

No. 706,922.

Patented Aug. 12, 1902.

J. GEEN.
PREPAYMENT GAS METER.

(Application filed Nov. 2, 1901.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

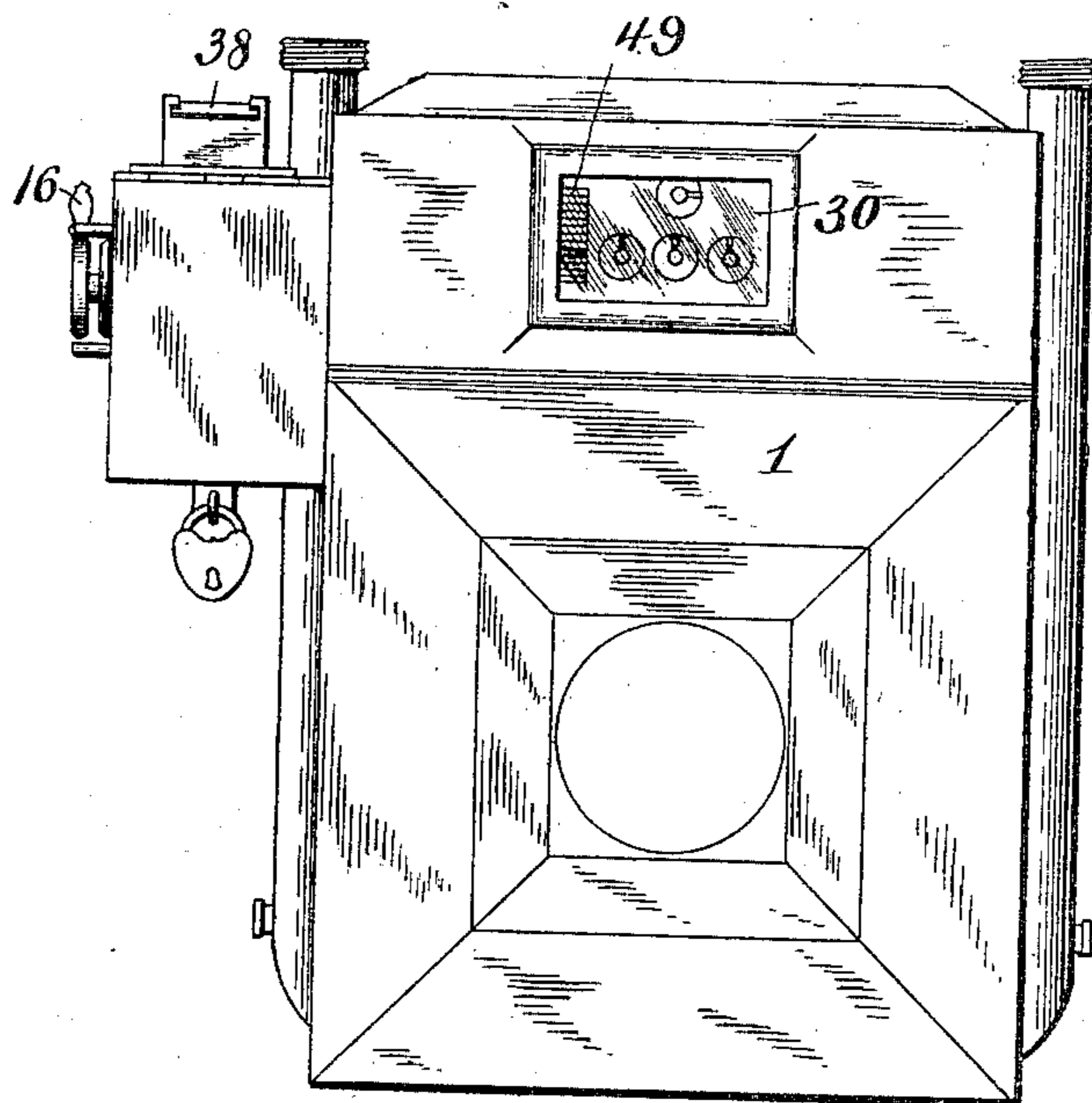
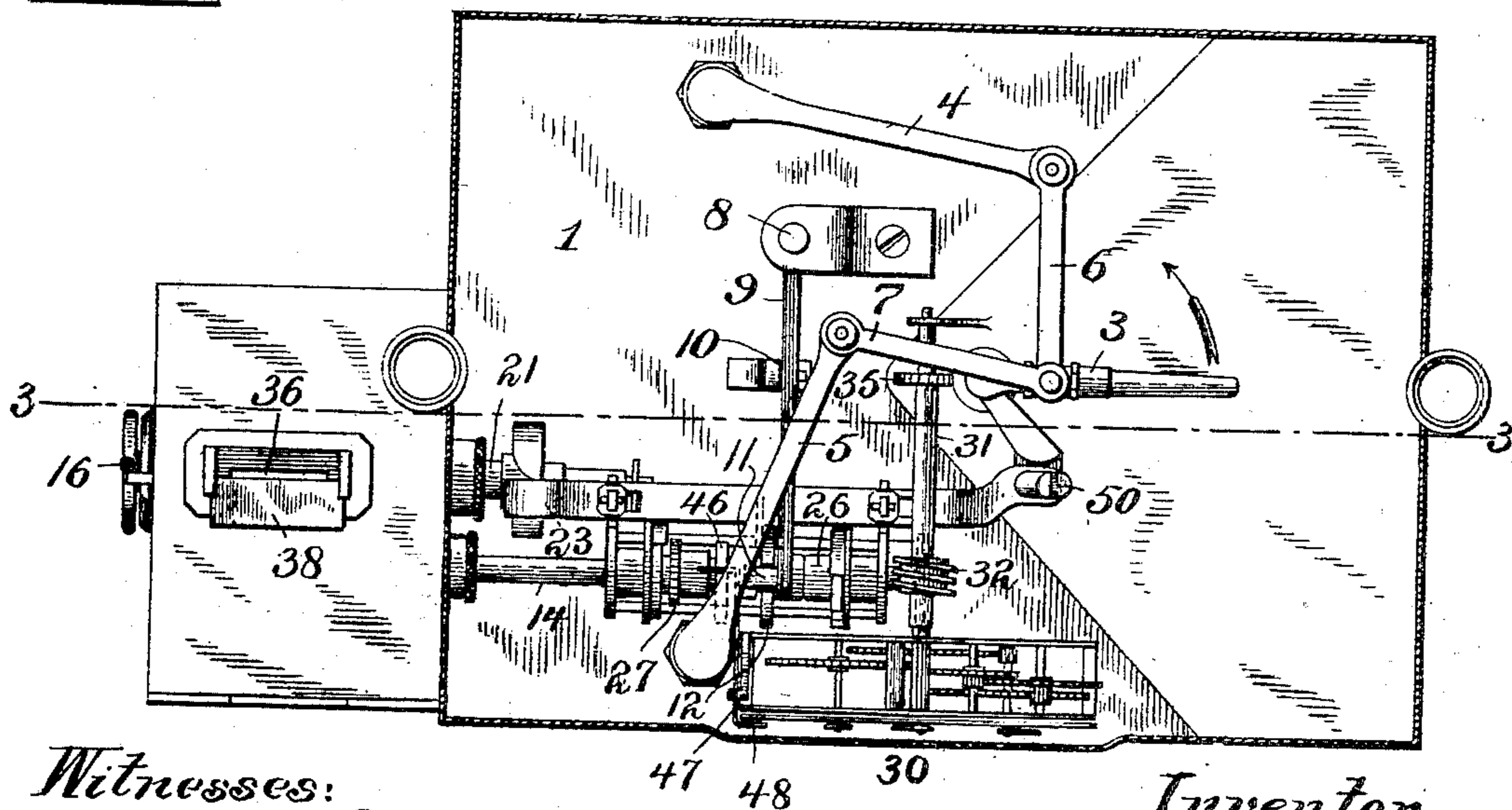


Fig. 2.



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Fig. 3.

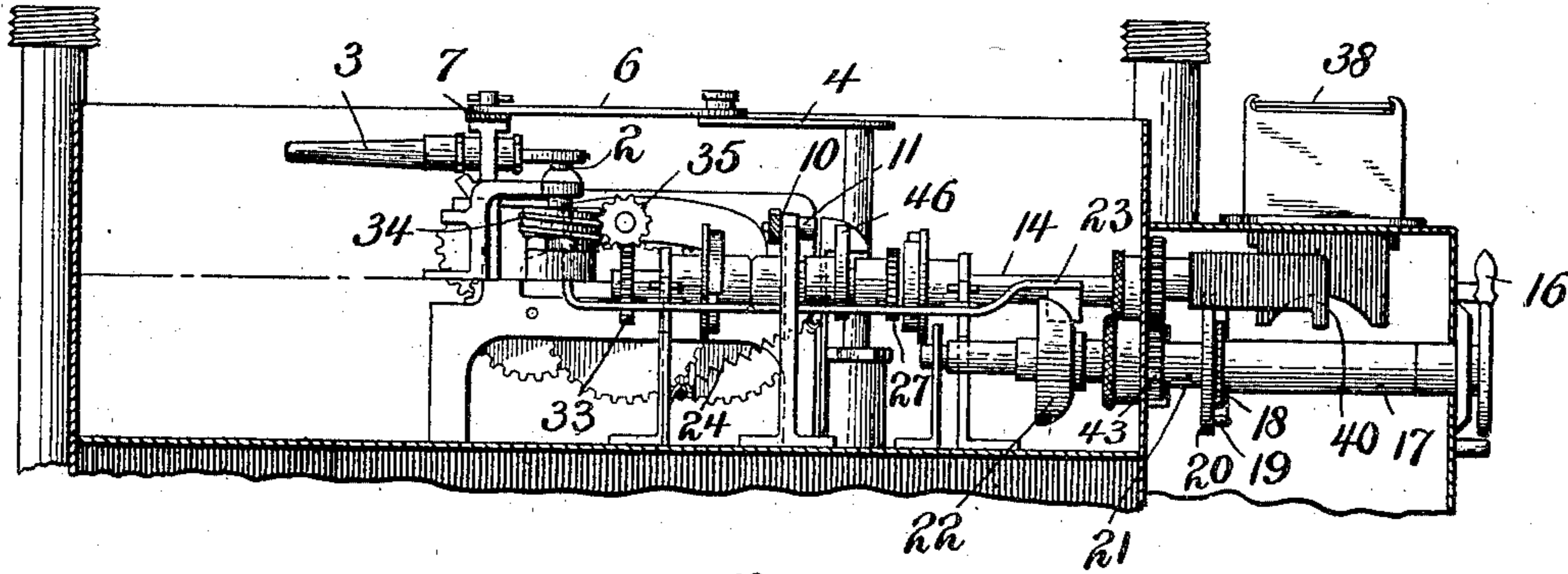


Fig. 4.

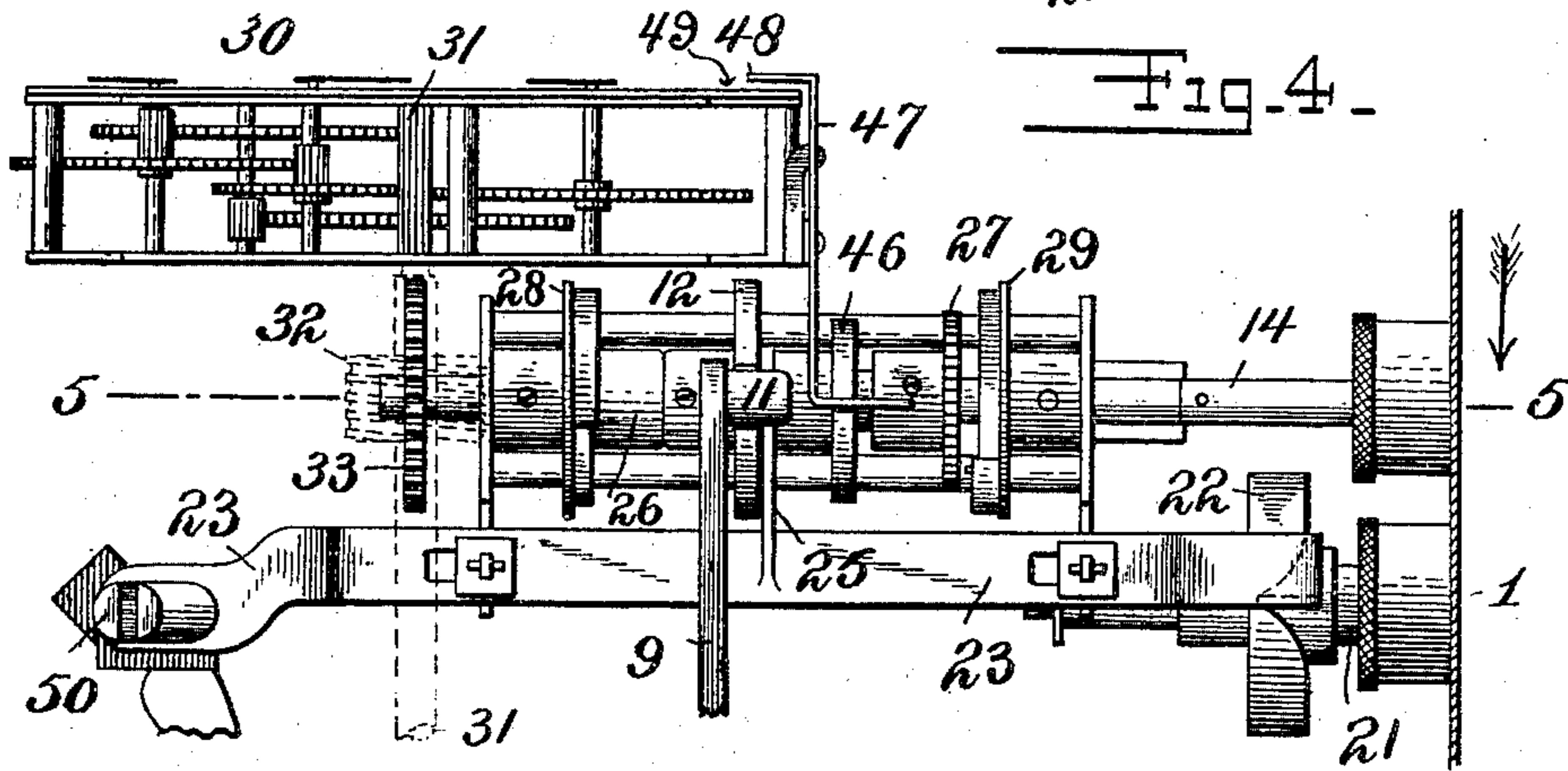
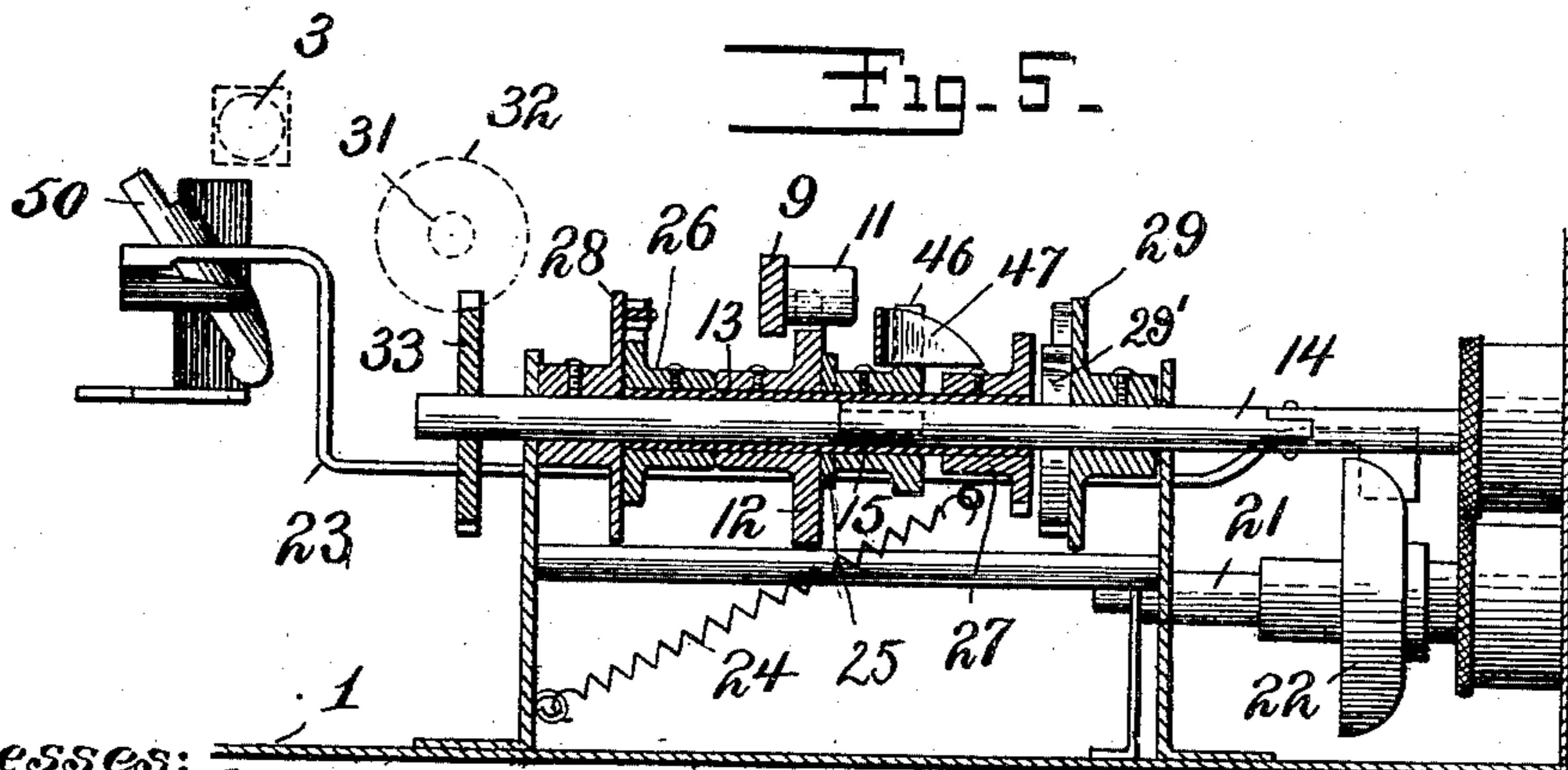


Fig. 5.



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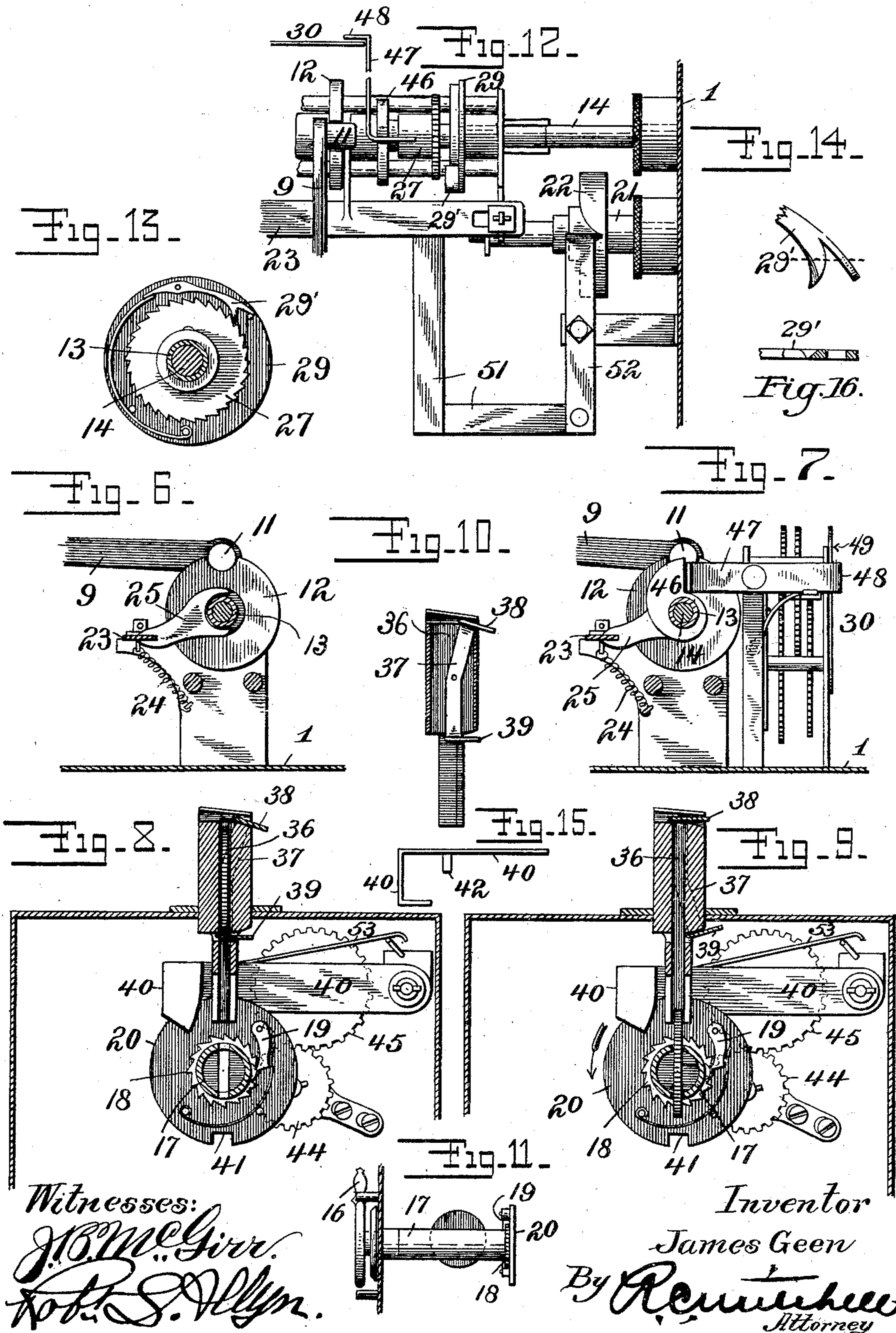
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(No Model.)

3 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

JAMES GEEN, OF HOBOKEN, NEW JERSEY.

PREPAYMENT GAS-METER.

SPECIFICATION forming part of Letters Patent No. 706,922, dated August 12, 1902.

Application filed November 2, 1901. Serial No. 80,839. (No model.)

To all whom it may concern:

Be it known that I, JAMES GEEN, a citizen of the United States, residing at Hoboken, county of Hudson, State of New Jersey, have
5 invented certain new and useful Improvements in Prepayment Gas-Meters, of which the following is a full, clear, and exact description.

My invention relates to gas-meters, and particularly to that class of gas-meters called
10 "prepayment-meters," in which the user by the insertion of a coin of the proper denomination may secure a certain number of given feet of gas for each coin so inserted. The
15 construction is such that when the amount of gas purchased has been exhausted the apparatus automatically locks, and no further delivery will be made until another coin has been introduced.

20 Among the objects of my invention are simplicity, effectiveness, and durability of construction, positiveness and certainty of action.

Figure 1 is a front elevation of a meter. Fig. 2 is a plan view thereof, slightly enlarged,
25 with the top removed. Fig. 3 is a section on line 3 3, Fig. 2. Fig. 4 is a plan view of Fig. 3, the parts being slightly enlarged and shown in the same position. Fig. 5 is a section on the line 5 5, Fig. 4. Figs. 6, 7, 8, 9, 10, 11,
30 13, 14, 15, and 16 are views of detached details of construction. Fig. 12 is an illustration of a modification of certain details of construction.

1 is a meter of any approved pattern.

35 2 is a spindle rotated by the operation of a bellows. 3 is an arm carried by the said spindle 2, the outer end of which is preferably removable for the purpose hereinafter described.

40 4 5 are swinging levers operated by the bellows.

6 7 are links connecting the levers 4 5, respectively, with the arm 3 of the spindle 2.

8 is a locking-bolt located in the path of rotation of the arm 3 and controlled automatically, so that when it is desired to cut off the
45 supply of gas the said locking-bolt 8 is adapted to project into the path of movement and check the rotation of the said arm 3.

50 9 is a lever pivoted at 10.

11 is a shoulder carried by the lever 9 and bearing against the cam 12, having a suitable

hub for connecting it with sleeve 13, loosely mounted on arbor 14, which is made, preferably, in two pieces, the two parts of which
55 are preferably held in alinement by means of a suitable dowel 15.

16 is an operating-handle mounted on a shaft 17.

18 is a ratchet-wheel carried by the shaft 17. 60

19 19 are pawls carried on the plate 20, in turn carried by a cam-shaft 21. 22 is a cam mounted on shaft 21.

23 is a sliding bar, one end of which bears against the cam 22 and may be yieldingly
65 pressed toward said cam by a spring 24.

25 is an arm carried by the sliding bar 23, the said arm 25 engaging suitably with the sleeve 13—for example, by bifurcating the same, as shown in Fig. 6. By rotating the
70 handle 16 the cam 22 causes the bar 23 to shift from the lower part of the cam to the higher part of the cam 22. This shifting movement draws the sleeve from left to right in Fig. 4.

26 27 are ratchets with oppositely-arranged teeth, the said ratchets being mounted upon the sleeve 13 at opposite ends thereof. 75

28 29 are pawl-carrying plates, the pawls of which are designed to respectively engage
80 with the ratchets 26 and 27. The ratchet-carrying plates 28 and 29 are mounted on the shaft 14, one on one section thereof and the other on the other section. In Figs. 3 to 5, inclusive, the pawls of plate 28 are in engage-
85 ment with the ratchet 26. When the operating-handle 16 is turned and the sleeve 13 shifted to the right, the ratchet 26 is freed from the pawls on plate 28 and the ratchet
90 27 is thrown into engagement with the pawls on plate 29. The pawls on plates 28 and 29 are properly shaped—for example, by tapering their faces, as shown in detail Figs. 13, 14, and 16—so that ready entrance of the
95 ratchets may be effected and prevent the jamming of the parts.

30 is a dial-box carrying suitable dials, which are controlled by the advance of the machine. The particular arrangement of the dials by which the units are counted off is too obvi-
100 ous and well known to require description. Sufficient to say that the units-dial is controlled by a shaft 31, which is directly engaged with the mechanism automatically operated

by the bellows. The shaft 31 carries the worm-gear 32, meshing with the gear 33, carried by the inner end of the shaft 14. When the parts are in the position shown in Figs. 2 to 5 inclusive, the mechanism is about to stop; the lever 9 has been tilted by reason of the extension 11 dropping into the cam 12, so that the bolt 8 has been elevated to stand in the path of the arm 3. Consequently, as soon as the arm has turned sufficiently far to engage the bolt 8, further movement will be checked and the meter will not operate until another payment is made.

The means for inserting the coin and operating the shaft 17 may be described generally as follows: It comprises a slot 36, having a passage therethrough of a size approximating the width and thickness of a coin of the proper denomination. 37 37 are side bars pivoted suitably to the sides of the slot 36, the said side bars carrying at each end gates 38 39. When the parts are in the position shown in Figs. 8 and 10, the gate 38 is removed from the entrance to the slot 36, whereupon a coin may be inserted, as shown. In this position the coin rests upon the gate 39, which blocks its further passage. The operator may now press in the gate 38, which will close the entrance to the slot and cut off any connection with the coin. At the same time the gate 39 is removed from the lower end of the slot, allowing the coin to drop into the position shown in Fig. 9, in which it rests in a suitable pocket in the shaft 17, assuming approximately the position shown in Fig. 11. When the operating-handle 16 is turned, the upper edge of the coin serves as a lever to tilt the latch 40, elevating the same and unlocking it from the plate 20, which may have suitable notches 41 at opposite edges thereof to receive a pin 42, carried by the latch 40. The rotation of the handle, as before stated, transmits rotative movement to the cam 22, which in turn shifts the sleeve 13 from the position shown in Fig. 3 to the right and to the opposite position, in which the ratchet 27 engages with the pawls on the plate 29. 43 is a gear carried by the shaft 17, meshing with the idler 44, meshing with gear 45, mounted upon the outer end of shaft 14, which outer section carries the pawl-carrying plate 29.

It will be seen that in operation the rotation of the handle 16 when the proper coin is in place unlocks the mechanism and transmits rotative movement through gears 43, 44, and 45 to the pawl-carrying plate 29, which then being in engagement with the sleeve 13 through ratchet 27 rotates the cam 12 a distance determined by the rotation of the handle 16. This rotation of the cam 12 elevates the shoulder 11 on the lever 9, tilting the same and dropping the bolt 8 from in front of the arm 3, at the same time revolving a scroll-cam 46, which bears against a lever 47, which may carry a pointer 48, which may traverse a graduated scale 49 in the dial-box 30 to indicate to the consumer the amount of gas pur-

chased. The operating-handle 16 is limited in rotation to one-half of one complete rotation. The operator must first throw it to the upright position shown in Figs. 1, 2, and 3 before the coin can be inserted. In operating the same it is turned one-half of a revolution, whereupon the coin drops out of a pocket in the shaft 17, whereupon the handle 16 must be turned to the original position before another coin can be inserted. If by chance the operating-handle is not turned one complete half of a rotation, so as to eject the coin with certainty, and the coin does not drop out, an auxiliary lock is provided, whereby the mechanism is prevented from working until the handle has been turned sufficiently far to discharge the coin into a suitable receptacle. This auxiliary lock comprises an extension of the arm 23, which has an enlarged slot in its outer end, through which passes a stop 50. When the shoulder on the slide 23 rests in the lower part of the cam 22, the stop 50 is tilted, as shown in Figs. 3 to 5, inclusive, in which position the arm 3 is free to move around and over said stop. If, however, the handle 16 is not turned one complete half-rotation, so that the coin will be discharged, then the shoulder on slide 23 will stand upon the high part of the cam 22 and the slide 23 will be retracted and in turn swings the stop 50 to the upright position, so that it will stand in the path of rotative movement of the arm 3, preventing its movement until the coin is discharged. The handle may remain in the inverted position or it may be turned back to the upright position. In any intermediate position, however, the stop 50 will stand vertically, so as to lock the arm 3.

Obviously the consumer may insert a single coin and purchase its value in gas, or he may insert more than one coin—for example, three or four coins—purchasing a corresponding amount of gas. When a purchase is made, the cams 12 and 46 are rotated a certain distance, depending upon the number of coins put in. For example, the insertion of a single coin will rotate the cam 12 a fraction of its circumference, the insertion of another coin will rotate it a corresponding fraction in addition thereto, and so on. When the purchase has been made and the handle has been left in either the upright or the inverted position, the slide-bar 23 shifts back to its normal position by the action of a spring 24 or its equivalent, in which position the ratchet 27 is freed from the pawls 29' and the ratchet 26 is engaged with the pawl 28'. In this position the passage of gas through the meter will cause the cams 12 and 46 to rotate in an opposite direction to that caused by the rotation of the operating-handle, so that the shoulder 11 will traverse the distance upon the high part of the cam 12 corresponding to the purchase made. As soon as the amount of gas purchased has been consumed the recess in the cam 12 is reached, whereupon the

shoulder 11 drops and, as before stated, tilts the arm 9, throwing the bolt 8 into the path of the arm 3, stopping the machine. During this period the nose on lever 47 rides down the spiral cam 46, and the pointer upon the purchase-scale 49 indicates how much gas will be delivered in order to complete the balance of the purchase.

It is obvious that many variations may be made in the construction and arrangement of the parts without departing from the spirit or scope of my invention.

In Fig. 12 I have shown one feature of my invention in which the cam 22 is merely reversed. A suitable link mechanism is inserted between the said cam and the slide 23 to retract said slide when the cam is advanced. This connection comprises an L-shaped extension 51 for slide 23 and a pivoted link 52. In the drawings the slide 23 is operated in one direction by a spring. The lever 40 may be operated by gravity or by a spring, or by both. In Fig. 9 I have shown an auxiliary means comprising a spring 53 to supplement the action of gravity in throwing the latch into the locking position, so as to project the pin 42 into the locking-notches 41 in the edge of plate 20.

It will be observed that in practice the coin acts as a part of the mechanism, its function being to lift the latch 40. Consequently its diameter must be proper to elevate the latch sufficiently when the shaft 17 is being turned to entirely free the pin 42 from either of the notches 41 with which it may happen to be engaged.

One of the advantages of making the outer end of the arm 3 removable is that it permits the changing of the apparatus from a coin-controlled meter to the ordinary meter, which is adapted to run on continuously so long as gas is used and is not checked after a certain predetermined quantity is measured off. For example, the bellows or meter is locked by the outer end of the arm 3 engaging with the bolt 8. Manifestly if the end of the arm 3 is removed, although the bolt 8 may operate, it will not check the operation of the meter.

What I claim is—

1. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device having rotatable and longitudinal movement, a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revoluble plate carrying a yielding pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revoluble plate carrying a yielding pawl for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft, and means for connecting said shifting device with one or the other of said revoluble plates.

2. In a device of the character described, a

revoluble spindle, a movable stop-bolt therefor, a shifting device having both rotatable and longitudinal movement and a cam carried by said shifting device for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revoluble plate carrying a yielding pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revoluble plate carrying a pawl for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft and a rotatable second cam manually controlled and operating a longitudinally-sliding bar for throwing said shifting device into connection with one or the other of said revoluble plates.

3. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement and a cam carried by said shifting device for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revoluble plate carrying a yielding pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revoluble plate carrying a yielding pawl for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft said plates carrying stop-pins for said pawls, and a cam and sliding bar controlled by said manually-operated shaft for operating said shifting device.

4. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement, a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revoluble plate carrying a pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revoluble plate carrying a pawl for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft, and means for connecting said shifting device with one or the other of said revoluble plates, said shifting device carrying a cam for controlling a lever to indicate the position of said stop-bolt-controlling cam, substantially as described.

5. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement, a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revoluble plate carrying a pivoted pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revoluble plate carrying a pivoted pawl for engagement with the other of said ratchets said second plate being controlled from a normally disengaged but manually-operated shaft, and means for connecting said shifting device with one or the other of said

revoluble plates, said means also controlling a supplementary stop-bolt.

6. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement, a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revoluble plate carrying a pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revoluble plate carrying a yielding pawl for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft, which also operates a cam and thus a sliding bar for throwing said shifting device in connection with one or the other of said revoluble plates, said sliding bar also operating a supplementary stop-bolt, substantially as described.

7. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement and a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revoluble plate carrying a pivoted pawl having its lateral face beveled for engagement with one of said ratchets said plate being driven from said spindle, a second revoluble plate carrying a pivoted pawl having its lateral face beveled for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft, and means for connecting said shifting device with one or the other of said revoluble plates.

8. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shaft driven from said revoluble spindle, a second shaft manually controlled and in line with said first shaft, a shifting device having both rotative and longitudinal movement upon the adjacent ends of said shafts, ratchets carried by each end of said shifting device, spring-pressed pawls carried by each of said shafts adjacent said ratchets, and means for throwing said shifting device into engagement with either one of said pawls,

said shifting device controlling the movement of said stop-bolt, substantially as described.

9. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shaft driven from said revoluble spindle, a second shaft manually controlled and in line with said first shaft, a shifting device having both rotative and longitudinal movement upon the adjacent ends of said shafts, ratchets carried by each end of said shifting device, pivoted pawls carried by each of said shafts adjacent said ratchets, and means for throwing said shifting device into engagement with either one of said pawls, and a sliding bar controlled from said manually-operated shaft by a cam for longitudinally moving said shifting device and at the same time actuating a supplementary stop-bolt.

10. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device for controlling said stop-bolt, a shaft carrying a double-notched cam for operating said shifting device, a manually-controlled shaft, and means for connecting said manually-controlled shaft and said cam-carrying shaft whereby said shifting device is returned to its normal position without returning said manually-controlled shaft to its normal position, substantially as described.

11. In a device of the character described, a revoluble spindle, a movable stop-bolt therefor, a shifting device for controlling said stop-bolt, a shaft carrying a double-notched cam for operating said shifting device, a manually-controlled shaft, and means for connecting said manually-controlled shaft and said cam-carrying shaft whereby said shifting device is returned to its normal position without returning said manually-controlled shaft to its normal position, and a supplementary bolt controlled by said cam, substantially as described.

Signed at New York, N. Y., this 17th day of October, 1901.

JAMES GEEN.

Witnesses:

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