

Oct. 7, 1930.

J. E. CARROLL

1,777,715

VENDING MACHINE

Filed Sept. 20, 1928

4 Sheets-Sheet 1

Fig. 1.

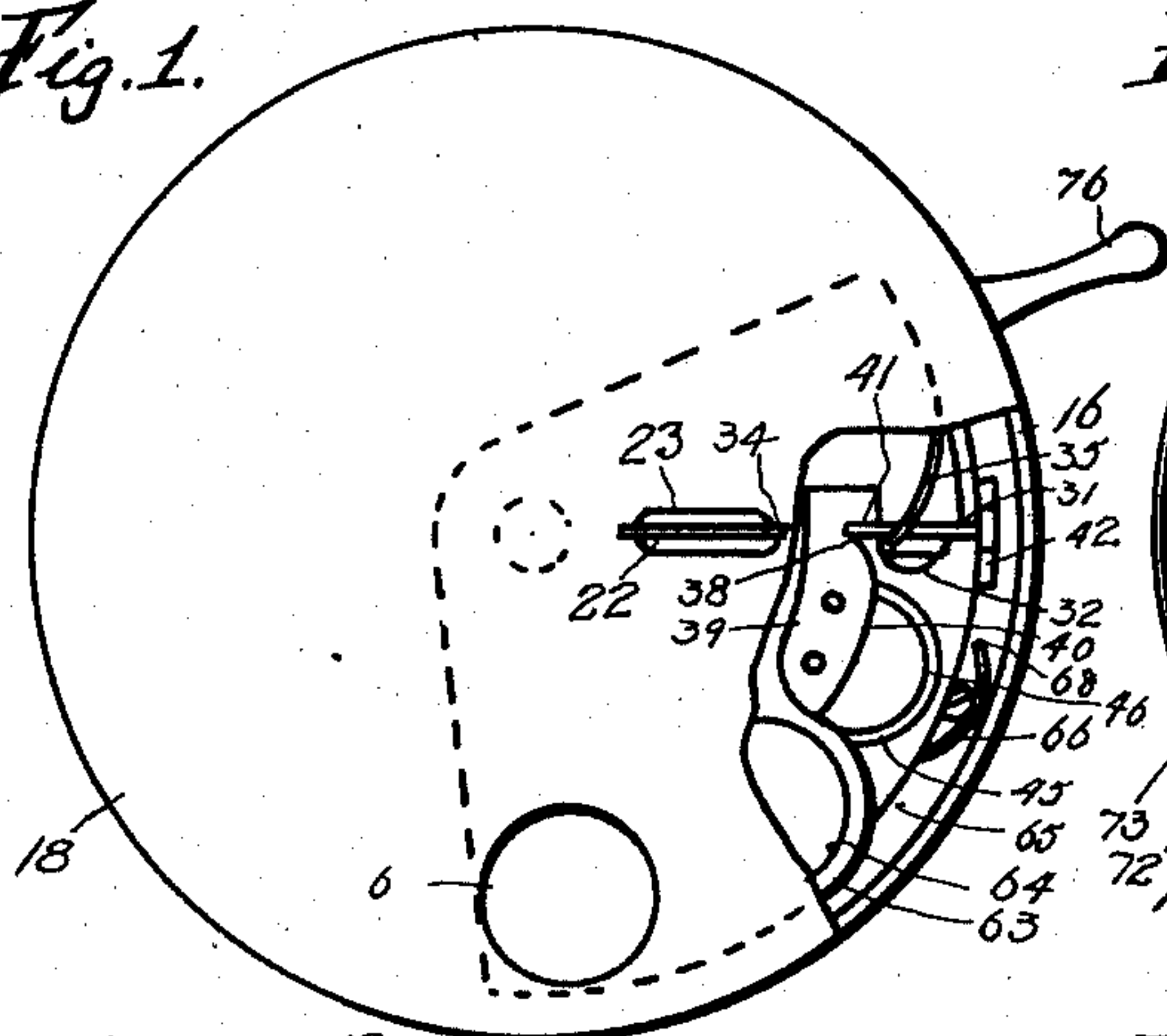


Fig. 2.

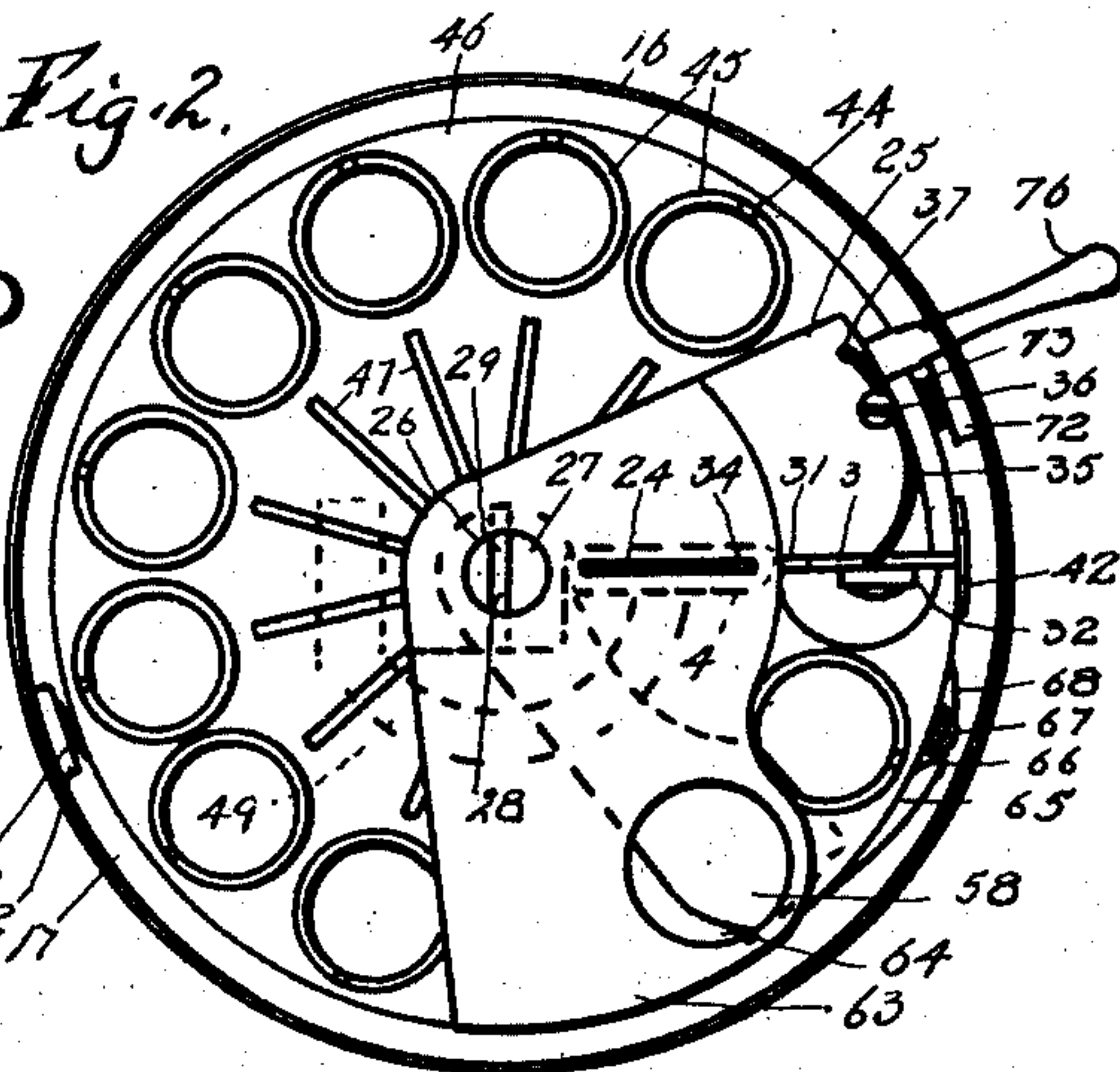


Fig. 3.

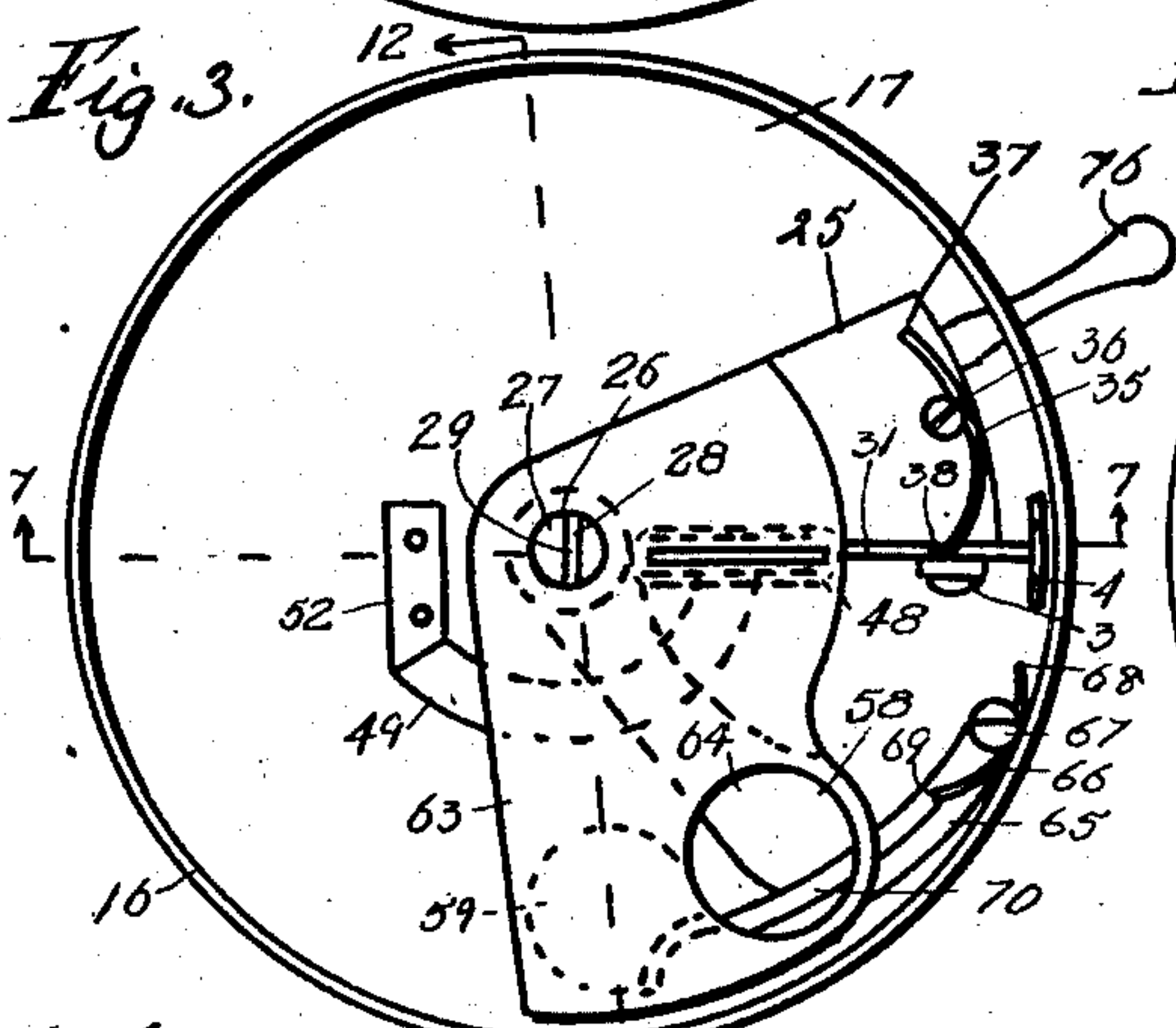


Fig. 4.

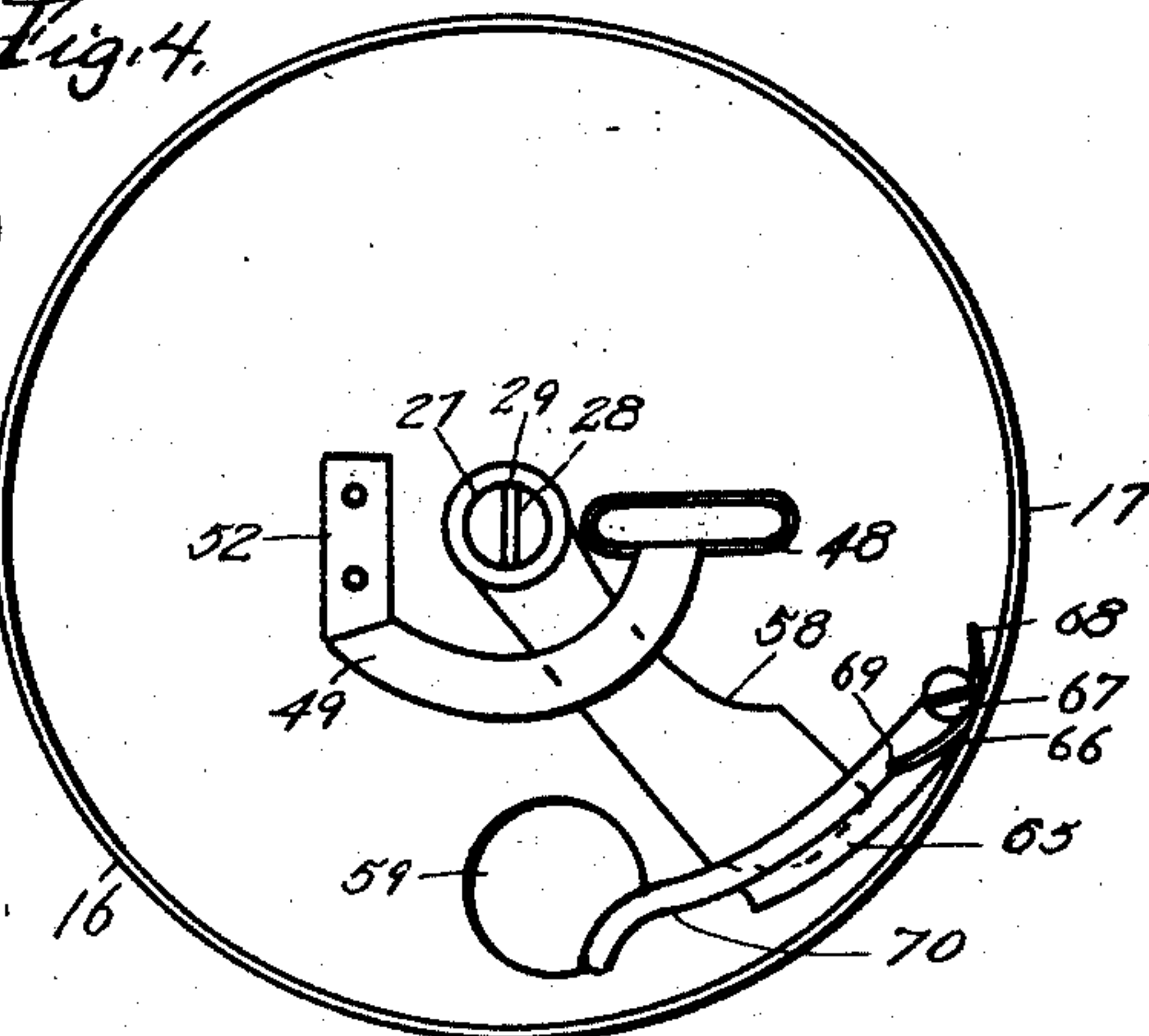


Fig. 9.

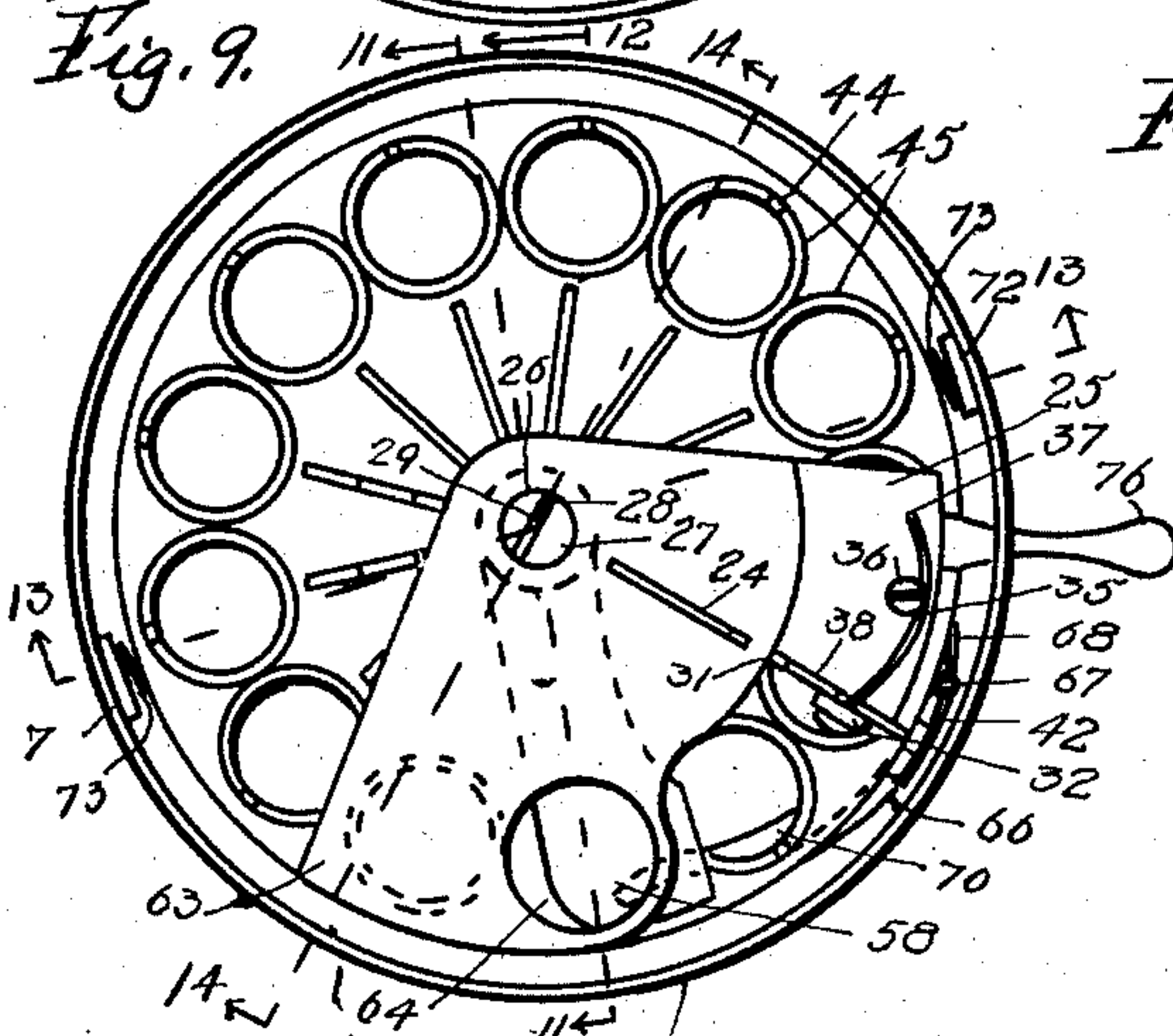


Fig. 10.

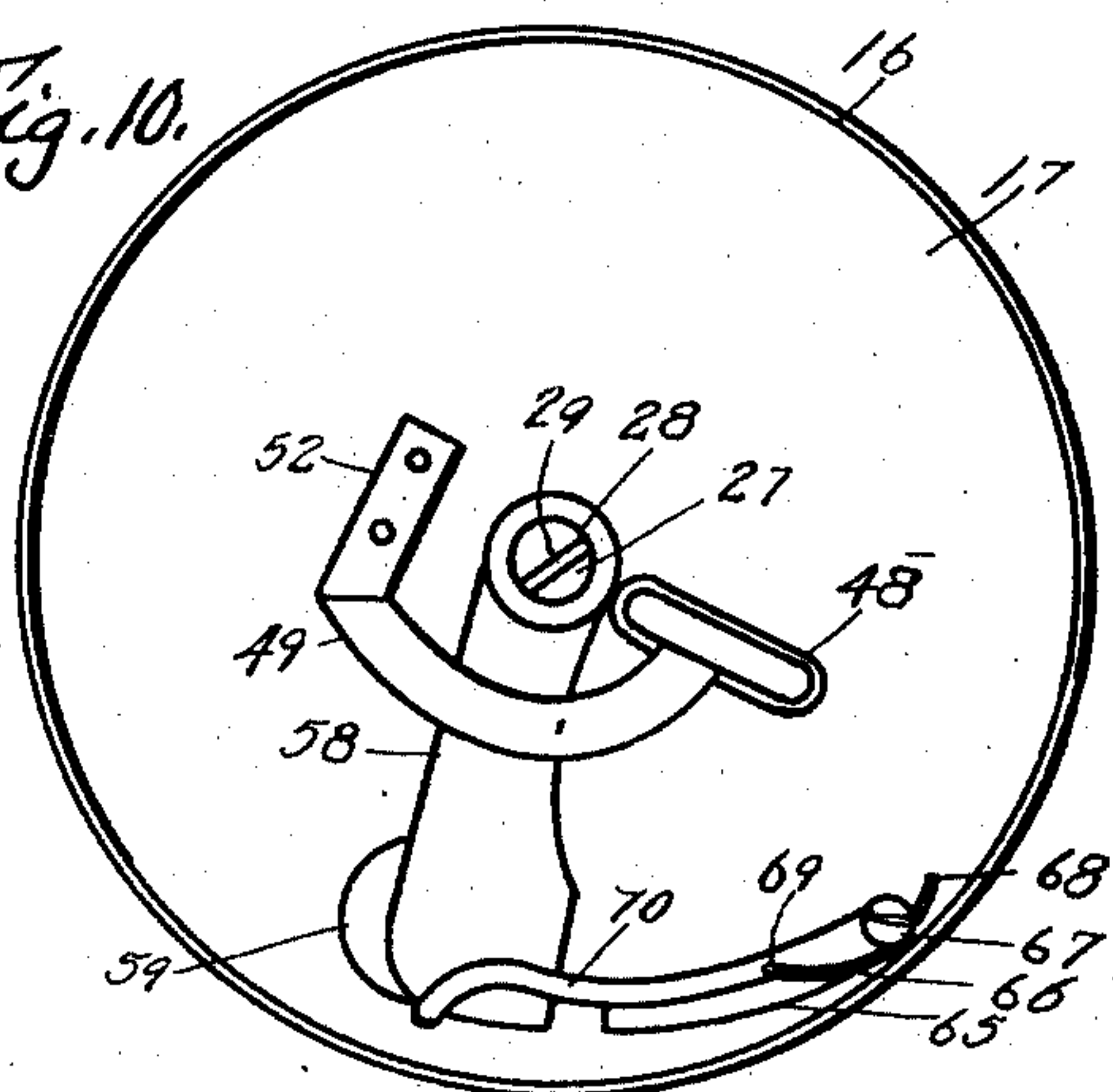


Fig. 5.

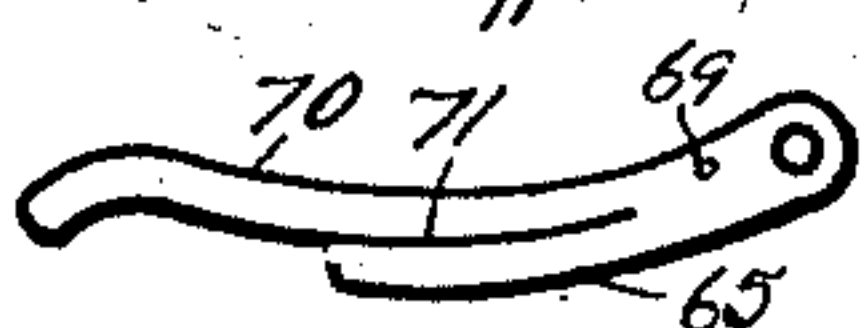


Fig. 6.



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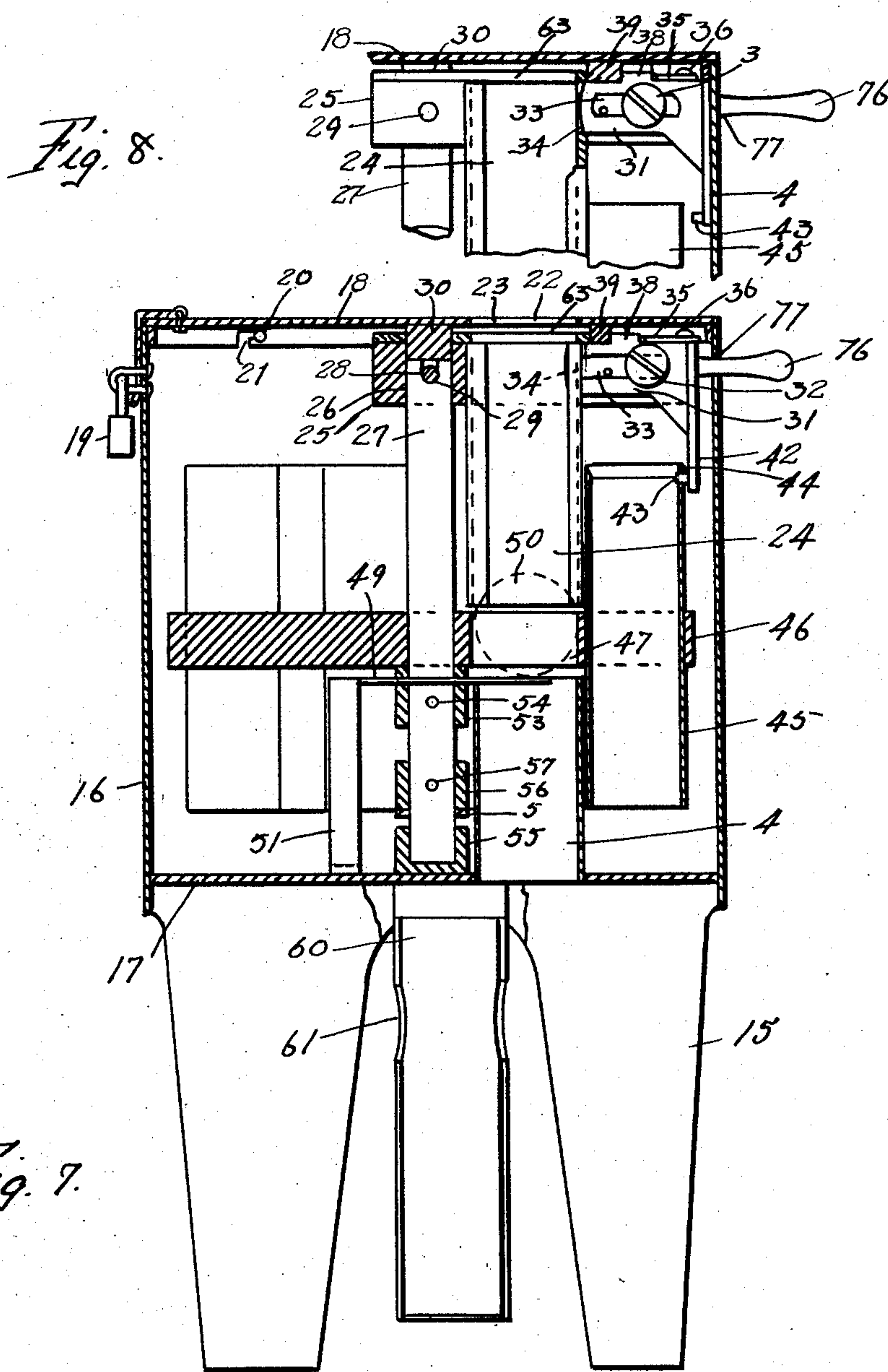
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VENDING MACHINE

Filed Sept. 20, 1928

4 Sheets-Sheet 2



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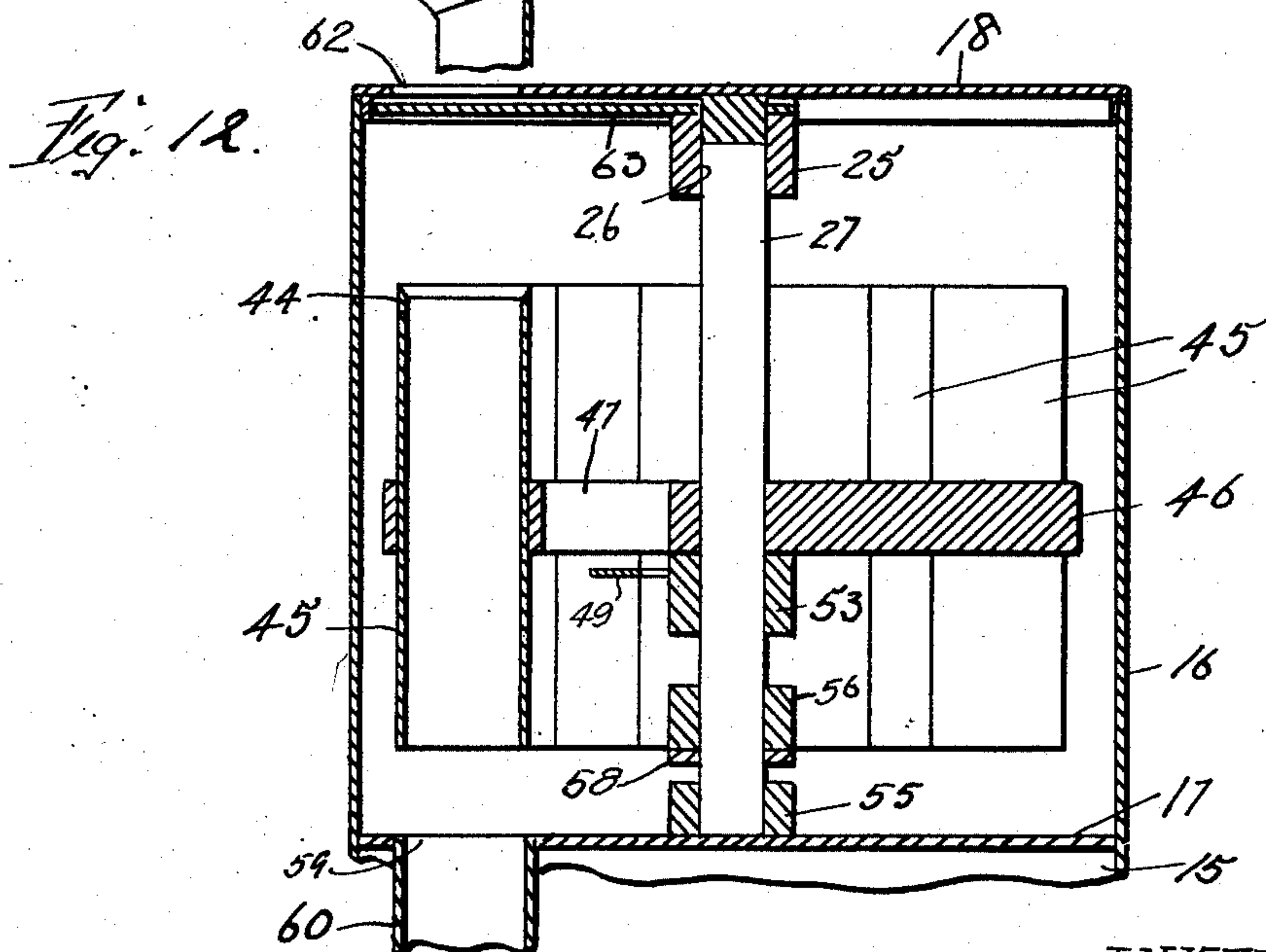
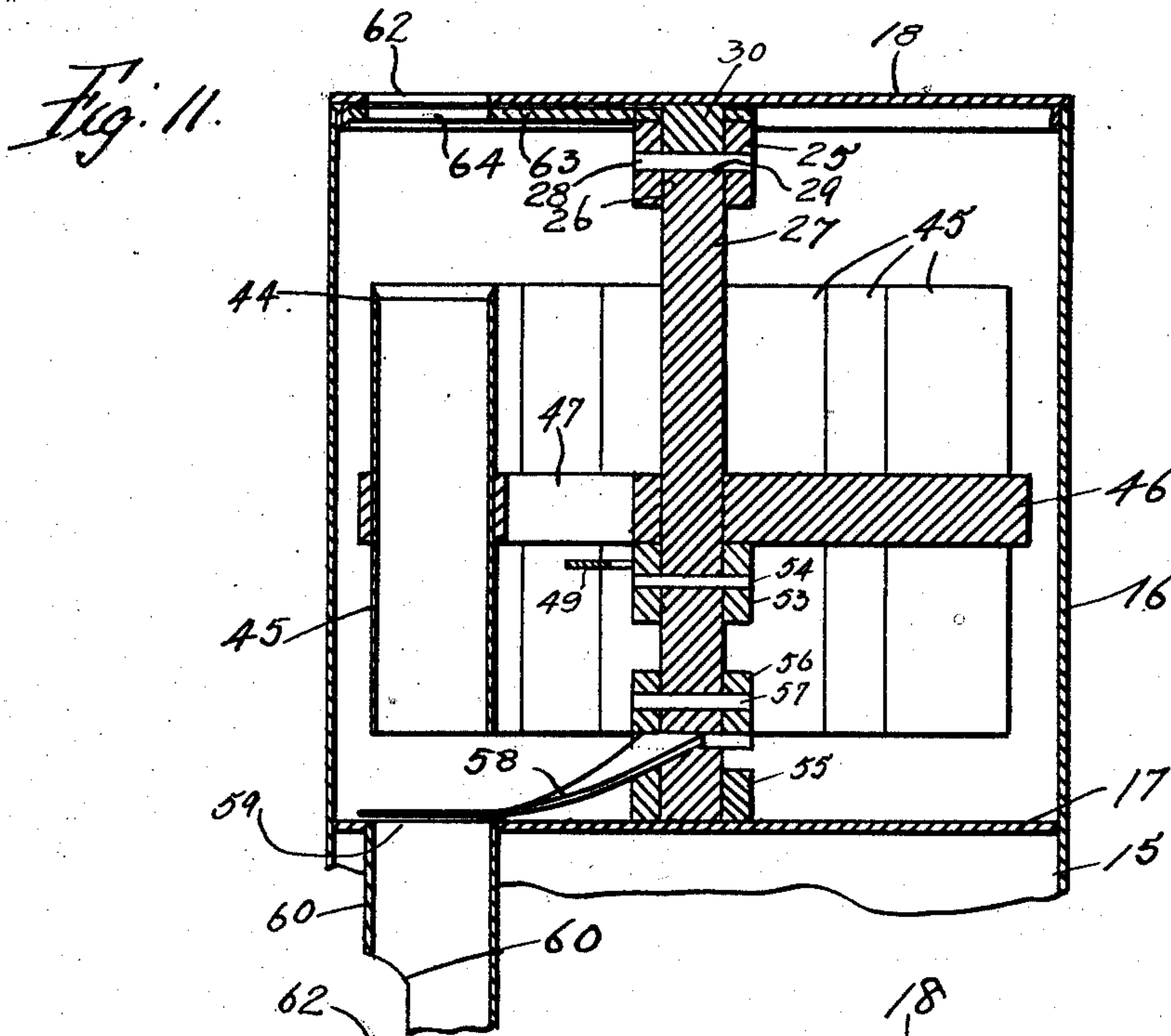
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VENDING MACHINE

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4 Sheets-Sheet 3



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VENDING MACHINE

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4 Sheets-Sheet 4

Fig. 13.

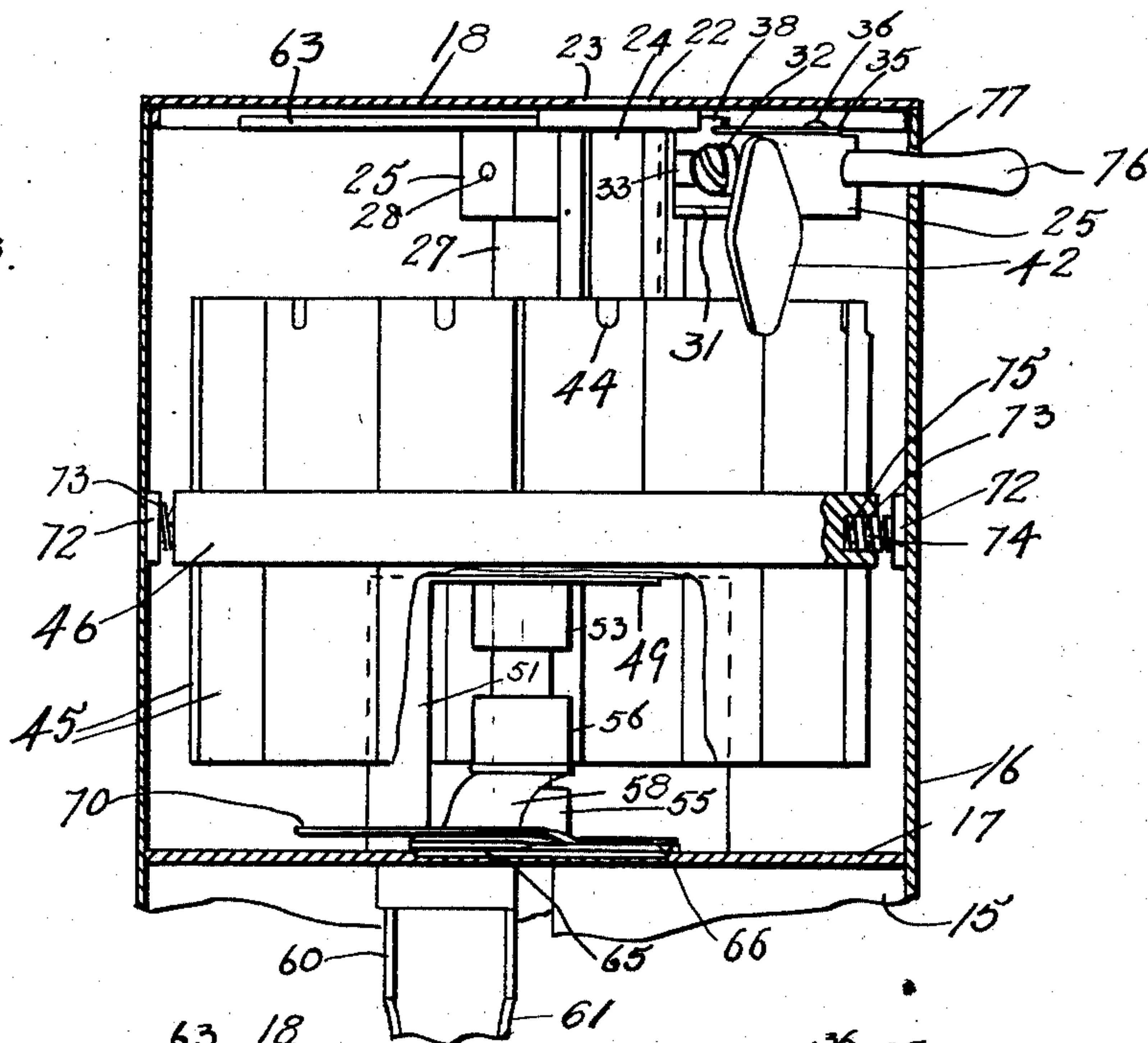
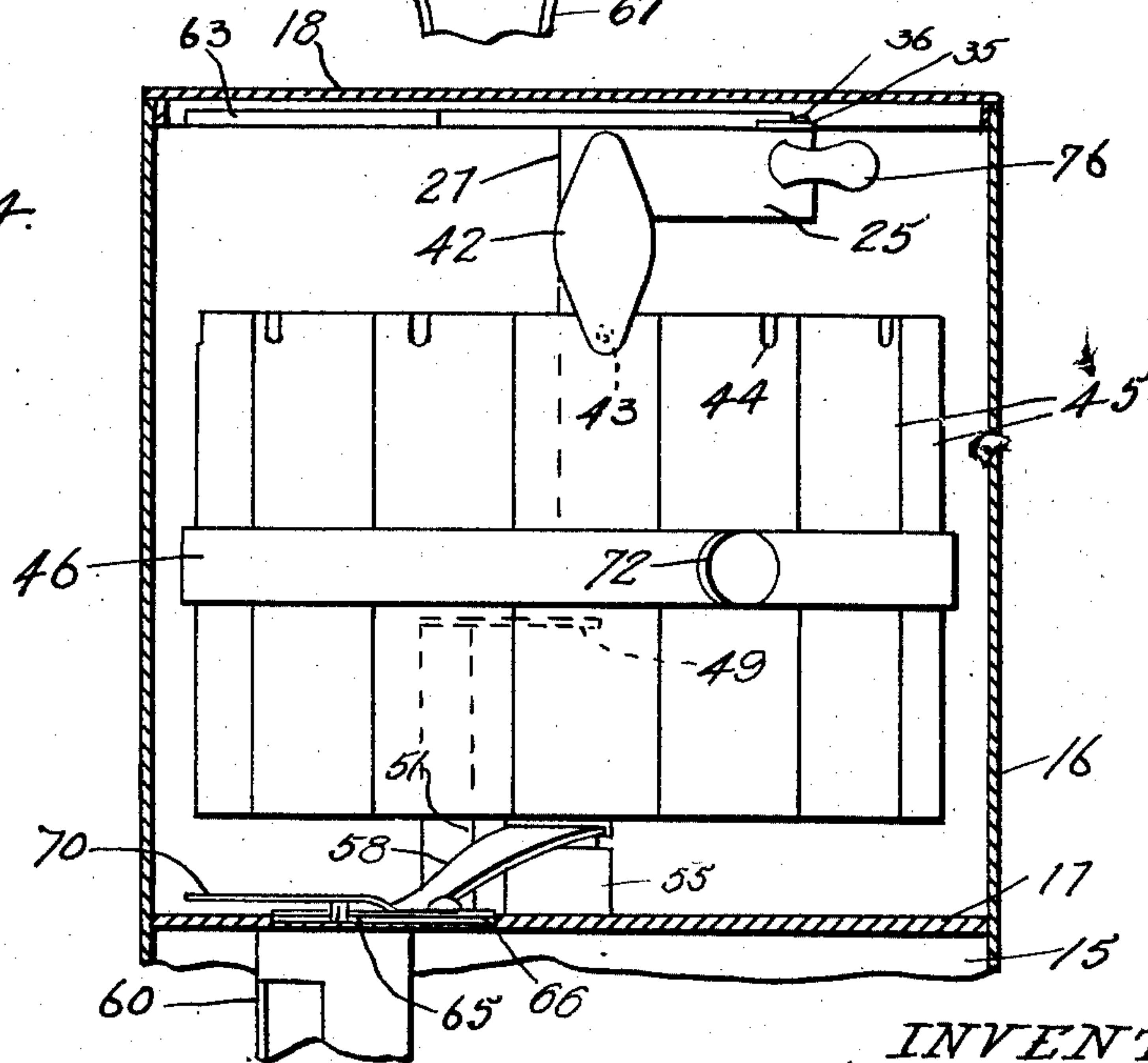


Fig. 14.



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UNITED STATES PATENT OFFICE

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VENDING MACHINE

Application filed September 20, 1928. Serial No. 307,093.

My invention relates to new and useful improvements in a vending machine wherein it is required that a receptacle as well as a coin be inserted to permit the complete operation of the device for the delivery of another receptacle, presumably a new or full one.

One of the objects of the invention is to so construct the vending machine that upon the insertion of a coin, a portion of the mechanism is unlocked whereby upon proper manipulation an aperture is uncovered for the insertion of an empty or used receptacle and after the insertion of such receptacle, the machine may be further manipulated to deliver a full or unused receptacle.

Another object of the invention is to provide means to release part of the mechanism upon forcing a coin into the coin slot and to provide for releasing the coin upon movement of the freed mechanism to a predetermined position.

A further object of the invention is the provision of several co-ordinated means which will cause the release of operating mechanism from a carrier of containers upon the insertion of a coin, and then permit the simultaneous uncovering of an inlet opening and the covering of an outlet opening, also free the coin during the early period of operation, and upon further or reverse movement of the operating mechanism, after the insertion of an empty container or receptacle, to cause the delivery of a full receptacle and the relocking of the machine.

A still further object of the invention is to utilize the coin as a connecting means between the operating mechanism and the carrier to move said carrier counter-clockwise with the operating mechanism.

With these ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring

by numerals to the accompanying drawings forming a part of this application, in which:

Fig. 1, is a top plan view of the vending machine, with a portion of the cover broken away to illustrate certain details of construction and the parts shown in the normal "rest" positions.

Fig. 2, is a similar view with the cover removed.

Fig. 3, is also a plan view with the cover and carrier removed.

Fig. 4, is likewise a plan view with the cover off and the carrier and operating mechanism removed.

Fig. 5, is a face view of the spring actuated outlet cover check.

Fig. 6, is an edge view thereof.

Fig. 7, is a section on the line 7—7 of Fig. 3 with the coin and carrier lock in elevation in the position prior to insertion of a coin.

Fig. 8, is a fragmentary view, similar to Fig. 7, illustrating the position for releasing the coin.

Fig. 9, is a view similar to Fig. 2, with the operating mechanism in the position assumed at the end of the first movement after being unlocked by the coin.

Fig. 10, is a view similar to Fig. 4, showing the position of the outlet cover at the end of the first movement.

Fig. 11, is a vertical section of the machine on the line 11—11 of Fig. 9, with the cover in place and the lower part broken away and the outlet closure shown in elevation to clearly illustrate the construction and operation thereof.

Fig. 12, is a similar section on the line 12—12 of Fig. 3, with the cover and carrier in position.

Fig. 13, is a vertical section of the machine casing or body, with the cover in place, on the line 13—13 of Fig. 9 and having parts broken away to illustrate details of construction.

Fig. 14, is a similar section on the line 14—14 of Fig. 9, the interior mechanism being wholly in elevation.

In carrying out the invention as herein embodied, 15 represents suitable supports, such as legs, for the casing or body 16 which is

preferably circular in cross-section, as shown in Fig. 1, and this casing is provided with a bottom wall 17 and has a removable cover 18 at its upper end removably secured in a place
 5 in any suitable or desirable manner. The fastening means for the cover should include a locking device 19 so that ready authorized access may be had thereto for refilling purposes, and with studs 20 co-operating with
 10 bayonet slots 21 in the flange of the cover 18 or some other convenient equivalent method for fastening the cover in place.

In the cover is a coin slot 22 having beveled edges 23 which aligns with a coin chute 24
 15 when the operating mechanism is at rest as shown in Figs. 1, 2, 3 and 7, said coin chute being carried by or forming a part of the operating mechanism. The operating mechanism includes a segment 25 having a bore
 20 26 for registration with the upper end of the vertical shaft 27 which latter is centrally located in the casing. Across the bore 26 is a pin 28 for registration with the notch 29 in the upper end of the shaft 27 for positioning
 25 the operating mechanism relative to other parts which are also connected with the shaft, as will be hereinafter described. In the bore 26 projects a lug 30 carried by the inner face of the cover 18 so as to form the upper bearing
 30 for the shaft.

On one edge of the segment 25 is slidably mounted the carrier lock 31 by means of a screw 32 or its equivalent passing through a longitudinal slot 33 in the lock 31 and having
 35 threaded connection with said segment 25. The inner end of the lock 31 projects through an aperture 34 so that the inner end or nose normally lies in the path of travel of a coin when inserted through the coin slot 22, and
 40 said lock is normally forced inward by means of a spring 35 secured intermediate its ends by a screw 36 and having one end 37 anchored, as by insertion in a hole in the segment 25, while the other or free end rides against the
 45 lug 38 and projects from the upper edge of the lock 31 and said lug also acts as the cam finger for coaction with the cam 39 carried by the inner face of the cover 18.

The cam 39 in addition to the cam surface
 50 40 is provided with the keeper notch 41 into which the lug 38 projects when the parts are at rest or in their normal positions, as shown in Fig. 1.

At the outer end of the lock 31 is a pendant
 55 42 provided with a pin 43 for coaction with apertures 44, Figs. 1, 2, 13 and 14, in the carrier tubes 45, which are open from end to end and supported for rotation about the shaft 27 by a diaphragm 46 rotatably mounted upon
 60 said shaft 27. There may be any desirable number of the carrier tubes and associated with each of these is a coin slot 47 in the diaphragm between the hub and the tubes so that they may be moved into alignment with
 65 the coin chute 24 at certain times and then

into alignment with the carry-off chute 48 at another time, the said carry-off chute leading to a suitable coin receptacle as should be obvious.

In order to prevent coins from dropping
 70 through the slots 47 except when the latter are in alignment with the carry-off chute 48, a coin rest or track 49 is provided a suitable distance below the diaphragm 46 to maintain the coin in a position which will lock the
 75 diaphragm to the coin chute 24 by means of said coin as shown by dotted lines at 50, in Fig. 7. The coin rest or track 49 is of arcuate formation and has one end connected with the carry-off chute while the other end is supported
 80 by an upright 51 having a foot 52 for connection to the bottom wall 17 of the body or casing.

It might be well to state at this time that the diaphragm 46 is positioned vertically of
 85 the shaft 27 by means of a collar 53 fixed to said shaft by a pin 54 or its equivalent.

The lower end of the shaft 27 is journaled in a bearing 55 preferably formed as a boss on the inner surface of the casing bottom
 90 wall 17 and a short distance above said bearing, a hub 56 is fixed to the shaft by a pin 57 or its equivalent and said hub carries the outlet closure 58 designed to rotate with the shaft across the outlet opening 59 in the
 95 bottom wall of the casing and which leads to a delivery pocket 60, such pocket here shown as of semi-cylindrical formation with notches 61 for the insertion of an operator's finger to remove a receptacle or container
 100 after being delivered into the pocket.

The cover 18 of the device is provided with an inlet opening 62 in alignment with the outlet opening 59 and the several carrier
 105 tubes 45 are intermittently brought into alignment with these two openings as the machine is operated. In order to close the inlet opening at certain times, a flap 63 is provided on the segment 25 and formed as a part of the operating mechanism and said
 110 flap has an opening 64 which is brought into alignment with the inlet opening 62 as the outlet opening 59 is covered by the closure 58 as indicated in Figs. 9 and 10.

When the parts are in the positions shown
 115 in Figs. 9 and 10, which is after movement of the operating mechanism clockwise, said parts are locked against the reverse or counterclockwise movement by the locking cam 65 which is in the path of travel of the outlet
 120 closure 58 in which position it is normally held by a spring 66 anchored intermediate its ends on the screw 67 which is the pivot for the locking cam and one end of said spring is set in a hole 68 in the bottom wall
 125 of the casing while the other end is set in a hole 69 in the releasing cam 70 associated with the locking cam.

The locking and releasing cams are fashioned from a single piece of material with
 130

the outer end of the locking cam 65 terminating short of the outer end of the releasing cam 70 and said cams are separated from each other throughout the major portion of their lengths as by a slit 71 and said releasing cam then bent upward so as to lie in a higher horizontal plane than the locking cam so that the outlet closure 58 may pass beneath the releasing cam 70.

In order to prevent shifting of the carrier during the time it is released from the operating mechanism and while the latter is being moved clockwise, friction discs 72 are provided, Figs. 2, 13 and 14, which are pressed against the inner surface of the casing by means of springs 73 coiled about the shanks 74 of the friction discs, said springs and shanks being mounted in holes 75 in the diaphragm 46.

The operation of the device is as follows:—

A coin, or its equivalent, such as a token, is inserted in the coin slot 22 in the cover 18 with sufficient pressure to overcome the action of the spring 35 on the lock 31 and because of the beveled edges 23, said coin may be forced inward a sufficient distance by the operator's finger to clear the cover of the casing. The insertion of the coin in this manner forces the lock 31 outward against the action of the spring 35 until the lug 38 is clear of the keeper notch 41 in the cam 39 located on the inside of the cover. At the same time the pin 43 at the lower end of the pendant 42 is disengaged from the notch 44 of one of the carrier tubes 45.

The operating mechanism is now unlocked and may be moved clockwise by actuating the handle 76 connected with the operating mechanism and working in a slot 77 in the machine casing. After a predetermined clockwise movement of the operating mechanism, the lug 38 will contact with the cam surface 40 and the lock 31 with its component parts will be forced slightly outward, as shown in Fig. 8, so as to release the coin which will then drop down the coin chute 24 and rest upon the diaphragm 46 between two of the coin slots 47 in said diaphragm on which it will ride until the complete counterclockwise or first movement has been made. At the end of the clockwise movement, the coin will drop into the next succeeding coin slot 47 and rest upon the track 49 in the position shown in Fig. 7, thereby connecting the operating mechanism and the carrier together for the next movement.

During movement of the operating mechanism as above described, the carrier will remain stationary due to contact of the friction discs 72 on the casing of the machine, but since said operating mechanism is connected to the shaft 27, the latter will be rotated so as to move the outlet closure 58

from the position shown in Fig. 4 to that illustrated in Figs. 9 and 10 so that said outlet closure will be disposed a sufficient distance across the outlet opening 59 to prevent the passage of a receptacle through said outlet opening. At the same time the flap 63, which is carried by the operating mechanism, will be moved from the position shown in Figs. 1 and 3 to the position illustrated in Figs. 9 and 11 when the aperture 64 in said flap will be in alignment with the inlet opening 62, thus permitting the insertion of a receptacle, such as an empty one, into the machine.

The flap 63 and the outlet closure 58 being in the position just described and assuming that no empty receptacle has been inserted in the machine, any attempt to move the mechanism in the reverse or counterclockwise direction is prevented by the locking cam 65 which is in the path of travel of the outlet closure 58.

In order to obtain the delivery of a receptacle from the machine, an empty one is now placed therein by inserting the same through the inlet opening 62, Fig. 1, so as to enter one of the carrier tubes 45, it being understood that there is always an empty carrier tube after each operation of the machine and said empty carrier tube is in alignment with the inlet and outlet openings.

The machine may now be actuated in the counterclockwise direction since the empty receptacle resting upon the outlet closure 58 will engage the releasing cam 70 and move it outward against the action of the spring 66 and since the locking cam 65 is a part of the releasing cam, said locking cam will likewise be moved outward out of the path of travel of the outlet closure 58 and as soon as a sufficient counterclockwise movement of the mechanism has been made, the succeeding carrier tube 45 with a full receptacle will be moved into alignment with the outlet opening 59 which latter has been opened due to the withdrawal of the closure 58, a full receptacle in said succeeding carrier tube will drop out of the machine into the delivery pocket 60 from which it may be removed by the operator or purchaser. The movement of the carrier with the operating mechanism in the counterclockwise direction is due to the position of the coin 50 as shown in Fig. 7, and since said coin is riding upon the track 49, which terminates at the carry-off chute 48, said operating mechanism and carrier will be moved together until the coin aligns with said carry-off chute at which time it will drop therein and be directed to some point of disposal, as into a collection box (not shown). During this movement, the aperture 64 in the flap 63 will be moved out of alignment with the inlet opening 62 so that the imperforate portion of the flap will cover said inlet opening.

Upon completion of the counterclockwise movement, the lug 38 on the lock 31, Figs. 1,

7 and 8, will ride off the cam surface 40 and be projected into the keeper notch 41 in the cam 39 and since the pendant 42 is carried by said lock, the pin 43 on said pendant will be projected into the notch 44 of the carrier tube 45 which has been moved into the position illustrated in Fig. 7.

From the foregoing description, it will be apparent that I have produced a vending machine which is practically fool-proof and which prevents the vending of a full receptacle until both a coin and an empty receptacle has been placed therein. One of the outstanding advantages of the construction illustrated and described is that a coin must be first inserted and the perspective purchaser does not lose said coin unless he is without an empty receptacle.

Of course I do not wish to be limited to the exact details of construction as herein shown as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is:—

1. A machine for vending merchandise in returnable receptacles comprising a casing having vertically aligned inlet and outlet openings, a cam provided with a keeper notch carried by the casing, an operating mechanism, a coin actuated locking means spring pressed in one direction and included as a part of the operating mechanism and coacting with the cam-keeper, a rotatable carrier for receptacles connectible to the operating mechanism through the medium of a coin, said locking means also coacting with the carrier whereby said carrier is locked to the operating mechanism and the latter to the casing but unlocked upon insertion of a coin through a slot in the top of the casing, said coin being temporarily held by the locking means during an initial movement of the operating mechanism, and closures for the inlet and outlet openings to simultaneously cover one and uncover the other of said openings upon movement of the operating mechanism.

2. A machine for vending merchandise in returnable receptacles comprising a casing having vertically aligned inlet and outlet openings, a carrier for receptacles rotatably mounted within the casing, an operating mechanism reciprocatingly mounted in the casing, coin controlled locking means for locking the carrier to the operating means and the latter to the casing in an at-rest position but when unlocked permitting an independent movement in one direction of the operating mechanism, means to cause a coin to connect the operating mechanism with the carrier whereby the two may be moved together in an opposite direction, a closure movable with the operating mechanism to uncover the inlet opening at the end of the first

movement, a closure movable with the operating mechanism to cover the outlet opening at the end of the first movement, and means coacting with the last named closure and controlled by a returnable receptacle to lock the movable parts in a semi-open condition.

3. A machine for vending merchandise in returnable receptacles comprising a casing, a central vertical shaft, a segment fixed to the upper end of said shaft, a coin chute carried by said segment and adapted to align with a coin slot in the top of the casing when the parts are in an at-rest position, a carrier for receptacles rotatably mounted on the shaft and connectible with the coin chute through the medium of a coin when the latter enters in one of a number of coin slots in the carrier, a cam-keeper on the inside of the top of the casing, a locking means slidably mounted on the segment and spring pressed inwardly for coaction with the cam-keeper and the carrier to lock the latter to the segment and said segment to the casing, but releasable upon the insertion of a coin which will be temporarily retained in the upper end of the coin chute by the locking means until the latter is released by the cam, means on the shaft normally covering an inlet opening in the top of the casing but uncovering said opening during the first part of the operating movement of the machine to permit the insertion of an empty receptacle, and means also carried by the shaft to cover an outlet opening in the bottom of the casing during the first movement of the machine and on which an empty receptacle rests upon insertion in the machine and uncovering said outlet opening during the second part of the movement of the machine, and means controlled by the returned receptacle to lock the mechanism at the end of the first part of the movement.

4. The structure set forth in claim 3 wherein the carrier includes a plurality of tubes opened from end to end to receive and convey receptacles toward the outlet opening and away from the inlet opening.

5. A machine for vending merchandise in returnable receptacles including a casing having vertically aligned inlet and outlet openings, means to support receptacles which are resting on the bottom of the casing in upright positions and move them toward the outlet opening, operating mechanism movable in one direction upon insertion of a coin and connectible to the means by said coin and movable in the opposite direction in connection with said means after the first movement by the insertion of a receptacle, means to support the inserted receptacle until the latter is beyond the outlet opening.

6. A machine for vending merchandise in returnable receptacles including a casing having vertically aligned inlet and outlet openings, a carrier including a plurality of tubes opened at both ends whereby receptacles

placed therein will rest upon the bottom of
the casing and be supported in an upright po-
sition for movement toward the outlet open-
ing by said carrier, said tubes having notches
5 in their upper ends, operating mechanism
provided with means for registration with the
notches in the tubes and movable in one di-
rection upon insertion of a coin and connecti-
ble to the carrier through the medium of said
10 coin, said operating mechanism being mov-
able in the opposite direction after the com-
pletion of the first movement and upon in-
sertion of a receptacle through the inlet open-
ing, said carrier then being moved with the
15 operating mechanism, means to prevent retro-
grade movement of the carrier and means to
support the inserted receptacle until the lat-
ter is beyond the outlet opening.

In testimony whereof, I have hereunto af-
20 fixed my signature.

JOHN E. CARROLL.

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