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PATENTED OCT. 15, 1907.

R. WEITLICH & A. W. MILLER.

VENDING MACHINE.

APPLICATION FILED MAY 7, 1907.

2 SHEETS—SHEET 1.

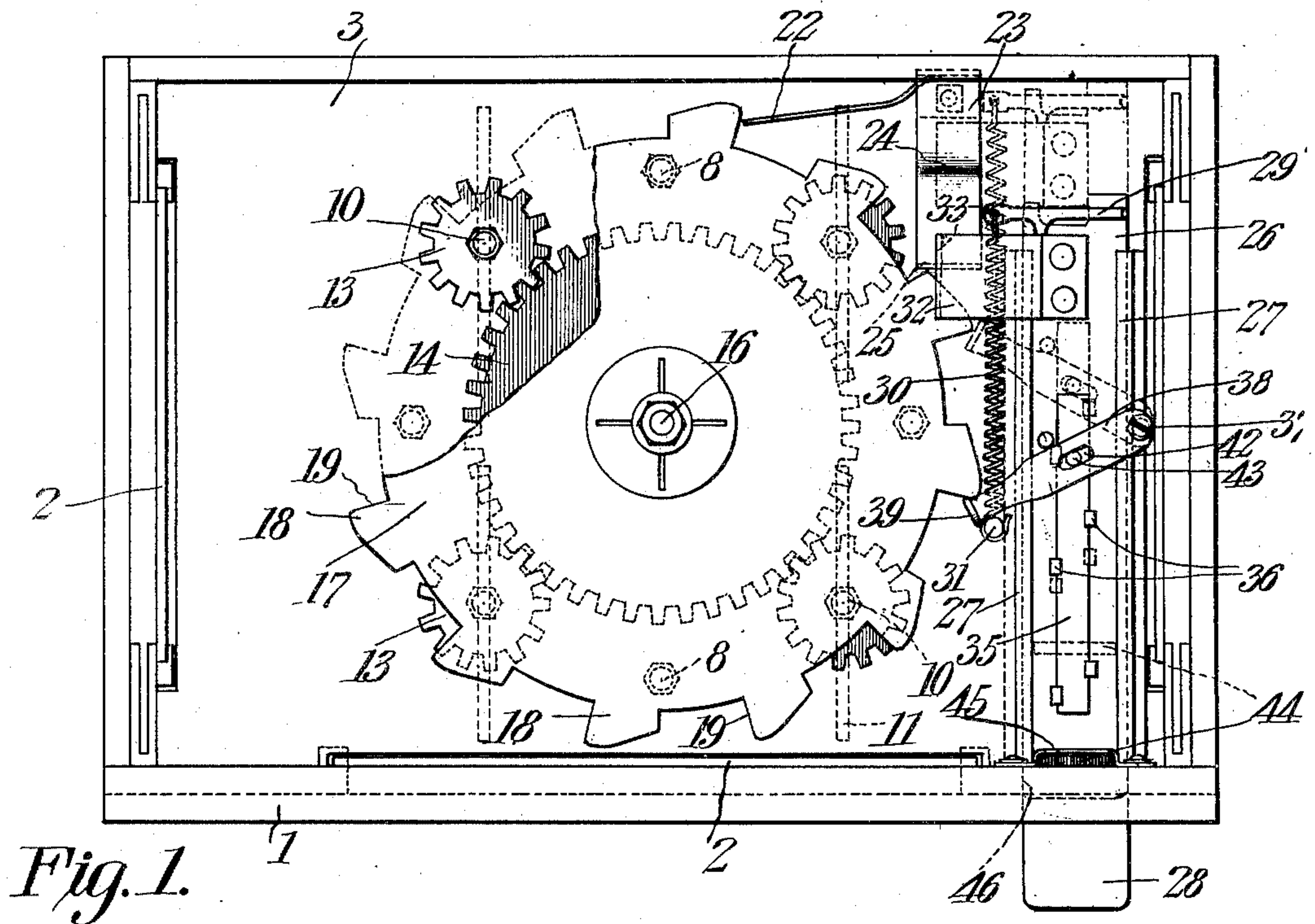
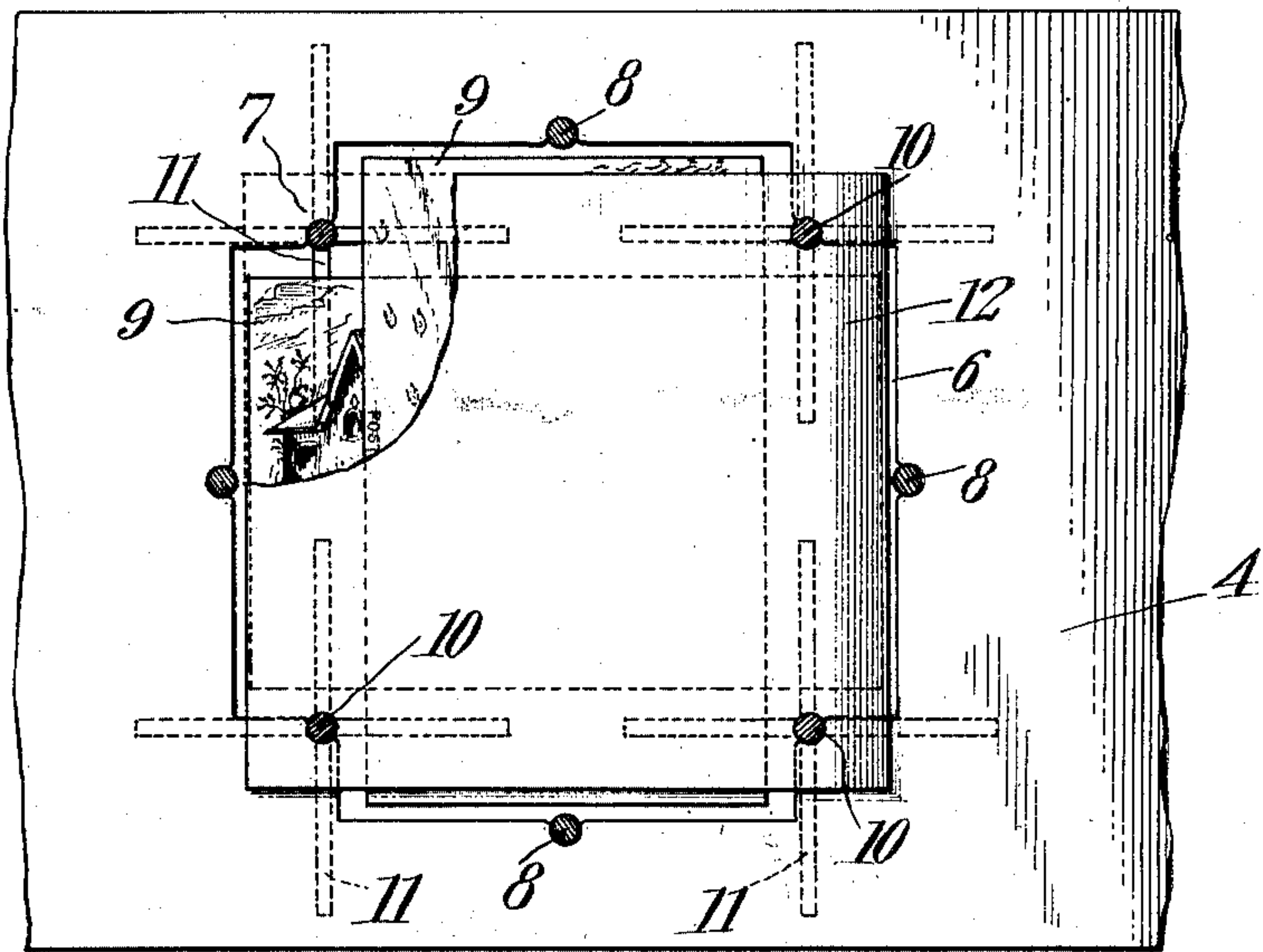


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

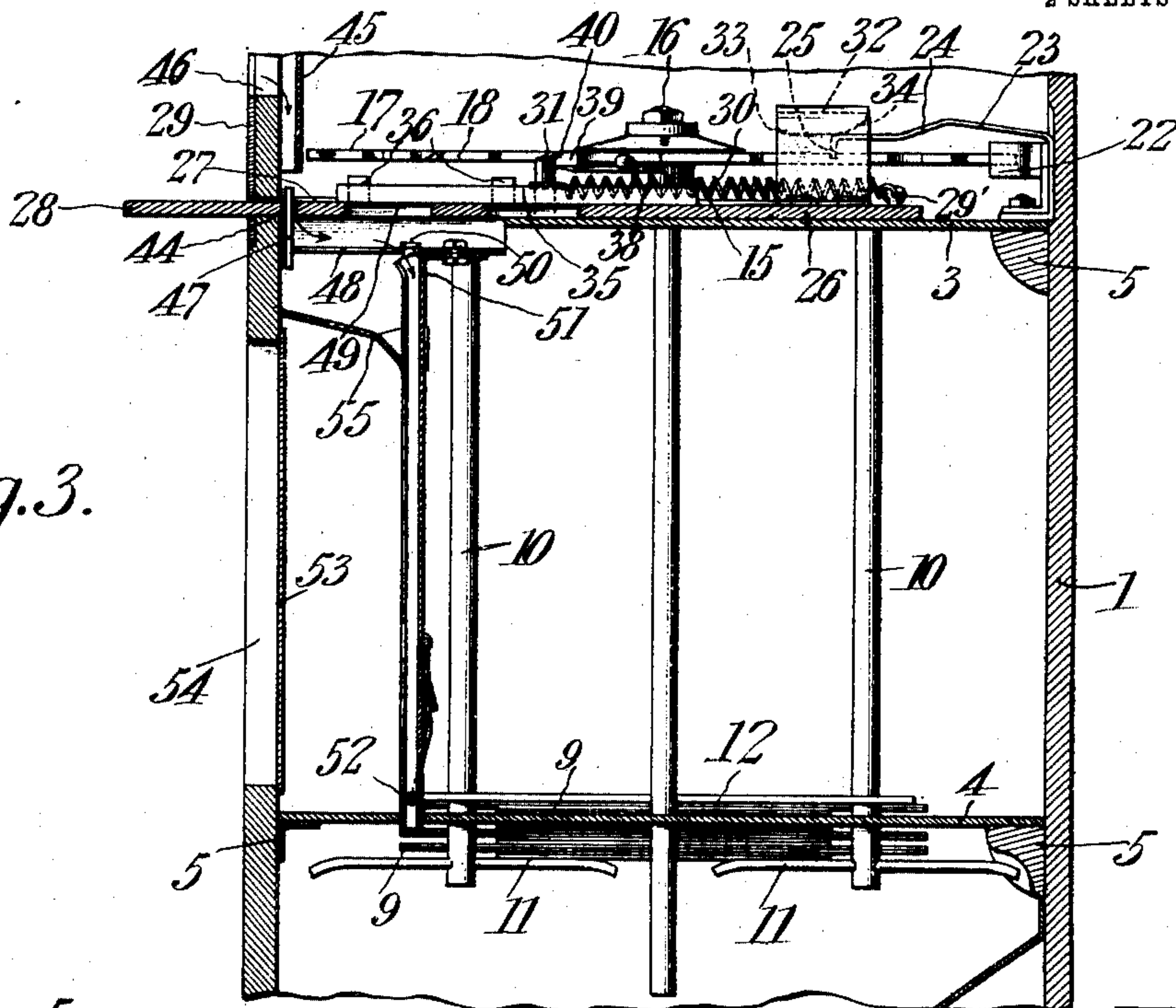


Fig. 5.

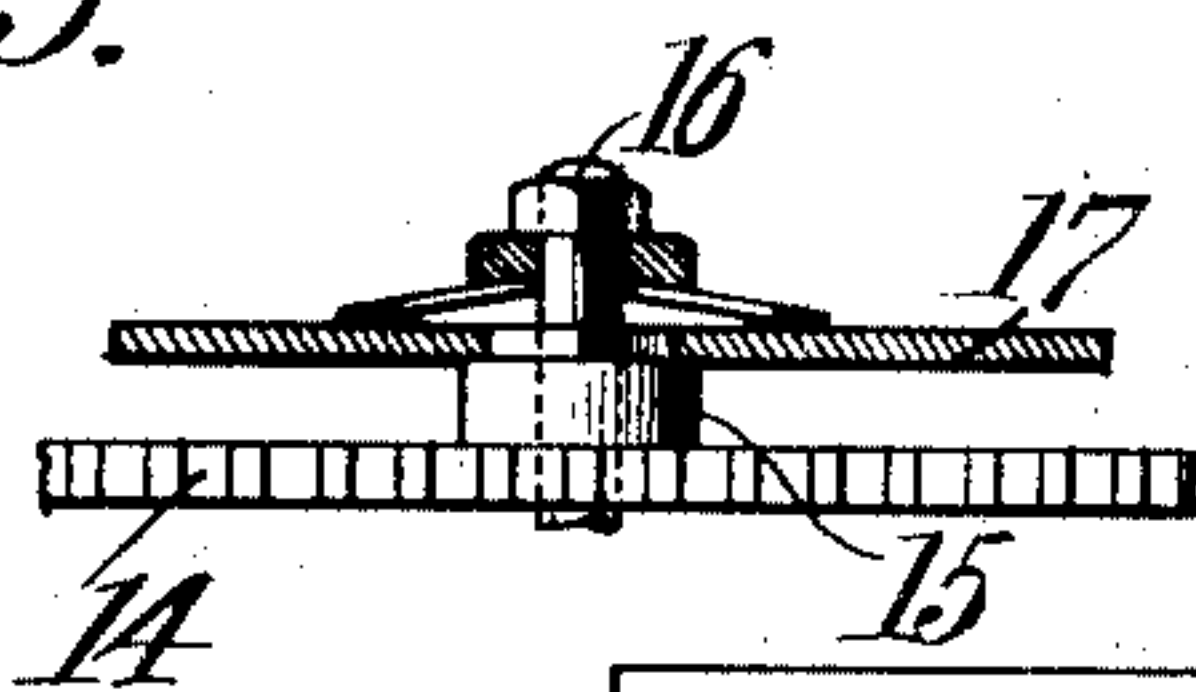


Fig. 6.

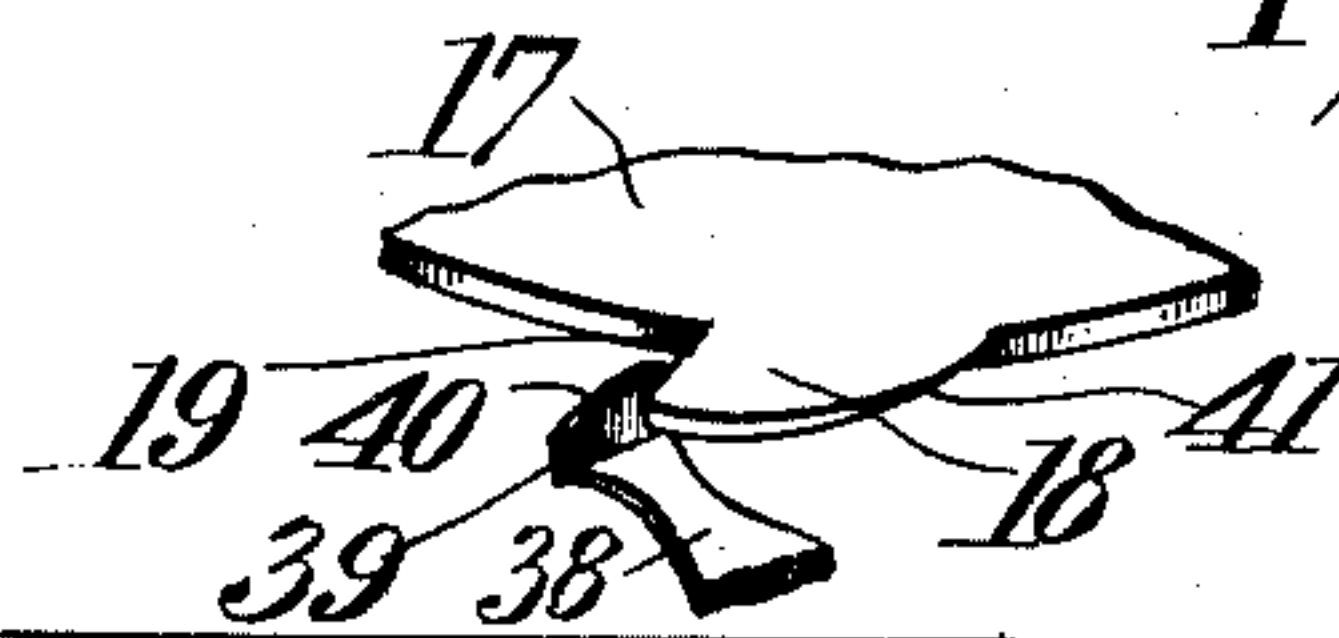
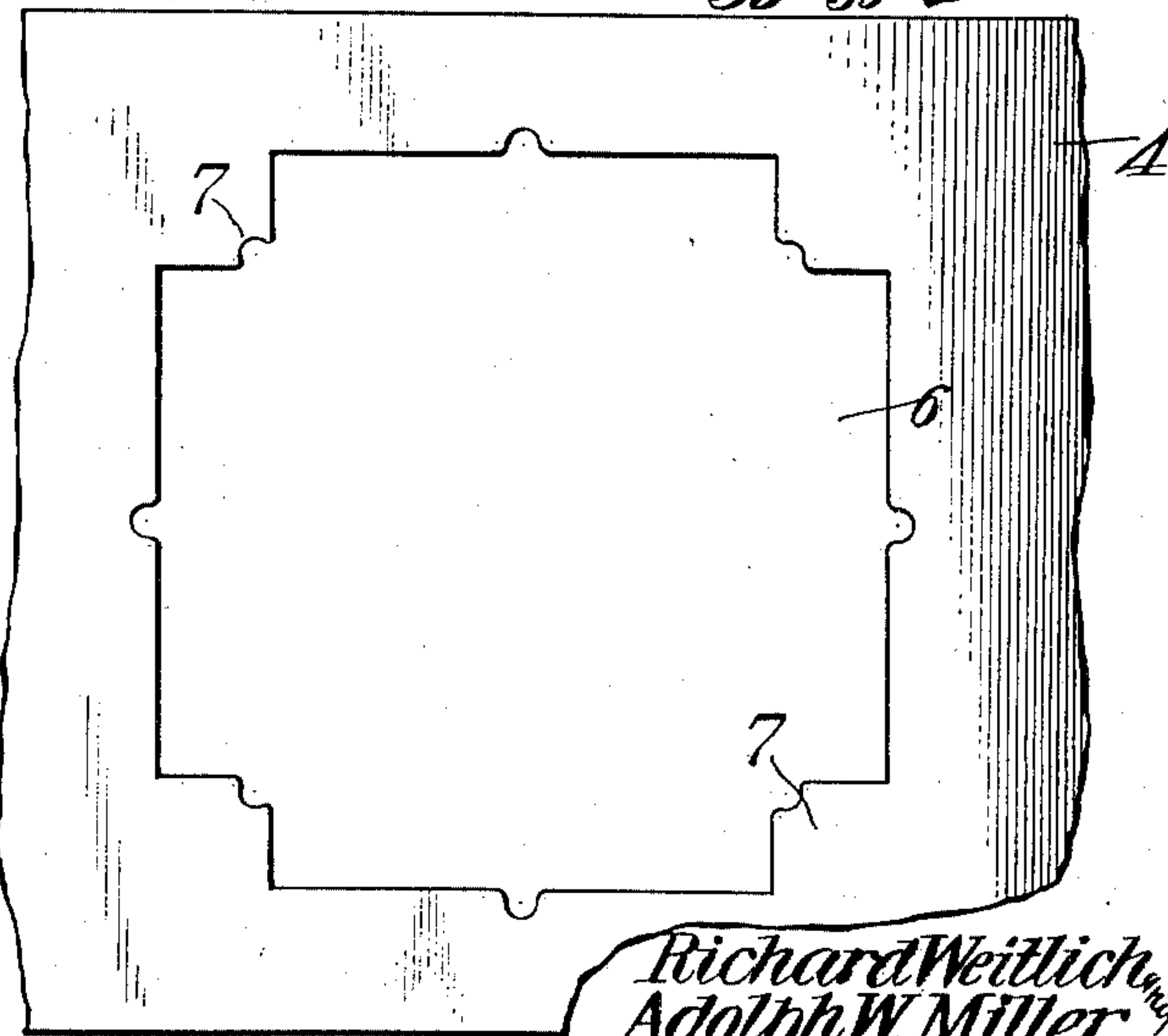


Fig. 4.



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UNITED STATES PATENT OFFICE.

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TO SLUG PROOF VENDING MACHINE CO., INC., OF STURGEON BAY, WISCONSIN.

VENDING-MACHINE.

No. 868,589.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed May 7, 1907. Serial No. 372,399.

To all whom it may concern:

Be it known that we, RICHARD WEITLICH and ADOLPH W. MILLER, citizens of the United States, residing at Sturgeon Bay, in the county of Door, State of Wisconsin, have invented a new and useful Vending-Machine, of which the following is a specification.

This invention has reference to improvements in vending machines, and relates more particularly to improvements in machines designed to deliver postal cards on the insertion of a coin of suitable value, although the machine is equally applicable, with such changes as may be necessary, for the delivery of newspapers or other articles more bulky than postal cards.

The present invention is based on the fact that postal cards and other articles which are longer in one direction than in the other can be crossed at right angles so as to present at the corners reëntering angles. At these points supporting arms are located so as to engage the lowermost of a tier of cards and thereby support all the cards thereabove. These arms are carried at the lower ends of rotating shafts so as to be brought in order into engagement with the lower faces of the cards in sequence, so that when one card or set of cards is released the next card or set of cards is caught by the arms and there held. The several shafts necessary for this operation are synchronously rotated by means of a common gear wheel engaging pinions on the several shafts, the latter being timed to move in proper relation. This gear wheel is under the control of a toothed disk constrained to move in one direction only under the impulse of a sliding member which, however, may be moved without imparting motion to the toothed disk. On the insertion of a coin, however, another sliding member is engaged by said coin and by means of suitable interconnecting members, through the intermediary of said coin, causes the sliding member to actuate a propelling pawl which, in turn, moves the toothed disk to an extent sufficient to cause the release of a card or set of cards, at the same time moving the retaining means into operative relation to the next card or set of cards.

The invention will be fully understood from the following detailed description, taken in connection with the accompanying drawings forming part of this specification, in which,—

Figure 1 is a plan view of the operating mechanism, with the casing shown in cross section; Fig. 2 is a plan view of the card-retaining portion and the follower plate, which latter is partly broken away, while the vertical shafts and other parts are shown in section; Fig. 3 is a vertical section through the machine on a line with the coin-operating mechanism; Fig. 4 is a plan view of the card-receiving plate with the follower omitted; and Figs. 5 and 6 are detail views.

Referring to the drawings, there is shown a casing 1

of suitable construction provided with glass panels 2 at the sides and front so as to expose the interior mechanism to view. Near the upper portion of the casing there is a horizontal plate 3, and near the bottom of the casing is another horizontal plate 4, each suitably secured by brackets 5 and each being of a size about that of the cross sectional area of the interior of the casing, thus dividing the casing into an upper, a lower, and a middle compartment.

The lower plate 4 is formed with a central, rectangular opening 6, but the corners of this opening are provided with reëntering sections 7 so that the opening 6 is in reality in the form of a cross with very short stems. This opening is of such size, in the present instance, to permit postal cards to just pass through it both when placed lengthwise of the plate 4 and when extending in a direction from the front toward the rear thereof.

Located beyond the borders of the opening 6 in the central plane of the length of the plate 4 and also in the central plane of the width of the plate 4 are rods 8 extending from the top plate 3 down through the plate 4 and serving simply as guides for the postal cards, which latter are indicated at 9, it being understood that the machine is shown as intended more particularly for the delivery of postal cards or articles of similar size and shape, and that for the delivery of newspapers or other articles of different size and shape the disposition of the parts will simply be changed to accommodate such articles without, however, in any way modifying the operation of the machine. Since the adaptation of the machine to other styles of articles is simply one of shape and size, and not of operation or change of principle, it is not deemed necessary to illustrate such machines in the drawings or to describe them.

The inner corners of the portions 7 of the plate 4 are rounded to receive upright shafts 10, which, in the present instance, are four in number and equidistantly spaced. Below the plate 4 these shafts carry through arms 11, that is, there is a single arm 11 extending entirely through each shaft and to an equal distance on each side thereof. These arms are a short distance below the plate 4 and are so arranged that when the shafts, which, as will hereinafter appear, are rotated synchronously, are turned upon their vertical axes, one end of the arms will, in one position of the shafts, engage under certain of the postal cards, thus supporting all the cards above them, these cards being arranged first in one plane and then in the plane at right angles thereto, then again in the first-named plane, and so on, in alternation. When the shafts 10 are rotated through an arc of ninety degrees the ends of the arms 11 which engaged a postal card or set of postal cards are moved out from under the latter until

out of the path thereof, while at the same time and before the first-named ends of the arms have escaped from under the postal cards, the opposite ends of the arms on the other side of the shafts engage under the postal card of that set of postal cards immediately above the first card or cards and lying in the plane at right angles to the plane of the first-mentioned card or cards. The first card or cards are therefore permitted to drop through the opening 6 while the next succeeding set and all those thereabove are engaged by the other ends of the arms 11. By this means the shafts 10 may be rotated always in the same direction and will alternately release the lowermost card or cards and hold the next succeeding card or cards.

It will be understood that this machine is designed to hold a stack of postal cards which may fill the middle compartment of the machine, and in order that these cards may be held in place and caused to drop quickly when released by the arms 11, there is placed on top of the stack a follower plate 12 provided with equi-distant perforations to travel on the shafts 10, this plate being guided by said shafts and also serving to maintain them in the cut-away portions of the angles of the parts 7 of the plate 4.

The upper ends of the shafts 10 extend through the top plate 3 and there each carries a pinion 13 in mesh with and equi-distantly disposed about a gear wheel 14 journaled to rotate in a horizontal plane upon the upper face of the top plate 3. This gear wheel is provided with a central hub 15 surrounding a fixed stud 16 on the top plate and journaled on this stud and spaced from the gear wheel and the pinions by the hub 15 is another plate 17 of considerably larger diameter than the gear wheel 14 and provided with equi-distantly spaced teeth 18 upon its periphery. The plate or disk 17 is connected with the gear 14 for rotation therewith in any suitable manner.

Each tooth 18, it will be observed, is so shaped that one radial edge is provided with an abrupt shoulder 19 while the peripheral portion of the tooth has a slope or bevel 20 terminating in a shoulder 21 less in radial extent than the shoulder 19. Fast on the back of the casing there is a spring plate 22 having its free end in the path of the teeth 18 and so arranged as to operate as a back-stop for preventing the rotation of the plate 17 except in one direction. Also fast on the back of the casing and so arranged that it may be moved into the path of the oncoming teeth is another spring plate 23 having a beveled portion 24 and terminating in a downturned end or tooth 25, the purpose of which will presently appear. Upon the top plate 3 and to one side of the gear 14, and the toothed plate 17 there is arranged a slide 26, held for sliding movement from front to rear or the reverse by guides 27 fast on the top of the plate 3 and suitably spaced to receive the edges of the slide 26. The front end of this slide extends through the front of the casing and beyond the same and this projecting portion constitutes the manipulating end 28 of the slide, being adapted to be pressed by the thumb or finger so that the slide may be moved until the front end is coincident, or nearly so, with the front of the casing. This thumb or push end 28 passes through a wearing plate 29 fast on the front of the casing. At the rear of the slide 26 there is a laterally projecting finger 29' terminating in an eye to which is secured one end

of a helical spring 30 extending toward the front of the machine and having its other end secured to a stud 31 rising from and fast on the plate 3 between the slide 26 and the plate 17. At the rear of the slide there is also secured an overhang bracket 32 having a downwardly projecting lip 33 arranged to engage the spring plate 23, which latter, in effect, performs the functions of a spring pawl. The rear edge of the lip 33 is curved or beveled, as indicated at 34. This lip 33, when the slide 26 is moved toward the rear, rides over the upper face of the spring pawl 23 until the beveled portion 24 thereof is reached, when it causes the spring pawl 23 to bend downward because the distance of the lip 33 above the plate 3 is fixed and the spring pawl must therefore yield. The relation of the parts is such that when the spring pawl 23 is free the tooth 25 at the end thereof is above the teeth 18, out of the path of said teeth, while when the lip 33 engages the bevel portion 24 this spring pawl 23 is so depressed that the tooth 25 is moved downward into the path of an oncoming tooth 18.

Mounted on the top of the slide 26 is another smaller or supplemental slide bar 35 constrained for longitudinal movement on the slide 26 by suitable guide studs 36 struck up from the slide 26 and bent over the bar 35.

Pivotaly secured to a stud 37 rising from the plate 3 beyond the outer edge of the slide 26 is a pawl 38 crossing the slide 26 and having at its free end an up-turned tooth 39 arranged to engage in one of the teeth 18. The upper edge of this tooth is curved or beveled in a direction toward the oncoming teeth, as indicated at 40, and the front edges of these teeth are also curved or beveled on their under sides, as indicated at 41.

The pawl 38 is provided with a longitudinal slot 42 through which passes a pin 43 rising from the supplemental sliding bar 35. The slide 26 is also provided with a transverse slot 44 which, when the slide 26 is in its normal position under the action of the spring 30, is about coincident with the inner face of the front of the casing 1. Above this slot there is arranged a vertical coin chute 45 fast on the inner face of the front of the casing 1, and leading into this coin chute there is a coin opening 46 of such size as to just receive the coin of predetermined size and value intended to operate the machine. When a coin, which, in Fig. 3 is indicated at 47, has been dropped through the coin chute it will pass partially through the slot 44 and be stopped by ledges 48 arranged below the plate 3, which is suitably slotted at this point, as indicated at 49. Now, when the slide 26 is propelled in a rearward direction by pushing on the thumb-piece 28 the coin will participate in this movement, moving along the ledges 48. This movement of the slide 26 progresses without further effect until the edge of the coin projecting above the slide ultimately comes into contact with the contiguous end of the supplemental slide bar 35, when, on further movement of the slide 26, this bar 35 is also caused to move rearward. Now the pin 43 on the bar 35, in turn, causes the pawl 38 to move about its pivot 37 and the tooth 39 on the pawl, engaging one of the teeth 18 on the plate or disk 17, moves the latter about its axis on the stud 16 and as the gear 14 participates in this movement the several pinions 13 are rotated and the shafts 10 will likewise be rotated. The parts are so proportioned that the movement of the slide 26 for the distance indicated is sufficient to rotate the

shafts 10 all synchronously through an arc of ninety degrees, thus releasing the lowermost postal card or set of cards and catching the next succeeding card or set of cards, which latter cross the first card or set of cards at right angles thereto.

As the pawl 38 is moved rearwardly and thus moves the disk or plate 17, a tooth 18 rides from under the spring pawl 22 and the latter snaps back into the path of such tooth, thus preventing any reverse rotation of the disk 17. While this is occurring the lip 33 on the bracket 32 has engaged the beveled portion 24 of the spring pawl 23 and the tooth 25 on said spring pawl is moved into the path of an oncoming tooth 18, thus limiting the extent of rotation of the disk 17 and the parts coacting therewith.

When the slide 26 has reached the rearmost limit of its travel the coin 47 is opposite recesses 50 in the ledges 48, and immediately below these recesses is a downwardly directed coin chute 51 leading to a suitable coin receptacle, not shown, below the plate 4, and a spring catch 52 is arranged in this coin chute near the bottom thereof to retain the coins dropping into the chute until a sufficient number have accumulated therein to overcome the resiliency of the spring catch 52 and permit the lowermost coin to drop. In order that the coin may be visible at the front of the machine the front of the coin chute may be left open and a glass panel 53 may be set opposite an opening 54 in the front of the casing in such position as to give a clear view of this coin chute so that the coins in the chute may be seen at any time.

Leading from the inner face of the front of the casing to the coin chute is a guideway 55 below the ledges 48 so that should a slug or coin smaller than the one designed to operate the machine be placed in the machine it will immediately fall on to the guideway 55 and be directed into the coin chute without causing the operation of the machine.

When the push or thumb-piece 28 is released the spring 30, which has been put under tension by the rearward movement of the slide 26, immediately returns the parts to their normal position and the pawl 38, which is made of thin enough metal to have a certain amount of resiliency, engages the beveled portion 41 of the next succeeding tooth 18 with the beveled portion 40 of the tooth 39 on said pawl and rides under the tooth 18 with which it engaged on its return movement, and finally snaps back in front of said tooth and comes into engagement with the stud 31, which thereby prevents further rearward movement of the slide 26, the latter being further provided with a stud 56 arranged to engage the pawl 38 when in this just described initial position.

It will be understood, of course, that when the card or set of cards have been released by the arms 11 they will fall upon a suitable delivery part of the mechanism contained in the lowermost chamber or compartment and will move to a point where they may be reached by a customer.

The follower plate 12 serves two functions. It serves to space the shafts 10 and hold them in proper position, acting in this respect to hold the shafts in the seats formed by the rounded-out inner corners of the portions 7 of the plate 4. It also serves as a space upon which to place a suitable notice that the supply of articles is

exhausted when the follower plate is upon the bottom plate 4.

We claim:—

1. In a vending machine, a number of substantially vertical shafts arranged to receive between them a number of articles stacked alternately at approximately right angles one to the other, supporting and delivering rods extending through the lower portions of the shafts and at equal distances on each side thereof, and means for rotating said shafts synchronously to angles sufficient to release the lowermost article or articles and simultaneously engage the next succeeding article or articles at right angles to the released article or articles.

2. In a vending machine, a number of substantially vertical shafts; article-supporting rods at the lower ends of the shafts, pinions at the upper ends of the shafts, a common gear wheel for the pinions, and means for rotating the gear wheel step-by-step to cause the rotation of the shafts to an extent sufficient to release an article or articles and engage the next succeeding article or articles.

3. In a vending machine, a number of substantially vertical shafts, each provided with a through rod near its lower end extending to each side of the shaft, pinions at the other ends of the shafts, a common gear wheel for rotating said shafts synchronously through the pinions, and means for imparting a step-by-step movement to the gear wheel to rotate the shafts a sufficient distance at each step movement to release an article or articles and engage the next succeeding article or articles.

4. In a vending machine, a number of substantially vertical shafts, article-receiving rods extending through the shafts near their lower ends and to each side thereof, pinions on the upper ends of said shafts, a common gear wheel for the pinions, a toothed member movable with said gear wheel, and means for engaging the teeth on the toothed member to impart a step-by-step movement to the toothed member.

5. In a vending machine, a number of substantially vertical, rotative shafts, through rods carried by said shafts near their lower ends, pinions on the upper ends of said shafts, a common gear wheel for all of said pinions, a toothed member secured to said gear wheel, a pawl normally out of engagement with the teeth of said toothed member, a slide, means carried by said slide for engaging said pawl and timed to move the same into the path of one of the teeth on the toothed member when the slide reaches the limit of its movement in one direction, another pawl arranged to engage one of the teeth on the toothed member, and means for coupling the slide and last-named pawl for causing the rotation of the toothed member when the slide is moved in the proper direction.

6. In a vending machine, a number of substantially vertical shafts, through rods near the lower ends of said shafts, pinions on the upper ends of said shafts, a common gear wheel for all the pinions, a toothed member movable with said gear wheel, a back-stop for said toothed member, a spring pawl normally out of the path of said toothed member and movable into the path of the teeth on said toothed member, a reciprocating slide, means on said slide for moving the spring pawl into the path of the teeth on the toothed member, an actuating pawl for the toothed member normally inoperative with relation to the slide, and means for coupling the slide and last-named pawl for coactive operation.

7. In a vending machine, a number of substantially vertical shafts, through rods near the lower ends thereof, pinions at the upper ends of said shafts, a common gear wheel for all the pinions, a toothed disk movable with said gear wheel, a back-stop for the toothed disk, a spring pawl normally out of operative relation to the teeth on the disk, a reciprocating slide, means on said slide for moving the pawl into the path of the teeth on the disk when the slide reaches one limit of its movement, a supplemental slide on the main slide, a pawl movable to engage the teeth of the toothed disk, means on the supplemental slide for engaging said last-named pawl, and means for causing co-operative movement of the two slides to actuate the pawl engaged by the supplemental slide to move the toothed disk.

8. In a vending machine, a number of substantially vertical shafts, through rods near the lower ends thereof, pinions near the upper ends of said shafts, a common gear wheel for all the pinions, a toothed disk movable with said
5 gear wheel, an elastic pawl for actuating said toothed disk, and means for moving said pawl in one direction to actuate said disk and permitting the said pawl to yield and ride under the teeth of the disk on its return movement.
- 10 9. In a vending machine, a number of equidistant, vertical shafts; article-supporting means at the lower ends of

the shafts, and a follower plate through which the shafts pass, said follower plate spacing and supporting said shafts and providing space for the display of instructions.

In testimony that we claim the foregoing as our own, 15
we have hereto affixed our signatures in the presence of two witnesses.

RICHARD WEITLICH.
ADOLPH W. MILLER.

Witnesses:

MARTHA ERICKSON,
R. P. CODY.