

**No. 711,634.**

**Patented Oct. 21, 1902.**

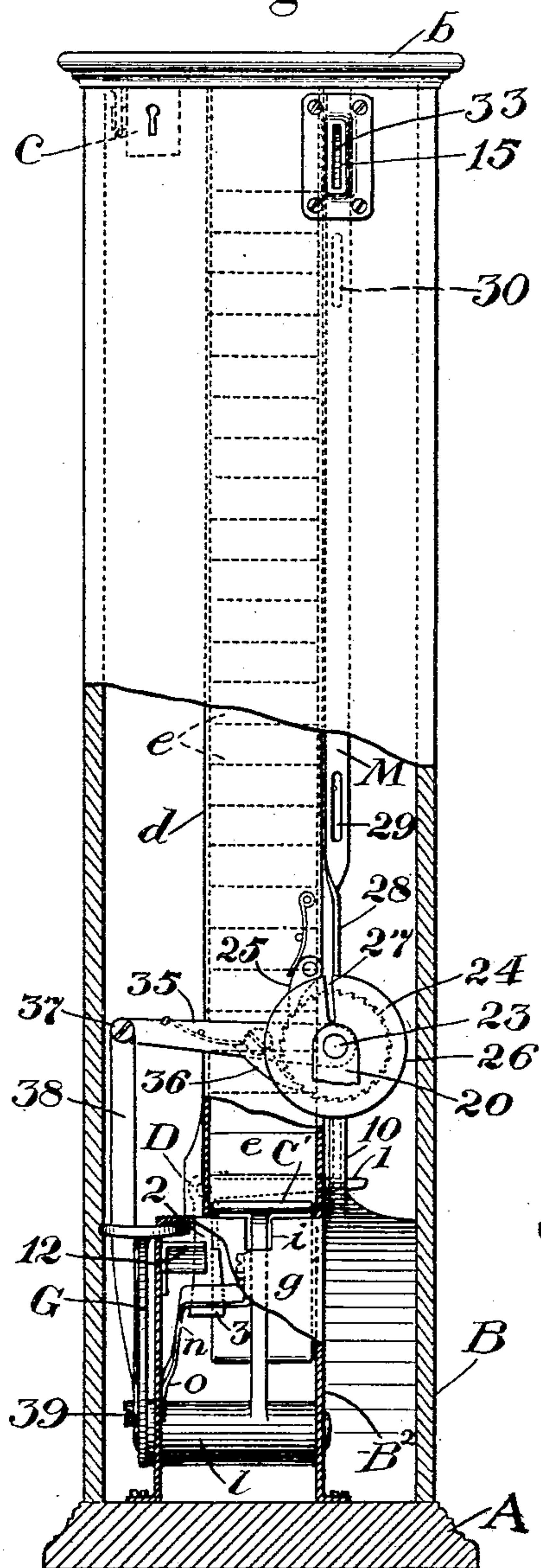
**F. A. KNAPP.**  
**VENDING MACHINE.**

(Application filed Apr. 15, 1902.)

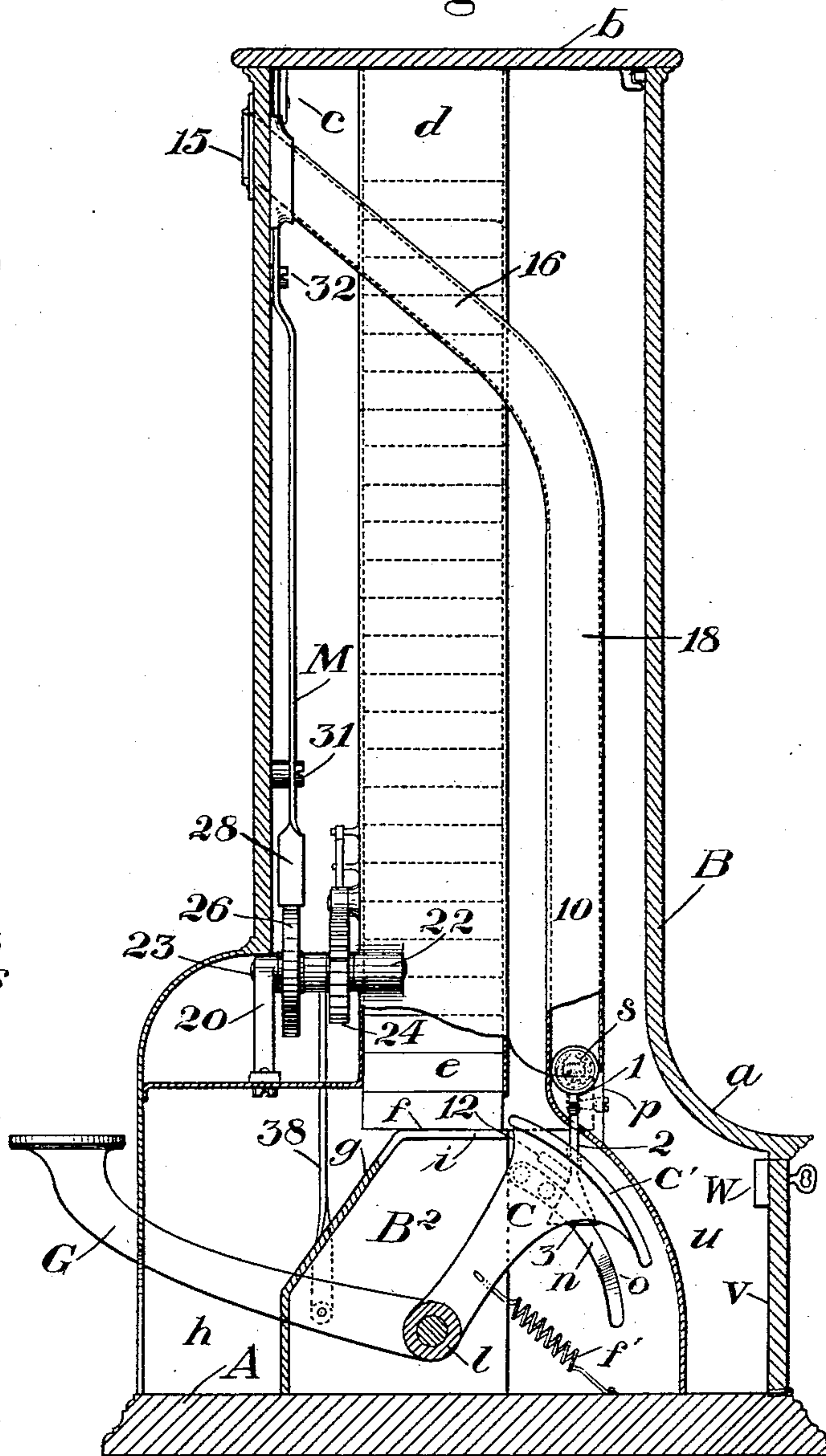
(No Model.)

**2 Sheets—Sheet 1.**

*Fig. 1.*



*Fig. 2.*



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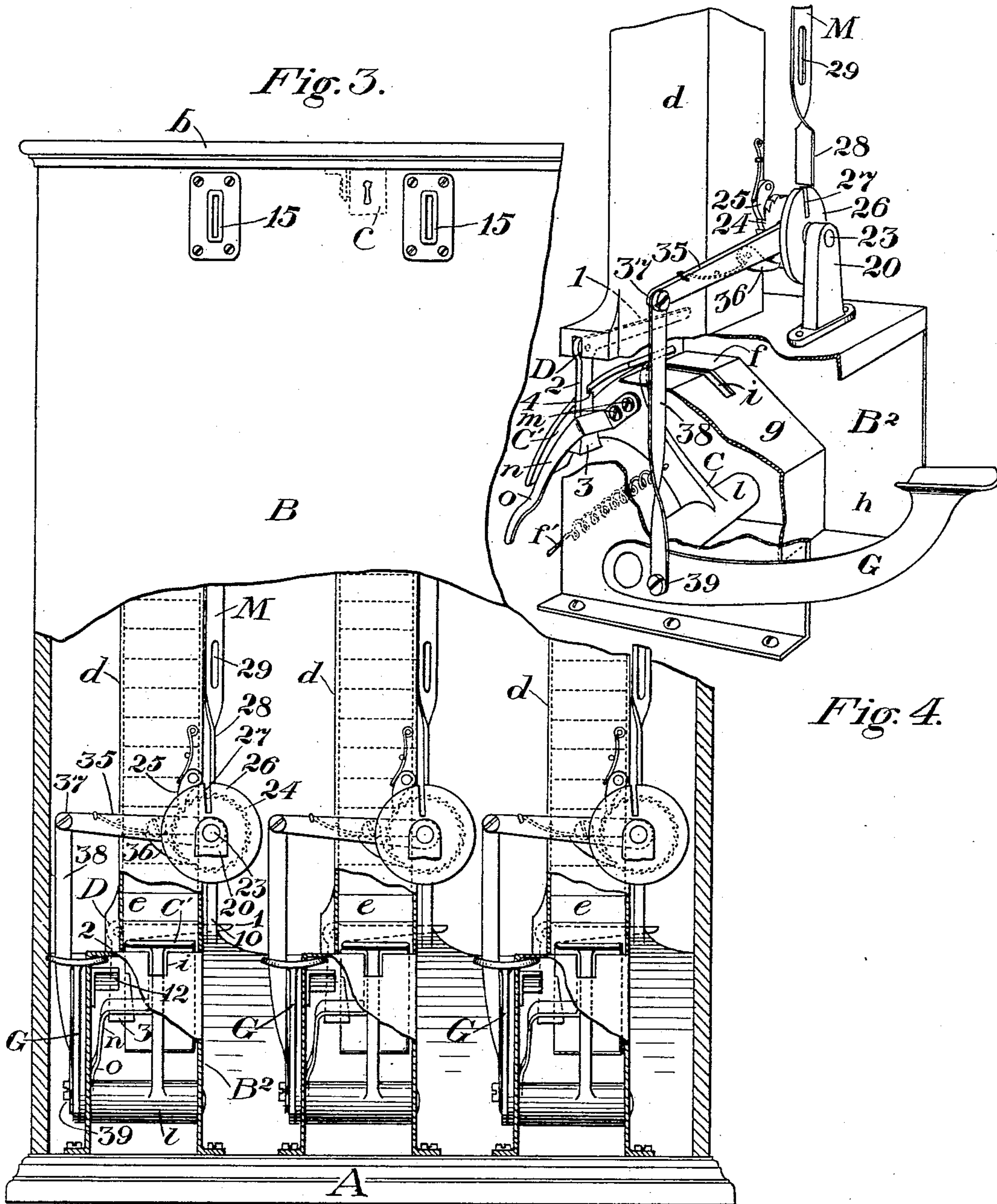
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(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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## VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 711,634, dated October 21, 1902.

Application filed April 15, 1902. Serial No. 102,970. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK ABNER KNAPP, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to vending-machines; and it consists, substantially, in the improvements hereinafter described.

The invention has reference more especially to vending-machines of that class or type in which the delivery of packages and the like is effected through the instrumentality of devices which are normally locked against movement, but which are rendered capable of being operated on deposit in the machine of a coin or other value of predetermined size or weight.

The principal object of the invention is to provide simplified and reliably-operating devices for effecting release of the displacer or ejector for the packages each time a coin of predetermined size or weight is deposited in the machine and also to provide means whereby on exhaustion of the stock or supply of packages in the machine the coin slot or entrance will be automatically closed, so as to prevent deposits of coin at times when no equivalent therefor would be obtained from the machine.

The invention also has for its object to simplify the construction and organization of the elements of the machine, to reduce the number of parts, and to provide positively-operating devices whereby but a single article or package may be delivered for each coin or other value deposited in the machine.

The above and additional objects I attain by means substantially such as are illustrated in the accompanying drawings, wherein—

Figure 1 is a front elevation, in part section, of a coin-controlled vending apparatus or machine, the elements of which are constructed and organized substantially in accordance with my invention; and Fig. 2 is a vertical transverse sectional view thereof. Fig. 3 is a view similar to Fig. 1, representing a plurality of columns of packages or the like, together with a plurality of mechanisms, each of which is adapted to be set in readi-

ness to be operated on deposit of the proper coin in the coin-chute belonging thereto. Fig. 4 is a perspective view in detail, representing the construction and organization of the elements of the apparatus or machine more clearly.

Before proceeding with a more detailed description it may be stated that I employ any suitable box or casing in which the operative elements of the machine are contained or housed, and interiorly of said box or casing I provide a suitable compartment, preferably of internal dimensions approximating the external dimensions of the articles or packages to be vended, said inner compartment extending from the upper end of the machine to a suitable height from the base thereof. Beneath the lower open end of the inner compartment is a support on which rests the lowermost package of the column or pile of packages contained in said compartment, and a suitable displacer or ejector for the packages is employed, which is rendered capable of being effectively operated each time a proper coin is deposited or inserted in the machine. The displacer or ejector is hand-operated, and on completion of each of its return movements the column or pile of packages automatically descends to carry a new package into position to be delivered on the next forward movement of said displacer or ejector. Practically all of the operative elements of the machine are inclosed, and said elements cooperate in the production of a very simple and effective apparatus or machine for the purpose mentioned.

Reference being had to the accompanying drawings by the designating characters thereon, A, Fig. 1, represents a suitable base, upon which is mounted a box or casing B, said box or casing being practically rectangular and being extended or widened at the lower part *a* thereof, so as to accommodate the operative elements of the apparatus or machine. The casing is preferably provided with a removable hinged cover or lid *b*, which is secured in a closed position by means of a suitable lock *c*, Fig. 1, and constructed within said casing is a compartment *d* for containing the column or pile of articles or packages *e* to be successively delivered or vended by the ma-



chine on the deposit therein of coins of the proper size or weight. The inner compartment *d* is closed by the cover or lid *b* and the lower end thereof is open, (seen more clearly at Fig. 2,) and access is had to said compartment by raising said cover or lid. Located on the base A of the machine is a specially-constructed inner casing B<sup>2</sup>, the upper end or surface *f* of which constitutes a platform or table, upon which rests the column or pile of articles or packages *e* contained in said inner compartment *d*, the distance between such surface *f* and the lower end of said compartment being substantially equal to the depth or thickness of one of said articles or packages. (See Fig. 2.) The inner casing B<sup>2</sup> is preferably inclined at the front portion *g* thereof, so as to facilitate the passage of the displaced or ejected article or package to the outlet *h* therefor in the lower part of the machine, and said inner casing is formed with a slot *i*, in which works the substantially sector-shaped displacer or ejector C, the curved portion of which consists of an arc plate C', slightly less in width than the distance between the sides of compartment *d*, said arc plate being the element which directly engages the packages, as hereinafter explained. The displacer or ejector is mounted to rock with a shaft *l*, having its bearings in the sides of the inner casing B<sup>2</sup>, (see Fig. 4,) and secured to one side of said displacer or ejector, by means of screws *m* or in any other suitable way, is an arm *n*, which is bent at *o*, so as to extend gradually outwardly and downwardly in the direction of the rear side of the machine, said arm, as hereinafter more particularly described, cooperating with a coin-operated device which normally engages or locks the displacer or ejector against movement. Said coin-operated device may be constructed in different ways, but in the present instance consists simply of an angle-lever D, pivoted in an extension of the lower part of compartment *d*, the horizontal arm 1 of said angle-lever normally extending substantially parallel with the packages some distance to the rear of said compartment *d*, while the arm 2 thereof normally occupies substantially a vertical position and is weighted at 3 to tend to carry the said arm inwardly to engage the notch 4 in the adjacent edge of the said arc plate C', (see Fig. 4,) thus normally holding the package displacer or ejector in a locked position. The said horizontal arm 1 of the angle-lever D projects into and across the lower extremity of a coin-chute 10, at or near the coin outlet *p* of the latter and substantially at right angles to the edge of the deposited coin *s*, the weight of said coin being greater than the weight of the lever-arm 2 and serving to rock said angle-lever D, so as to disengage the displacer or ejector C to permit the latter to be operated to eject a package from the column of packages contained in compartment *d*. The displacer or ejector is operated to displace and eject a package by depressing a

hand-lever G, projecting outside of the machine, as shown, and the inner end of which is secured to one end of the shaft *l*, on which said ejector is mounted or supported. (See Fig. 4.) On releasing pressure from said thumb-lever the said displacer or ejector is restored to its normal position by means of a spring, (indicated at *f'*, Fig. 2.) It may be stated at this point that though the weight of the coin is sufficient to rock or tilt the angle-lever D to disengage the arm 2 thereof from the arc plate C' of the ejector, still the coin is not immediately released to drop into the cash-receptacle *u* beneath on account of the portion of arm *n* near the bend *o* thereof serving as a stop for lever-arm 2, which prevents arm 1 from being lowered very far at first. On operating the displacer or ejector to eject a package, however, the arm *n* is of course moved forwardly with said displacer or ejector, and inasmuch as said arm is bent gradually outwardly and downwardly, as already explained, the weight of the coin on arm 1 of angle-lever D will gradually lower said arm 1 and carry the arm 2 thereof outwardly proportionate to the extent permitted by the outward inclination of said arm *n*, it being understood that the said arm 2 of the angle-lever D is held to said arm *n* of the displacer or ejector by the weight of the coin during the whole forward movement of said displacer or ejector. Thus it will be seen that the coin is released from the lever-arm 1 to pass to the coin-receptacle *u* practically at the time of completion of the forward movement of the displacer or ejector, and immediately this operation takes place the said displacer or ejector is restored to its former position by means of spring *f'*. In the meantime the column of packages has become lowered by gravity an extent substantially equaling the depth or thickness of one of the packages, the next lowermost package taking position for ejection on the next operation of the machine. By the construction and organization of elements thus described and shown it will be seen that no actual delivery of an article or package can take place until release of the coin to the coin-receptacle has been accomplished, and it will also be seen that the delivery of the article or package is absolutely certain, provided the proper coin be inserted in the coin-chute 10 previous to attempting to depress the operating-lever G for the displacer or ejector. To prevent injurious strain upon the operative mechanism, such as might occur if the hand-lever G is tampered with in the normal position of the parts, I provide on the interior of inner casing B<sup>2</sup> a stationary stop 12, one edge of which is in contact with the adjacent side of arm 2 of angle-lever D just below the engaging point between said arm and arc plate C' of the displacer or ejector, (see Fig. 2,) and it will be seen that any pressure put upon the lever G without previously inserting a coin in the chute 10 will be received principally by said stop 12. When the angle-



lever D is moved by the weight of a coin on the arm 1 thereof, the arm 2 of said lever moves against the edge of the said stop 12. Of course as soon as lever-arm 2 is disengaged from the notch in the arc plate C' the displacer or ejector C is free to be operated in the manner already explained by which to displace and eject a package from the machine. The packages themselves may be of any desired character—such, for instance, as boxes of matches, candies, or other articles.

The coin-chute 10 leads from the coin slot or aperture 15, formed in the front of the machine at near the top thereof, and said chute is inclined at 16 and extends inwardly of the machine a suitable distance, thence downwardly at 18. (See Fig. 2.) As before stated, the arm 1 of angle-lever D extends across said chute transversely of the edge of the deposited coin, said arm working in a plane parallel with the coin-outlet *p*, leading to the coin-receptacle *u*, access to which latter is had in any suitable way, as by means of a hinged door *v*, having a suitable lock *w*.

In Fig. 3 I have shown my improved vending machine or apparatus in triplicate, it being understood, of course, that any number of the machines may be thus united or made up in one structure, thereby greatly increasing the capacity. The same designating characters employed for Figs. 1, 2, and 4 also apply to each of the mechanisms shown in said Fig. 3, the construction and organization of elements being substantially the same in each instance.

In order to prevent insertion or deposit of coins in the machine after the stock or supply of packages therein has become exhausted, I preferably employ suitable means for automatically closing the coin slot or aperture immediately on completion of the return movement of the displacer or ejector after the latter has been operated to eject from the machine the last one of a column or pile of packages, and in this way insertions of coins in the machine will be prevented when no equivalent therefor is to be obtained from the machine. Thus in suitable bearings 20 and 22, Fig. 2, I mount a short shaft 23, on which is rigidly held or supported a toothed ratchet-wheel 24, the number of the teeth of which corresponds to the total number of packages the compartment *d* of the machine is intended to contain, said shaft and ratchet-wheel being prevented from back movement by means of a spring-pressed pawl 25, pivoted to the side of said compartment *d* and taking into the teeth of said wheel, substantially as shown. The shaft 23 is also provided with a circular plate or disk 26, having at a point of its circumference or periphery a notch 27, the sides of which at the beginning of operations occupy a position just past a truly vertical line, and resting upon the edge of said circular plate or disk immediately at one edge of said notch 27 is the lower

end of the engaging portion 28 of a locking-plate M, which is slotted at 29 and 30 to have vertical movement on pins 31 and 32, projecting from the inner side of the front of the casing, said plate being of a length to normally reach to the upper end of the outer casing and also having therein a slot 33, normally registering with the coin slot or aperture 10. Working loosely on the shaft 23 is one end of a lever 35, having pivoted thereto a spring-pressed actuating-pawl 36 for said ratchet-wheel 24, the other end of said lever being movably connected at 37 with the upper end of a connecting-rod 38, the lower end of which latter is similarly connected at 39 with the operating hand-lever G.

Assuming that the operative parts of the mechanism are in the positions indicated in the drawings, the operation of the machine is as follows: On depositing a coin of predetermined size or weight in the coin-chute the said coin falls across the arm 1 of angle-lever D, as already explained, rocking said lever so as to release engagement of the weighted arm 2 thereof with the arc-plate of the displacer or ejector for the packages, whereupon by depressing the hand-lever G the said displacer or ejector will be operated to expel or eject the lowermost package from beneath the column or pile of packages resting on top of the inner casing B<sup>2</sup>. On each full depression of said hand-lever G the ratchet-wheel 24 will be moved the distance of one tooth thereof, the circular plate or disk 26 being likewise moved or turned a corresponding distance. The said ratchet-wheel is herein shown as provided with twenty-five teeth, which correspond with the number of packages contained in the compartment *d*, and thus when the displacer or ejector has been finally operated to expel or eject from the machine the last package of the column or pile thereof the notch 27 of disk 26 will be brought into alinement with the portion 28 of locking-plate M, whereupon said plate will descend or move downwardly of its own weight, and the said portion 28 thereof will enter said notch 27, and thereby lock the entire mechanism of the machine against movement or operation during the time there are no packages contained in the machine. On placing a new stock or supply of packages in the machine the parts are again set as shown in the several figures of the drawings, and the same operations may be repeated. Of course on descent of said locking-plate M the upper part thereof closes over the coin slot or aperture in an obvious manner, the downward movement of the plate being limited by the bottom of notch 27 in disk 26.

It will be understood that I do not limit myself in practice to the precise details of construction and organization of elements herein shown and described, since variations thereof may be made and still be within the scope of my invention.



Having now described my invention, I claim—

1. A coin-controlled apparatus comprising an inner package-compartment open at its lower end and having an extension on one side at such end, a platform for supporting a pile of packages in the compartment, an ejector comprising an arc-plate for ejecting the packages one by one from the bottom of the pile, said arc-plate having a notch in one edge thereof, and a weighted angle-lever pivoted in said extension with an arm thereof engaging in said notch, said arm being operated to release such engagement by an inserted coin of predetermined weight, and the said ejector being provided at one side with a downwardly and rearwardly bent arm moving against said lever-arm for controlling the movement of the lever to deliver the coin to the receptacle therefor on completion of the forward movement of the ejector.

2. A coin-controlled apparatus comprising an inner package-compartment open at its lower end and having an extension on one side at such end, a platform having a slot and supporting a pile of packages in the compartment, an ejector working in said slot and comprising an arc plate for ejecting the packages one by one from the bottom of the pile, said arc plate having a notch in one edge thereof, and a weighted angle-lever pivoted in said extension with an arm thereof engaging in said notch, said arm being operated to release such engagement by an inserted coin of predetermined weight, and the said ejector being provided at one side with a downwardly and rearwardly bent arm moving against said lever-arm for controlling the movement of the lever to deliver the coin to the receptacle therefor on completion of the forward movement of the ejector.

3. A coin-controlled apparatus comprising an inner package-compartment open at its lower end and having an extension on one side at such end, an inner casing the upper surface of which is formed with a slot and constitutes a platform for supporting a pile of packages in the compartment, an ejector mounted in the sides of said casing and comprising an arc plate for ejecting the packages one by one from the bottom of the pile, said arc plate having a notch in one edge thereof, and a weighted angle-lever pivoted in said extension with an arm thereof engaging in said notch, said arm being operated to release such engagement by an inserted coin of predetermined weight, and the said ejector being provided at one side with a downwardly and rearwardly bent arm moving against said lever-arm for controlling the movement of the lever to deliver the coin to the receptacle therefor on completion of the forward movement of the ejector.

4. A coin-controlled apparatus comprising a casing having a coin-slot, a coin-chute, and an inner package-compartment open at its

lower end and having an extension on one side at such end, a platform supporting a pile of packages in the compartment, an ejector comprising an arc plate for ejecting the packages one by one from the bottom of the pile, said arc plate having a notch in one edge thereof, and a weighted angle-lever pivoted in said extension with an arm thereof extending across the lower end of the coin-chute, and its other arm engaging in said notch, said last-named arm being operated to release such engagement by an inserted coin of predetermined weight falling on the first-named arm, and the said ejector being provided at one side with a downwardly and rearwardly bent arm moving against said lever-arm for controlling the movement of the lever to deliver the coin to the receptacle therefor on completion of the forward movement of the ejector.

5. A coin-controlled vending-machine, comprising a casing having a coin-slot, a coin-chute, and an inner compartment for containing a lot of packages or the like, means for ejecting the packages one by one, and means for closing said coin-slot succeeding the ejection of the last package of the lot, said means including an intermittently-operated rotatable disk having a notch, and a gravity-plate dropping into said notch on completion of rotation of the disk.

6. A coin-controlled vending-machine, comprising a casing having a coin-slot, a coin-chute, and an inner package-compartment open at its lower end, a platform for supporting a pile of packages within the compartment, means for displacing and ejecting the packages one by one from the bottom of the pile, and means for automatically closing said coin-slot succeeding the ejection of the last package of the pile, said means including an intermittently-operated rotatable disk having a notch, and a gravity-plate dropping into said notch on completion of rotation of the disk.

7. A coin-controlled vending-machine, comprising a casing having a coin-slot, a coin-chute, and an inner package-compartment open at its lower end, a platform for supporting a pile of packages within the compartment, normally engaged devices for displacing and ejecting the packages one by one from the bottom of the pile, means for releasing such engagement on deposit in the chute of a coin of predetermined weight, and means for closing said coin-slot succeeding the ejection of the last package of the pile, said means including an intermittently-operated rotatable disk having a notch, and a gravity-plate dropping into said notch on completion of rotation of the disk.

8. A coin-controlled vending-machine, comprising a casing having a coin-slot, a coin-chute, and an inner compartment for containing a lot of packages or the like, means for ejecting the packages one by one, said means including a hand-lever, a shaft carrying a

