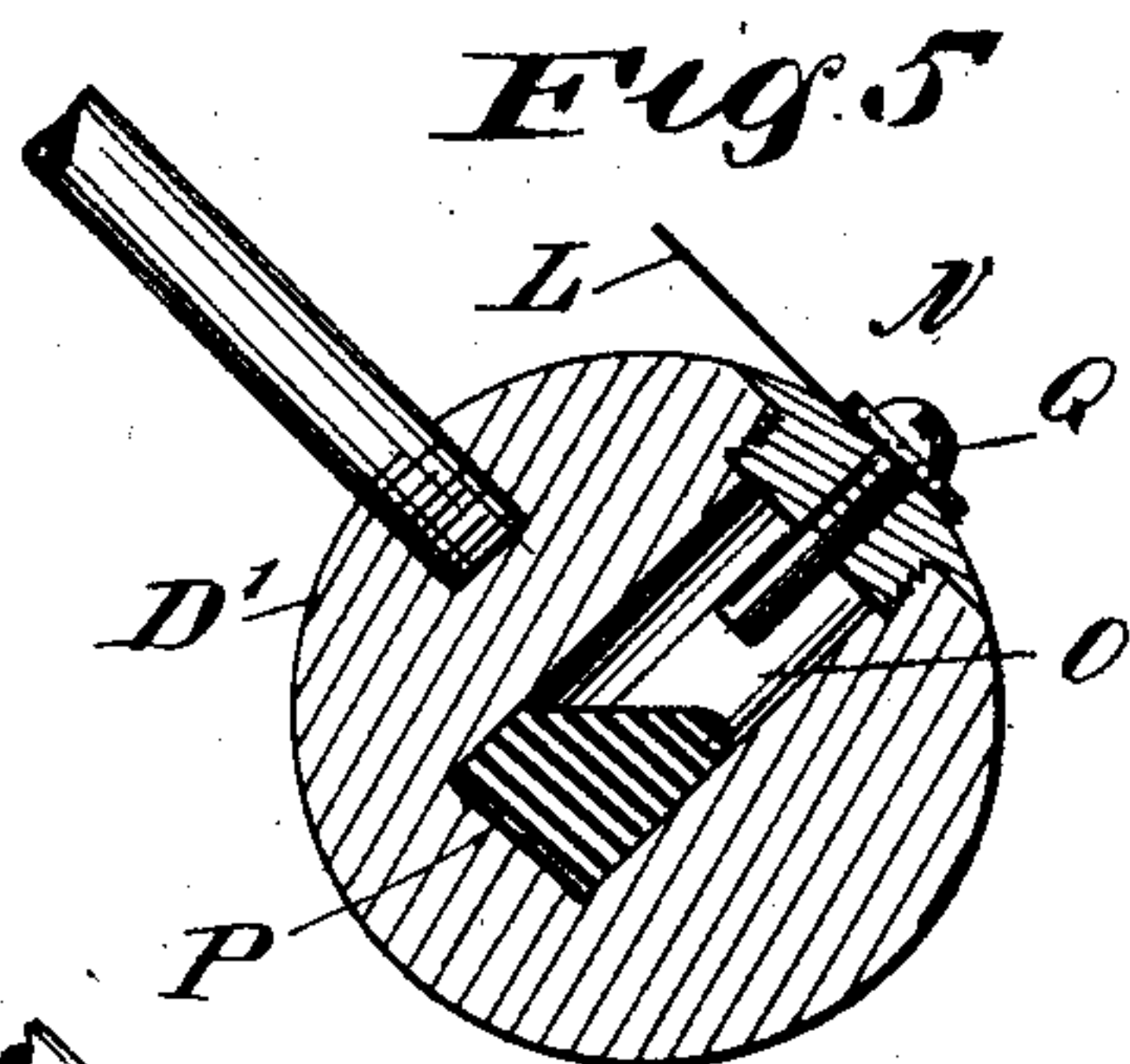
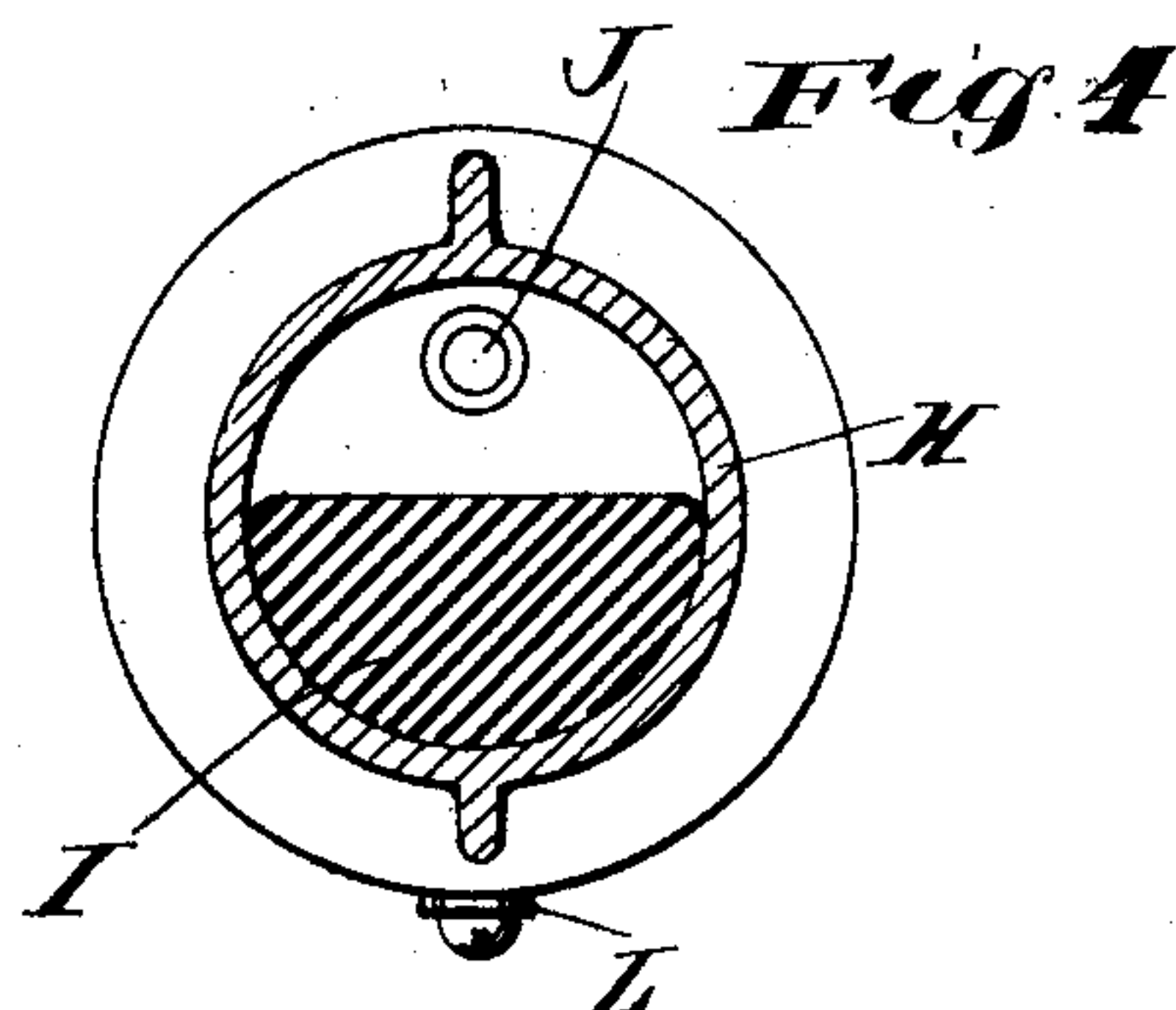
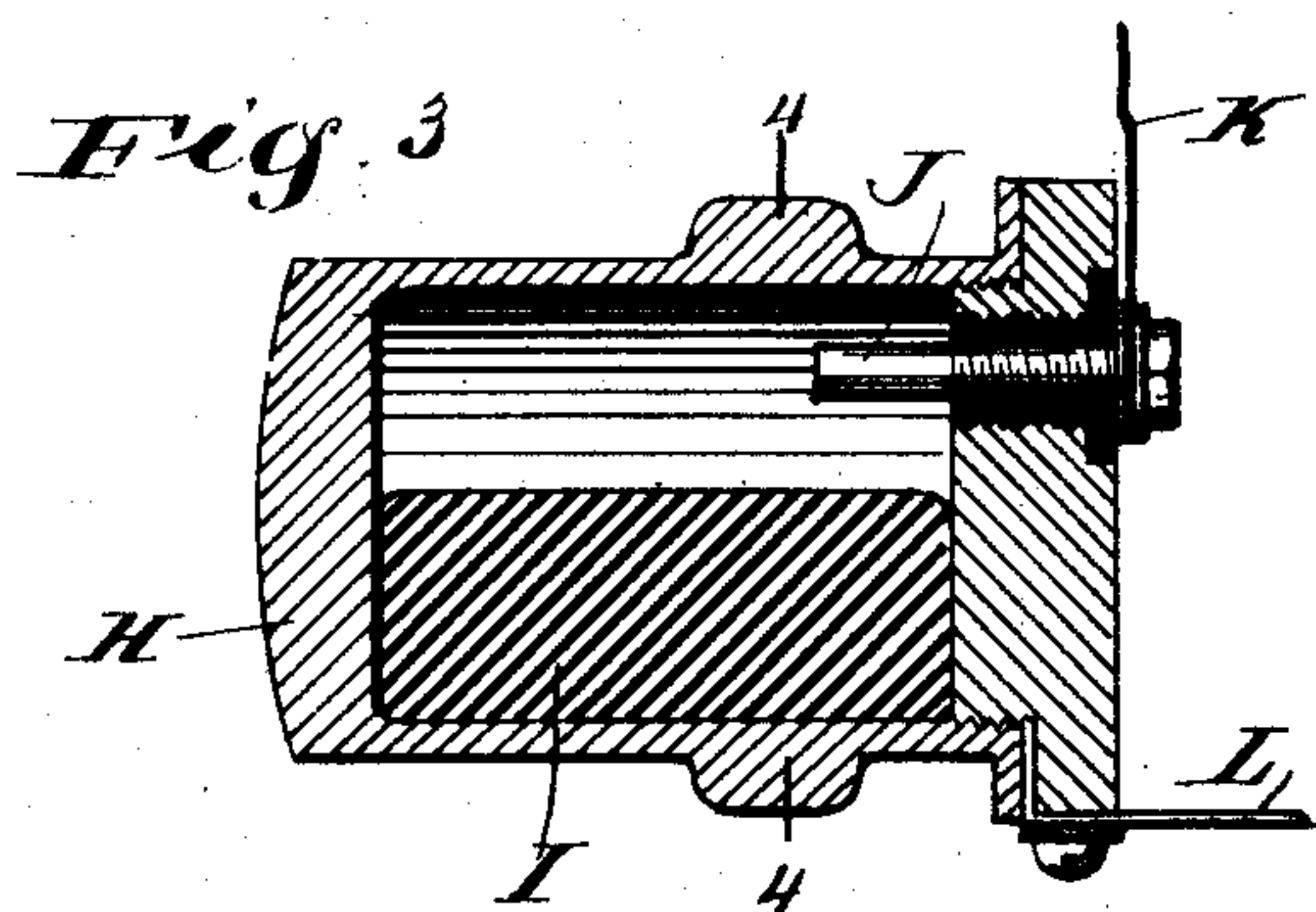
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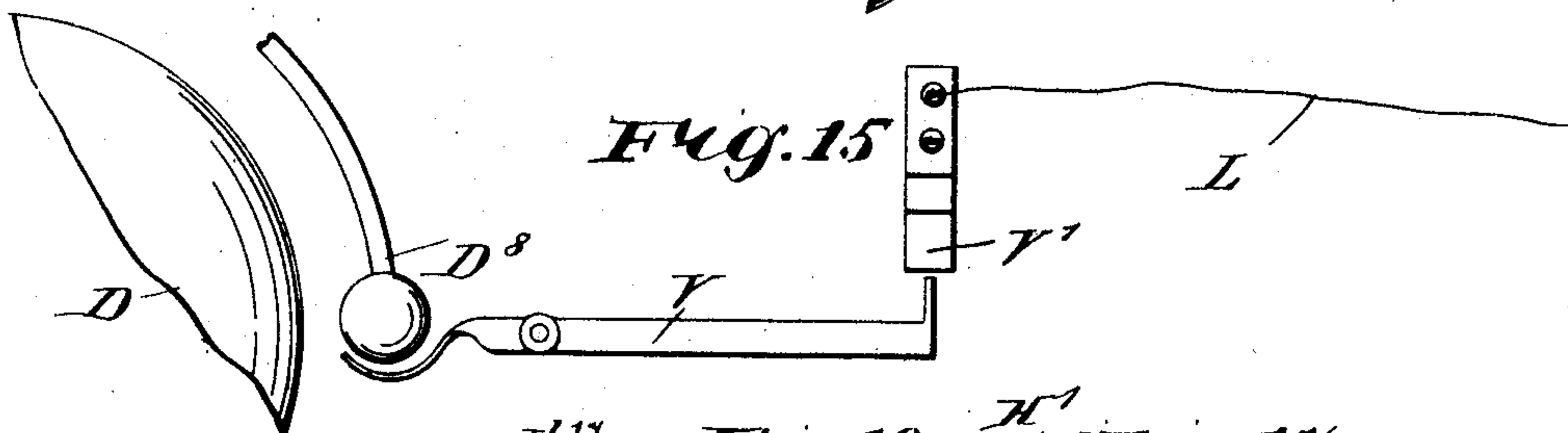
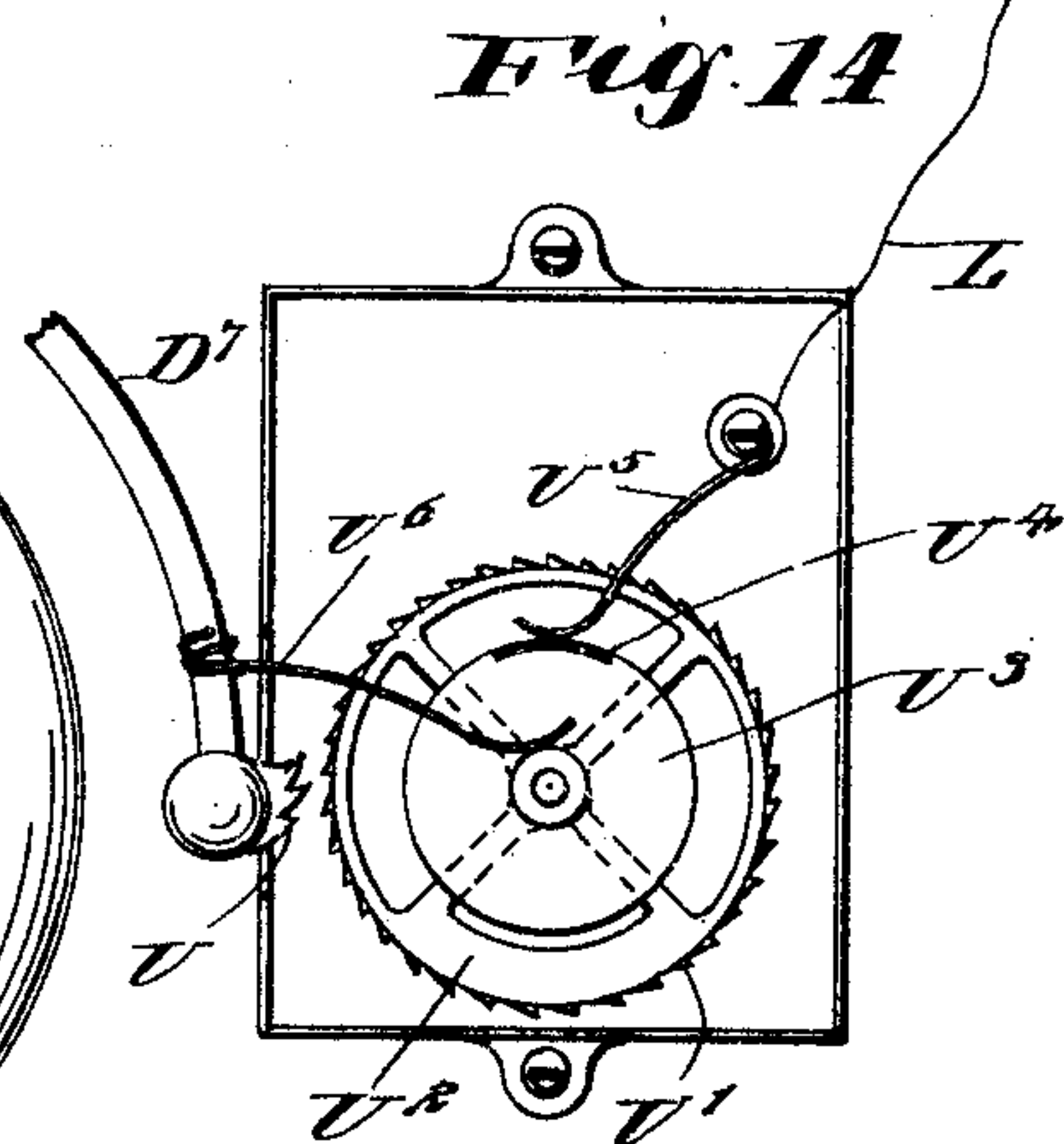
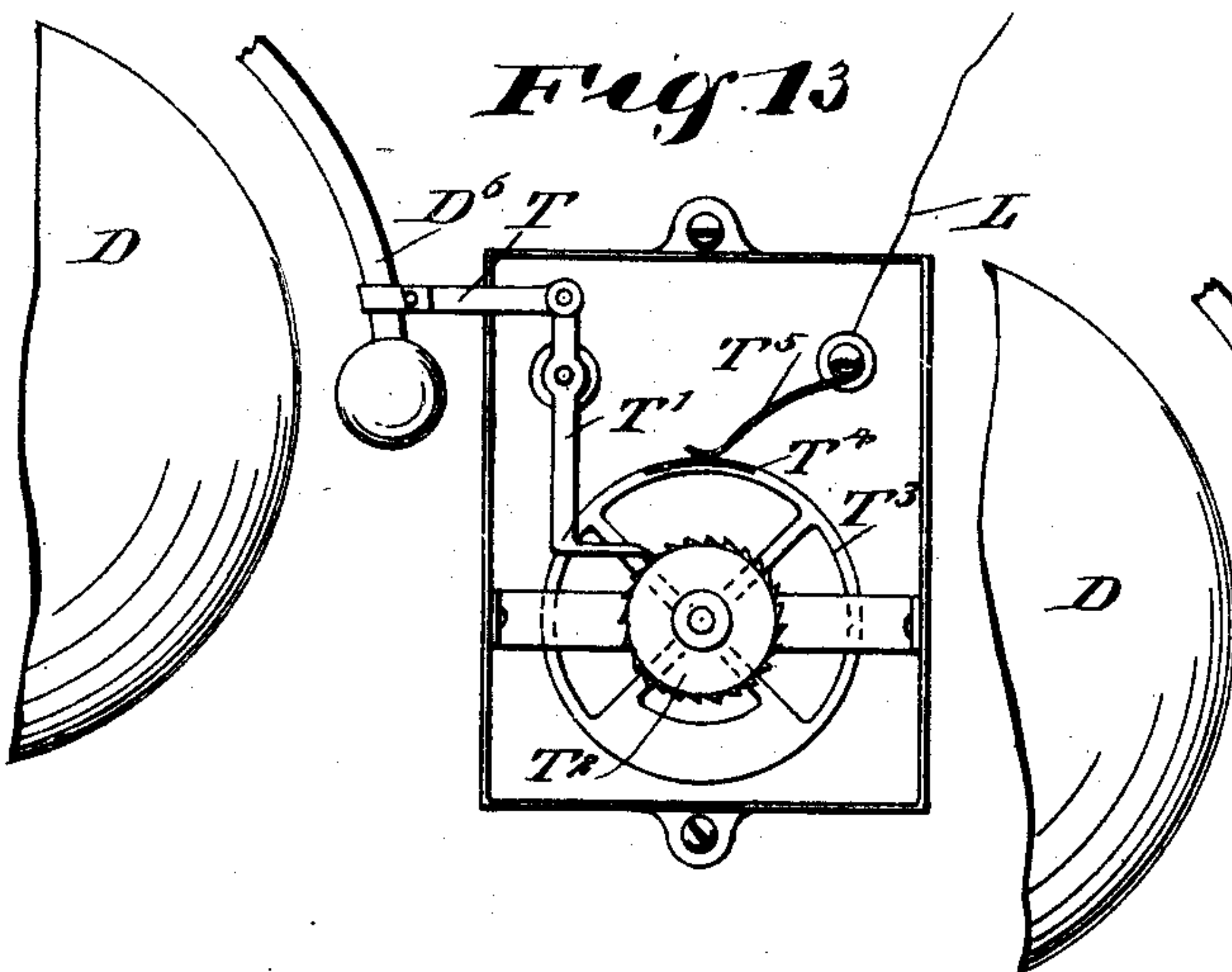
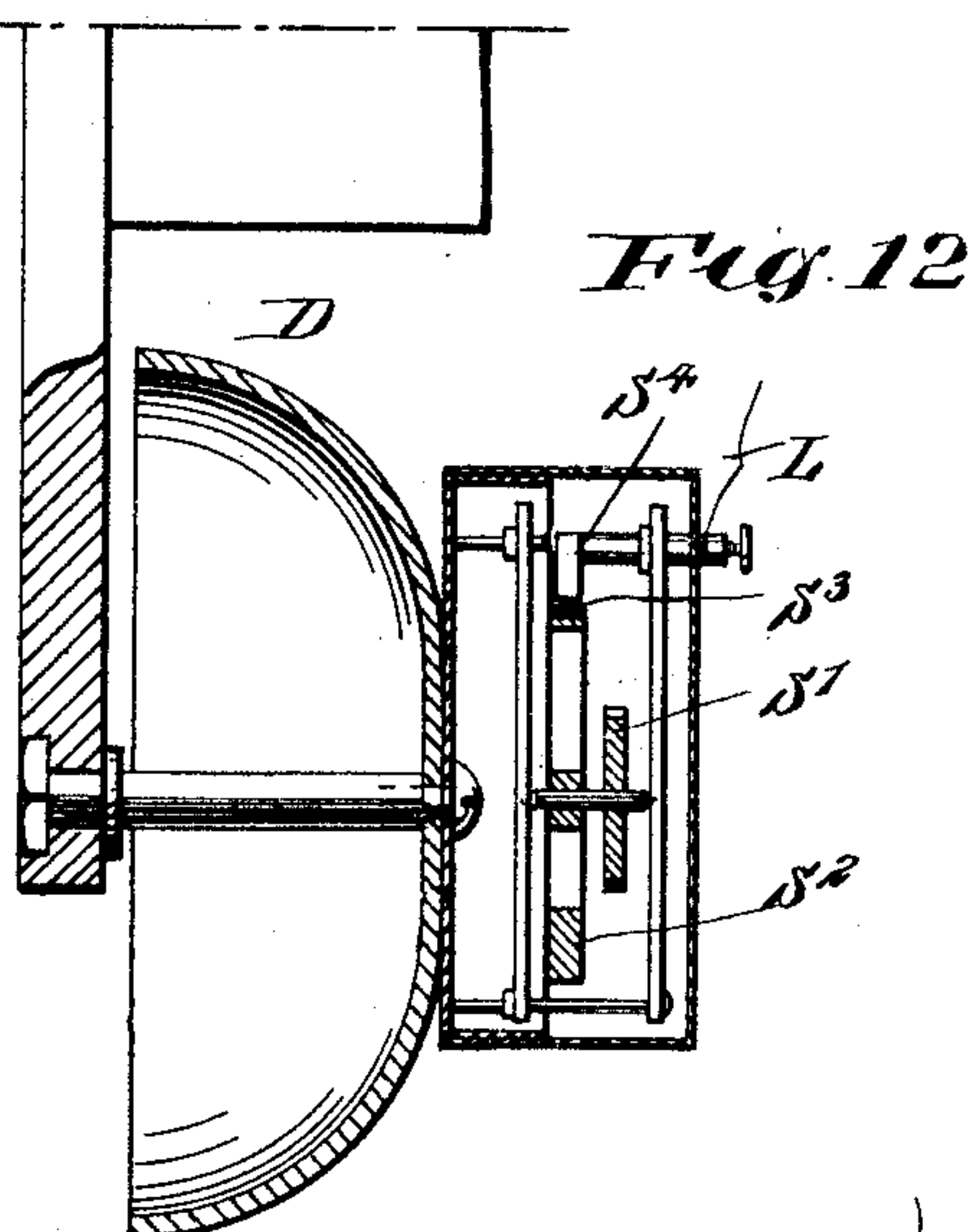
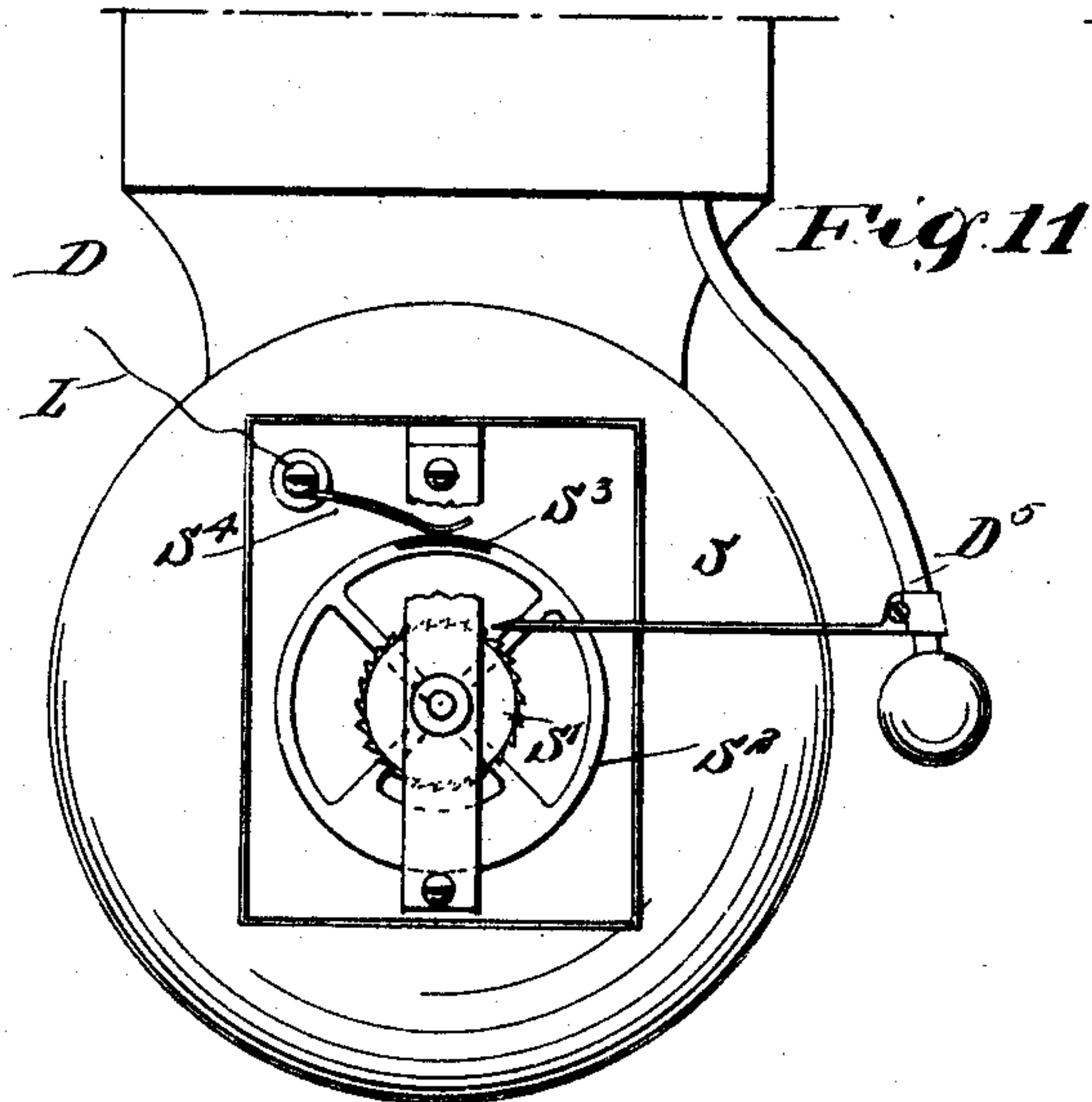
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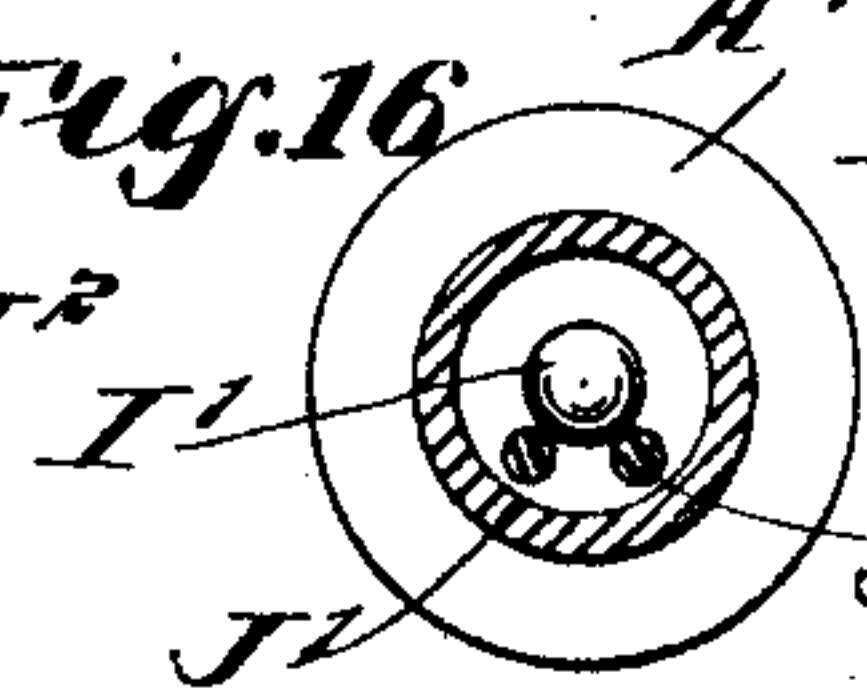
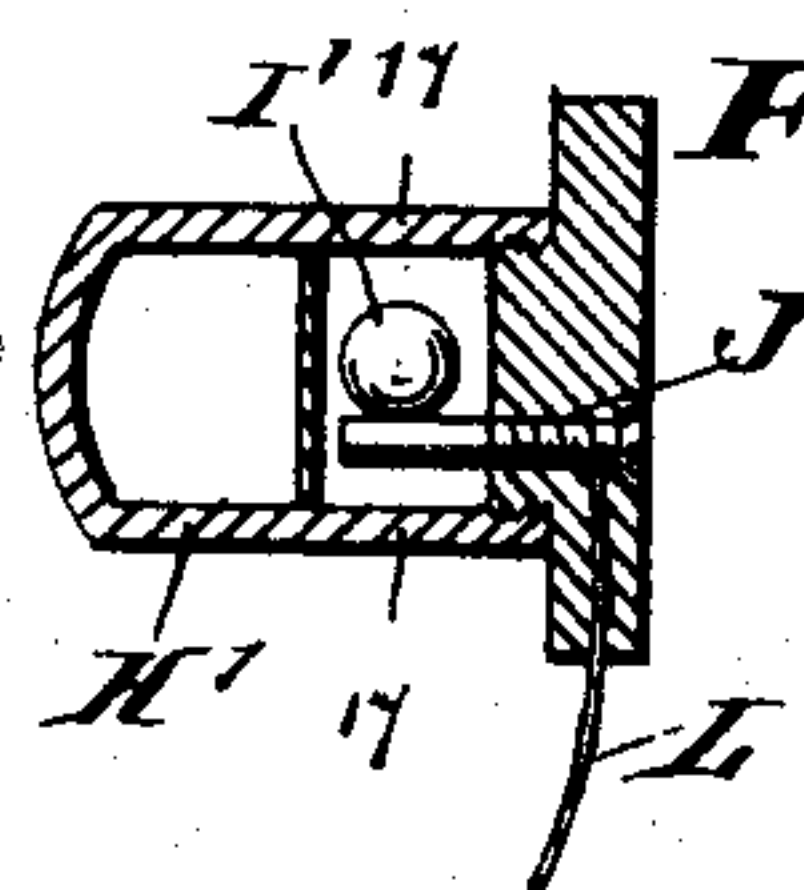
(Application filed Sept. 15, 1898.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

ADOLPH F. T. WIECHERS, OF NEW YORK, N. Y.

ELECTRIC DOOR-OPENER.

SPECIFICATION forming part of Letters Patent No. 629,638, dated July 25, 1899.

Application filed September 15, 1898. Serial No. 691,000. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH F. T. WIECHERS, a subject of the Emperor of Germany, residing in the city of New York; borough of Manhattan, in the county and State of New York, have invented a new and Improved Electric Door-Opener, of which the following is a full, clear, and exact description.

The invention relates to electrically-operated locks for the front or entrance door of an apartment-house or the like; and the object of the invention is to provide certain new and useful improvements in electric door-openers, whereby a tenant is enabled to unlock and open the door from the outside without the use of a key or requiring assistance from another person in the house.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a diagrammatic view of the improvement with the lock in a closed position. Fig. 2 is a similar view of the same with the lock in an open position. Fig. 3 is an enlarged sectional side elevation of the switch in the push-button for the door-opener. Fig. 4 is a transverse section of the same on the line 4 4 in Fig. 3. Fig. 5 is an enlarged sectional side elevation of the automatic circuit-closer on the alarm-bell. Fig. 6 is a similar view of the same with parts in a different position. Figs. 7, 8, 9, and 10 are sectional side elevations of modified forms of the same. Fig. 11 is a face view of another form of circuit-closer. Fig. 12 is a transverse section of the same. Figs. 13, 14, and 15 are face views of other modified forms of circuit-closers. Fig. 16 is an enlarged sectional side elevation of a modified form of push-button switch, and Fig. 17 is a cross-section of the same on the line 17 17 of Fig. 16.

An electrically-operated door-opener in an apartment-house or other building is provided with the usual push-button A in the hall or entrance of the building, the push-button being located in a circuit having wires B B', a battery or other source of electricity

C, and an alarm D, so that when the button is pressed the alarm D is sounded in the corresponding apartment. The door-opener proper, E, is in a circuit containing the apartment push-button F, wires G connecting the lock with the push-button F and with the battery C. After the alarm D has been sounded the person in the apartment-house presses the button of the push-button F, so that the bolt E' is withdrawn and the door is opened for the person who originally pushed the button of the push-button A.

In order to enable the person outside of the building or in the hall to open the door without assistance from a person in the apartment, I provide the following arrangement: The button H of the push-button F is made hollow to contain mercury, filings, granulated carbon, or other loose material I or solid material I', which is a conductor of electricity and is adapted to come in contact with a contact-pin J, carried insulated on the button H, as is plainly indicated in Figs. 1, 2, 3, 4, 16, and 17. When the button H is in such position, as shown in Fig. 3, so that the pin J stands uppermost, then no contact takes place between the material I and the button H; but when the button is given a half-turn then the pin J moves in contact with the loose material I. The contact-pin J is connected by a wire K with one of the contact-springs of the push-button F, and a wire L leads from the button H to an automatic closer N, held on one of the movable parts of the alarm D or armature, preferably on the hammer for the bell, as indicated in the drawings. As illustrated in Figs. 16 and 17, the push-button H', of insulating material, has the loose material, in the form of two metallic balls I', adapted to engage or disengage pins J' J'', connected with the wires K and L to close or break the circuit on turning the push-button. The automatic circuit-closer N is provided with a chamber O, which may be formed directly in the ball D' of the hammer, as plainly indicated in Figs. 1, 2, 5, and 6, and in this chamber is held mercury, granulated carbon, filings, or other like loose or solid contact-making material for electric transmission, normally out of contact with a pin Q, held insulated on the chamber and connected with the wire L. When the alarm D is actuated, as previously

explained, and the hammer vibrates, then the loose or solid material P is thrown in contact with the insulated pin Q, and consequently an electric connection is made between the push-buttons A F, the alarm D, and the door-opener E, so as to actuate the latter to withdraw the bolt therein and open the door, if the button H or switch had previously been turned to bring the pin J in contact with the loose or solid material I or I', as above explained. From the foregoing it is evident that when the button H or switch is turned by a person in the apartment to bring the insulated pin J in contact with the material I and a person now leaves the house and closes the door and then returns, by pressing the button in the push-button A at the entrance or hall causes first a ringing of the alarm D to cause the hammer thereof to close the circuit for the wire L, whereby the current passes through the push-button F or switch to the door-opener, so as to actuate the same and open the door. Thus no assistance is required from within the house for the person pressing the push-button A.

The arrangement in the button H or a switch, together with the automatic circuit-closer N, forms a controlling device for the two circuits, one of which contains the alarm and the push-button A and the other the door-opener E and the push-button F, and hence a person is enabled by setting the push-button H or a switch to subsequently open the door from the outside without assistance from a person inside of the apartment.

I do not limit myself to the particular construction of the controlling device shown and described, as it is evident the same may be greatly varied, especially the automatic circuit-closer N. For instance, as shown in Fig. 7, the chamber O', containing mercury or the like, instead of being formed in the hammer-ball is attached to a clip O², secured to the shank for the hammer. As shown in Fig. 8, a chamber O³, containing the mercury and the contact-pin, is attached to the side of the flat hammer-ball; but the action of both devices shown in Figs. 7 and 8 is exactly the same as the one previously described with reference to Figs. 5 and 6.

In the modified form shown in Fig. 9 the chamber and mercury are dispensed with and a contact-bead O⁴ is made use of, fitted to slide loosely on the shank D³ of the hammer, the bead O⁴ normally resting on an insulated sleeve O⁵, carried by the said shank. The wire L is directly connected to the bead, and when the hammer vibrates the bead finally creeps off the insulated sleeve O⁵ and makes contact with the metallic hammer-shank D³ to complete the circuit, as indicated in Fig. 9. Instead of carrying the wire L directly on the bead O⁴, I may connect the said wire with a spring-tongue R, adapted to be engaged by the bead O⁶, normally resting on an insulated sleeve O⁷, held on the hammer-shank D³. When the hammer is vibrated, the bead O⁶

moves off the insulated sleeve O⁷ and in contact with the spring-tongue R to complete the circuit.

The circuit-closer shown in Fig. 11 is actuated from the hammer D⁵, and for this purpose the hammer carries a pawl-arm S, adapted to engage a ratchet-wheel S' on a gravity-wheel S², carrying in its rim an insulated plate S³, normally engaged by a contact-spring S⁴, connected with the wire L. Now when the hammer vibrates the arm S turns the ratchet-wheel S' to turn the wheel S² and move the plate S³ from under the spring S⁴, the latter now contacting with the metallic rim of the wheel S² to close the circuit. The wheel S² returns by gravity to its normal position, as shown, as soon as the hammer ceases to vibrate. A similarly-actuated mechanism is illustrated in Fig. 13, the hammer D⁶ being connected by a link T with a pawl-lever T' for turning the ratchet-wheel T² and the gravity-wheel T³, carrying the plate T⁴, normally engaged by the contact-spring T⁵, connected with the wire L. The hammer D⁷ (shown in Fig. 14) is provided with a toothed segment U, adapted to turn a toothed wheel U' on the gravity-wheel U², carrying a contact-wheel U³, with a plate U⁴, normally engaged by the contact-spring U⁵, connected with the wire L. A spring U⁶, carried by the hammer D⁷ and engaging the hub of the wheel U³, prevents the latter from returning too quickly after the ratchet-wheel U' is turned by the segment U on the vibrating of the hammer.

In Fig. 15 the hammer-ball D⁸ is adapted to vibrate a lever V for making contact with a contact-plate V', connected with the wire L. The armature of the alarm D may be used in a similar manner as the hammer for closing the circuit by way of wire L. It is also evident that instead of the switch being in the apartment push-button itself it may be separate therefrom. I reserve particularly the right to use any switch for this connection.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the alarm-circuit and means for closing the same, an electrical door-opener and a circuit therefor, means, independent of the alarm-circuit, for closing the circuit of the door-opener, another device for closing the circuit of the door-opener automatically when the alarm-circuit is closed, and a switch for establishing or interrupting the electrical connection of the door-opener with the last-named circuit-closer of the door-opener circuit.

2. An electric door-opener, comprising a circuit containing an alarm, a second circuit containing a door-opening device, a controlling device for the said circuits, so that when the alarm-circuit closes the door-opening device is actuated for opening the door, said controlling device comprising a switch in the apartment push-button or separate, and an automatic circuit-closer connected with the

said push-button and actuated from the alarm, substantially as shown and described.

3. An electric door-opener provided with a switch under the control of the operator and connected with an apartment push-button, and an automatic circuit-closer actuated from the alarm and having electric connection with said switch so that an electric current passes to the door-opening device to open the same when the switch is set and the entrance push-button is pressed, substantially as shown and described.

4. An electric door-opener provided with an entrance circuit-closer, an alarm, an apartment circuit-closer for the door-opening device, a switch connected with the apartment circuit-closer, and an automatic circuit-closer actuated from said alarm and having electric connection with said switch, so that when the latter is set and the entrance circuit-closer is actuated, then a current is sent by way of the switch, the alarm and the automatic circuit-closer to the door-lock, to open the same, substantially as shown and described.

5. The combination of the alarm-circuit, a circuit-closer therefor, a door-opener circuit, a circuit-closer independent of the alarm-circuit and controlling the door-opener, another circuit-closer likewise connected with the door-opener circuit, and constructed to be actuated when the circuit-closer of the alarm-circuit is operated, and a switch for putting the second-named circuit-closer of the door-opener circuit into or out of controlling connection with the door-opener circuit.

6. The combination of the alarm, the circuit-closer connected therewith, the door-opener, a circuit for the door-opener, a circuit-closer in the last-named circuit, controlled by the alarm, and a switch in said circuit, to bring the alarm-operated circuit-closer into or out of controlling connection with the door-opener.

7. A push-button containing a loose or solid contact-making substance, and an insulated contact-point carried by the said button and adapted to be engaged by and disengaged from the said substance, according to the position of the button, substantially as shown and described.

8. The combination of the alarm, the circuit-closer connected therewith, the door-opener, a circuit for the door-opener, a circuit-closer located in the apartment and controlling the door-opener, and a switch located in the apartment and so arranged that in one position it will cause the door-opener circuit to be closed upon the actuation of the circuit-closer of the alarm-circuit.

9. The combination of the alarm, the circuit-closer connected therewith, the door-opener, a circuit for the door-opener, a double circuit-closer located in the apartment and controlling the door-opener, the said circuit-closer having two circuit-closing devices, the contact-terminals of one circuit-closing device being in direct circuit with the door-opener, a circuit connecting the contact-terminals of the other circuit-closing device with the door-opener, but interrupted between one of said terminals and the door-opener, and a circuit-closer for completing said interrupted circuit, the said double circuit-closer being movable in two directions to operate one or the other of its contact-closing devices.

10. The combination of the bell-hammer or armature, a contact rigid therewith, and a contact carried by the armature and movable thereon to be actuated by the vibration of the armature, and a circuit connected with said contacts.

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Witnesses:

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