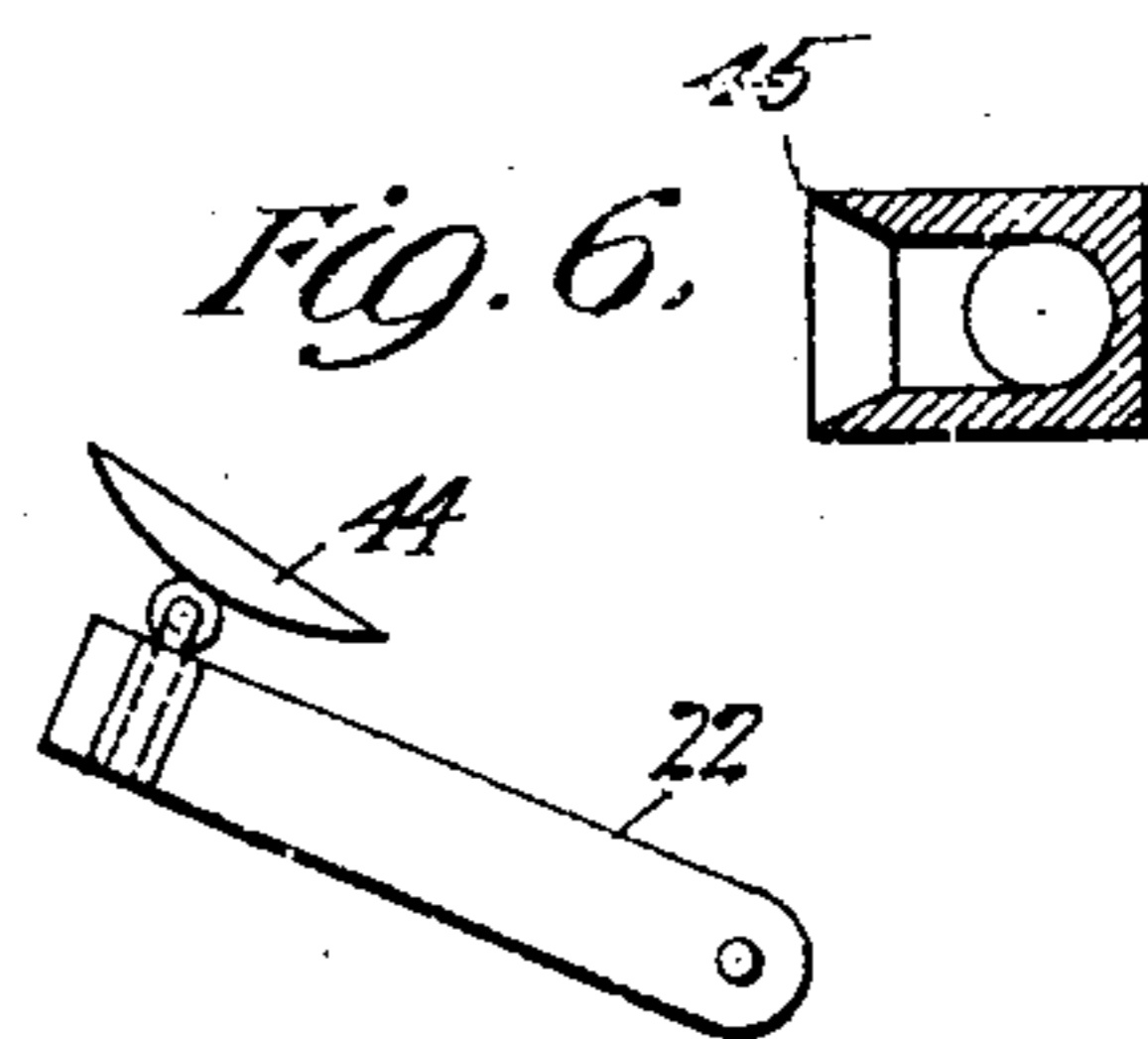
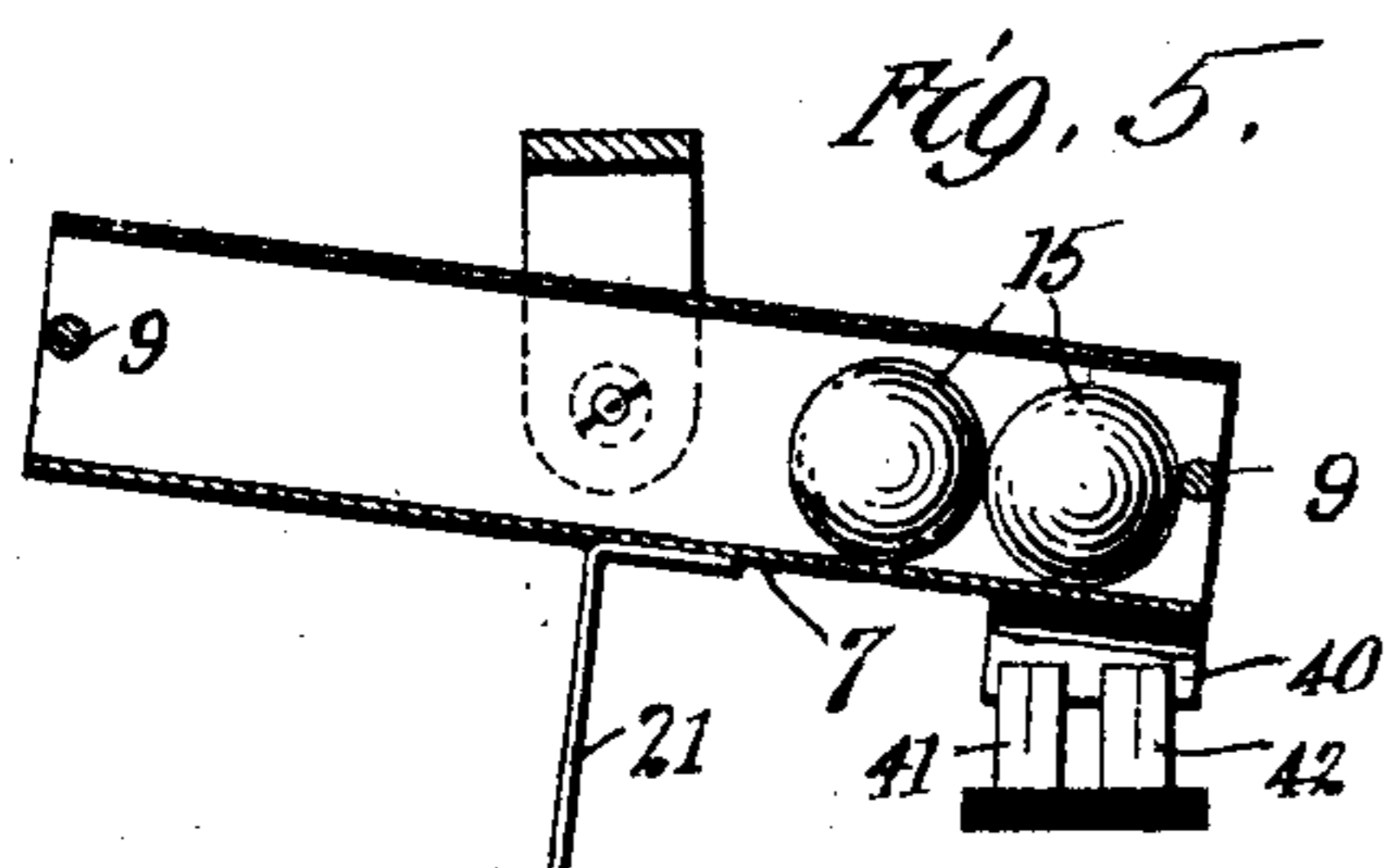
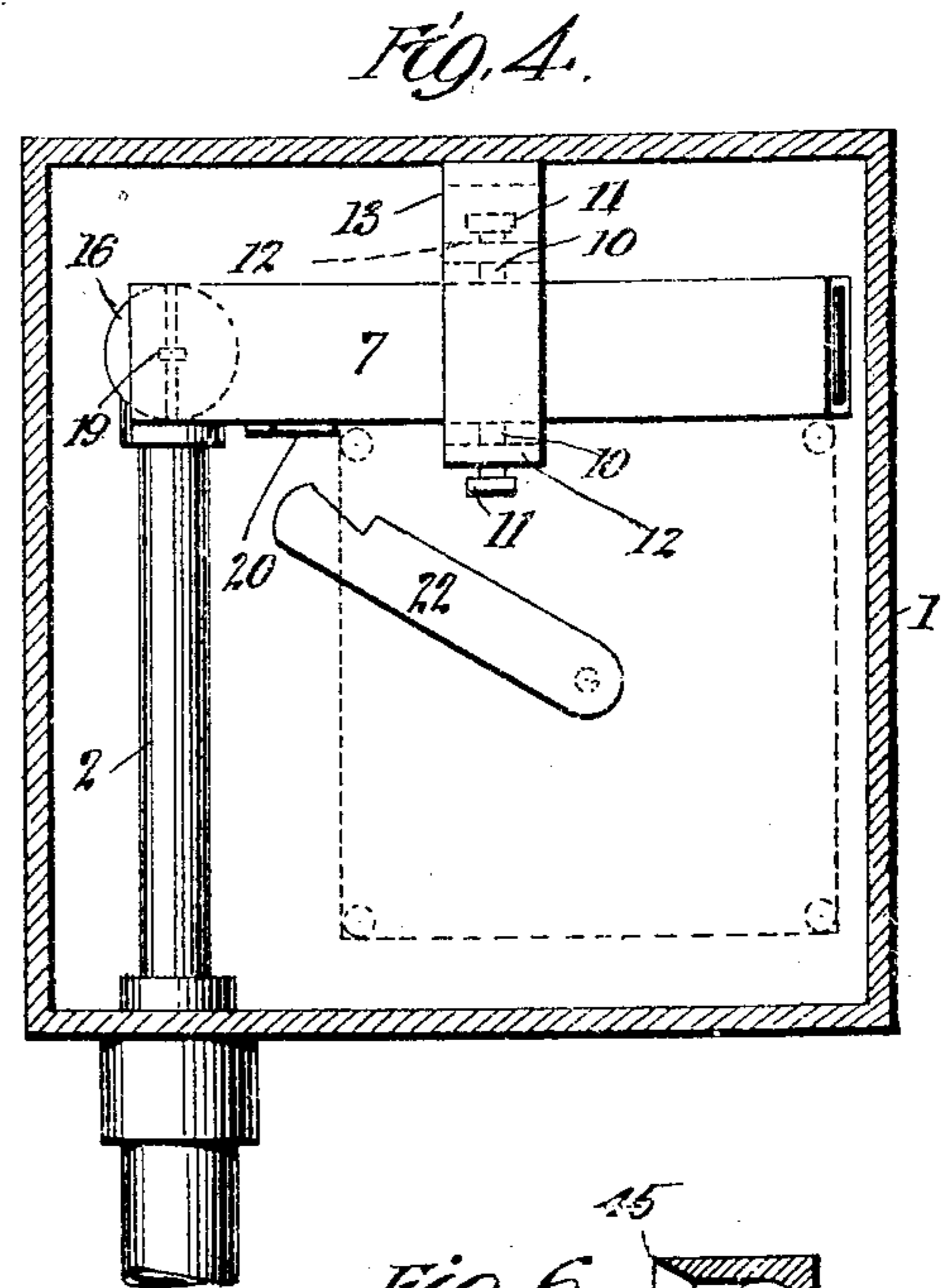
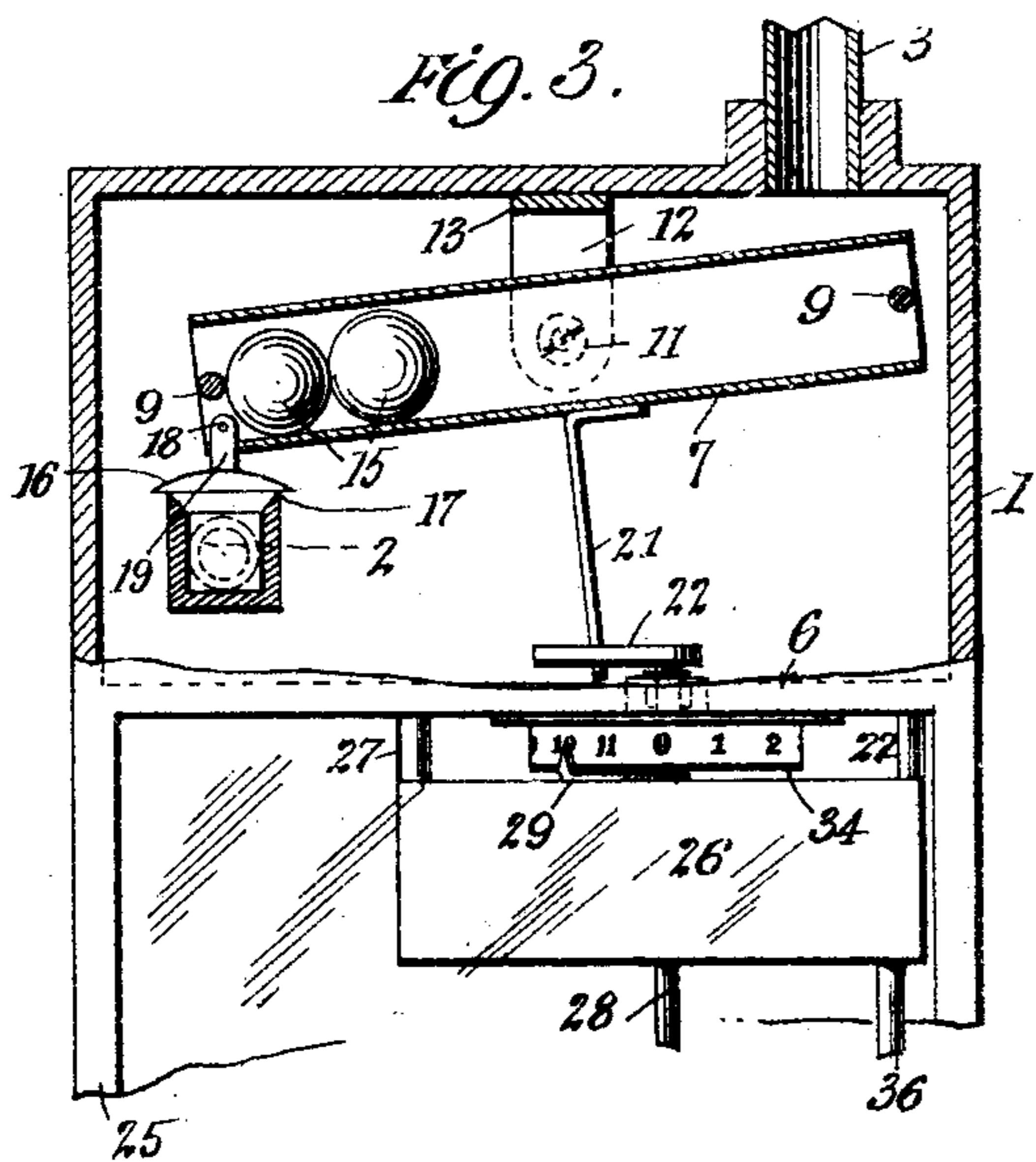
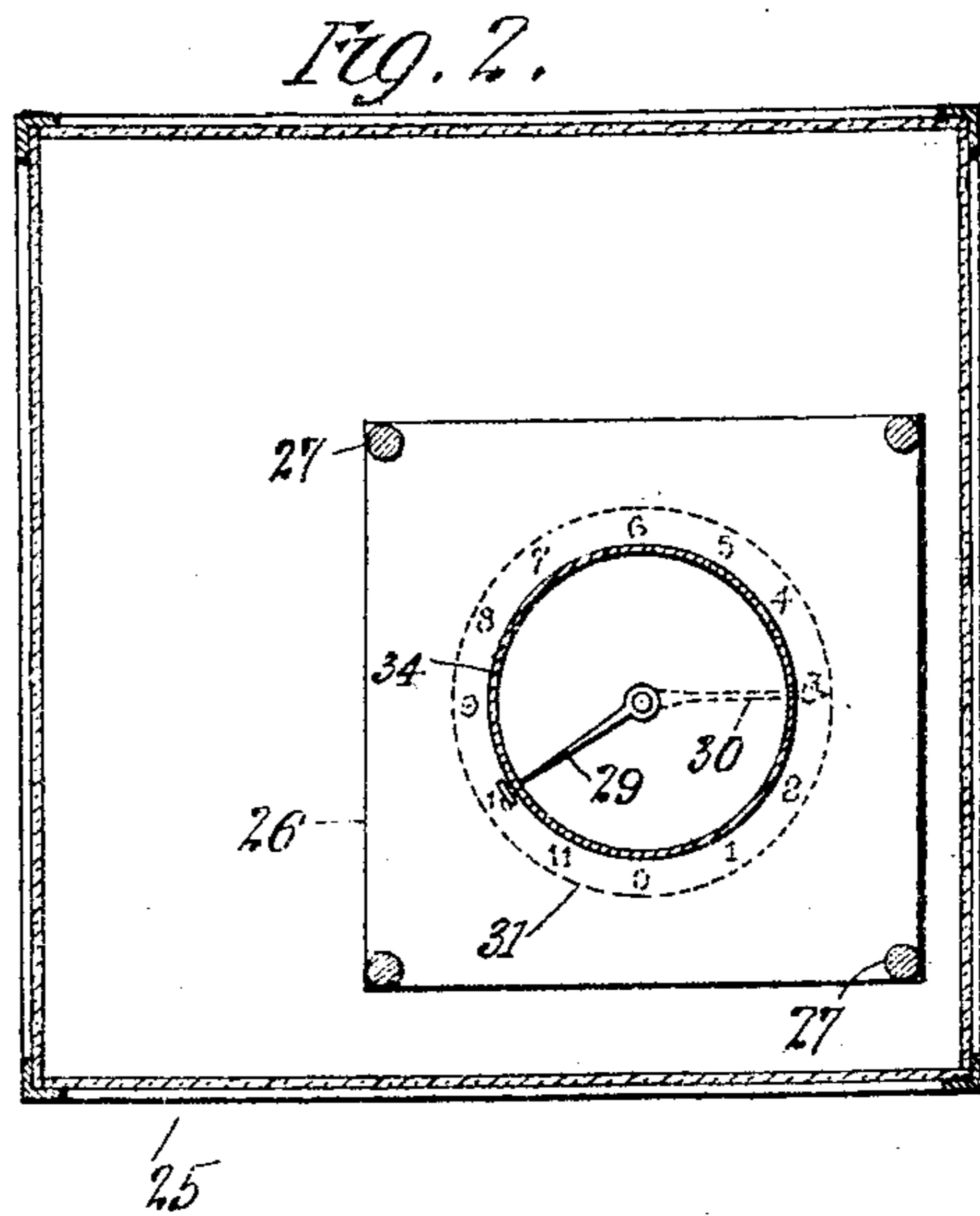
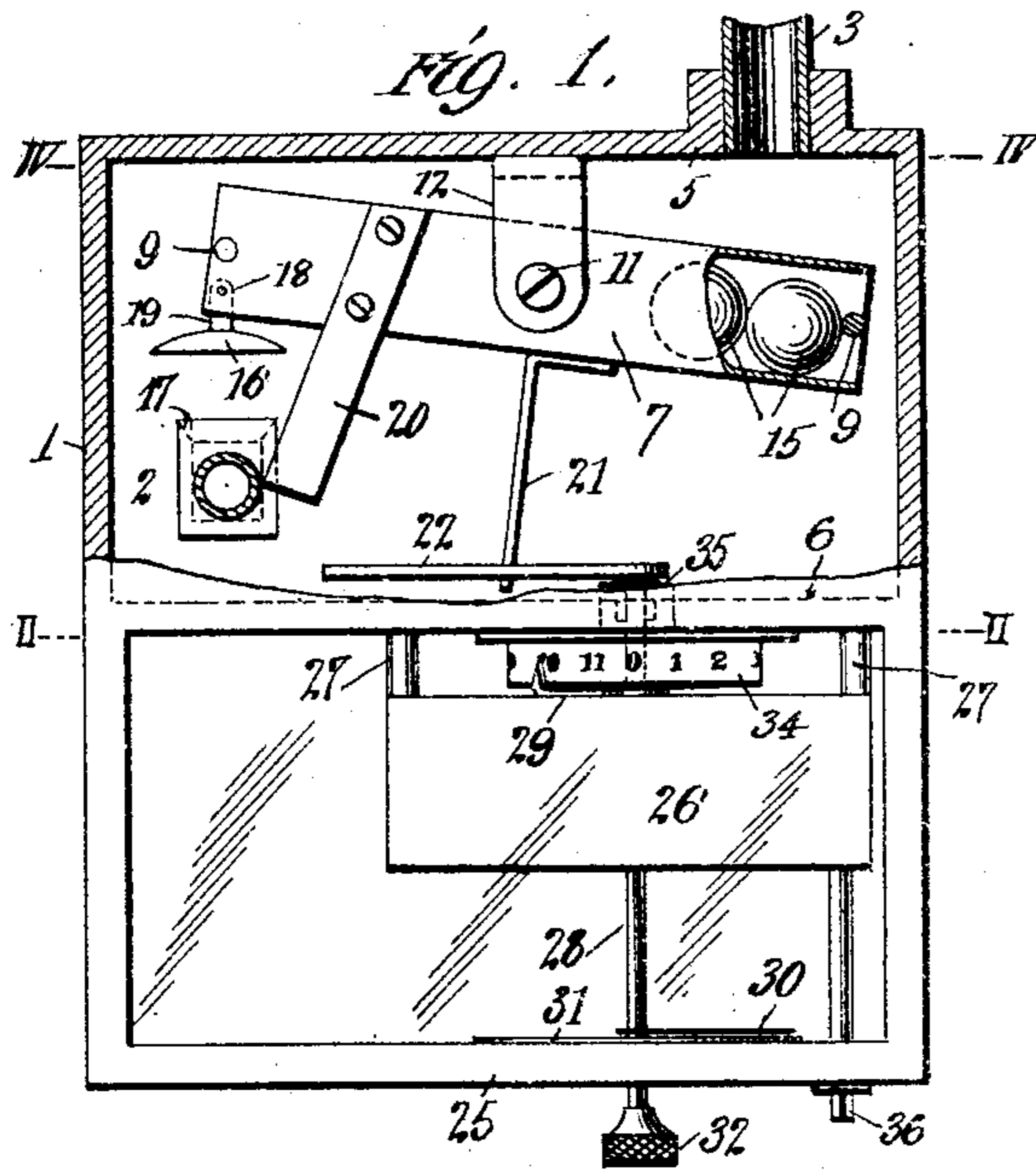


H. NIEMANN.  
TIME CONTROLLED GAS AND ELECTRIC CUT-OFF.  
APPLICATION FILED MAR. 29, 1909.

956,147.

Patented Apr. 26, 1910.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

HENRY NIEMANN, OF NEW YORK, N. Y.

TIME-CONTROLLED GAS AND ELECTRIC CUT-OFF.

956,147.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed March 29, 1909. Serial No. 486,463.

*To all whom it may concern:*

Be it known that I, HENRY NIEMANN, a citizen of the United States, residing at the city of New York, in the borough of Brooklyn and State of New York, have invented certain new and useful Improvements in Time-Controlled Gas and Electric Cut-Offs, of which the following is a full, clear, and exact description.

My invention relates to time controlled cut-offs for various purposes, but particularly for gas and electric lighting.

The present invention provides a clock operated mechanism for the foregoing purposes, and which is designed to be of the greatest possible simplicity, and to secure the greatest possible certainty of action. I also aim to have the setting of the clock dials, etc., accomplished by a convenient and easy manipulation.

In the preferred form of my invention, I make use of a tilting lever which is overbalanced in one position by a ball or shiftable object. This lever is displaced and its movable object shifted to an alternate position by the clock mechanism. The ball or shifting object assures an abrupt movement of the lever so that the cut-off of the gas or electric current is accomplished with suddenness and certainty, in an obviously desirable manner. As will later appear, however, I do not desire to be limited or restricted to those features of my invention which secure this latter characteristic.

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

In the drawings: Figure 1 is a side view partly in section of a gas cut-off embodying the principles of my invention; Fig. 2 is a sectional view on the line II—II of Fig. 1, looking downward; Fig. 3 is a view similar to Fig. 1 showing the parts moved to their alternate positions; Fig. 4 is a sectional view on the line IV—IV of Fig. 1 looking downward; Fig. 5 shows a modification of the device adapted for electric circuits, and Fig. 6 shows an additional modification for securing a gas cut-off in a very simple way.

Referring to the drawings in which like parts are designated by the same reference sign, 1 denotes a box or housing of cast or sheet metal adapted to provide a hermetical inclosure of the main valve controlling parts. I prefer to employ a shallow square box having a gas inlet pipe 2 and a gas outlet pipe 3.

5 and 6 respectively denote the bottom and top sides of the box.

Within the box I provide a lever 7 preferably comprising a hollow square tube, restricted at its ends by the transversely extending pins 9. The lever is best made with trunnions 10 engaged by cone screws 11 in the ears 12 of a bracket 13 which extends from one of the side walls of the box 1. This lever 7 has associated therewith a movable or sliding object which causes it to be overbalanced in one direction or the other. I have illustrated balls 15 within the tube of the lever 7, which obviously roll from one end of the tube to the other whenever the tube is properly inclined.

At one end of the lever 7 I mount a valve member 16 which is capable of closing against the valve seat 17 at the inner open end of the inlet pipe 2. In order to insure a perfect closure of the valve against its seat, I support the valve member by a flexible connection from the lever 7. A transverse pin 18 at one end of the lever, from which the valve member 16 depends by a link or stem 19, serves very satisfactorily and permits a free universal movement of the valve member on the lever. Also depending from the lever 7 I provide rigid fingers 20 and 21 which serve as stops for a movable arm 22 controlled by clock mechanism. The arm 22 is operated to swing in an angular path and engage the finger 21 so as to tilt the latter and the lever 7 from the position shown in Fig. 1, to the position shown in Fig. 3. In the reverse or return movement of the arm 22 the latter contacts with the finger 20 and effects a reverse displacement of the lever 7.

I have designed a very effective clock mechanism comprising a supplemental box or chamber 25 fixed to the underside of the box 1, and having glass sides through which its interior may be observed.

26 denotes an ordinary clock movement fixed beneath the plate 6 by the standards 27. This clock movement has the usual minute hand arbor 28 and an hour hand 29. The minute hand arbor 28 is extended some distance below the clock movement and carries a minute hand 30 working over a stationary dial 31 at the bottom of the chamber 25. This arbor is further extended through the bottom of said chamber 25 where it has a squared end or knurled wheel 32. The hour hand 29 is preferably arranged on the upper side of the clock movement and works over

a cylindrical dial 34, being deflected upwardly at its extremity so as to be readily observable in its movement on this dial. The hour hand 29 has fixed thereto a stud or upward extension to which the arm 22 already described is secured. This stud or extension is carried through a packing box 35 in the plate 6, so as to seal the upper box or chamber 1 and prevent any escape of the gas therefrom.

36 denotes an arbor with a square end or knurled wheel by which the clock movement is wound up.

In the use of my appliance it is merely necessary to turn the knurled wheel 32 so that the hour and minute hands 29, 30, move backward over their dials for the interval of time for which the cut-off is to be set. The backward movement of the hour hand 29 is, of course, accompanied by a corresponding backward displacement of the arm 22 which engages the finger 20 in the manner already described. This engagement with the finger 20 displaces the lever 7, causing the balls or slidable object 15 to be displaced to the valve opening position of the lever, where the valve member 16 is elevated off its seat 17. The gas now flows freely into the box 1 and outward through the delivery pipe 3. The proportions of the box, pipes and valves are so ample that a gas flow sufficient for a large building or establishment is provided for. The clock movement operates in the usual way and after the interval of time for which the apparatus was set, the arm 22 engages finger 21 and tilts lever 7 from its valve opening position into a position slightly inclined in the alternate direction. As soon as the inclination of the lever passes beyond the horizontal stage, the balls or shiftable object 15 moves to the other end of the lever and overbalances it, causing the abrupt descent of the valve member 16 on its valve seat. This is entirely sufficient to cut off the flow of gas, but the closure is made positive by the further clock movement which causes the arm 22 to be impelled tightly against the finger 21 with the full effective power of the clock spring. This engagement of course stops the clock, completing the action.

For electric circuit cut-offs, a switch blade or element 40 may be fixed on lever 7 in place of the valve member 16. In this case the switch blade 40 descends into bridging relation between the two poles 41, 42 of an electric circuit in an obvious manner.

In Fig. 6 a modification of the gas cut-off arrangement is illustrated which dispenses with some of the mechanism of my preferred modification by also forfeiting the functions thereof. In this case the valve member 44 is simply flexibly attached to the arm 22 of the clock movement, moving toward a stationary valve seat 45. The uni-

versal joint connection of the valve member with the arm 22 insures perfect closure, regardless of any minor irregularities in the parts or in the movement.

The form of the valve 44 which I prefer in practice and which is illustrated in the drawings, is very simple and easy in its action, and has the further advantage that it does not require any accuracy in the construction or setting of the lever 7 or the inlet pipe 2, or any of the other parts of the mechanism. However, I do not desire to be limited or restricted to this particular form of valve, since other constructions may be employed if desired. For example, a valve having a rim entering an annular grease cup could be used in place of a valve member 44 with a perfectly flat under face.

What I claim, is:—

1. A cut-off of the class described comprising a lever pivoted to tilt to either side of a horizontal position, a shiftable object movable on said lever to overbalance it in one direction or the other, a clock movement having a rotating arbor and a rigid arm thereon for tilting said lever past its central or horizontal position, a valve for effecting a cut-off operation as set forth upon completion of the latter movement, said arm engaging said lever whereby the latter movement is positively impelled to be completed by the clock movement.

2. A cut-off of the class described comprising a lever pivoted to tilt to either side of a horizontal position, a shiftable object movable on said lever to overbalance it in one direction or the other, a clock movement having a rotating arbor with a rigid arm for tilting said lever past its central or horizontal position, a valve for effecting a cut-off operation as set forth upon completion of the latter movement, a handle for resetting the clock movement, and a finger on said lever for restoring said lever to its non-cut-off position when engaged by said arm in the reverse rotation of said arbor.

3. A cut-off of the class described comprising a chamber having a valve, a clock movement having a spindle projecting into said chamber, an arm rigidly fixed on said spindle, means actuated by said arm for closing said valve, a dial for indicating the angular movement of said spindle, and means for indicating minutes in the movement of said spindle.

4. A cut-off of the class described comprising a chamber having a valve, a clock movement supported in off-set relation from the underside of the chamber and having a spindle projecting upward into the chamber, means actuated by the movement of said spindle for closing said valve, a cylindrical dial between said clock movement and said chamber for indicating the angular displacement of said spindle, and a dial beneath the

clock movement for indicating minutes in the movement of said spindle.

5 5. A cut-off of the class described comprising a closed chamber, a lever pivoted therein, a ball rolling to over-balance said lever in one direction or the other when said lever is tilted, a valve member attached to said lever, a valve closed by said valve member, and a

clock mechanism having an arm adapted to engage said lever to tilt the same. 10

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

HENRY NIEMANN.

Witnesses:

ALFRED W. PROCTOR,  
WALDO M. CHAPIN.