

Feb. 17, 1953

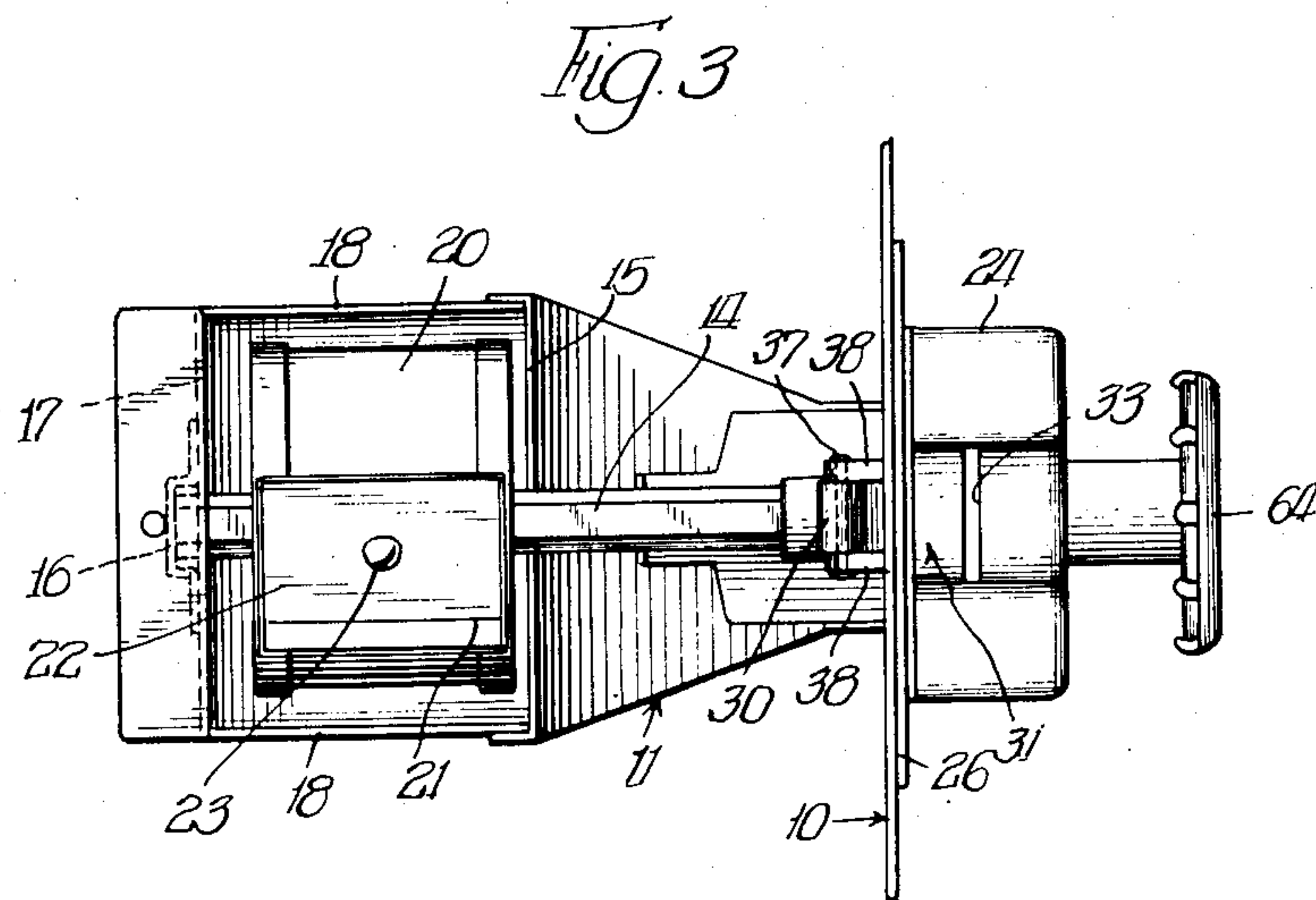
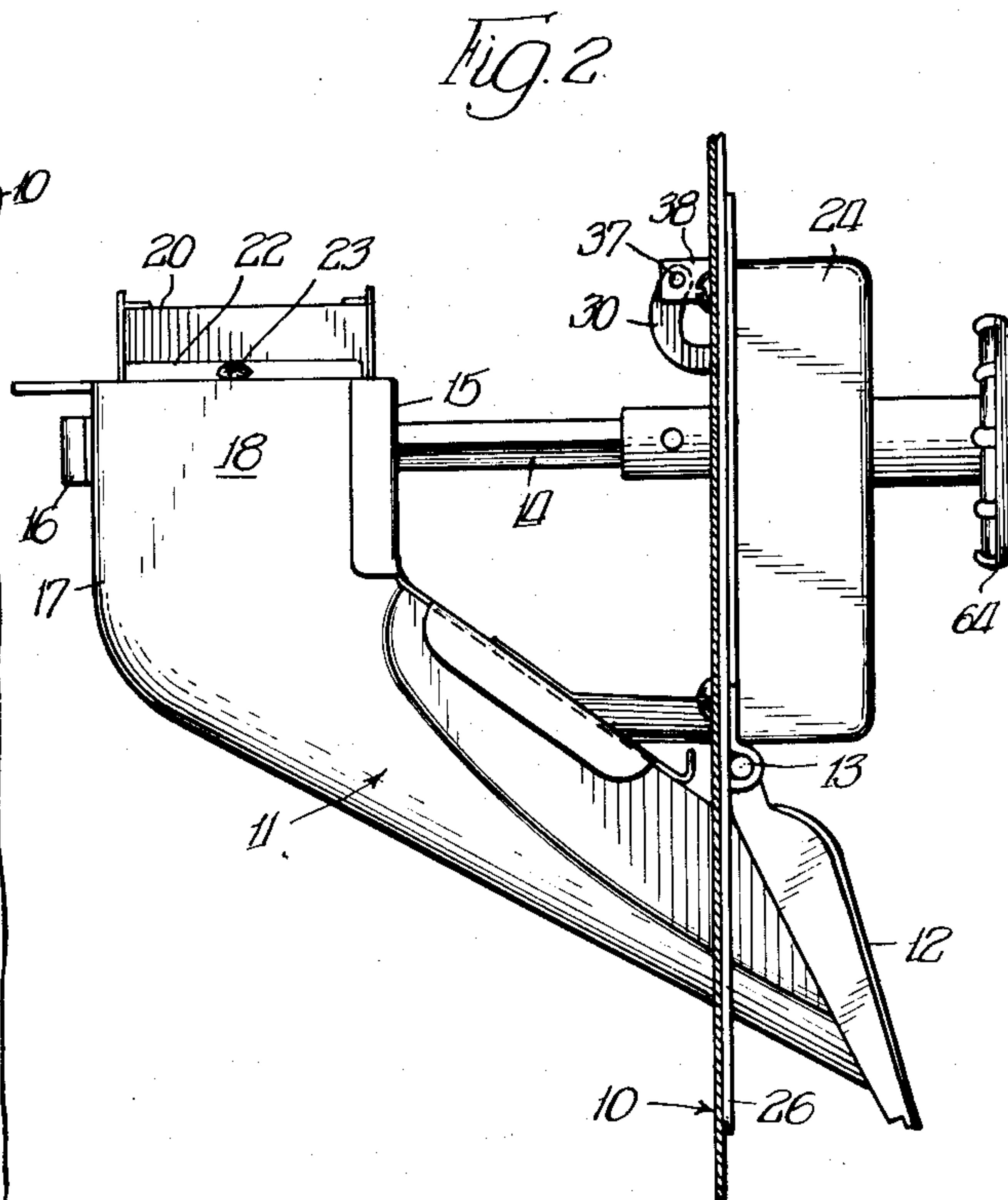
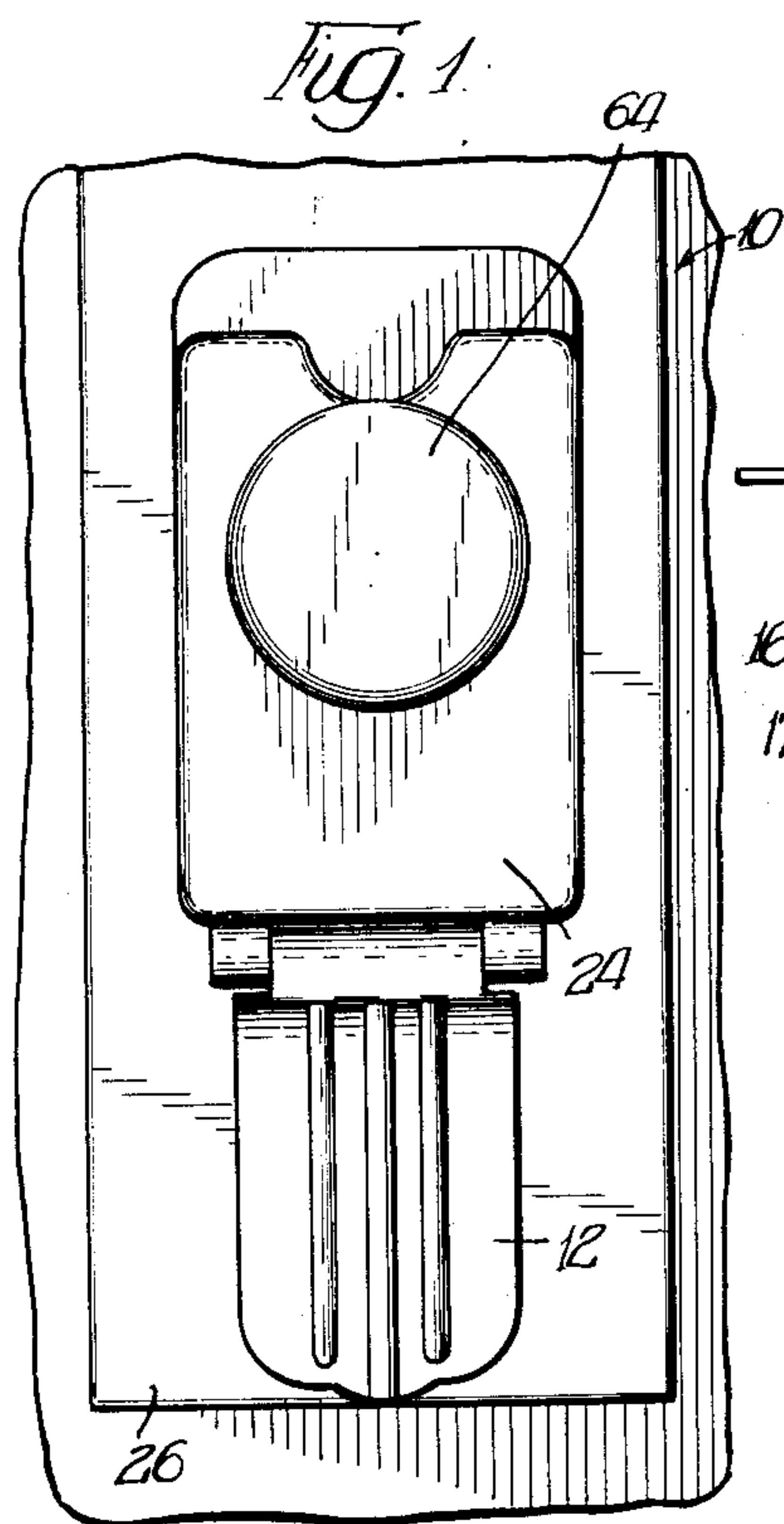
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COIN-CONTROL MECHANISM FOR VENDING MACHINES

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3 Sheets-Sheet 1



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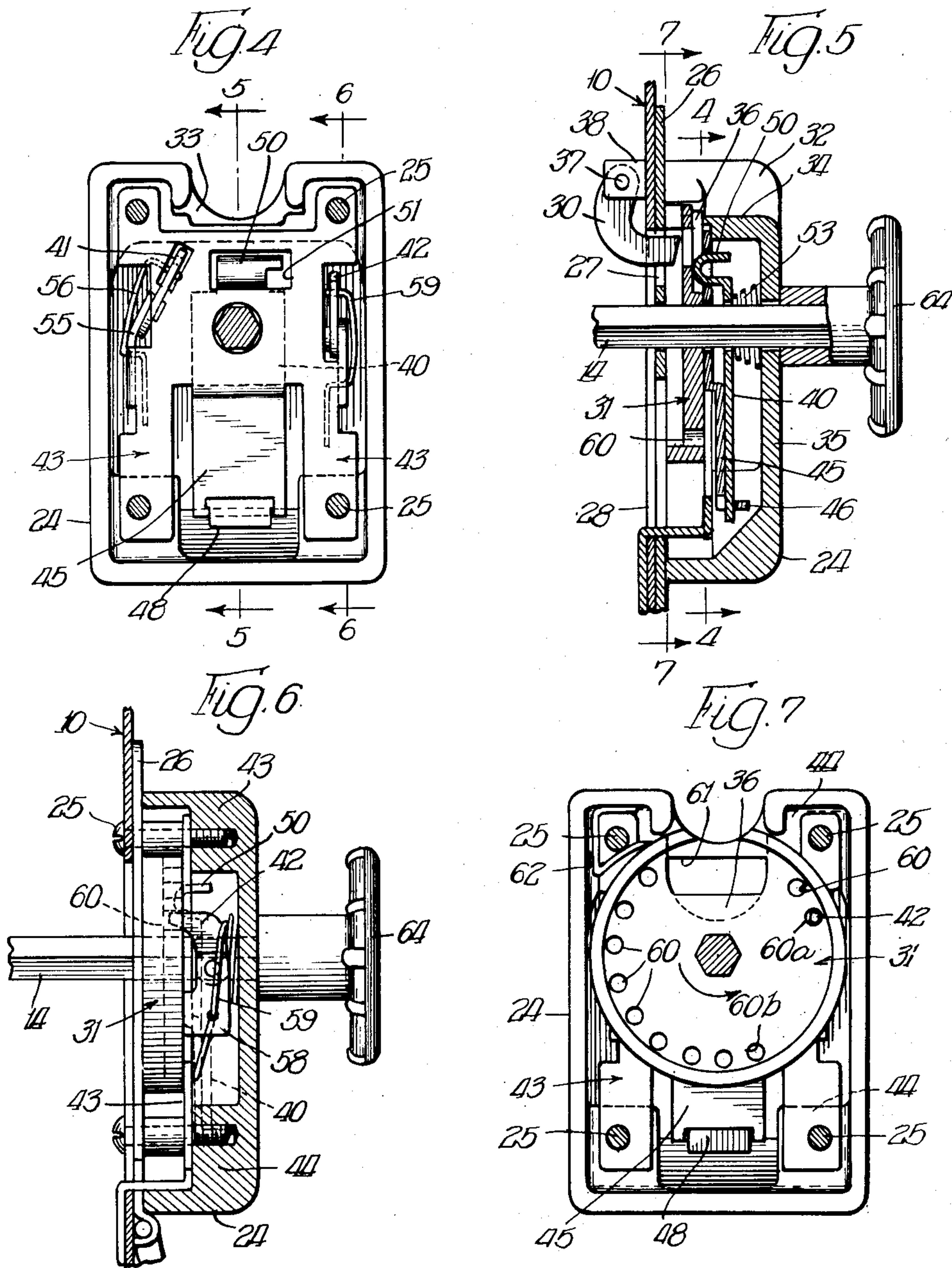
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COIN-CONTROL MECHANISM FOR VENDING MACHINES

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3 Sheets-Sheet 2



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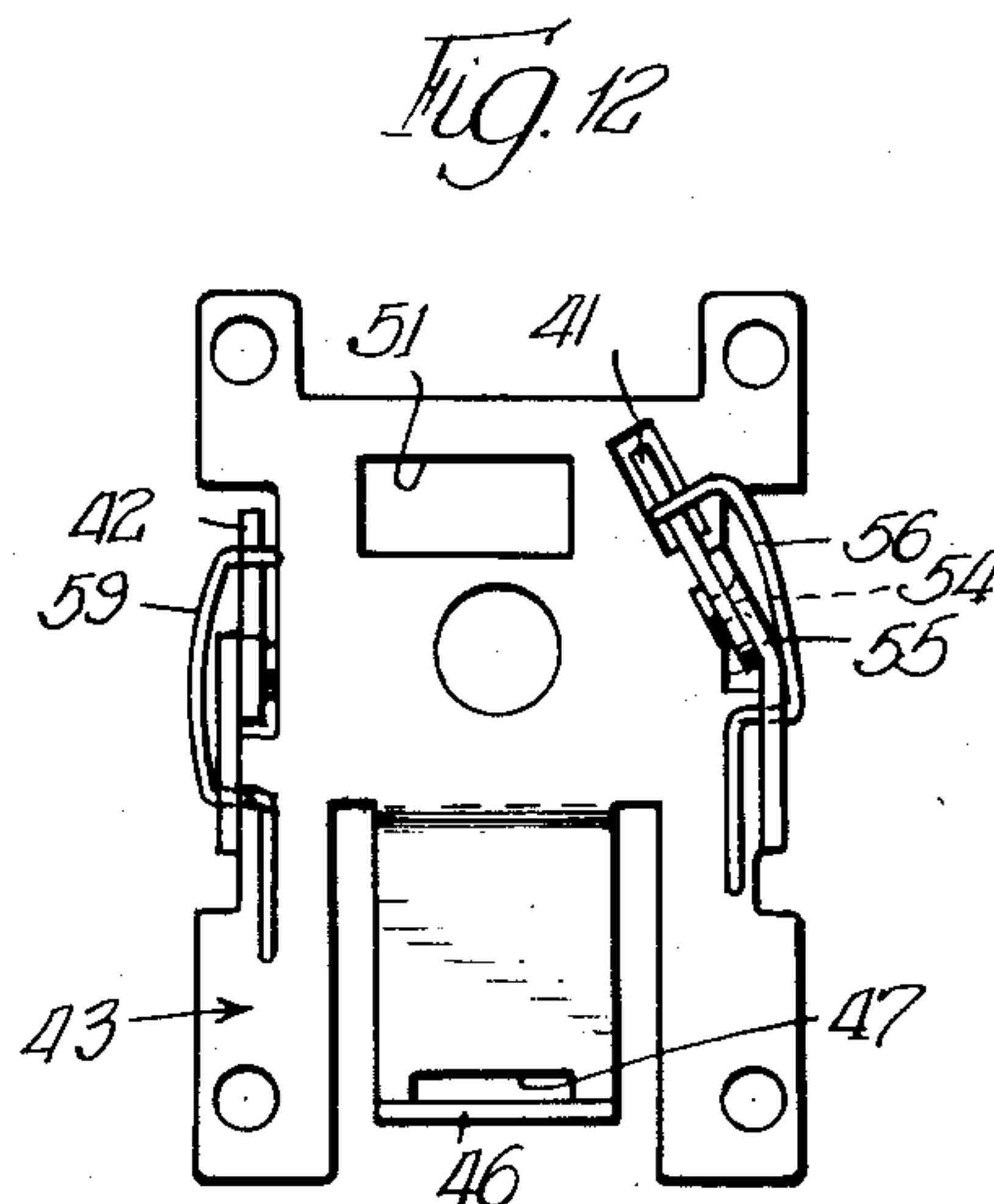
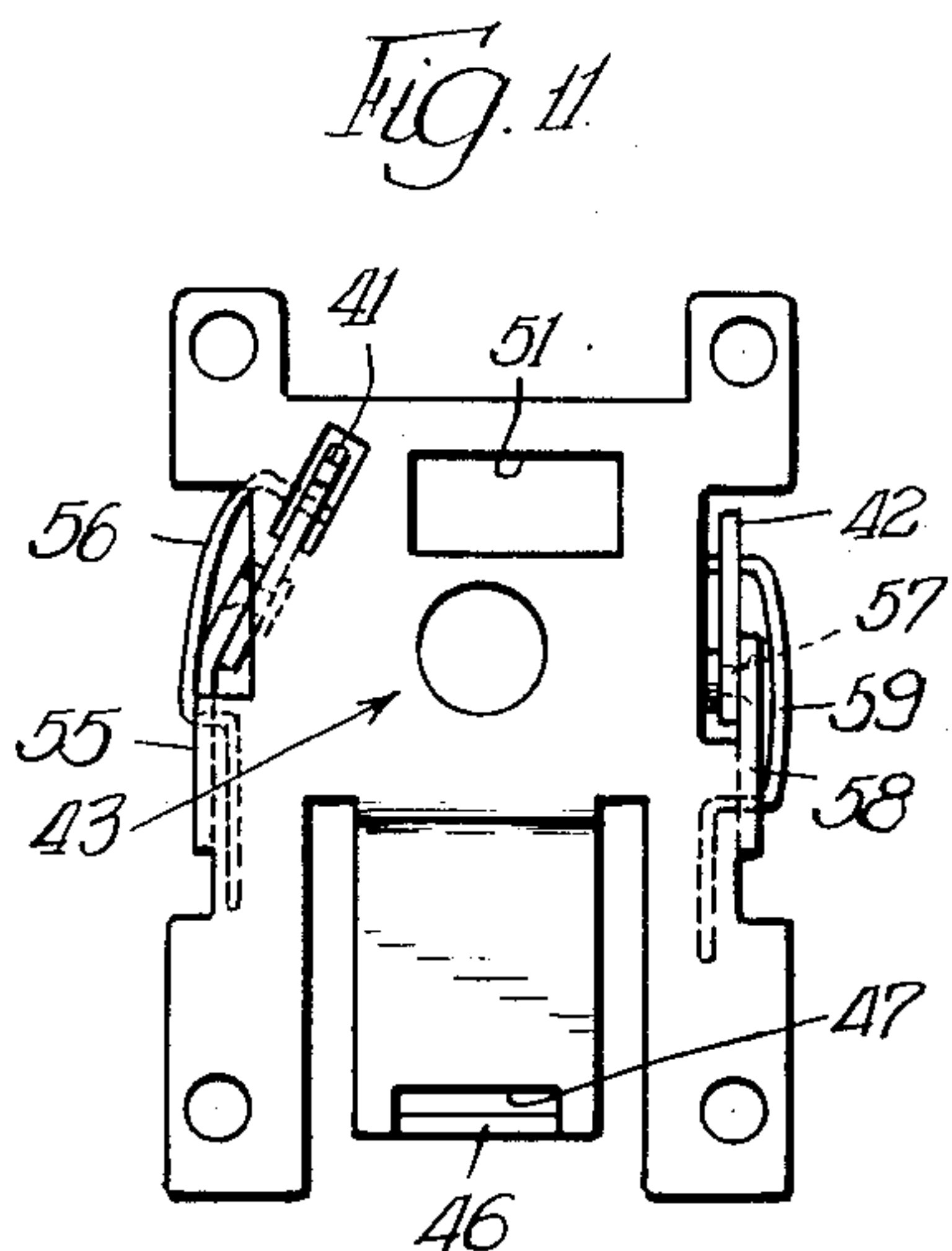
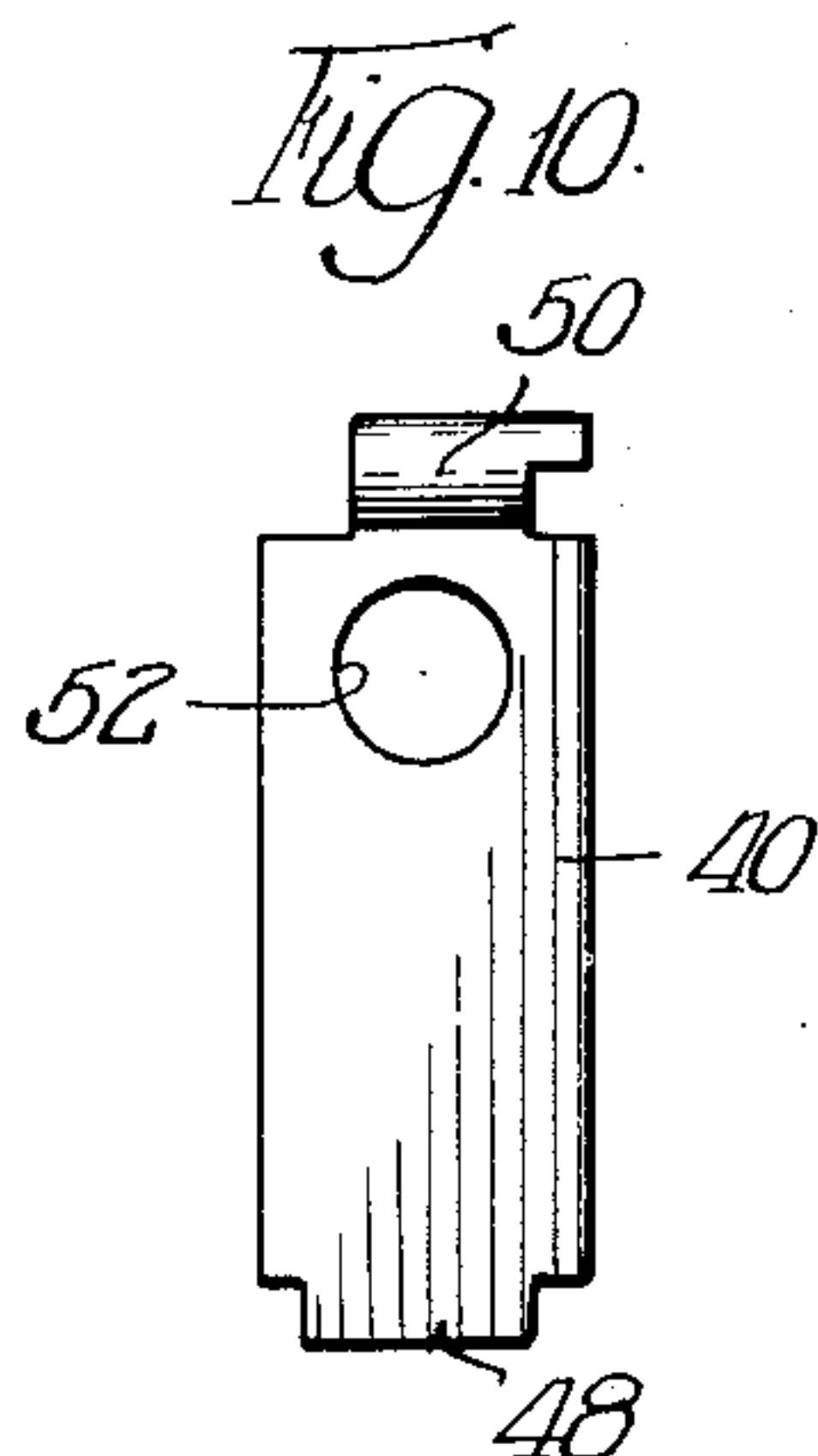
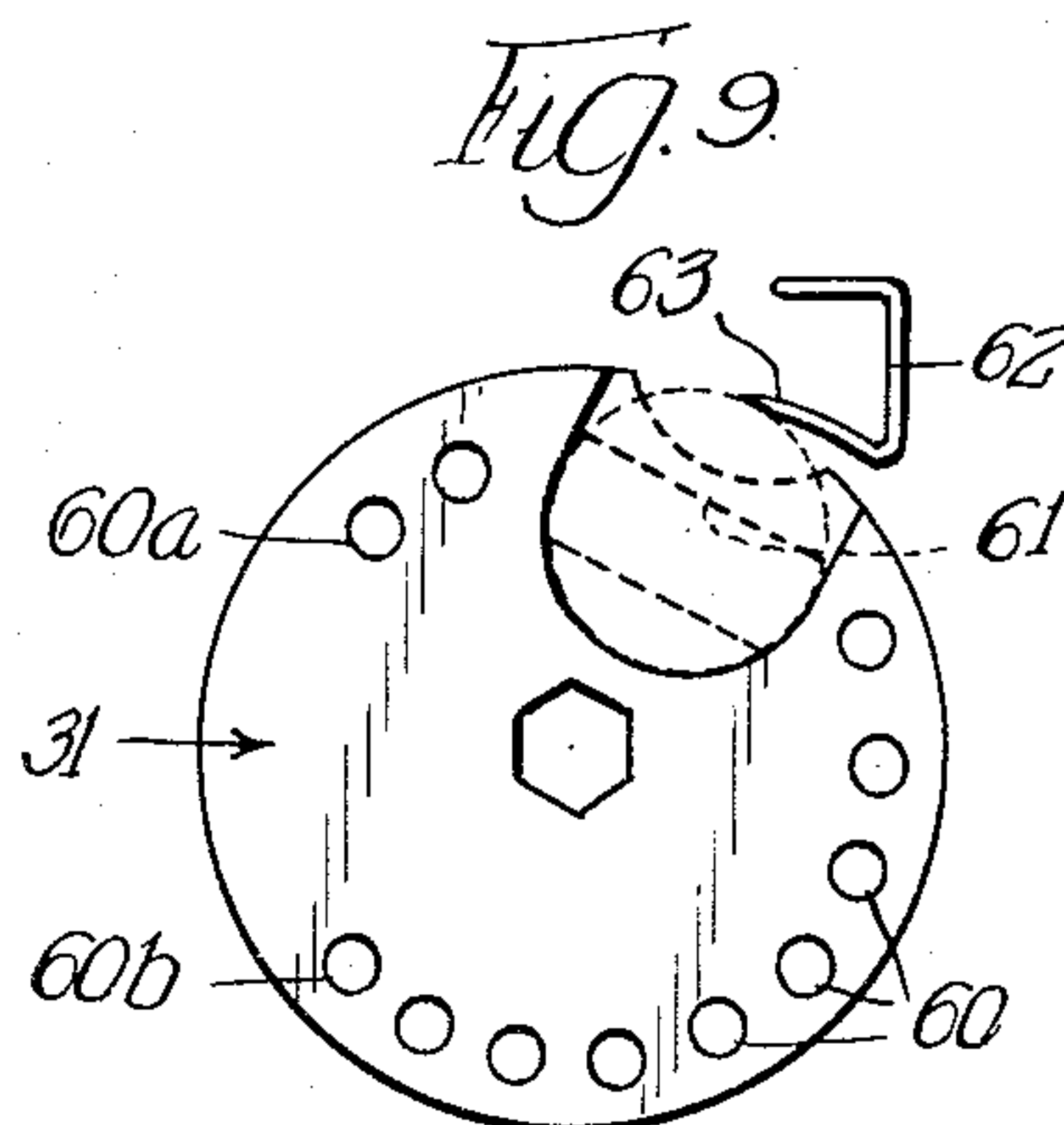
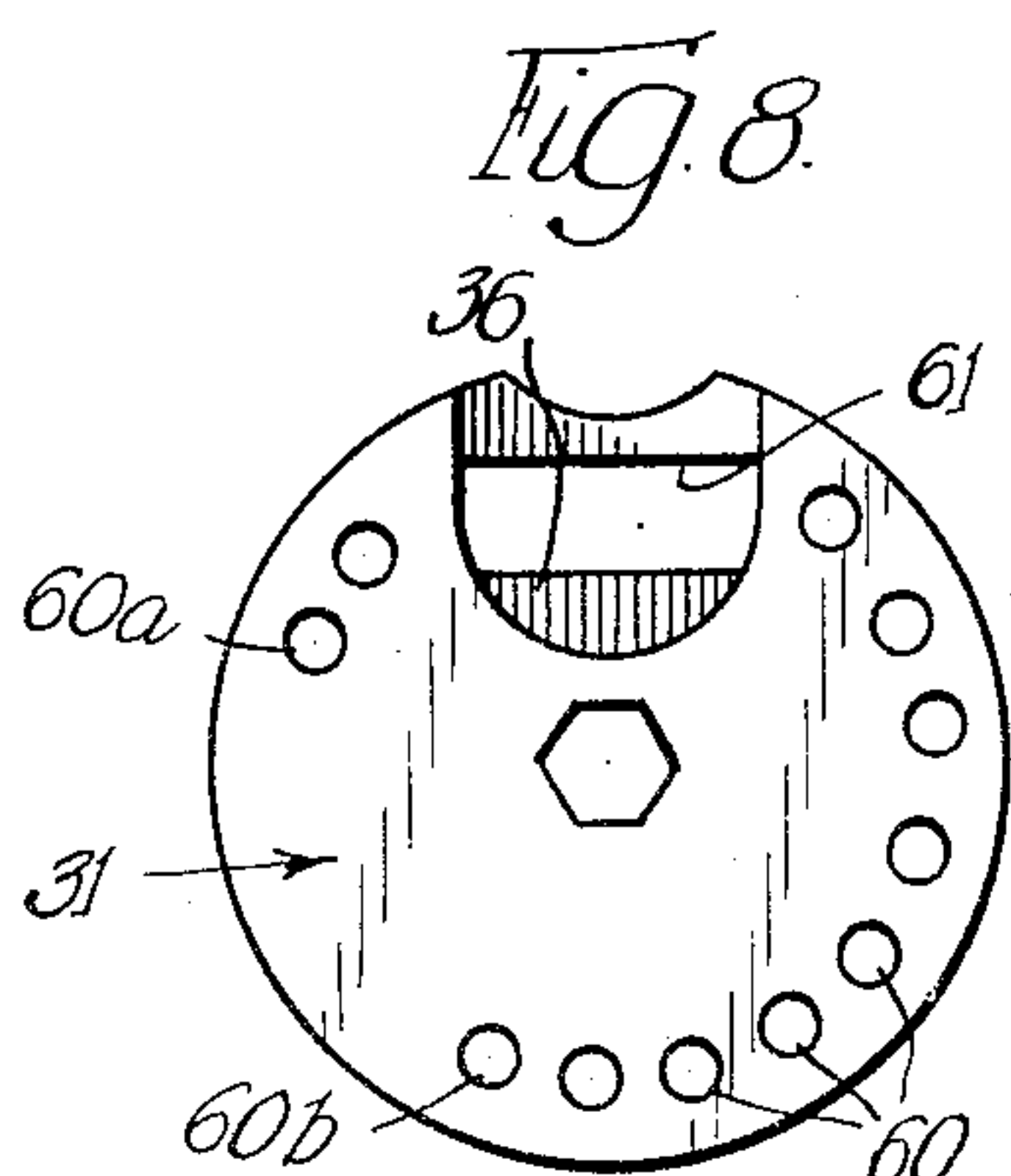
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COIN-CONTROL MECHANISM FOR VENDING MACHINES

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3 Sheets-Sheet 3



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# UNITED STATES PATENT OFFICE

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## COIN-CONTROL MECHANISM FOR VENDING MACHINES

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3 Claims. (Cl. 194—61)

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The invention relates to vending machines for dispensing a confection or the like and has reference more particularly to dispensing mechanism which will be coin controlled, requiring the insertion of a coin of the proper denomination in the machine for releasing the dispensing mechanism before the operator is able to rotate the shaft of said mechanism in a dispensing direction.

An object of the invention resides in the provision of improved coin controlled mechanism for vending machines which will be relatively simple in construction and economical to manufacture, employing a minimum of parts that can be stamped from sheet metal and easily assembled into an operative unit.

Another and more specific object is to provide coin controlled mechanism having an improved operating member in the form of a coin wheel provided with a coin receiving cavity or recess which upon receiving a coin will effect release of the mechanism for dispensing purposes. The coin wheel as a result of its coin receiving recess has coaction in a novel manner with a locking arm and with a safety locking pawl, both said elements locking the coin wheel against rotation in a dispensing direction by contact with an edge of the coin receiving cavity therein.

Another object of the invention is to provide locking mechanism including a coin wheel having a coin receiving recess and which is locked in position to receive a coin by a spring energized locking arm, the said arm functioning to release the coin upon insertion of a coin and said arm together with the safety pawl holding the coin in its seat during initial rotation of the coin wheel.

Another object of the invention is to provide locking mechanism as above described wherein the safety locking pawl is operative, following initial rotation of the coin wheel to a predetermined extent, to arrest further rotation in the event a perforated slug has been inserted in the coin receiving recess or in the event the locking arm has been manipulated and the coin wheel rotated without the insertion of a coin. In this connection, although the safety locking pawl prevents further rotation of the coin wheel in a dispensing direction it does not prevent reverse rotation so that the coin wheel can be returned to its initial coin receiving position, in which position the slug can be removed or a coin of the proper denomination inserted.

Another object of the invention resides in the provision of a coin control mechanism as above described wherein the coin wheel will have associated therewith a magnetic slug detector capable

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of operating automatically to prevent rotation of the coin wheel in the event a slug is inserted in the coin receiving recess thereof.

A further object of the invention is to provide locking mechanism for coin control vending machines which will include a rotatable coin wheel of the character described having associated therewith a reverse locking pawl coacting with openings selectively spaced around the periphery of the wheel so that the wheel will be held against rotation in a reverse direction whenever the reverse locking pawl has location in one of said openings.

Another object of the invention is to provide locking mechanism as described wherein the openings in said coin wheel are arranged with respect to the reverse locking pawl so that initial rotation in a dispensing direction will take place to a predetermined extent before said pawl functions to prevent reverse rotation.

A further object is to provide coin controlled dispensing mechanism of the type described wherein the locking arm, safety locking pawl and reverse locking pawl are carried by a single plate member which provides a mounting for all said parts, thereby facilitating assembly of the mechanism.

A still further object is to provide coin controlled dispensing mechanism which will be practically fool-proof against the use of slugs of various types, but which may be readily actuated when a coin of the proper denomination is inserted, the same permitting a complete revolution of the dispensing shaft whereupon the parts are reset for another operation.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation as will be more fully described and particularly pointed out in the specification, drawings and claims appended hereto.

In the drawings which illustrate an embodiment of the invention and wherein like reference characters are used to designate like parts—

Figure 1 is a front elevational view illustrating dispensing mechanism embodying the improved features of the invention and which is illustrated as applied to a vending machine;

Figure 2 is a side elevational view showing the dispensing mechanism of the invention applied to a machine for vending peanuts;

Figure 3 is a top plan view of the combination shown in Figure 2;

Figure 4 is a vertical sectional view taken substantially along line 4—4 of Figure 5 and illus-



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trating the construction and arrangement of the locking arm and locking pawls which comprise the control elements of the present mechanism;

Figure 5 is a vertical sectional view taken transversely through the locking mechanism of the invention substantially along line 5—5 of Figure 4 and which clearly illustrates the locking action of the locking arm with respect to the coin wheel;

Figure 6 is a vertical sectional view taken transversely through the locking mechanism of the invention substantially along line 6—6 of Figure 4 and illustrating the locking action of the reverse locking pawl with respect to the coin wheel;

Figure 7 is a vertical sectional view substantially along line 7—7 of Figure 5 and looking in the direction of the arrows;

Figure 8 is a view showing the coin wheel in front elevation;

Figure 9 is a view similar to Figure 8 but illustrating the action of the detector spring with respect to a coin located in the coin recess of the coin wheel;

Figure 10 is a view in front elevation showing the locking arm for the coin wheel;

Figure 11 is an elevational view of the supporting plate for the locking arm and locking pawls looking at the side of the plate located adjacent the coin wheel; and

Figure 12 is an elevational view of the same plate as shown in Figure 11 but illustrating the side of the plate located adjacent the locking arm.

Referring to the drawings, particularly Figures 1, 2 and 3, which disclose a preferred embodiment of dispensing mechanism for illustrating the present invention, the numeral 10 indicates the main housing frame of the machine which suitably supports the chute 11, the same extending through an opening in the frame to the exterior of the machine for dispensing the confection to the operator. The dispensing end of the chute is normally closed by the cover flap 12 suitably pivoted at 13. The dispensing shaft 14 extends through wall 15 of the chute 11 and is journaled at 16 in wall 17 of the chute, the said walls 15 and 17 being joined by side walls 18 to form a substantially square enclosure which constitutes the top end of chute 11. A dispensing drum 20 is located within said enclosure and is suitably mounted by shaft 14 so as to rotate with said shaft. The drum is provided with a recess or opening 21, the depth of which may be adjusted by regulation of the bottom member 22 through manipulation of the screw 23. This cavity in a coin receiving position of shaft 14 is located as shown in Figures 2 and 3, in which position the cavity will be filled with the confection to be dispensed and upon rotation of shaft 14 in a dispensing direction the material will be discharged into chute 11 and delivered to the operator.

The invention provides coin controlled mechanism for controlling the rotation of the dispensing shaft 14, which shaft extends through housing wall 10 and has its outward projecting end journaled by the housing 24. Within said housing 24 is mounted the mechanism for normally locking shaft 14 against rotation but which is releasable upon the insertion of a coin of the proper denomination in the coin receiving slot of said housing. The housing 24 is substantially rectangular in front elevation, as clearly evident from an inspection of Figures 4, 5 and 7, and said housing is suitably secured to wall 10 of the ma-

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chine by means of securing screws 25 located in the respective corners of the housing. It will be observed that a plate 26 is interposed between wall 10 and housing 24, said plate being retained in position by the securing screws 25. The plate is provided with an opening 27 in alignment with a much larger opening 28, Figure 5, formed in wall 10 so that the pivoted magnet 30 may extend through said aligned openings for coaction with the coin wheel indicated in its entirety by numeral 31, and which will be more particularly set forth as the description proceeds.

The top wall of housing 24 is provided with a U-shaped depression 32 which has the effect of providing a coin receiving opening 33, the same having location between member 26 and the top wall 34 of said housing 24. The coin wheel 31 is mounted on the dispensing shaft 14 so as to rotate therewith. For this purpose shaft 14 is non-circular as regards its exterior so that the coin wheel is readily mounted thereon in a manner to rotate with the shaft. The surface of the coin wheel 31, directed toward the front wall 35 of housing 24, is provided with a coin receiving recess or cavity 36, as shown in Figures 8 and 9, the recess extending from the periphery of the coin wheel radially toward the center and having an area and depth such as to receive a coin of the desired denomination for which the machine may be designed. In accordance with the invention the coin wheel 31 is normally locked against rotation in both directions when in a coin receiving position, in which position the recess 36 is located in vertical alignment with the coin receiving opening 33.

The locking means essentially consists of a locking arm 40, Figure 10, a safety locking pawl 41, and a reverse locking pawl 42. Both said pawls and the locking arm are carried by a mechanism supporting plate 43 which is suitably housed within housing 24 and secured in position within said housing by the securing screws 25 which hold the plate in contact with bosses 44. Said bosses 44 are formed integral with the housing 24 and are located at the respective corners of the housing as is evident from an inspection of Figures 4 and 7. The mechanism support plate 43 is positioned adjacent the front surface of coin wheel 31, which surface has formed therein the coin receiving recess 36. A coin deposited in the recess is accordingly retained in said recess until the coin wheel is rotated for a half revolution which locates the recess adjacent the center forwardly indented portion 45 of the mechanism support plate 43, whereby as a result of the indented position of this portion the coin is free and the same therefore drops out of its coin receiving recess in the coin wheel to be eventually delivered to the coin box of the machine. The portion 45 is provided with a horizontally disposed flange 46 which is apertured at 47 for receiving the end 48 of the locking arm 40. This pin and slot connection functions to pivotally mount the locking arm on the mechanism support plate and to position its latching head 50 through opening 51 provided for the purpose in the plate, said structure being clearly shown in Figures 4 and 5. The locking arm 40 is provided with a central opening 52 through which shaft 14 extends and the arm is resiliently biased in a direction toward the coin wheel 31 by the coil spring 53. The biasing action of said coil spring is sufficient to force the locking head 50 of the locking arm toward coin wheel 31 which thereby maintains the locking head 50 in cavity 36 when the coin wheel is located in a coin receiving posi-



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tion. The action of locking head 50 is such as to engage, and its right hand edge has been designed to engage, an edge of the coin receiving recess thus locking the coin wheel 31 against rotation in a dispensing direction.

This locking of the coin wheel is supplemented by the safety locking pawl 41 pivoted at 54 to arm 55 integral with the mechanism support plate 43. The safety locking pawl is yieldingly urged in a direction toward coin wheel 31 by the spring 56 and said pawl is so positioned with respect to the coin receiving recess 36 as to drop into said recess and engage an edge of the same to thereby prevent any further rotation of the coin wheel in a dispensing direction. Of course, the safety pawl 41 is prevented from having any such locking action when a coin of the proper denomination is positioned within the coin receiving recess 36. Therefore when the operator has deposited the proper coin in the recess it will be seen that the locking arm 40 is actuated into a release position which frees the coin wheel 31 for rotation in a dispensing direction, and since initial rotation will bring the coin into contact with safety pawl 41 the pawl is thus prevented from engaging the edge of the coin receiving recess and the operator is thus able to continue rotation of the dispensing shaft 14 to complete a dispensing operation.

The locking action of coin wheel 31 is further supplemented by the reverse locking pawl 42 pivoted at 57 to arm 58 formed integral with the mechanism support plate 43. The spring 59 serves to yieldingly force the pawl in a direction toward the coin wheel 31. For coaction with said pawl the coin wheel is provided with a plurality of spaced openings 60. Said openings are spaced around the periphery of the coin wheel in accordance with the invention, as best shown in Figure 7. This spacing has been selected for a particular purpose, that is, to prevent reverse rotation of the coin wheel at certain times and to allow reverse rotation to take place at other times. It will be seen from Figure 7 that the coin wheel 31 is held against reverse rotation by the pawl 42 which has location in opening 60a. The action of said pawl 42 is supplemented by the locking arm 40 which holds the coin wheel against rotation in a dispensing direction when in this coin receiving position since the locking head 50 of said arm is normally urged against the seat of the coin receiving recess and thus prevents rotation of the coin wheel by engaging an edge of the recess. If a coin is inserted in the recess at this time the locking arm is released and since pawl 42 does not prevent rotation in a dispensing direction the operator is able to rotate shaft 14. It will be seen by referring to Figure 7 that the openings 60 are omitted between opening 60a and 60b. Accordingly, the reverse locking pawl 42 is not operative during this interval and therefore it is possible for the operator to return the coin wheel to initial position following a dispensing rotation to a predetermined extent. However, if the dispensing rotation of shaft 14 is continued to such an extent where an opening 60b comes into alignment with pawl 42 it will thereafter be impossible to return the shaft in a reverse direction to initial position. In such case the dispensing rotation must be continued until one revolution of the shaft has taken place, whereupon the coin will be ejected and the parts returned to initial coin receiving position and locked by the locking arm and reverse locking pawl as described.

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The construction of the locking head 50 and its mode of operation is such that the locking arm is released only upon the insertion of a coin of the proper thickness so that the locking action of the locking mechanism is to reject thin coins or slugs. However, in the event perforated slugs of the proper thickness are employed to release the locking arm, then the safety locking pawl 41 becomes operative since this pawl will drop into the opening in the slug and will in this manner prevent further rotation of shaft 14 in a dispensing direction. It is, of course, possible to reverse the rotation of shaft 14 to locate the parts in initial coin receiving position, whereupon the rejected slug can be withdrawn. Should the locking arm 40 be released by manual manipulation of the arm, as by the insertion of a member in the coin receiving opening to release the locking head 50, the operator will be able to rotate shaft 14 to a limited extent only since the safety locking pawl 41 will drop into the coin receiving recess and prevent further rotation of the coin wheel by contact of the pawl with the rear edge of the recess. However, it is possible to reverse the rotation of shaft 14 to again locate the parts in an initial coin receiving position.

Reference has been previously made to the pivoted magnet 30 pivoted at 37 to the arm 38 extending rearwardly from the wall 10 of the dispensing member. Under normal circumstances the magnet is positioned so that it does not interfere with the coin wheel 31. However, should an iron or steel slug be inserted in the recess 36 the slug will be located so close to the magnet as to attract the same, in which case its forward projecting end will enter opening 61 formed in the wall of the coin wheel 31 at the coin receiving recess. Therefore as long as the slug remains in the recess the magnet will prevent rotation of the coin wheel notwithstanding that the slug is operative to release the locking arm 40. The insertion of a coin in the recess 36 will not affect magnet 30 since neither copper nor silver will attract the magnet. The magnetic detector is therefore selective, having actuation to prevent rotation of the coin wheel only upon the insertion of an iron or steel slug.

As best shown in Figures 7 and 9 the invention provides another slug detector in the form of a flat spring member 62 having an arm 63 provided with a sharp edge. When the coin wheel is rotated with a coin positioned in the recess thereof, said coin will engage the sharp edge of the arm 63 of said spring and for metal coins and slugs the said arm will be caused to ride over the same, thereafter engaging the periphery of the coin wheel and maintaining contact therewith. The spring 62, however, performs its detecting function when a slug of soft cardboard or the like is inserted. In this case the sharp edge of arm 63 will dig into the periphery of the cardboard slug instead of freely riding over the same and as a result further rotation of the coin wheel is effectively prevented. The only alternative for the operator is to reverse the coin wheel, again locating the parts in initial position, whereupon the slug can be removed.

The invention as above described provides improved means of novel construction for locking vending machines, preventing operation for dispensing purposes but which may be released by the insertion of a coin of the proper denomination. This dispensing shaft 14 of the present device is conveniently provided with the handle 64 to be actuated by the operator for rotating said



dispensing shaft. With said shaft and the coin wheel in a coin receiving position the parts are locked against rotation by locking arm 40 supplemented by the locking pawl 42. Whereas, the action of the arm is to prevent rotation in a dispensing direction, the action of pawl 42 is to prevent rotation in a reverse direction. When a coin is inserted in recess 36 the same actuates the head 50 of the locking arm to effect release of the same, thus permitting rotation in a dispensing direction. The slug detectors such as the magnet 30 and spring 62 are inoperative as regards the coin and the safety locking pawl 41 is also rendered inoperative so that rotation of the dispensing shaft can be continued by the operator for a complete revolution to effect a dispensing operation. The coin is automatically discharged from the recess during said rotation and upon completion of one revolution the parts are again locked in coin receiving position.

The invention is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings as various forms of the device will of course be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

What is claimed is:

1. In dispensing mechanism, the combination with a rotatable shaft capable of effecting a dispensing operation when rotated in a dispensing direction, a coin wheel on said shaft rotating therewith, said coin wheel having a recess therein for receiving a coin, locking means for the coin wheel locking the wheel and thus the shaft against rotation but releasable upon the insertion of a coin in the recess to permit rotation in a dispensing direction, a housing having a front wall provided with an opening through which the said shaft extends, said housing enclosing the coin wheel and said locking means and having a coin slot with which the recess is aligned when the coin wheel is in coin receiving position, a mechanism support plate located within and secured to said housing and disposed between the coin wheel and the front wall of the housing, said locking means being pivotally supported by said mechanism support plate and having an opening therein through which said shaft extends, a resilient coil spring encircling the shaft and backed by the front wall of the housing for yieldingly urging the locking means in a direction to engage the seat of said coin receiving recess to lock the coin wheel against rotation in a dispensing direction, and a reverse locking pawl having coaction with openings in the coin wheel for locking the wheel against rotation in a reverse direction.

2. In dispensing mechanism as defined by claim 1 additionally including a safety locking pawl circumferentially spaced from the locking means and resiliently urged in a direction to coact with said coin receiving recess for holding the coin wheel against rotation in a dispensing direction, said safety locking pawl being rendered inoperative when said recess contains a coin of the proper denomination, and wherein the reverse locking pawl and said safety locking pawl are both supported by the mechanism support plate.

3. In dispensing mechanism, in combination, a dispensing shaft mounted for rotation, a coin wheel carried by said shaft and rotating therewith, said coin wheel having a recess therein for receiving a coin, a housing for the coin wheel having a coin slot with which the recess is aligned when the coin wheel is in a coin receiving position, locking means for the coin wheel including a locking arm yieldingly urged in a direction to engage the seat of said coin receiving recess when in a coin receiving position to lock the wheel against rotation in a dispensing direction, said locking arm being automatically released by a coin of the proper denomination when inserted in the recess, a reverse locking pawl having coaction with the coin wheel for holding the wheel against rotation in a reverse direction, and magnetic detector means associated with the coin wheel for locking the coin wheel in a coin receiving position to prevent rotation thereof in a dispensing direction, said magnetic detector means being normally inoperative and including a pivoted magnet adapted to enter a slot in the coin wheel when attracted in said direction by the insertion of a steel slug in the coin receiving recess of the wheel.

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