

No. 703,137.

Patented June 24, 1902.

D. KNOWLTON.
VENDING MACHINE.

(Application filed May 20, 1901.)

(No Model.)

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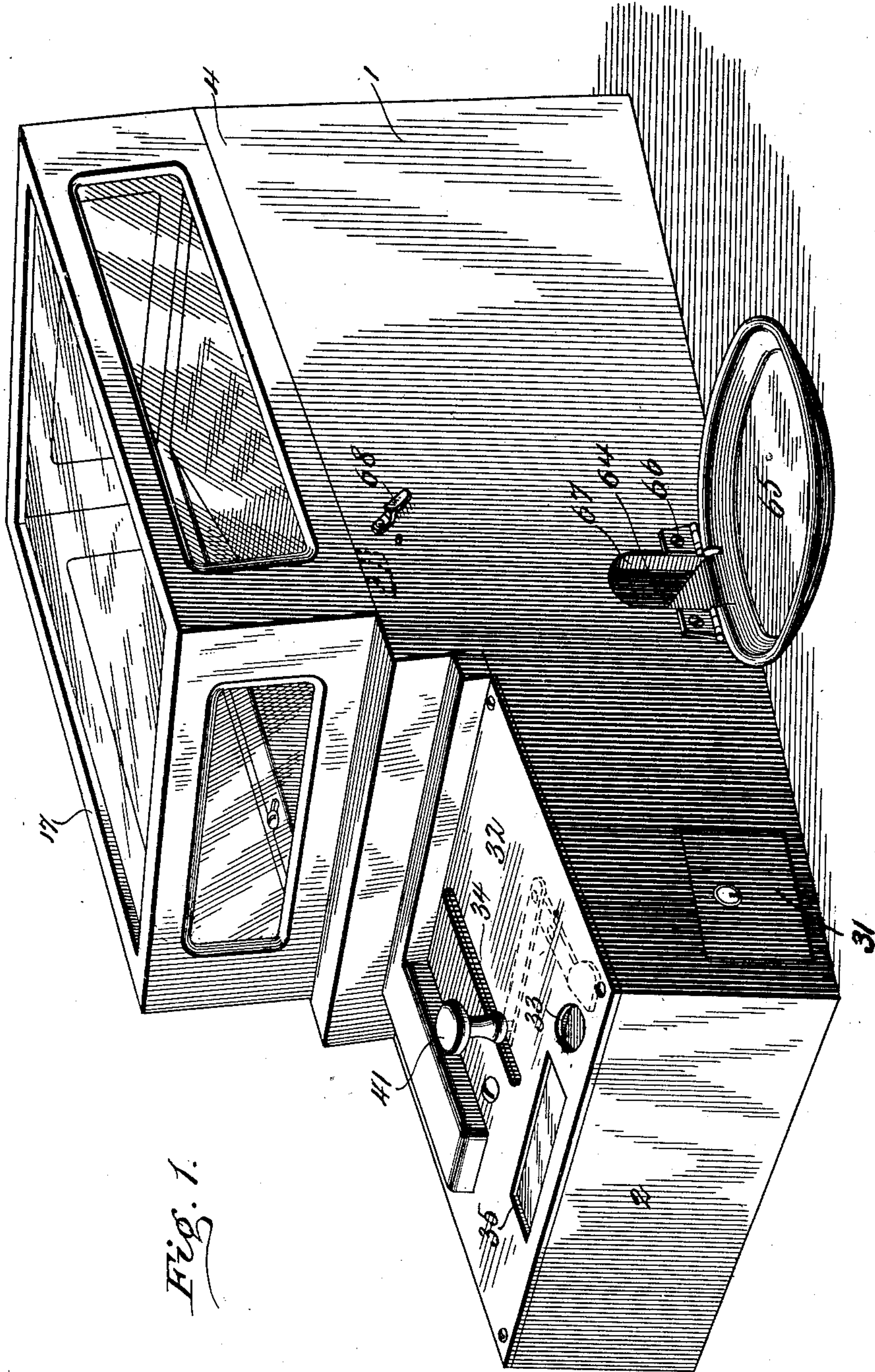


Fig. 1.

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Fig. 2.

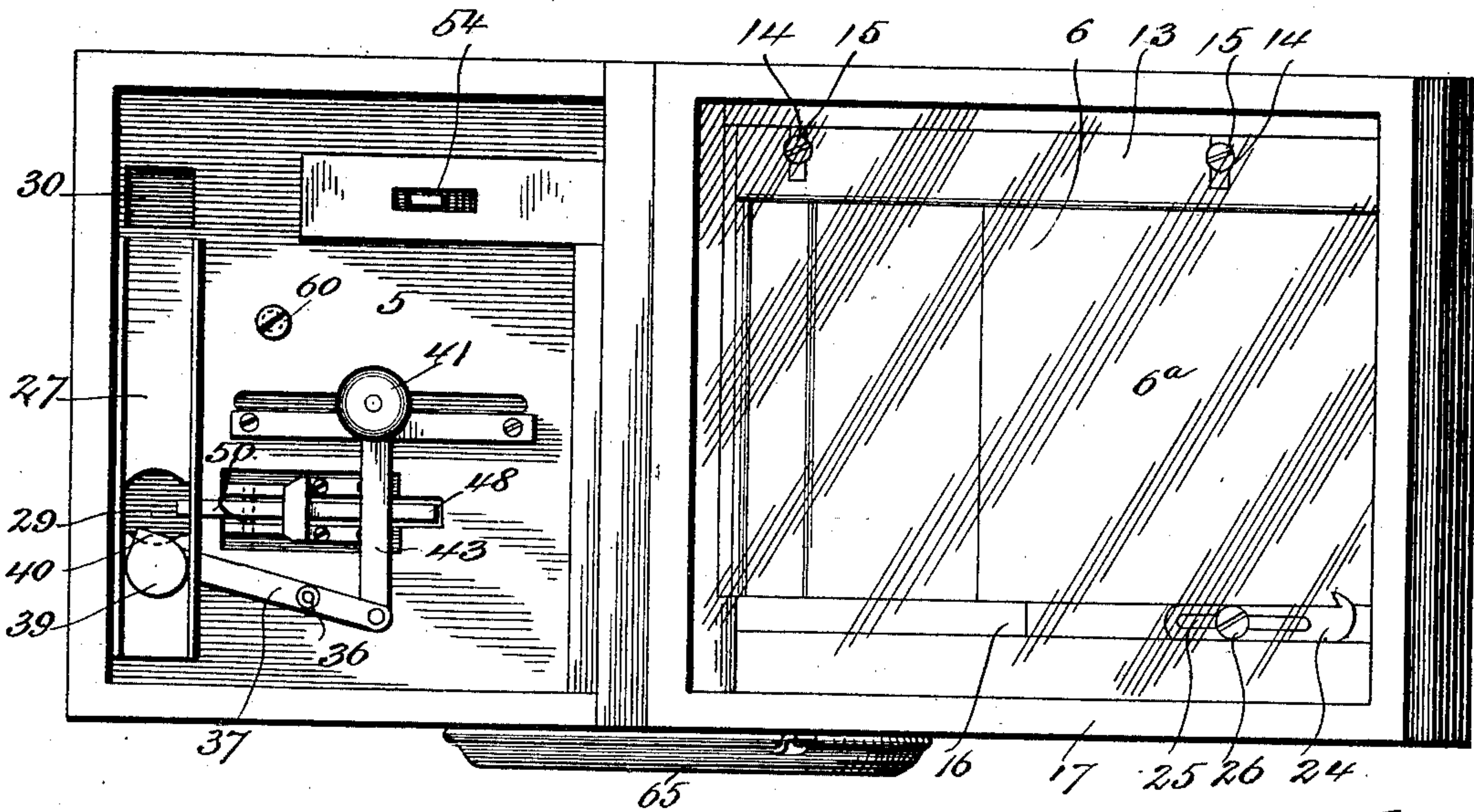
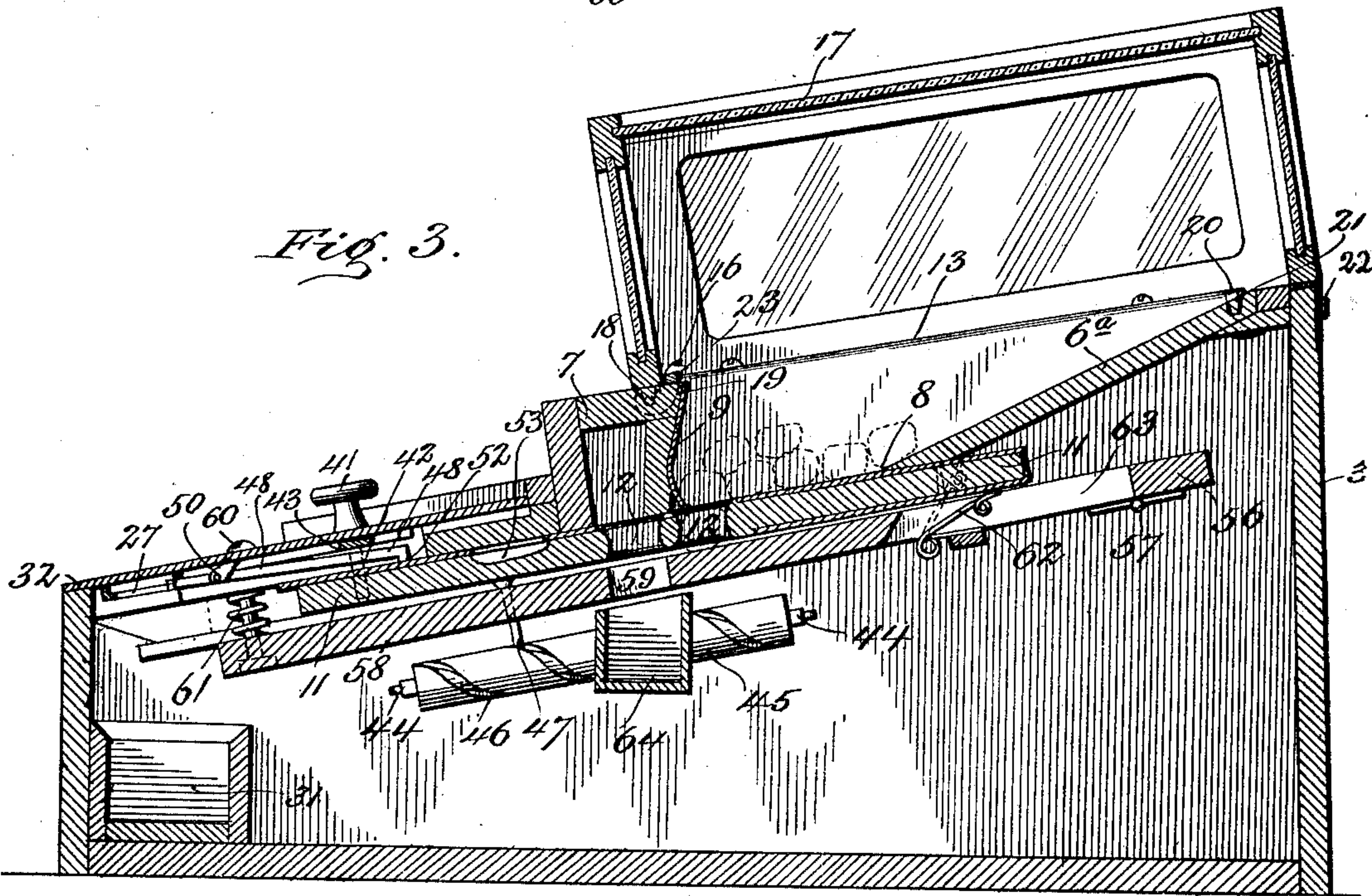


Fig. 3.



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Fig. 4.

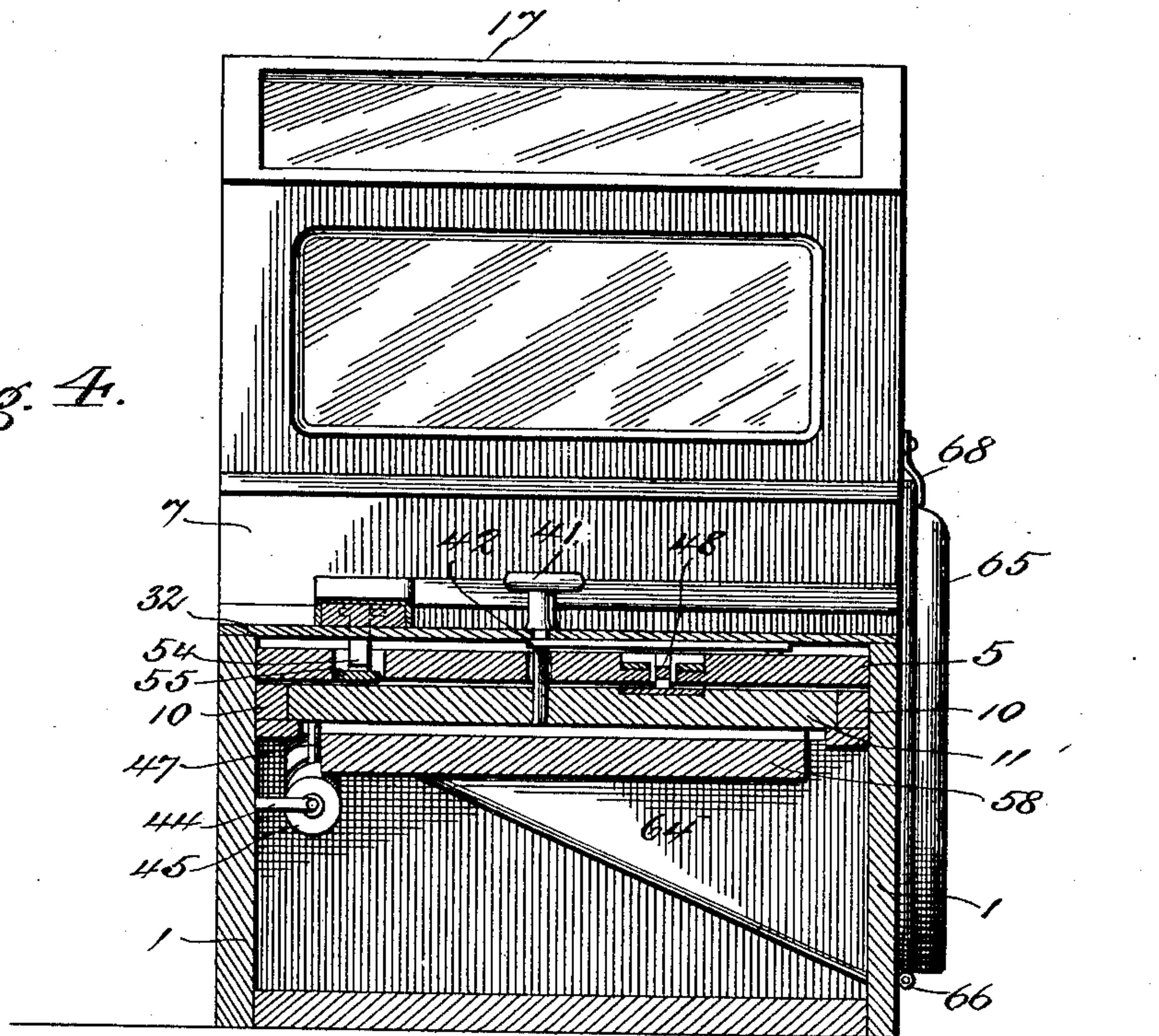


Fig. 5.

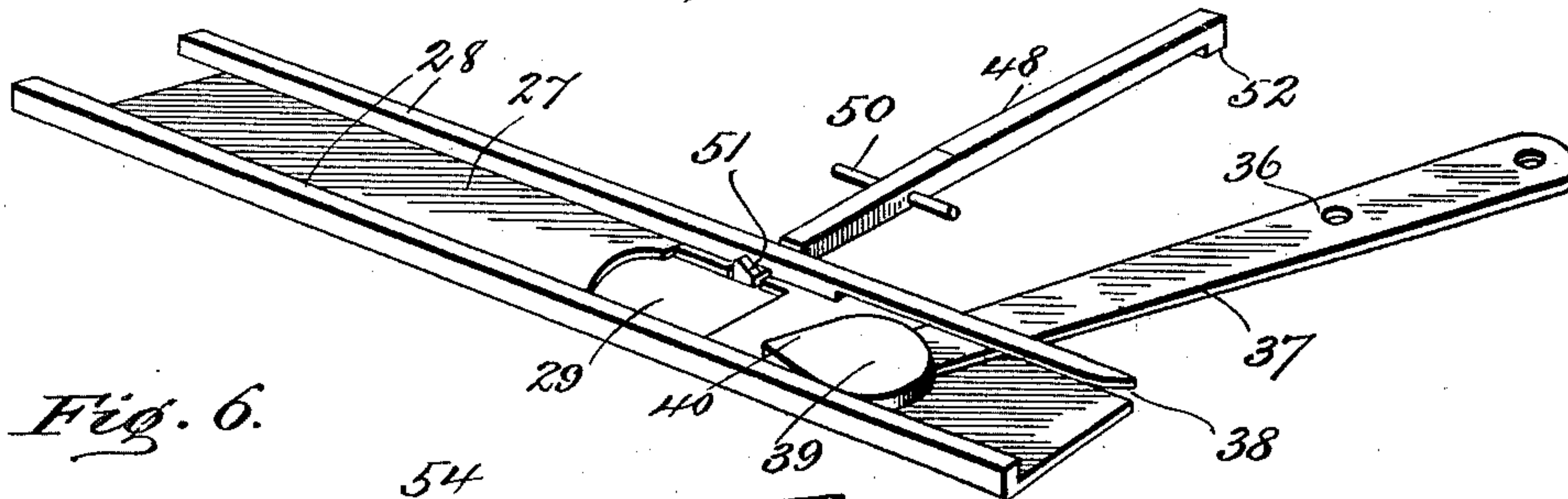
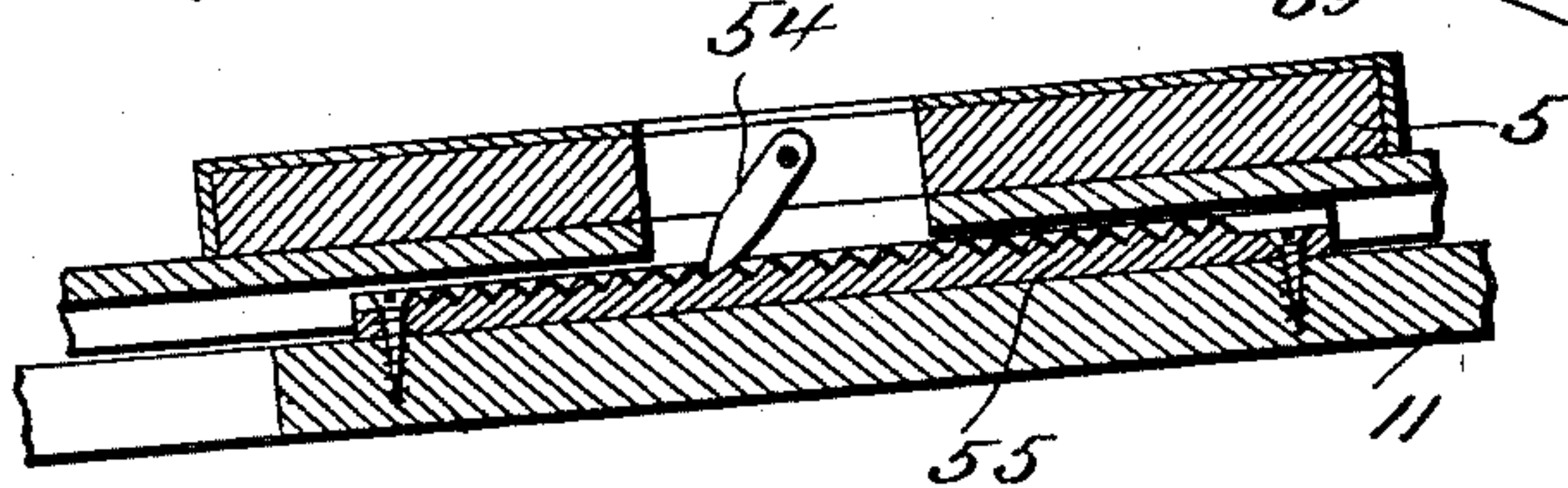


Fig. 6.



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UNITED STATES PATENT OFFICE.

DALLAS KNOWLTON, OF WASHINGTON, DISTRICT OF COLUMBIA.

VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 703,137, dated June 24, 1902.

Application filed May 20, 1901. Serial No. 61,099. (No model.)

To all whom it may concern:

Be it known that I, DALLAS KNOWLTON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to vending-machines, more particularly to that class thereof known as "coin-controlled," and is primarily intended for vending cigars, cigarettes, and other merchantable articles of a substantially cylindrical nature.

The principal objects of the invention are to simplify the general construction, and thereby lessen the expense of constructing the machine; to adapt it for successfully vending cigars and the like of different lengths and diameters and regardless of whether they are regular or irregular in shape—as an example of the latter instance a pressed cigar—to render the machine accurate and positive in its operation; to adapt it to attractively display the goods to be vended; to avoid untimely stoppage of the machine by any undue clogging thereof by the coins deposited therein; to adapt it to conveniently deliver the articles; to lightly manipulate or handle the same without injury; to render its operation simple and unmistakable and its various parts readily accessible to authorized persons.

With these general objects in view the invention consists in certain features of construction hereinafter mentioned, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view of a vending-machine embodying the invention. Fig. 2 is a plan view of the same with the protecting-plate removed to expose to view the coin-operating mechanism and the releasing mechanism. Fig. 3 is a substantially longitudinal central sectional view through the machine, which, like the preceding figure, shows the parts in the position they occupy subsequent to the insertion of a coin and a partial operation of the machine. Fig. 4 is a transverse vertical sectional view through the front of the machine. Fig. 5 is a detail in perspective of the coinway, coin-operating lever, and releasing latch or pawl. Fig. 6 is a detail in section through

the front platform and the subjacent portion of the sliding cut-off, showing the holding-pawl.

Similar numerals of reference indicate similar parts throughout the several figures of the drawings.

The machine when viewed in plan is of a general oblong shape and comprises opposite side walls 1, being preferably inclined toward their rear edges, as shown, and from about their middles being slightly and abruptly elevated, as indicated at 4, thereby forming the side walls of a superimposed hopper 6. As will hereinafter appear, the hopper 6 contains the articles to be vended. The frame of the machine also comprises the front wall 2 and the rear wall 3. A platform 5, supported by the side walls 1 and front wall 2, supports the coinway and coin controlling and tripping mechanism hereinafter described.

Located in the hopper 6 is an inclined feed-bottom 6^a, which extends possibly a little over one-half the distance from the rear wall 3 toward a transverse front wall 7, that connects the two side walls of the hopper 6. The feed-bottom, as before stated, is inclined and terminating, as it does, short of the wall 7 combines with the latter to produce a feed-opening 8, the adjacent edge of the delivery or feed bottom being preferably beveled on its under edge, as shown. The front end of this feed-opening is formed by what may be termed a "fixed" cut-off 9, the lower edge of which is substantially in line with the beveled edge of the feed-bottom, and said cut-off may be vertical and straight in cross-section, inclined, or, as may be preferred, curved or concaved, the latter being preferable for reasons hereinafter appearing.

Below the bottom and feed opening of the hopper 6 and the platform 5 and in close proximity to the former and in opposite parallel inclined ways 10, affixed to the side walls 1, is a sliding cut-off 11, the same being provided with a transverse delivery slot or slots 12, the upper edges of which may be slightly rounded. The delivery-slot may be, but preferably is not, made adjustable in width, but in the latter event, as herein, is of a width sufficient to cause it to readily receive the largest size (in diameter) of merchantable

articles the machine will be called upon to vend — as, for instance, a cigar. Also the length of the slot is such as will adapt it to accommodate readily the longest of such articles. It being intended when the machine is employed to vend cigars, for which it is primarily designed, to adapt said machine to vend successfully the largest, the smallest, or any intermediate size or length of cigar ordinarily made and sold, it would be natural to suppose that the width of this slot of the cut-off must necessarily be made adjustable; but practical demonstration proves that the cigars will vary so slightly in diameter that a slot sufficiently wide to receive the largest cigar will successfully receive and manipulate also the smallest.

A false, preferably L-shaped, side wall 13 is applied to one wall of the hopper 6, in this instance the said false wall being provided with any suitable well-known means of adjustment. It is preferred to slot the upper horizontal portion of the wall, as indicated at 14, and the same overlying the hopper-wall may be held in any of its laterally-adjusted positions by set-screws 15. The lower edge of the false wall and its front end are so shaped as to escape both the bottom of the hopper and the stationary cut-off 9, and thus, as will be apparent, a manipulation of the adjusting means will result in either an increase or decrease of the width of the hopper as a whole, and consequently its feed-opening. In this manner it will be seen that cigars or other articles to be vended can be readily accommodated as to length. The opposite and front edge of the hopper may be surmounted by a combing 16, the same being of such shape in cross-section as to adapt it to fit accurately about the adjacent side and front walls of the cigar-box.

The two front corners of a display-case may be provided with depending hooks 18, designed to removably engage in openings 19, formed in the hopper-walls, and at its sides said display-case may be further provided with depending studs 20, designed to engage openings 21, formed in said walls. The case may be raised and lowered, the hooks 18 acting as hinges, to give access to the hopper, and when the latter is supplied with the articles to be vended it may be securely locked by any ordinary lock, as 22. Of course other means may be readily provided for securing the display-case in position or for giving access to the hopper, this style or design of case merely recommending itself on account of its general appearance and capability of tastefully displaying the articles to be vended.

The front combing may be provided with one or more sharp teeth 23, extending into the hopper, and the side combing with a shouldered sliding clamp 24, slotted longitudinally, as at 25, and held adjusted by a set-screw 26.

Of course the cigars, for example, may be

simply dumped loosely in the hopper and the display-case closed and locked; but it is preferred, for many obvious reasons, to place the original package on sale. In doing the latter the top and bottom of the cigar-box are removed and the box in this condition placed upon the hopper-walls. The box is seated snugly against the side combing and then pushed forward, so that the pointed tooth 23 enters the same, after which the clamp 24 is adjusted with its shoulder against the opposite end of the box and secured in position. In this manner in the present instance the box is held against displacement, the lower portion of the contents falling loosely in the hopper, the walls of which latter, it being understood, having been previously adjusted, if necessary, to the length of the cigar. To still further display the brand of the cigars, the top of the box bearing the usual name and emblem may be severed longitudinally and the sides of the same arranged at the sides of the box so as to project thereabove sufficiently to be observed.

Returning, however, to the actual construction of the machine, there is set into the platform 5, and preferably parallel with the front edge thereof, a coinway 27, the same having opposite parallel side beads or edges 28, constituting flanges or guides, and an intermediate opening 29, extending nearly, but not quite, its entire width. At one end of the coinway is a coin-discharge opening 30, and below the way and both openings 29 and 30 is located a coin-drawer 31, mounted removably in a transverse manner or otherwise in the machine. The smallest opening 29 is designed to receive improper coins, while the largest opening 30 is designed to receive the proper coin, by which only the machine can be operated, both classes of coin, however, dropping into the coin-drawer. Of course the machine may be designed to operate with any denomination of coin; but, for instance, if it is made to vend a five-cent cigar, a penny or dime being smaller will drop through the first opening 29, and hence, as will hereinafter appear, such will not reach the coin-controlled mechanism. A protecting-plate 32 covers the platform 5 in the present instance, said plate being provided with a coin-receiving opening 33, located slightly in advance of the opening 29 of the coinway. This plate is further provided with a slot 34, extending longitudinally, and with a transverse glass sight-panel 35, which registers with and therefore is directly above the coinway, whereby the latter is in full view.

Between the platform 5 and plate 32 occurs a narrow space, and within the same, intermediately fulcrumed upon the platform back of the coinway, as at 36, is a vibrating lever 37. The lower or free end of this lever extends through a narrow guide-slot 38, formed in the rear bead or guide-flange 28 of the coinway, and at said end the lever carries a

disk 39, provided at one side with a tangential shoulder 40. By vibrating this lever it will be obvious that the coin-receiving opening 33 in the protecting-plate 32 will be opened and closed, and, furthermore, that a proper coin introduced through the opening into the coinway will be subsequently advanced by said shoulder 40 along the said way a sufficient distance to cause the coin to advance over and beyond the opening 29 in the way, or, if an improper coin, to discharge the same through the aforesaid opening 29 into the coin-drawer. As successive coins are placed into the machine the coinway will become filled, and as each succeeding coin is placed in the coinway the advance coin of the series drops through the opening 30 into the drawer. It will be observed that it will be impossible to clog the machine by the insertion of a coin before the preceding coin has been sufficiently advanced to make room and has therefore performed its function, inasmuch as the disk 30 covers the coin-receiving opening during the advancement of the said preceding coin and before such advancement the coin itself is in the way to any further insertion.

A convenient operating-knob 41 surmounts the protecting-plate 32 and has its shank 42 extended down through and adapted to ride in the slot 34 of said plate. The lower end of this shank is secured to the front end of the sliding cut-off, and by moving the knob back and forth it will be obvious that the cut-off will be reciprocated back and forth under the feed-opening of the hopper and the delivery-opening of said cut-off caused to be thrown into and out of register therewith. The shank of the knob is loosely connected to the inner end of a link 43, the opposite end of the link being similarly connected with the rear end of the lever 37. Thus it will be obvious that at each rearward movement of the knob the cut-off will be moved to the rear, so as to cause its opening or openings to travel the length of the feed-opening of the hopper, and also that the lever 37 is vibrated, so as to advance a coin previously placed in the coinway and to close the coin-opening in the protecting-cover. A reverse movement of the knob returns these parts to their former positions. In order to avoid any violent and unduly quick movement of the knob, there may be journaled in bearings 44, extending from the wall of the machine, the trunnions of a roll or shaft 45, the same having a spiral groove 46, in which engages and readily rides a pin 47, extending from the sliding cut-off. This arrangement insures an even steady motion of the cut-off and at the same time successfully resists any sudden and undesirable thrust that might perhaps prevent the machine from working properly.

A locking-pawl 48 is fulcrumed at an intermediate point, as at 50, in the platform 5 and at its front end extends into the coinway above the opening 29 thereof, the outer cor-

ner of said extended end being beveled or chamfered, as at 51, so as to facilitate the passage of the coin thereover and its own depression thereby. The opposite or rear end of the locking-pawl 48 is provided with a depending tooth 52, which when the sliding cut-off is in its forward or inoperative position is in engagement with a slot or recess 53 in the latter.

At the opposite side of the operating-knob 41 a loose gravity holding-pawl 54 is pivoted in the platform 5, the lower or operative end of the pawl being in constant engagement with one side or the other of a set of teeth forming a rack-bar 55, mounted upon the sliding cut-off. The purpose and function of this holding-pawl is to prevent any premature reversal of movement of the sliding cut-off, and thus a miscarriage of the machine. For instance, having inserted a proper coin and the cut-off started on its rearward passage or travel it is necessary that the cut-off be moved the full distance before being returned, the reason of which will be clear in that if only partially moved the article or articles to be vended might not be caught by its slot or slots. In this primary movement the holding-pawl 54 will ride lightly over the teeth of the rack-bar 55, but will effectually resist any premature reversal of such movement, such resistance being maintained until the full movement of the sliding cut-off has taken place, by which time the front end of the cut-off will have passed from under the pawl. The cut-off then being returned, the pawl again rides over the teeth of the rack-bar, being inclined in a reverse direction at the opposite side of the teeth, and resists anything but a withdrawal of the sliding cut-off until the latter has reached the end of its forward movement, by which time the article or articles will have been discharged, as will be hereinafter apparent, and the pawl hang loose in rear of the rack-bar.

Hinged, as at 57, to a cross-bar 56 or other support or otherwise loosely mounted is a gage-plate 58, the same extending forward completely under and preferably beyond the sliding cut-off and in close or intimate proximity thereto. This gage-plate is provided a short distance in advance of the feed-opening of the hopper with a discharge-opening 59. The gage-plate forms the bottom of the opening in the sliding cut-off and may be supported in adjustable relation thereto by any suitable means—in the present instance an adjusting-screw 60, passed downwardly through openings in the platform 5 and protecting-plate 32, the lower end of the screw being threaded in the front free end of the gage-plate. By manipulating this screw it will be obvious that the front end of the gage-plate will be raised and lowered, and thus the depth of the opening in the sliding cut-off increased or diminished to accommodate the machine to any thickness of cigar. A

coiled spring 61 may be interposed between the platform and the gage-plate to insure the operation of the latter.

To provide a proper tension for the sliding cut-off, there may be employed a spring-detent 62, the same being most conveniently located on the gage-plate, extended through an opening 63 therein, and bearing at its free end against the rear end of said sliding cut-off when the latter is in its forward position, and subsequently when moved to the rear riding lightly over the under side thereof.

The machine may discharge at any convenient point, but preferably at one side, through a chute 64, located under the discharge-opening 59 of the gage-plate, onto any ordinary tray or receptacle—as, for instance, at 65. This tray may be rigid or hinged at its lower side, as at 66, so as to be capable of folding up out of the way and also incidentally covering the discharge-opening 67 in the side of the machine, in which position it may be held by any ordinary turn-button 68 or other means.

The operation of the machine has been described in connection with the description of its construction, so that it is not believed any further description will be necessary to a thorough understanding thereof. Particular attention is, however, called to what is termed the “fixed” cut-off, located at the front edge of the opening in the bottom of the hopper. This cut-off might be made to operate to some extent by being made of other shape in cross-section than that shown; but the curve given it has been practically demonstrated to absolutely obviate any breaking of the cigar-wrappers by permitting the cigars above the one in the delivery-opening in the cut-off to become engaged or caught between the rear edge of said latter opening and the fixed cut-off. This curve simply elevates the cigars immediately above the delivery opening or openings in the sliding cut-off, holding the same thus elevated and out of harm’s way during the forward movement of the cut-off.

It will be observed that the machine may be readily adapted to vend a plurality of articles for a single coin, if desired—that is to say, one, two, or a greater number of delivery-openings 12 may be employed, each successively delivering its contents into the chute 64. In this manner, for example, cigars at the rate of two for five cents, three for twenty-five cents, or six for twenty-five cents can be vended, so that by slight change the machine can be adapted for vending all grades or classes of goods. It will also be observed that by reason of the slot or recess 53 being elongated the sliding cut-off can be moved a short distance without the insertion of any coin. This, in connection with the disk 39, effectually prevents the machine being operated by a piece of wire or other illegal means, for, as is apparent, should such an attempt be made and the locking-pawl depressed a subsequent move-

ment of the knob in the attempt to move the cut-off would cause the latter to move merely the length of the slot, or nearly so, before the disk 39 would completely cover the coin-opening 33. This would necessitate a withdrawal of the wire or other extraneous device being employed for holding down the locking-pawl, and the latter having its engaging end still above the slot or recess 53 would immediately reengage.

Of course it will be understood that numerous changes in the details of my invention will readily suggest themselves whereby the machine may be adapted for vending different kinds and grades of merchantable articles, all of which changes I hold to be within the scope of my invention and can therefore be readily resorted to without sacrificing any of the advantages or departing from the principles thereof.

Having described my invention, what I claim is—

1. The combination, in a cigar-vending machine, provided with a discharge-opening, of a movable cut-off having a delivery-opening adapted to be thrown into and out of register with the hopper-discharge, and the fixed cut-off 9 located over the front edge of the hopper-discharge said cut-off being curved from its lower edge upwardly.

2. The combination, in a vending-machine, of a hopper having a discharge-opening, a sliding cut-off mounted thereunder and provided with a delivery-opening, a gage-board located immediately below said cut-off hinged at one end and provided with a discharge at one side of and out of register with the hopper-discharge, and means for vertically adjusting the free end of said gage-board.

3. The combination, in a vending-machine, of a hopper having a discharge, a sliding cut-off arranged thereunder and provided with a delivery-opening, a gage-board having a discharge at one side of that of the hopper and having its rear end hinged to a support, and an adjusting-screw swiveled in the gage-board and in the machine, whereby said gage-board is capable of being raised and lowered to increase or diminish the depth of the delivery-opening in the sliding cut-off.

4. The combination, in a vending-machine, of a hopper having a discharge, a sliding cut-off located thereunder and having a delivery-opening, of a threaded shaft journaled at one side of the cut-off, and a projection carried by the latter and engaging the thread of said shaft.

5. The combination, in a vending-machine, of a hopper having a feed-opening, a fixed cut-off, arranged in front thereof, a subjacent sliding cut-off having a delivery-opening, a false wall cut to conform to the hopper-bottom and the cut-off, and means for adjusting said false wall laterally.

6. The combination in a vending-machine, of a hopper, a false wall adjustably mounted

at one side of the hopper and provided with
an outwardly-extending support seated on
the wall of the hopper, a spur at the front
wall of the hopper, and a clamp having a
5 shoulder at its rear end and mounted adjust-
ably on that wall of the hopper opposite to
which the said false wall is mounted.

In testimony whereof I affix my signature
in presence of two witnesses.

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