

N. D. NELSON.
 COIN CONTROLLING MECHANISM FOR VENDING MACHINES.
 APPLICATION FILED MAR. 12, 1908.

919,749.

Patented Apr. 27, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

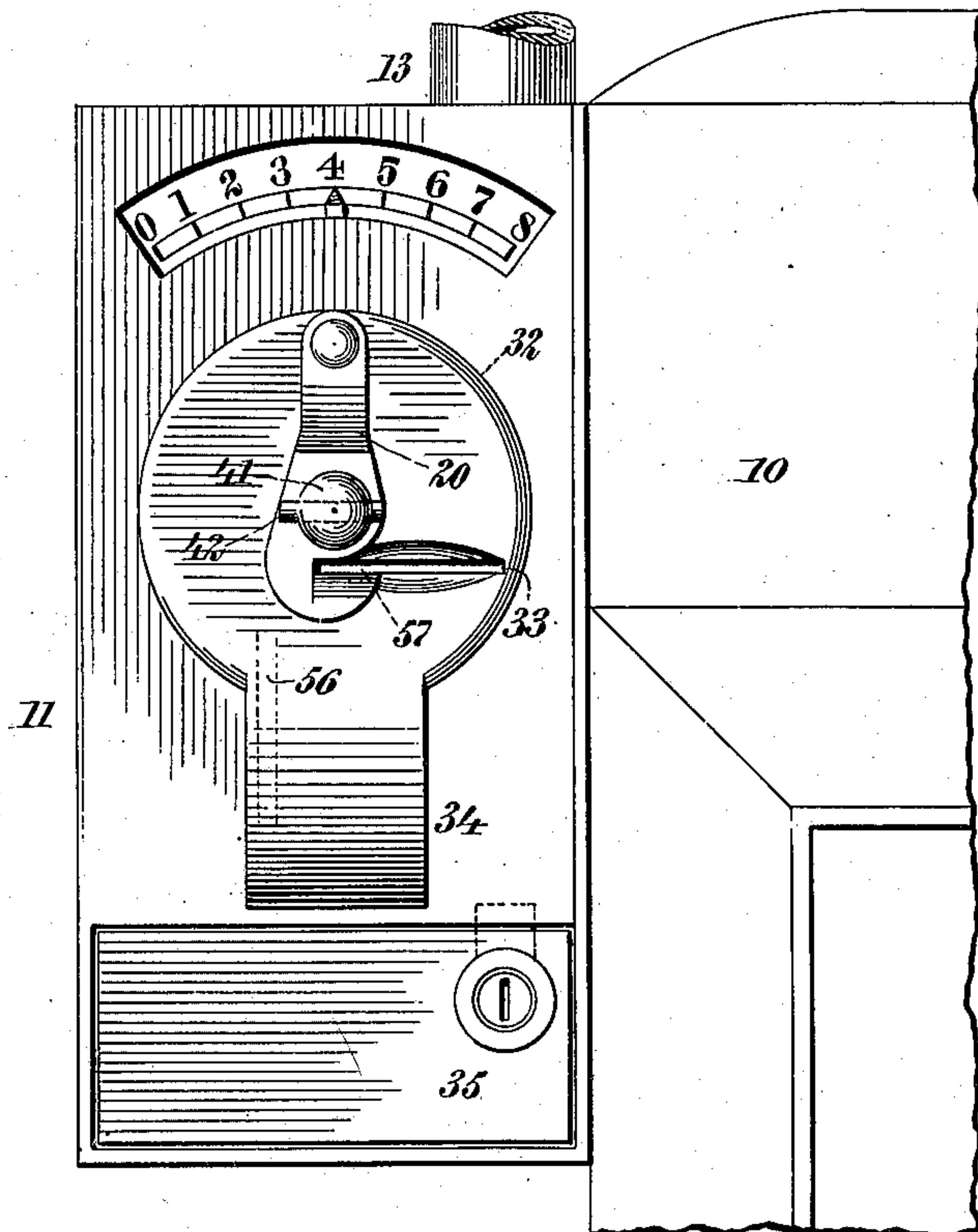
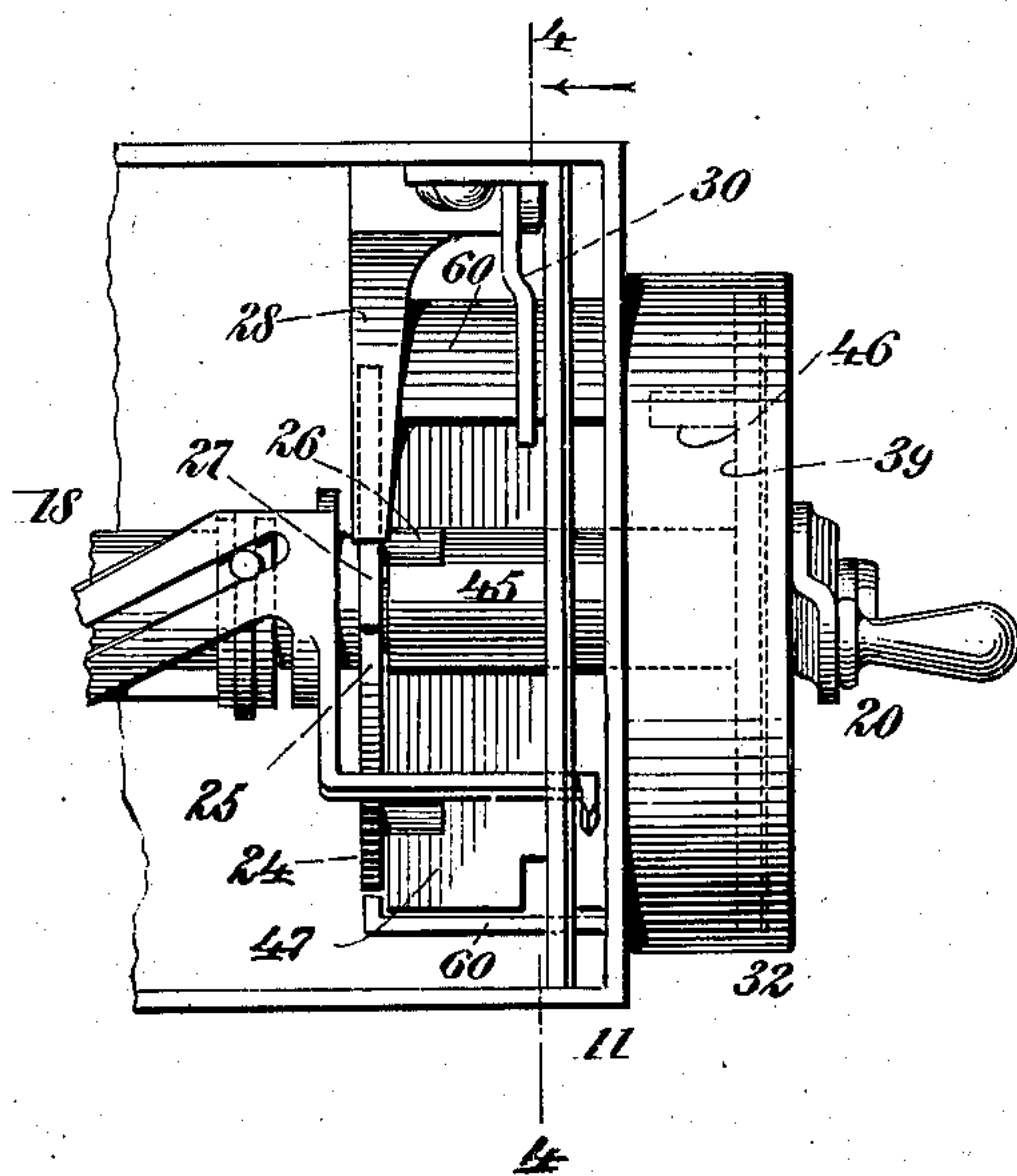


Fig. 2.



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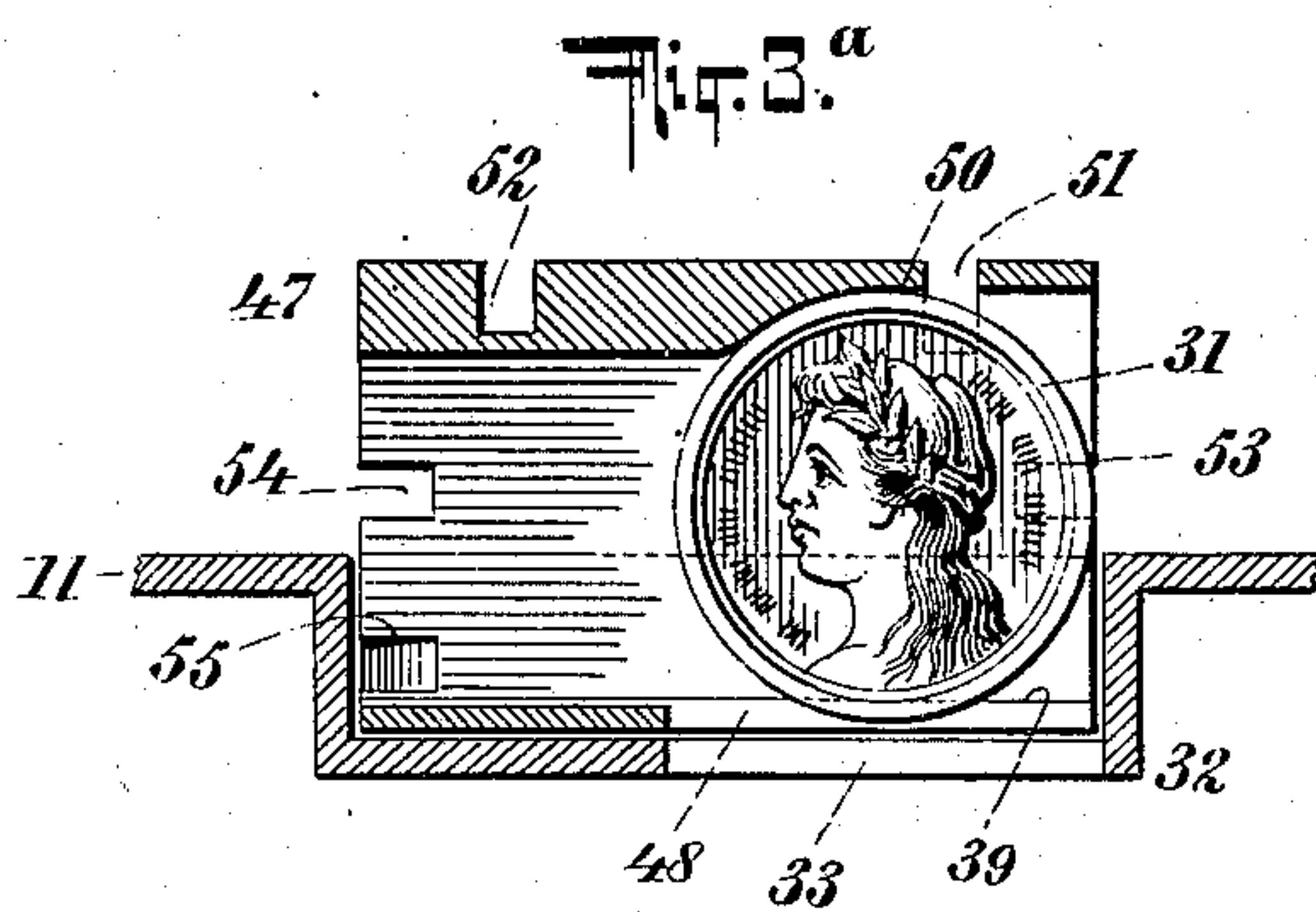
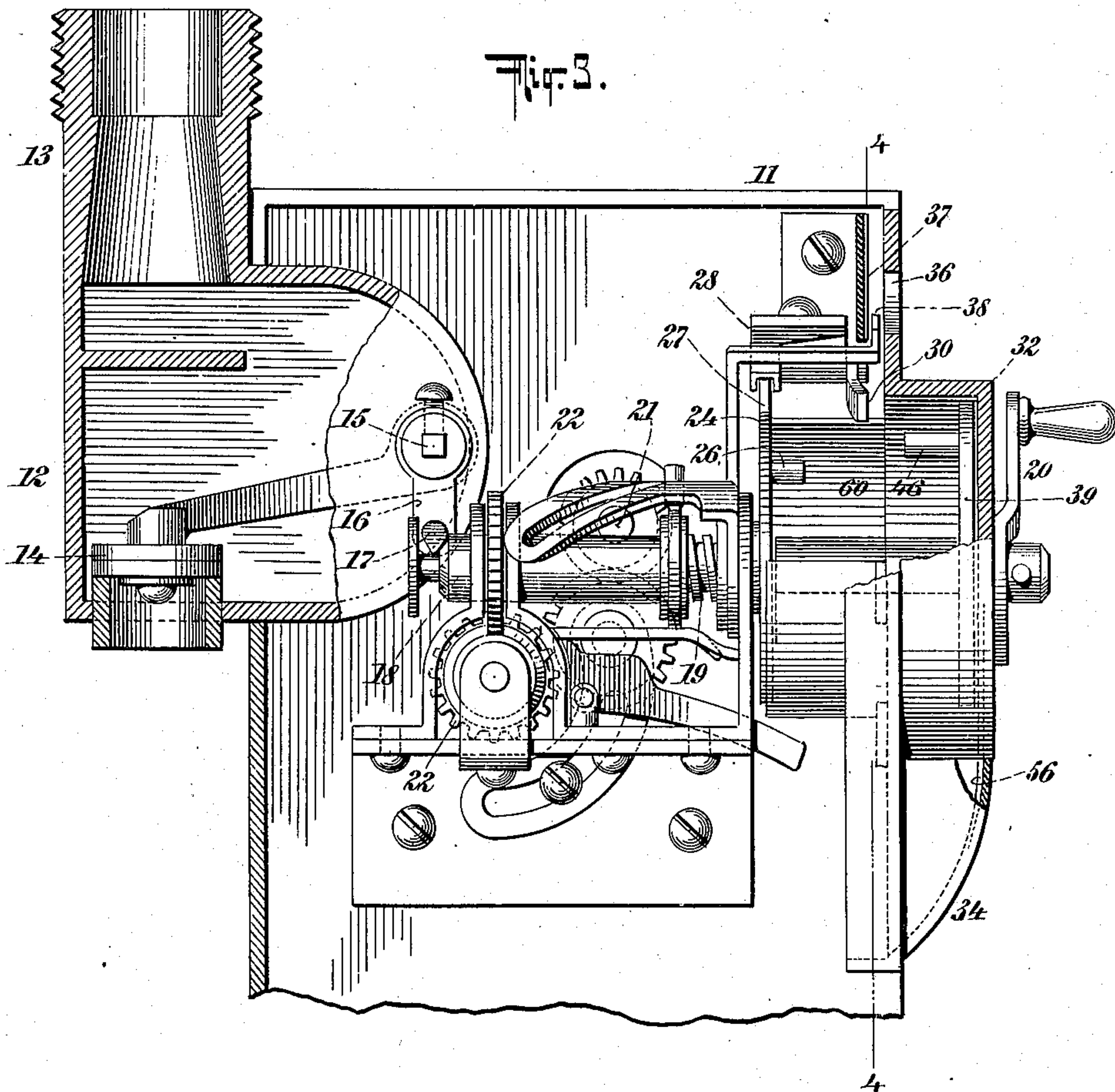
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3 SHEETS—SHEET 3.

Fig. 4.

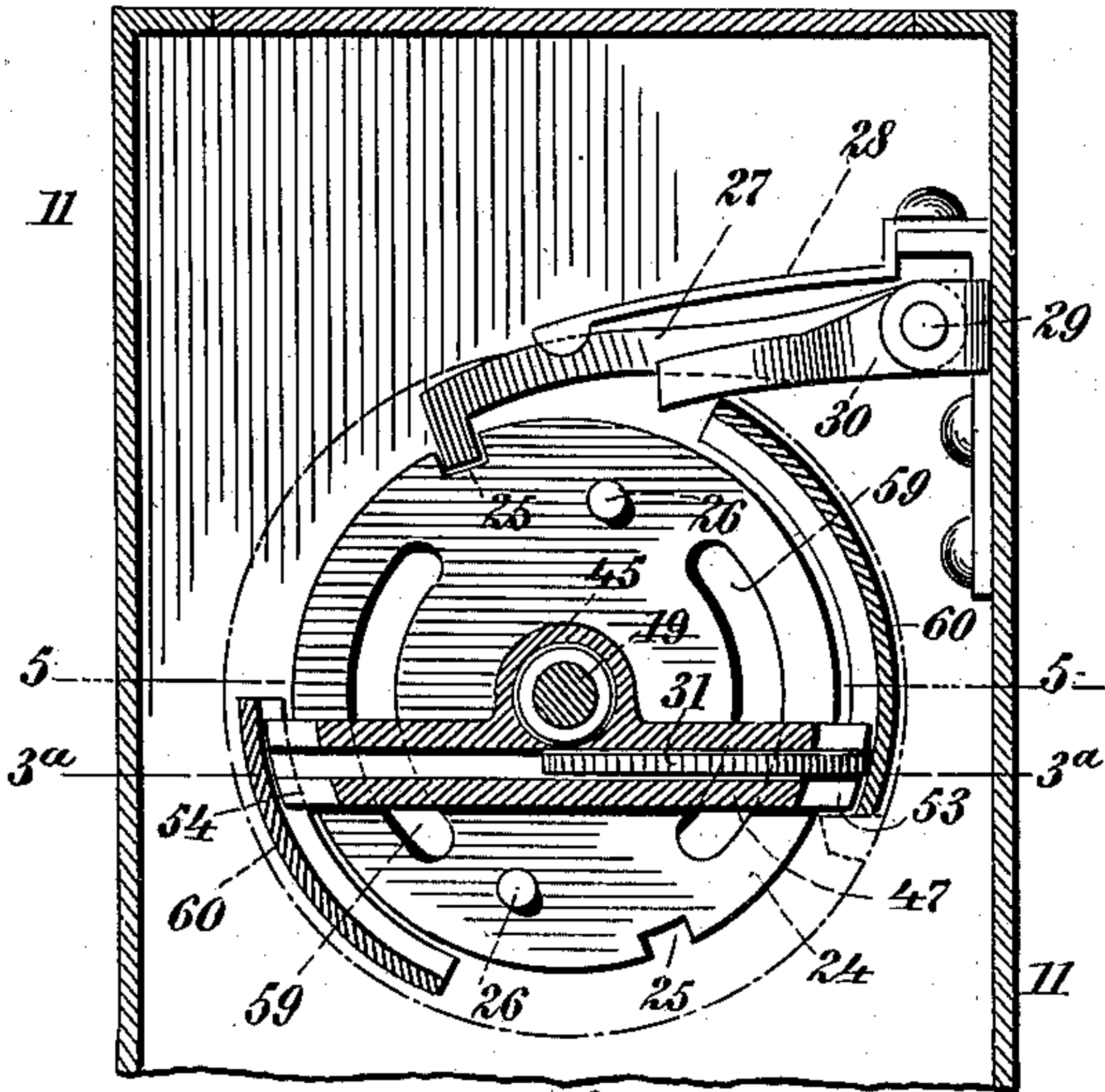


Fig. 5.

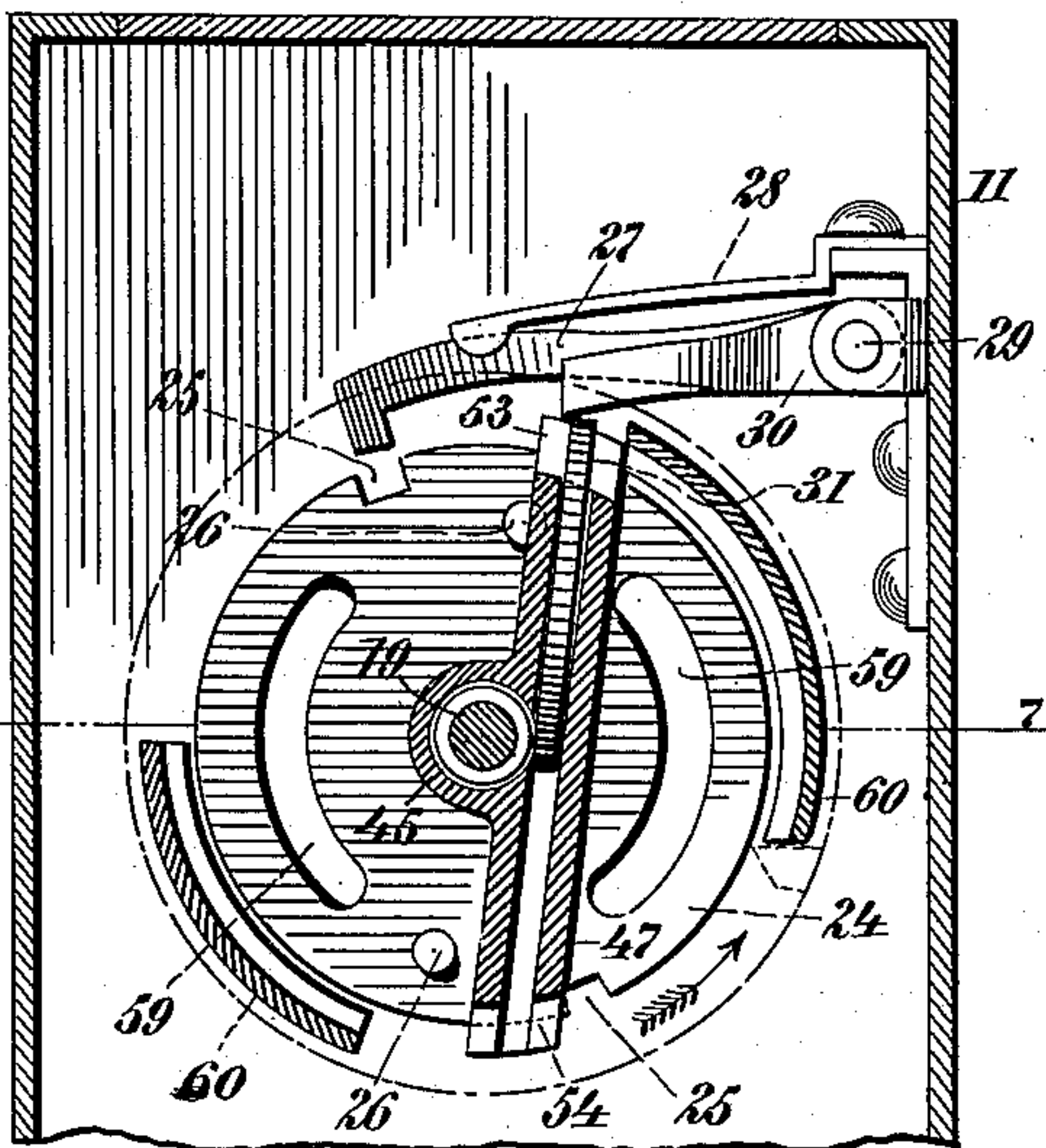


Fig. 6.

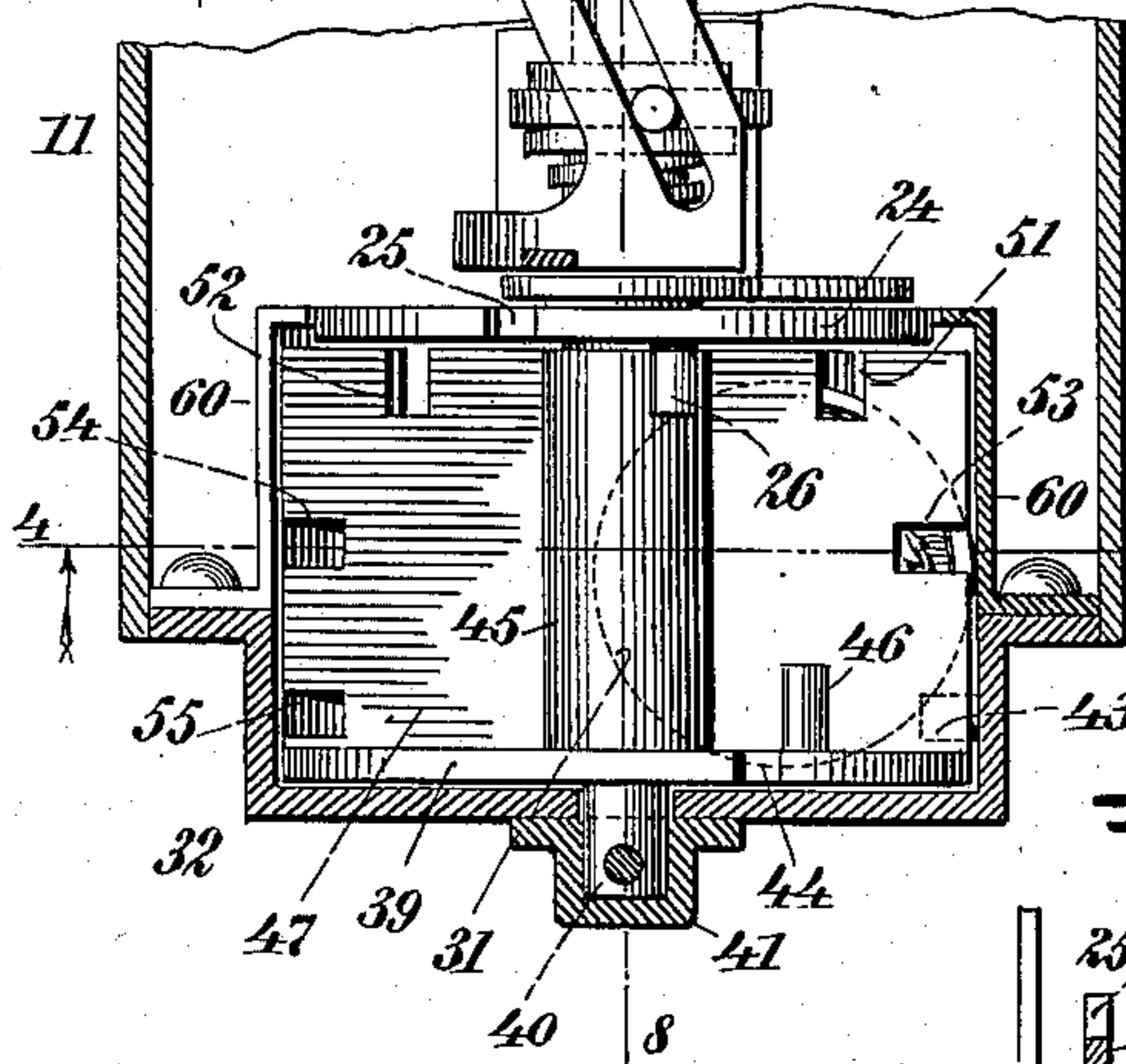


Fig. 7.

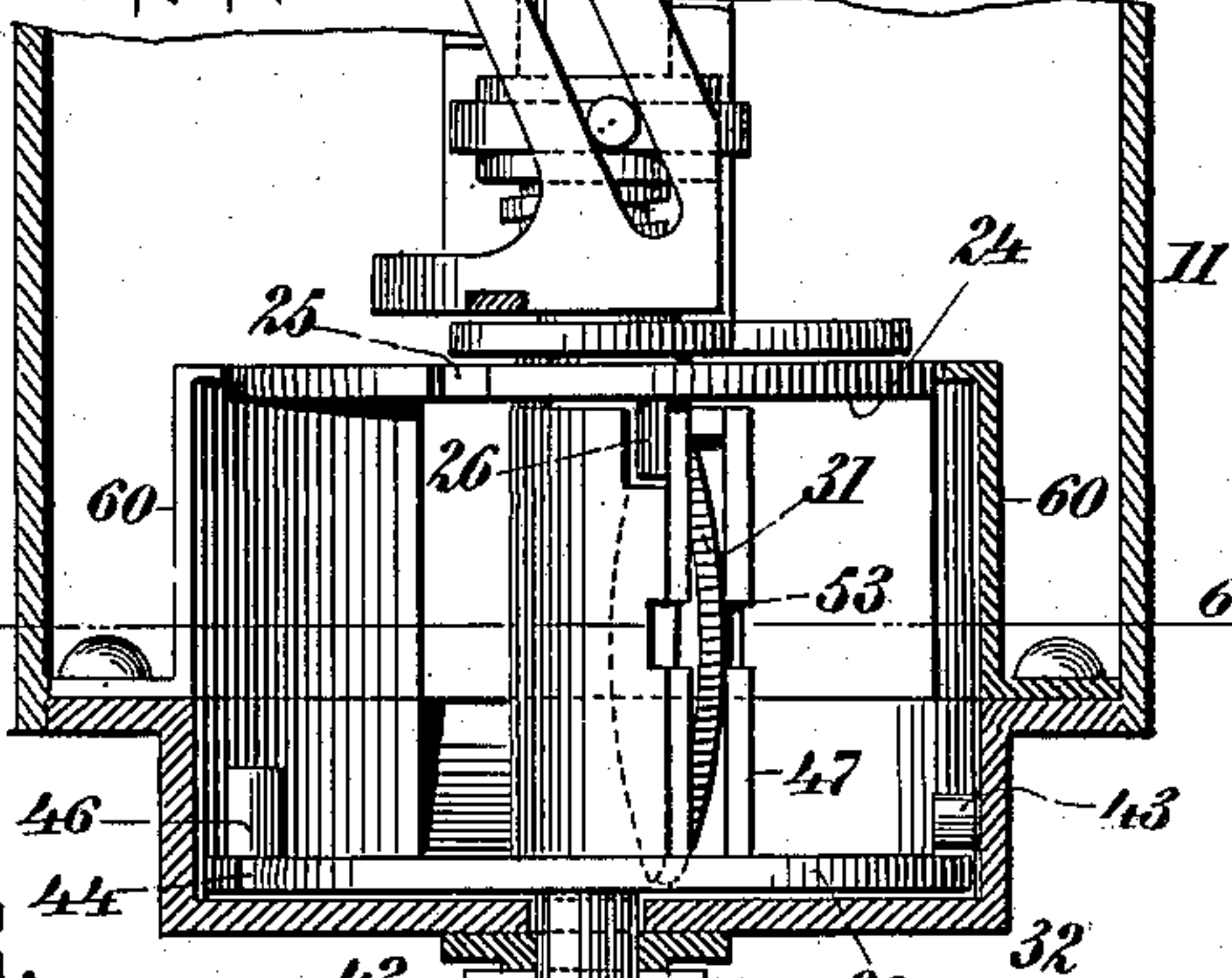
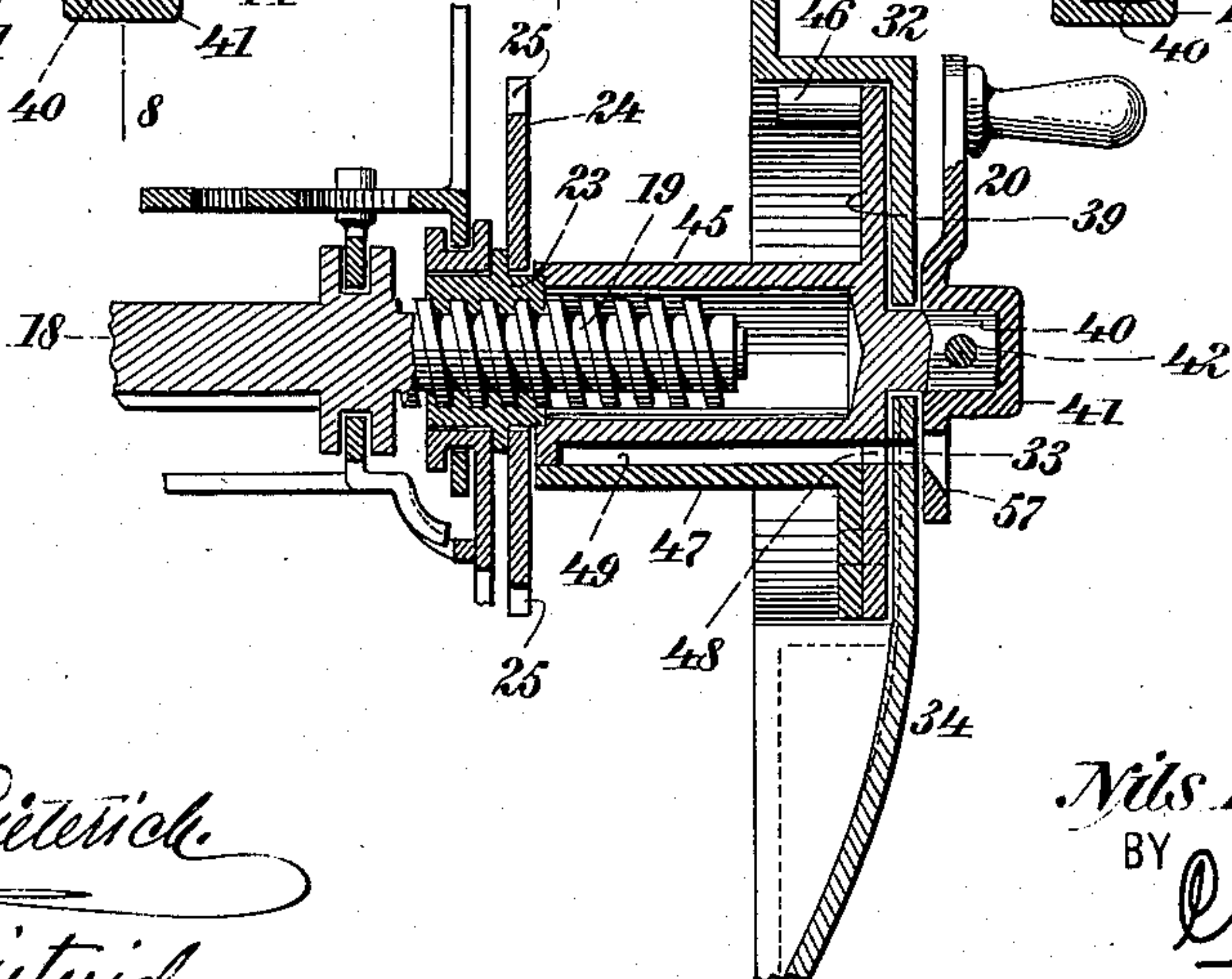


Fig. 8.



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UNITED STATES PATENT OFFICE.

NILS D. NELSON, OF NEW YORK, N. Y.

COIN-CONTROLLING MECHANISM FOR VENDING-MACHINES.

No. 919,749.

Specification of Letters Patent.

Patented April 27, 1909.

Original application filed July 27, 1906, Serial No. 327,990. Divided and this application filed March 12, 1908. Serial No. 420,535.

To all whom it may concern:

Be it known that I, NILS D. NELSON, a subject of Great Britain, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Coin-Controlling Mechanism for Vending-Machines, of which the following is a specification.

The invention relates to improvements in coin-controlling mechanism for vending machines, and it consists in the novel features and combinations of parts hereinafter described, and particularly pointed out in the claims.

This application is a division of my application filed July 27, 1906, Serial No. 327,990 for Letters Patent for improvements in prepayment gas meters, the patent which issued on said application being dated November 19, 1907 and numbered 871,290.

In presenting my invention herein I illustrate the same in operative connection with the meter mechanism shown in said Patent No. 871,290, so that the invention may be readily understood and its construction, operation and utility clearly explained.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which:

Figure 1 is a front elevation of a gas meter of usual construction equipped with a coin-controlling mechanism constructed in accordance with and embodying my invention; Fig. 2 is a top plan view, partly broken away, of the coin controlling mechanism and its casing, said mechanism being shown in operative relation to the means cooperating with it; Fig. 3 is a vertical longitudinal section, partly broken away, through a casing containing the coin-controlling mechanism and its cooperating parts; Fig. 3^a is a horizontal section through a portion of the coin-controlling mechanism on the dotted line 3^a—3^a of Fig. 4; Fig. 4 is a vertical transverse section through the coin-controlling mechanism on the dotted lines 4—4 of Figs. 2 and 5; Fig. 5 is a detached horizontal section of the same on the dotted line 5—5 of Fig. 4; Fig. 6 is a vertical section of the same on the dotted line 6—6 of Fig. 7; Fig. 7 is a horizontal section through the same on the dotted line 7—7 of Fig. 6, the section being through the casing and not through the mechanism contained therein,

which is represented in top elevation; and Fig. 8 is a vertical longitudinal section of a portion of the coin-controlling mechanism taken on the central dotted line 8—8 of Fig. 5.

In the drawings 10 designates a meter and 11 a box or casing connected therewith and containing or supporting the features constituting the present invention. The box 11 has at its rear end a box-like section 12 (Fig. 3) interposed in the gas-inlet 13 and containing the valve 14 for controlling the entrance of gas to the meter. The valve 14 is connected with the rock-shaft 15, which is operated by a crank-arm 16 having a laterally projecting finger 17 which is engaged by the stem 18 of a longitudinally disposed worm 19 adapted to be moved inwardly or toward the rear (without rotating), for opening the valve 14, from the manually operable crank-handle 20 upon the introduction of the proper coin to the mechanism and in a reverse or outwardly direction (while rotating) from the meter-actuating-shaft 21, for permitting said valve 14 to close. The shaft 21 is connected with the stem 18 by suitable gearing, fully shown and described in my aforesaid patent, intermediate said shaft and a gear wheel 22 keyed on said stem. The gear wheel 22 may impart rotary motion to the stem 18 and worm 19 during the closing of the valve 14 and permit said stem to travel through the same, without rotating, during the opening of the valve 14. The stem 18 is moved outwardly or toward the front during the gas consumption to close the valve 14 and inwardly or toward the rear by means of the crank-handle 20 to open said valve.

The worm 19 has upon it a nut 23 (Fig. 8) held by a suitable bracket and having secured upon it a disk 24, which is only rotated when a proper coin has been introduced to the machine and the handle 20 is operated to open the valve 14. The outward movement, toward the front, of the stem 18 results in the worm 19 rotating within the nut 23 without actuating the same or any part connected therewith. The inward movement of the stem 18 and worm 19 for opening the valve 14 is direct and without said stem and worm being rotated, this direct movement of said stem and worm being effected by imparting rotary motion to the disk 24 and nut 23 by the means here-

inafter described constituting features of my invention.

The disk 24 is a plain flat plate having, at opposite points in its periphery, recesses 25 (Figs. 4, 5 and 6), and on its front face pins 26, and said disk remains stationary, except when it is rotated from the crank handle 20 after a proper coin has been introduced into the machine. The disk 24 is held against rotation, except when actuated from the handle 20 by means of a dog 27, whose engaging end enters the recess 25 which may at the time be at the upper edge of the disk. The dog 27 is pressed against the disk 24 by means of a spring 28 and is secured upon the rock shaft 29 carrying a crank-arm 30, which, upon the application of a proper coin to the machine and the actuation of the same by the coin holding mechanism, is elevated by the contact therewith of the coin, numbered 31, for the purpose of turning the shaft 29 and elevating the dog 27 from contact with the disk 24, so that the latter by the contact of the same coin with one of the pins 26 may be compelled to rotate and impart its motion to the nut 23, for driving the worm 19 and its stem 18 inwardly to open the valve 14.

In the front of the casing 11 is a circular frontwardly projecting section 32 containing the coin slot 33 at one side of the center thereof and opening at its lower side into a vertical inwardly inclined chute 34, down through which the coins fall into a drawer or coin receptacle 35 (Fig. 1) provided to receive them.

The coin receiving means comprise a disk 39 which fits within the forwardly projecting section 32 of the casing 11 and is close against the inner face thereof, as shown in Figs. 5, 7, 8, and this disk 39 carries upon its front face a pin 40 which enters the hub 41 of the crank handle 20, the said hub being secured to said pin by means of a transverse pin 42 or other suitable means. The side of the section 32 is provided with a stud 43 (Fig. 7) which serves as a stop and also as a means for keeping the disk 39 close against the inner front wall of the section 32. The disk 39 is formed in its edge with a recess 44 which permits said disk to pass by the stud 43 when assembling the parts of the apparatus, this recess 44 being necessary, because the edges of the disk 39 snugly fit within the circular edges of the section 32.

At its inner face the disk 39 is formed with a hollow cylindrical hub or sleeve 45, which extends inwardly to and bears upon the front edges of the nut 23 and receives within it and forms a housing for the worm 19. Upon the inner face of the disk 39 and near one edge thereof is secured a stop pin 46, and said inner face, at one side of the sleeve 45, is provided with a coin holding frame 47 formed of two parallel plates

properly separated to receive between them a coin 31, as shown in Figs. 6 and 7, the frame 47 being closed at its outer or front edge with the exception of a sufficient portion at the side of one end thereof to match the coin slot 33, there being an opening 48 in the disk 39 (Fig. 8) corresponding with the coin slot 33 leading into the space, numbered 49, in the frame 47, so that a coin introduced to the coin slot 33 and opening 48 may reach the frame 47 and be held therein at one end of the space 49, where the coin is utilized to actuate the mechanism of the device in the manner hereinafter described and then permitted to escape (when the coin receiving end of the space 49 attains its lower vertical position) down through the chute 34. At one end of the frame 47 the space 49 is wider than at the other end thereof, as shown in Fig. 3^a, this being due to the fact that the inner wall closing the rear edge of the space 49 varies in width, as at 50. If a coin less than the proper size were introduced into the frame 47 it would not be held at one end of said frame in the manner shown in Figs. 4, 6 and 3^a, but would slip through said frame upon the turning of the latter from its horizontal position (which is the introductory position for the coin, as shown in Fig. 8,) without operating any of the mechanism. The inner or rear edge of the frame 47 is formed near one end with a recess 51 (Fig. 5) to permit of a limited exposure of the edge of the coin 31 so that it may contact, when the crank handle 20 and disk or plate 39 are operated, with one of the pins 26 on the disk 24, for the purpose of rotating said disk, and the said inner edge of the frame 47 near its other end is formed with a recess 52, so that during the rotation of the frame 47 from the crank handle 20, said frame may pass by the other pin 26 on said disk 24 without touching the same.

At the receiving end of the frame 47 there is provided in the outer edge of said frame a recess 53 (Figs. 5 and 7) which permits the exposure of a portion of the coin 31 so that during the rotation of the frame 47 the coin before reaching the pin 26 on the disk 24 to rotate the latter, may be carried against the crank arm 30 and elevate the dog 27 from the disk 24, thus freeing said disk 24 so that it may be rotated by the pressure of the coin against the pin 26. At the opposite end of the frame 47 (Fig. 5) is formed a recess 54, so that during the rotation of the frame 47 said recess 54 may pass along by the crank arm 30 without touching the same. When the frame 47 is rotated without a proper coin being therein, the recess 53 will also pass by said crank arm 30 and allow the latter to remain at rest, whereby the dog 27 maintains the disk 24 in a locked position and the worm 19 is held at

rest. In order to impart motion from the crank handle 20 to the disk 24 and through said disk and its nut 23 to the worm 19, a proper coin must be introduced into the frame 47, since the coin is utilized, first to free the dog 27 from the disk 24 and then to effect the rotation of said disk with its nut 23, the rotation of the latter causing the worm 19 to have a direct inward movement.

Adjacent to the front edge of the frame 47 the end thereof which does not initially receive the coins is formed with a recess 55 (Fig. 5) which permits said frame 47 to rotate by the stop pin 43 fixed in the circular frame section 32, while at the receiving end of the frame 47 no such recess is provided, it being intended that the receiving end of the frame 47 shall strike against the stop 43 and become arrested thereby when said frame is in a horizontal position in line with the coin receiving slot 33. After the coin has been introduced into the frame 47 the crank handle 20 is moved downwardly toward the left, looking at Fig. 1, so as to carry the coin upwardly against the crank arm 30 and then against a pin 26 of the disk 24, and this movement is continued until the receiving end of the frame 47 has performed about three-quarters of a rotation, and said end stands vertically adjacent to the left hand edge, looking at Fig. 1, of the chute 34, at which time the coin will fall from said frame and pass downwardly along said chute into the cash receptacle 35. When the frame 47 thus attains its vertical discharge position, the pin 46 on the disk 39 will contact with the stop 43 and arrest said disk and said frame 47. When the coin 31 is in the receiving end of the frame 47 and the latter is being rotated, said coin is held between the rear wall of the frame 47 and the inner face of the front section 32 of the casing, a portion of the edge of the coin remaining in the slot 48 in the disk 39. I form in the inner wall of the front section 32 a vertical groove 56 in line with the coin when the latter reaches its discharge position, so that the coin may readily escape downwardly into the chute 34, the opening 48 in the disk 39 extending to the outward edge of said disk and passing into line with said groove 56 when the frame 47 attains its discharging position. When the admission slot 48 of the disk 39 passes from the coin slot 33, the face of said disk closes said slot.

The crank handle 20 is rigid with the disk 39 and I provide said handle, as shown in Fig. 1, with a knife 57, so that in the event that a person should introduce a coin tied to a string or the like through the slot 33, the movement of the disk 39 by means of the handle 20 would result in the string or the like being severed by the knife 57. The slot 48 in the disk 39 when moving upwardly from the admission slot 33 and due to the

fact that said slot 48 is below the center of said disk, carries its outer end upwardly, first from the slot 33, thus causing any string or wire which might be connected with a coin to slide along the slot 33 toward the inner end thereof in position for the knife 57 to perform its function.

The disk 24 is formed with slots 59 through which an instrument could pass, should one be inserted through the coin slot 33 in an attempt to operate the internal mechanism without the use of a coin.

In the casing 11 I provide segmental plates 60 which are in line with the circular front section 32 of said casing and form walls within which the outer edges of the frame 47 may rotate during the operation of the machine, the inner edges of said plates 60 being flanged inwardly, as shown in Fig. 5, to encompass the disk 24. The upper edge of the right hand segmental plate 60 (Fig. 3) serves as a stop for the crank arm 30 when the dog 27 is in engagement with one of the recesses 25 of the disk 24.

In the initial condition of the mechanism constituting my invention, the parts will be in the relative positions shown in Fig. 3, the valve 14 being closed, the crank handle 20 in a vertical position and the coin receiving frame 47 in a horizontal position with the entrance opening 48 thereto in line with the coin slot 33, as shown in Fig. 8. When the parts are in the position just stated the worm 19 and its stem are in their extreme forward position. The consumer desiring to purchase gas will insert the proper coin, a silver quarter, for illustration, through the coin slot 33, and into the space 49 of the frame 47 to the position indicated by dotted lines in Fig. 5 and full lines in Fig. 4, and thereupon the consumer will rotate the crank handle 20 from the position shown in Fig. 1 downwardly toward the left until the said handle completes a three-quarter turn, when the frame 47 will attain a vertical position in line with the left hand edge of the chute 34, looking at the front of the device, and the coin escape downwardly to the cash box 35. The rotation of the frame 47 with the coin 31 therein results in said coin being carried upwardly and around toward the left as shown in Fig. 6, said coin at the exposure recess 53 in the frame 47 first acting against the crank arm 30 to free the dog 27 from the disk 24 and then at the exposure recess 51 in said frame engaging a pin 26 on said disk 24 and effecting during the continued movement of said frame the rotation of said disk, said disk with each operation of the frame 47, while holding a coin, making about one-half of a rotation. The rotation of the disk 24, by means of the coin, results in the nut 23 having a corresponding rotation and driving the worm 19 and stem 18 inwardly toward the rear, whereby the

valve 14 is operated to open. The apparatus shown is constructed to receive eight successive coins or to sell \$2. worth of gas when so desired, and in such employment of the apparatus the purchaser would insert one coin in the manner hereinbefore described and operate the handle 20, and thereupon he will return the handle to its initial position, moving it downwardly toward the left and then upwardly to the position shown in Fig. 1, and then successively introduce the further coins and operate the said handle in the same manner that he did upon the introduction of the first coin. Each successive operation of the handle 20 will result in the worm 19 and stem 18 moving inwardly toward the rear. During the consumption of the gas the worm 19 and stem 18 will be moved frontwardly, as hereinbefore explained, and thereby be returned to their initial position preparatory to the further operation of the same by means of a coin to be introduced through the coin slot 33.

The present application is not limited to the use of the worm 19 and stem 18 for operating the valve of a gas meter, since the features constituting my invention may be used in other forms of vending machines. My invention is, however, particularly applicable to prepayment gas meters, since in such use the flow of the gas as consumed may be relied upon to return the worm 19 to its initial position after having been actuated through the medium of the crank handle 20 and coin held within the frame 47.

What I claim as my invention and desire to secure by Letters-Patent, is:

1. A coin controlling mechanism for vending machines comprising a frame for receiving the coin, an inclosing casing having a coin slot leading to said frame when the latter is in its initial position, an exposed crank for rotating said frame and having a cutting edge adapted to sweep by said slot for severing any cord that may be attached to the coin, and means on the rotation of said frame and actuated by said coin for operating the vending mechanism; substantially as set forth.

2. A coin controlling mechanism for vending machines comprising a rotary frame having a coin receiving space at one side of its axis of rotation, an inclosing casing having a coin slot leading to said space in said frame and located below and to one side of said axis, an exposed crank connected with said frame in line with the axis thereof for rotating said frame and having a cutting

edge adapted to sweep by said slot for severing any cord that may be attached to the coin, and means on the rotation of said frame and actuated by said coin for operating the vending mechanism; substantially as set forth.

3. A coin controlling mechanism for vending machines comprising a rotary frame composed of parallel sides forming a space between them to receive the coin, a casing inclosing said rotary frame and having a face containing a coin-slot leading thereto, a disk on the outer end of said frame close to said face and slotted to admit the coin and hold one edge thereof during the rotation of said frame, means for rotating said frame, and means in the path of the coin carried thereby and to be actuated therefrom for operating the vending mechanism, said face having a vertical groove (56) to aid in releasing the coin when said frame reaches its discharging position; substantially as set forth.

4. A coin controlling mechanism for vending machines comprising a rotary frame composed of parallel sides forming a space between them to receive the coin, an inclosing casing having in its face a coin slot leading to said frame, a rotary plate (24) for actuating the vending mechanism and having pins 26 projected toward said frame, means for normally locking said plate stationary, and means for rotating said frame, said frame having, in its inner edge, recesses 51, 52 adapted to pass over free of said pins 26 when said frame is rotated without a coin being therein and to expose at one thereof the edge of a coin placed in the frame so that upon the rotation of said frame said edge of the coin may move against one of said pins and actuate said plate, and said frame having at its ends recesses 53, 54 adapted to pass by said locking means when said frame is rotated without a coin being therein and to expose at one thereof the edge of a coin placed in the frame so that upon the rotation of the frame said edge of the coin may move against and actuate said locking means to release said plate preparatory to the movement of the latter; substantially as set forth.

Signed at New York city, in the county of New York and State of New York this 10th day of March A. D. 1908.

NILS D. NELSON.

Witnesses:

ARTHUR MARION,
CHAS. C. GILL.