

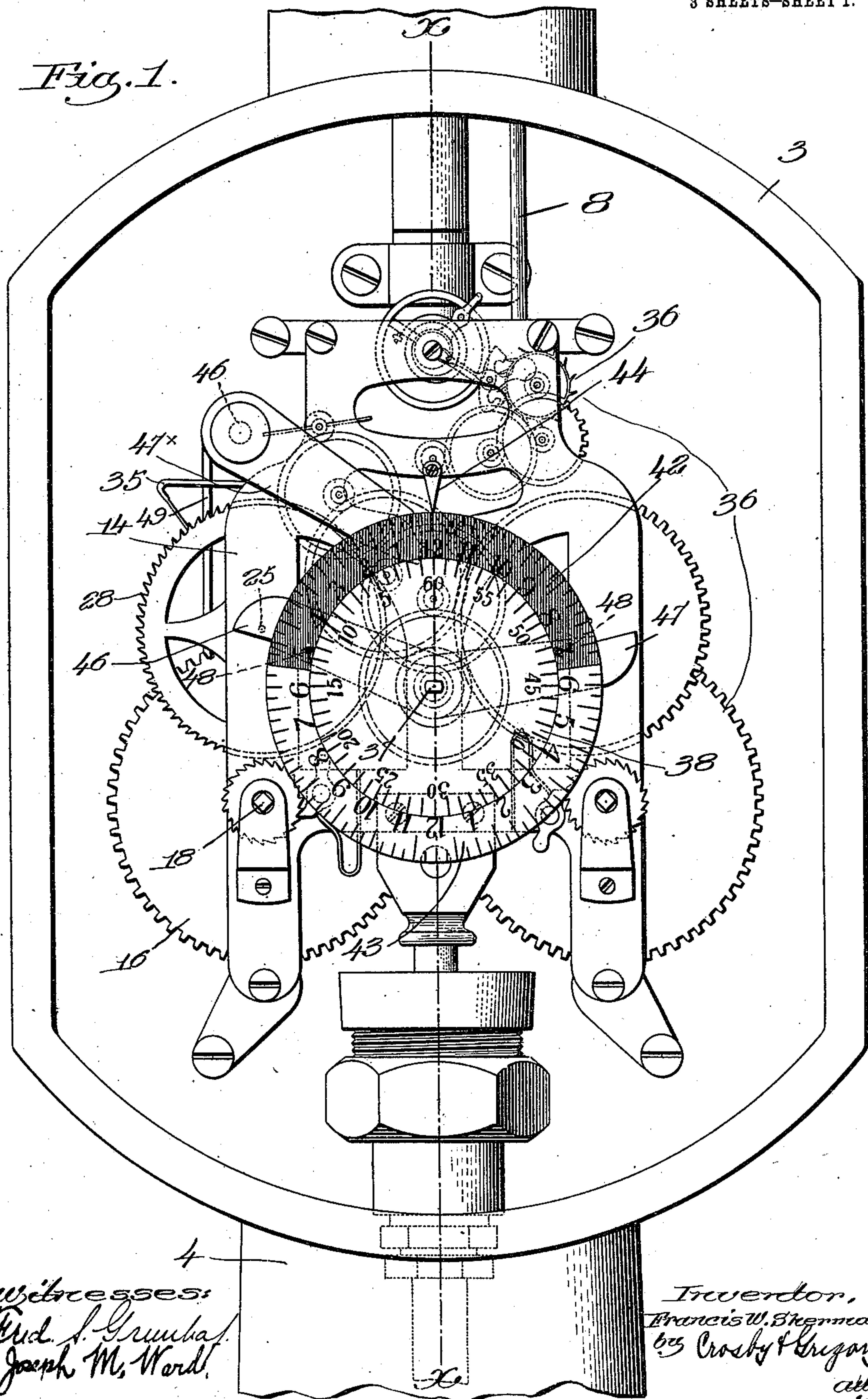
F. W. SHERMAN.
 AUTOMATIC GAS LIGHTER AND EXTINGUISHER.
 APPLICATION FILED JUNE 29, 1910.

989,654.

Patented Apr. 18, 1911.

3 SHEETS-SHEET 1.

Fig. 1.



Witnesses:
 Fred. J. Grumbel
 Joseph M. Ward

Inventor,
 Francis W. Sherman,
 by Crosby & Gregory
 attys.

F. W. SHERMAN.
 AUTOMATIC GAS LIGHTER AND EXTINGUISHER.
 APPLICATION FILED JUNE 29, 1910.

989,654.

Patented Apr. 18, 1911.

3 SHEETS—SHEET 2.

Fig. 2.

Fig. 3.

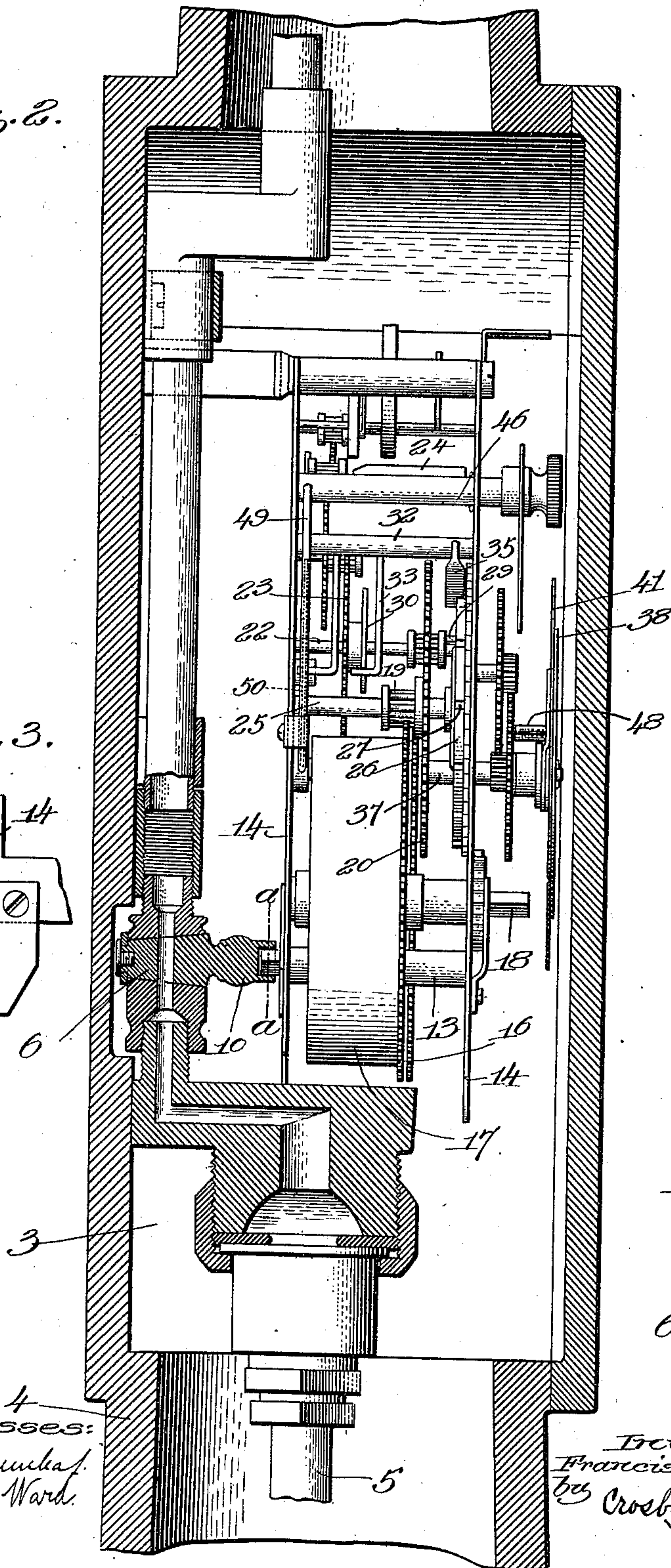
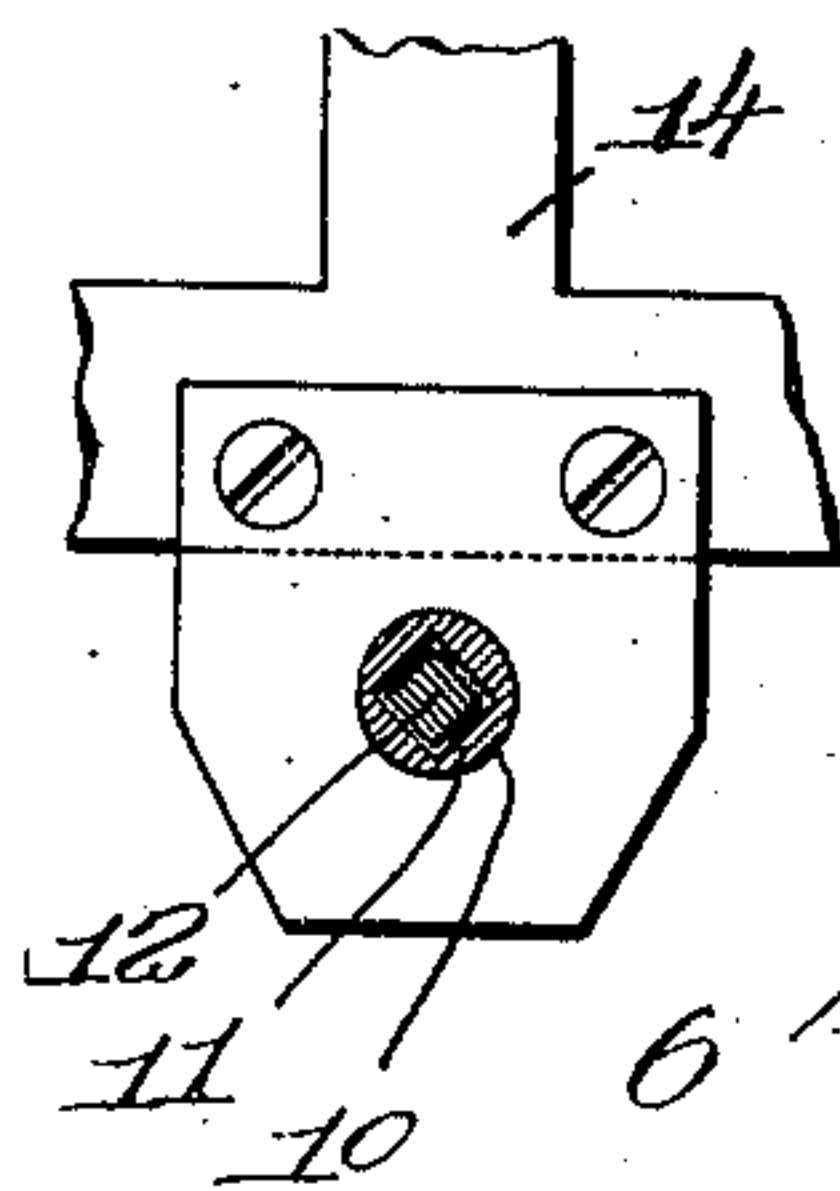
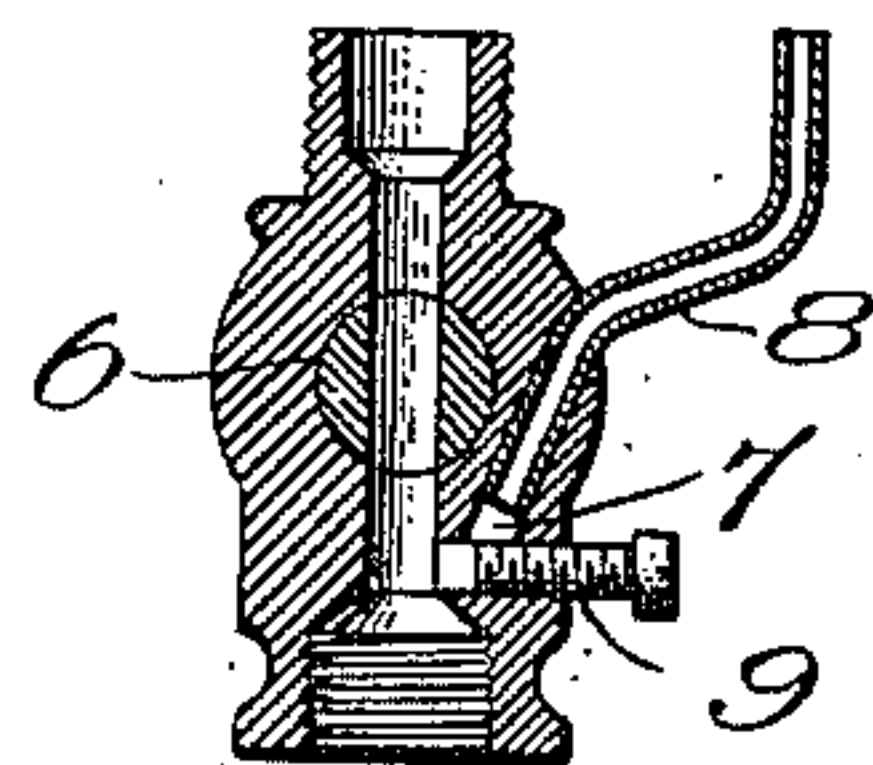


Fig. 4.



Witnesses:
 Fred. S. Grunhauf
 Joseph M. Ward.

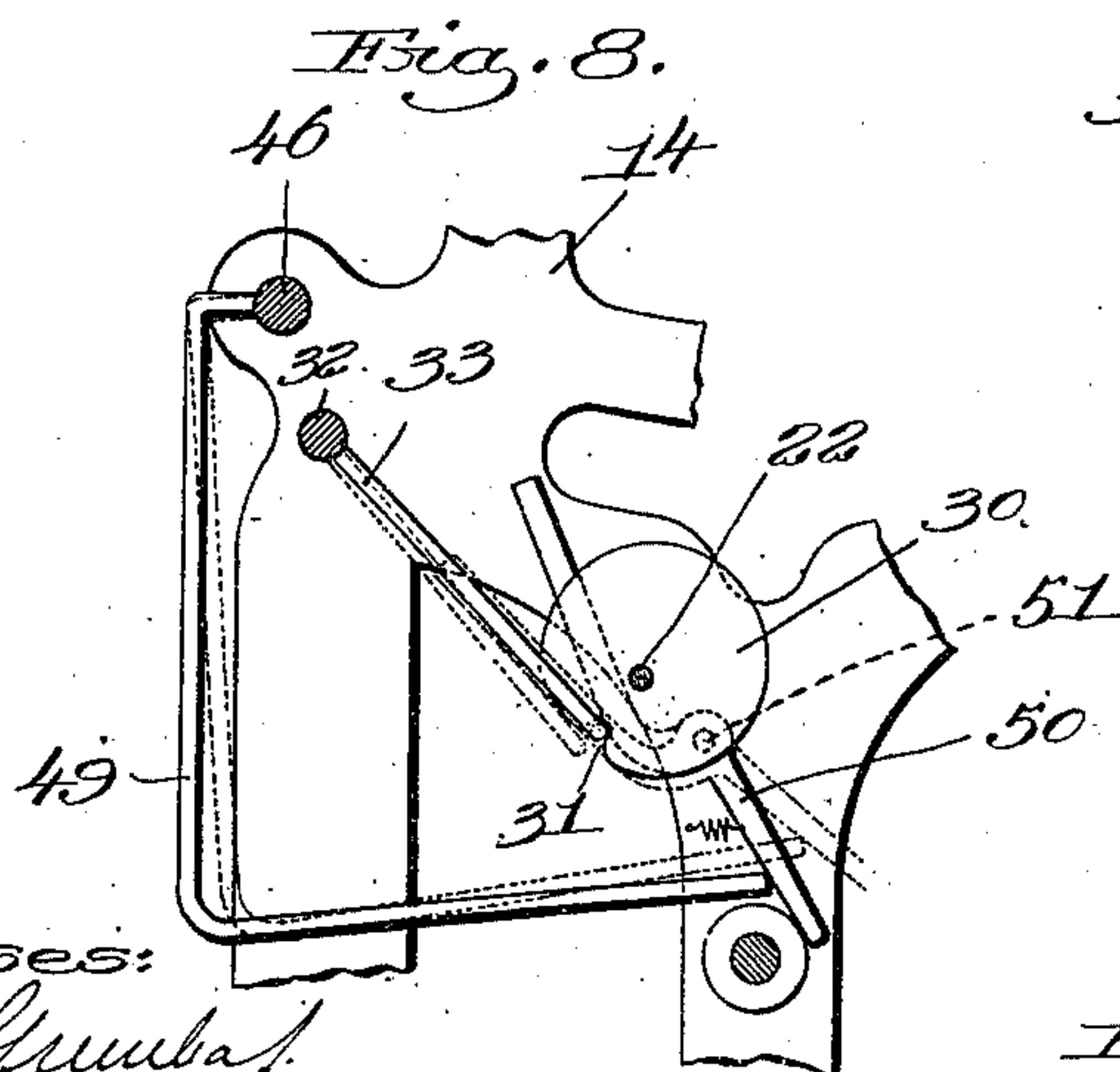
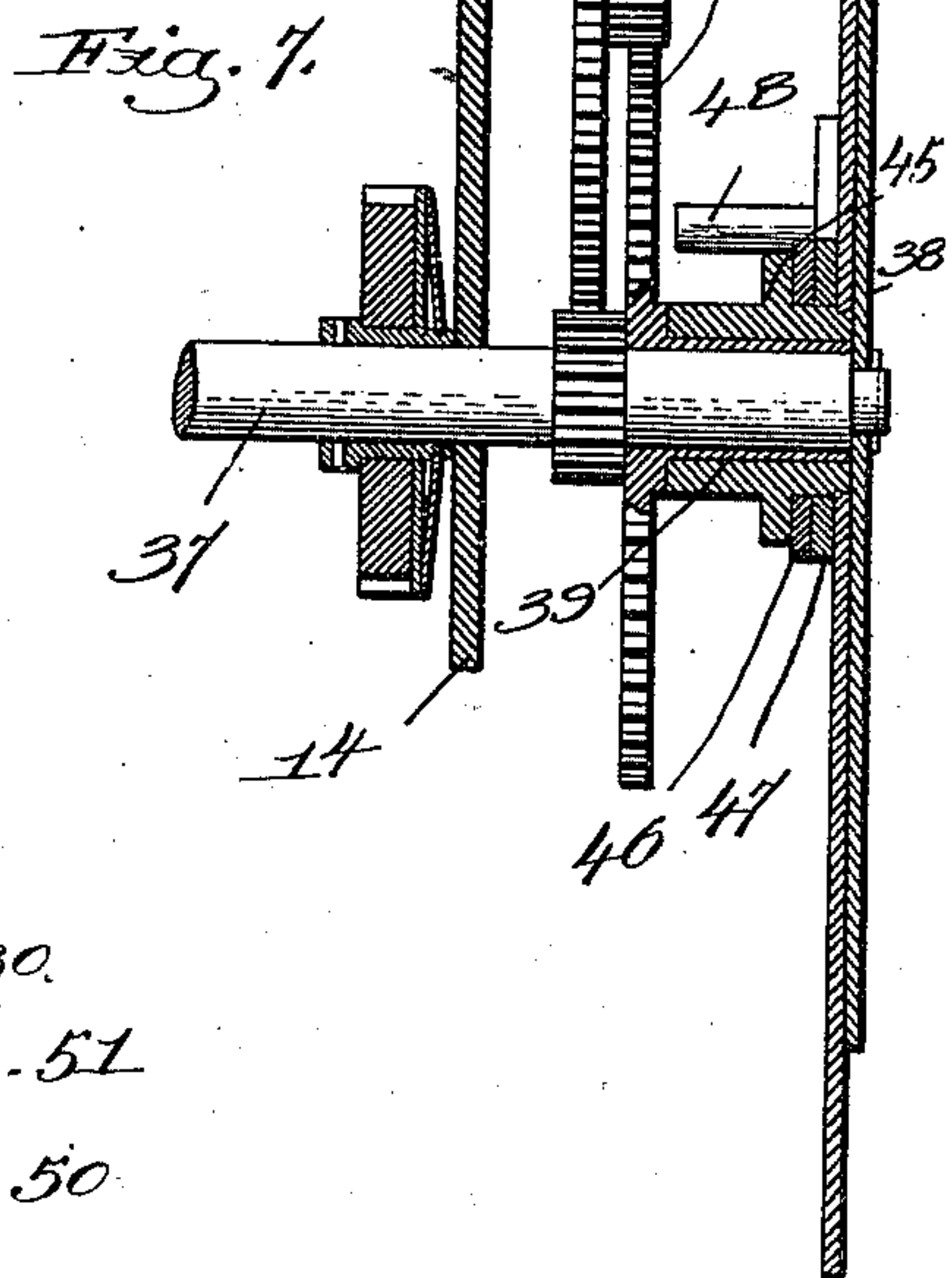
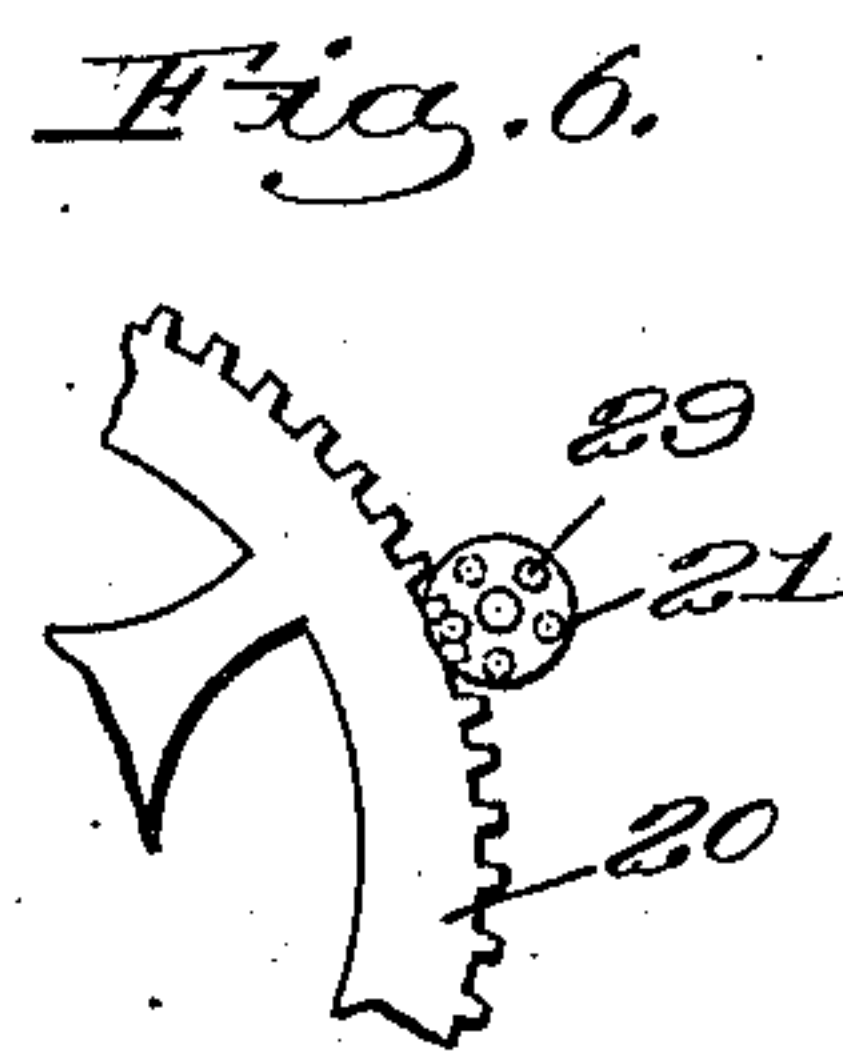
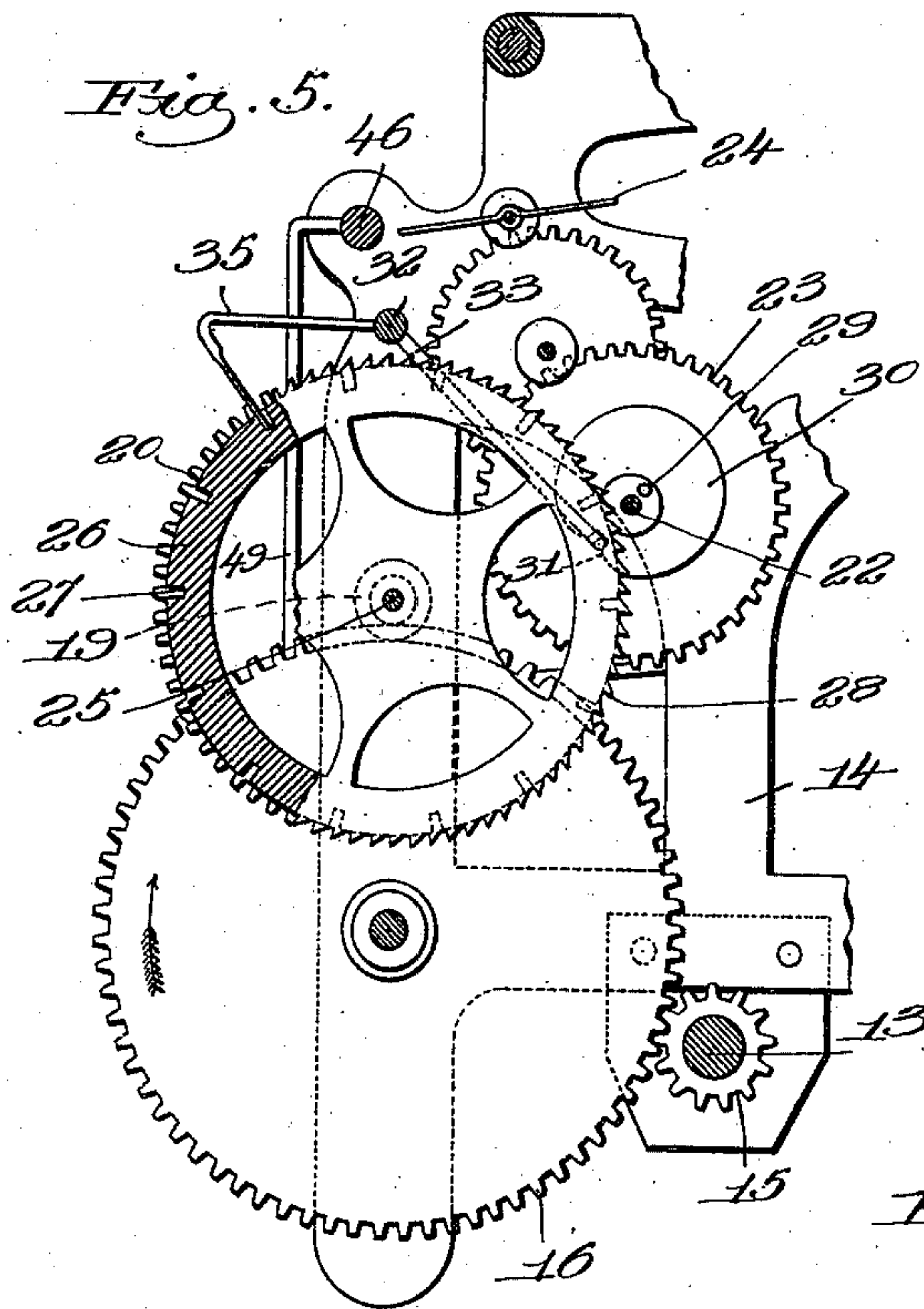
Inventor.
 Francis W. Sherman,
 by Crosby & Gregory
 attys.

F. W. SHERMAN.
 AUTOMATIC GAS LIGHTER AND EXTINGUISHER.
 APPLICATION FILED JUNE 29, 1910.

989,654.

Patented Apr. 18, 1911

3 SHEETS—SHEET 3.



witnesses:
 Fred S. Grumbel
 Joseph M. Ward

Inventor,
 Francis W. Sherman,
 by Crosby & Gregory
 attys.

UNITED STATES PATENT OFFICE.

FRANCIS W. SHERMAN, OF EVERETT, MASSACHUSETTS, ASSIGNOR TO INDEPENDENT STREET LIGHTING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

AUTOMATIC GAS LIGHTER AND EXTINGUISHER.

989,654.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed June 29, 1910. Serial No. 569,449.

To all whom it may concern:

Be it known that I, FRANCIS W. SHERMAN, a citizen of the United States, residing at Everett, county of Middlesex, and State of Massachusetts, have invented an Improvement in Automatic Gas Lighters and Extinguishers, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to automatic gas lighters and extinguishers of that type wherein the valve which shuts off or turns on the gas is operated by a spring-actuated mechanism which in turn is controlled by a time mechanism so that at predetermined times the spring-actuated valve-operating mechanism will operate to open the valve to admit gas to the burner and at other predetermined times the valve will be closed.

My invention aims to improve a device of this class in the particulars hereinafter set forth and then pointed out in the claim.

Referring to the drawings, Figure 1 is a front view of a mechanism embodying my invention with the front of the casing removed to better show the interior parts; Fig. 2 is a vertical section on substantially the line $x-x$, Fig. 1; Fig. 3 is a section on the line $a-a$, Fig. 2; Fig. 4 is a section through the valve showing the by-pass arrangement; Fig. 5 is a detail view of the controlling means for the valve-actuating mechanism; Fig. 6 is a further detail of this controlling mechanism; Fig. 7 shows the gearing for operating the dials and trip arms; Fig. 8 is a view showing the releasing mechanism for the controlling means.

I have shown the valve and its actuating mechanism as confined within a casing 3 which will preferably be secured to or formed integral with the lamp-post 4 if the device is used for street lighting purposes. Situated within the lamp-post 4 is a gas pipe 5 which passes up through the casing 3 to the burner and which has therein a valve 6 of any suitable construction (an ordinary plug cock being shown) which controls the delivery of gas to the burner. This plug-cock is so arranged that a quarter turn from the position shown in Figs. 2 and 4 will close the valve and another quarter turn will open it again. The valve casing is provided with a by-pass 7 to which is connected a pipe 8

leading to the pilot light whereby the pilot light is kept continuously burning. The size of the pilot light can be regulated by a suitable screw 9. The valve is given its intermittent quarter turn movements by a spring-actuated mechanism which in some respects is somewhat similar in operation to the striking mechanism of a clock. In the embodiment shown the stem 10 of the valve is formed with a flat sided socket 11 into which fits the non-circular end 12 of a shaft 13 that is journaled in a frame 14. This shaft 13 has thereon a pinion 15 which meshes with and is driven by a gear 16 that is operated by a spring 17 similar to the main spring of a clock, which spring may be wound up in usual manner by the winding arbor 18. The operation of this spring mechanism is controlled by a controlling device which in its construction is somewhat similar to the striking mechanism of a clock. The gear 16 meshes with a pinion 19 which has rigid therewith a gear 20 that meshes with a pinion 21, see Fig. 6, and the arbor 22 of the pinion 21 has a gear 23 thereon which forms part of a train of gearing leading to a regulator or fan 24. The arbor 25 has loose thereon a notched wheel 26 provided in its periphery with a plurality of notches 27 equally spaced apart, and this notched wheel is provided with teeth 28 on its periphery which are actuated by a pin 29 projecting from the pinion 21. The notched wheel 26 is, therefore, given an intermittent rotation when the pinion 21 rotates. Fast on the arbor 22 is a cam 30 having a recess 31 and pivoted to the frame 14 is a rock-shaft 32 having a locking arm 33, the end of which is adapted to enter said recess 31. Said rock shaft has also extending therefrom another arm 35 provided with a nose which is adapted to enter the notches 37.

When the nose of the arm 35 is occupying a notch 27, then the locking arm 33 can enter the recess 31 and thereby lock the cam 30 from rotation, and thus when the parts are in this position the spring-actuating mechanism for operating the valve is locked. When the rock shaft 32 is turned, however, to withdraw the nose of the arm 35 from its notch and the locking arm 33 from the recess 31, then the spring 17 will begin to unwind and will both operate to turn the valve 6 and also to rotate the gearing lead-

ing to the fan 34. Before the arbor 22 has made one complete rotation, however, the notched wheel 26 is advanced one step by the pin 29 and the nose of the arm 35 will by its engagement with the periphery of this wheel prevent the locking lever 33 from entering the recess 31 until another notch is reached when the parts will become locked from further rotation in a well known way.

The device herein shown is arranged so that the locking lever 33 will be released at predetermined intervals depending on the times when it is desired to open and close the valve, and these intervals of time are governed by a clock mechanism which is supported by the frame 14 and which is designated generally by 36. This clock mechanism comprises a center arbor 37 which is arranged to rotate once every hour and on the end of which is fastened a disk or dial 38 marked off to indicate minutes, as shown in Fig. 1. This arbor has loose thereon a sleeve 39 which is driven from the center arbor by suitable reducing gearing 40 so that the sleeve will make one rotation every twenty-four hours, this gearing being similar to that which is employed to operate the hour hand of a clock. The sleeve 39 has fast thereon a second dial 41 which is marked to indicate hours shown in Fig. 1 and I propose to make one-half of said dial 41 a dark color, as shown at 42, and the other half of a light color, as shown at 43, the dark color corresponding to the night hour and the light color to the day-light hours.

The frame 14 sustains a pointer or indicating finger 44 by which the dials are read to indicate time, that is, the hour marked on the dial 43 which stands opposite the indicator 44 is the hour of the day. The sleeve 39 has secured thereto another sleeve 45 on which are adjustably mounted two trip arms 46, 47, these arms preferably being frictionally held in place. Each trip arm is provided with a pin 48 which is adapted to operate the release mechanism for releasing the locking arm 33. This release mechanism comprises a rock shaft 46 mounted in the frame 14 and carrying an arm 47* that is situated to be engaged by the pins 48 as the trip arms turn, and also carrying a bent finger or arm 49, see Fig. 8, the end of which is adapted to engage a re-

leasing member 50 that operates to release the locking arm 33 from the recess 31 in the cam 30. This releasing member is shown as a lever pivoted to the frame at 51, and one end of which is adapted to be engaged by the end of the bent finger 49 and the other end of which is adapted to engage the locking arm 33. Whenever either trip arm engages the arm 47 the rock shaft 46 will be rocked thereby throwing the finger 49 into the dotted line position and the engagement of the finger with the driven member 50 will swing the latter into its dotted line position Fig. 8 thereby carrying the locking arm 30 out from the recess 31 and permitting the valve-actuating mechanism to operate.

The gearing for operating the notched wheel 26 and the disks between the notches thereof is such that the valve will make one-quarter turn each time that the actuating mechanism is released and before the nose of the arm 35 enters the next recess. By setting the two arms 46, 47 at the desired hours, therefore, it is possible to open and close the valve at any desired time.

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

In an automatic gas lighter and extinguisher, the combination with a valve, of a spring for operating said valve, a cam member operated by said spring and having a recess, a pivoted locking lever adapted to enter said recess, an arm provided with a nose connected to and moving with said lever, a wheel provided with notches to receive said nose when the locking lever is occupying said recess, a toothed member rigid with said notched wheel, a one-toothed pinion rotated by said cam and adapted to engage said toothed member thereby to rotate the notched wheel intermittently when the cam is released, and time mechanism to release the locking lever from the recess of the cam at predetermined intervals.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

FRANCIS W. SHERMAN.

Witnesses:

LEONA CHANDLER,
FREDERICK S. GREENLEAF.