Dec. 20, 1932. J. GOTTFRIED 1,891,640

VENDING MACHINE

Filed Sept. 16, 1930 6 Sheets-Sheet 1

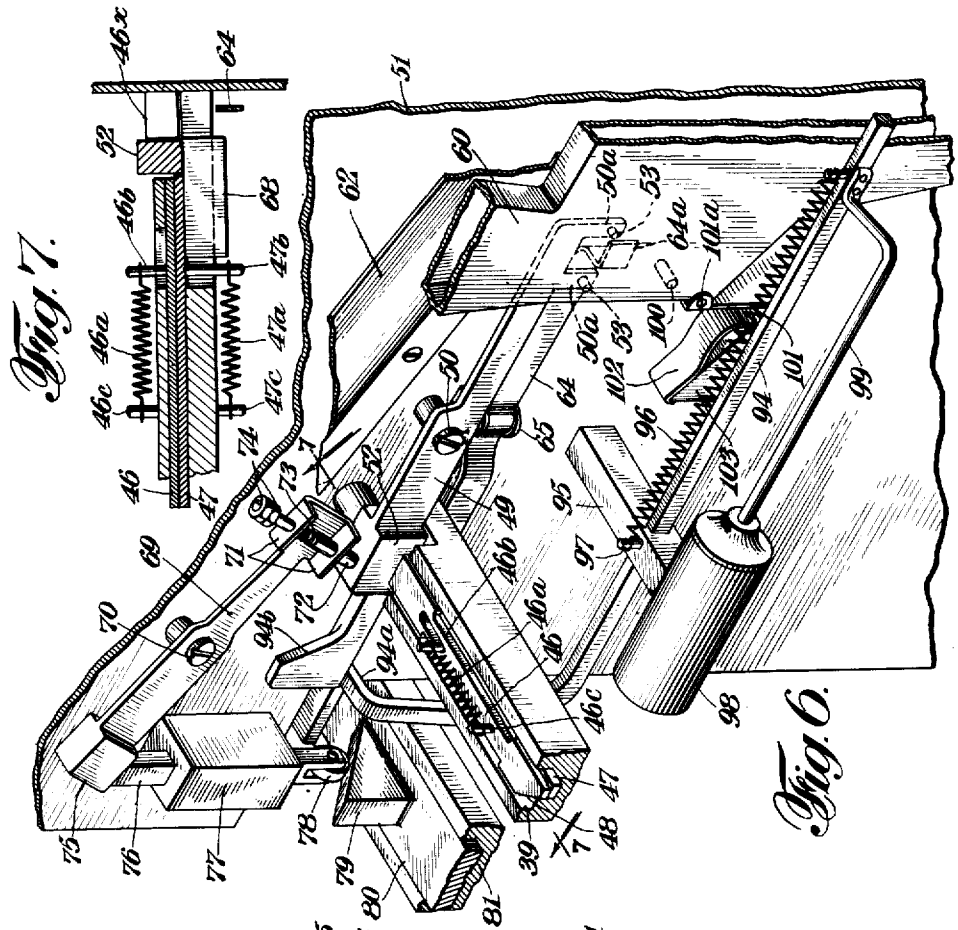


Fig. 7.

Fig. 6.

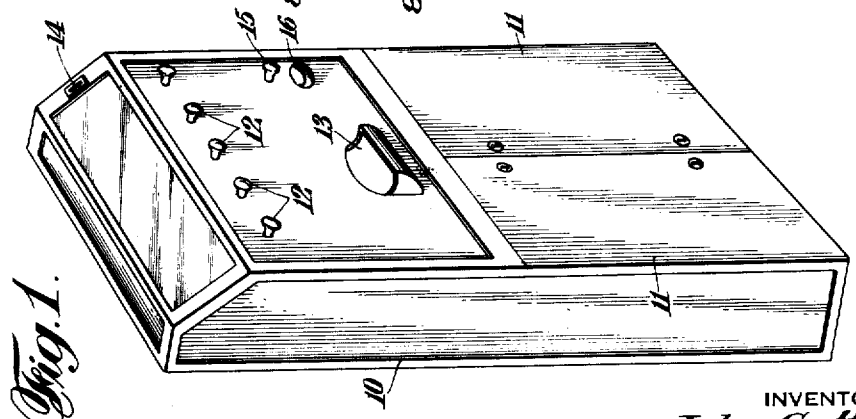


Fig. 1.

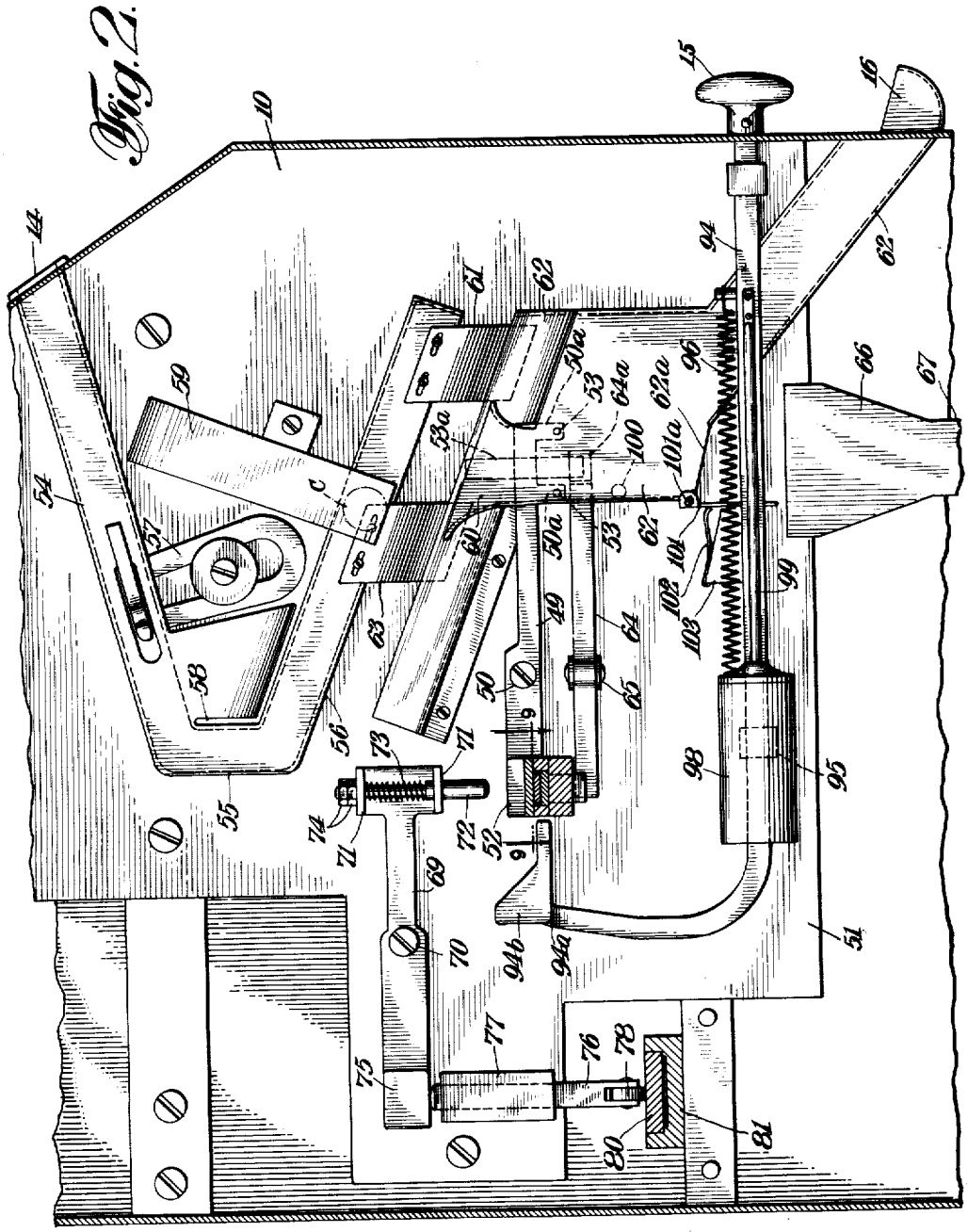
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Fig. 2.



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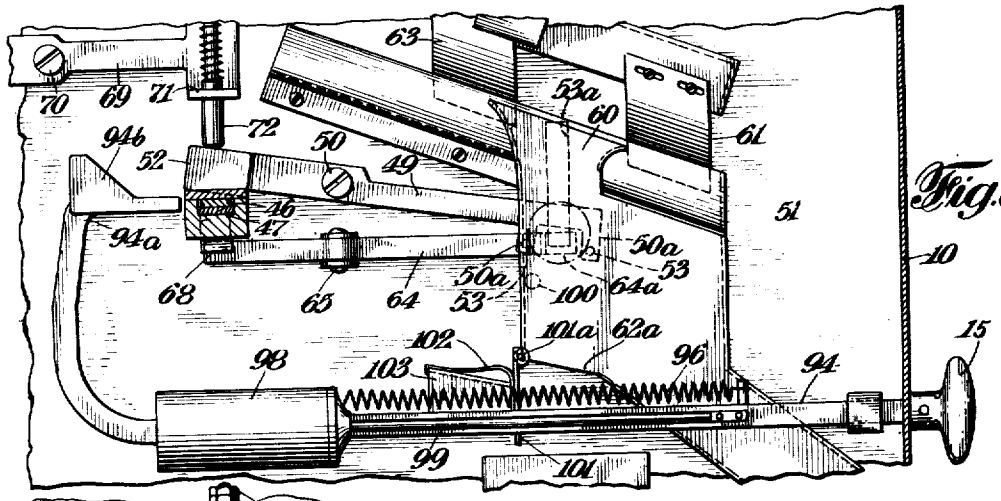


Fig.3.

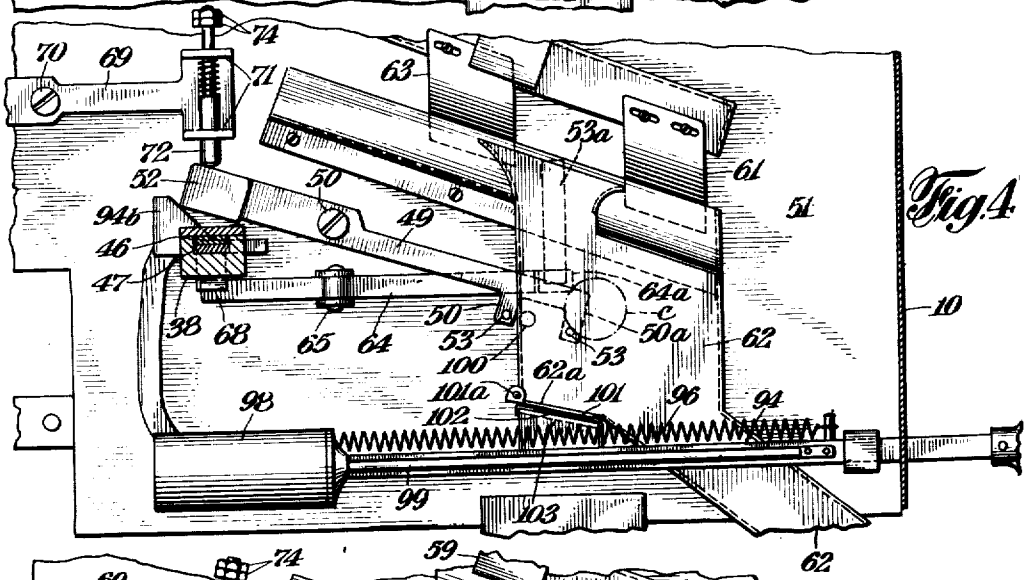


Fig.4

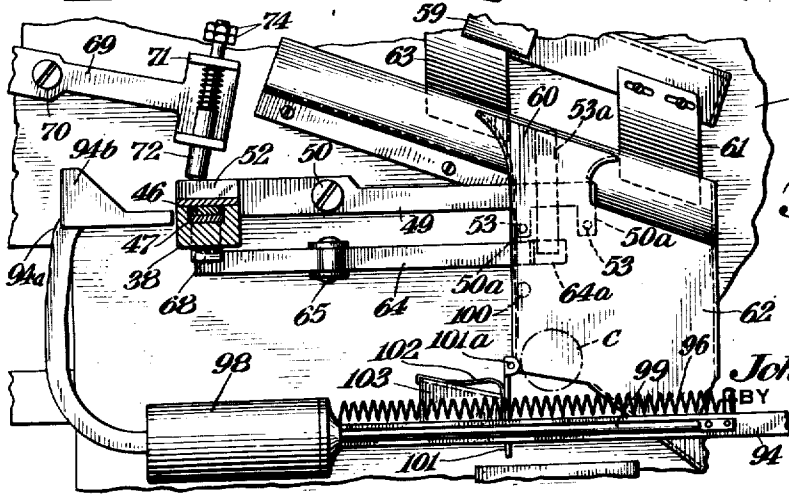


Fig.5.

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VENDING MACHINE

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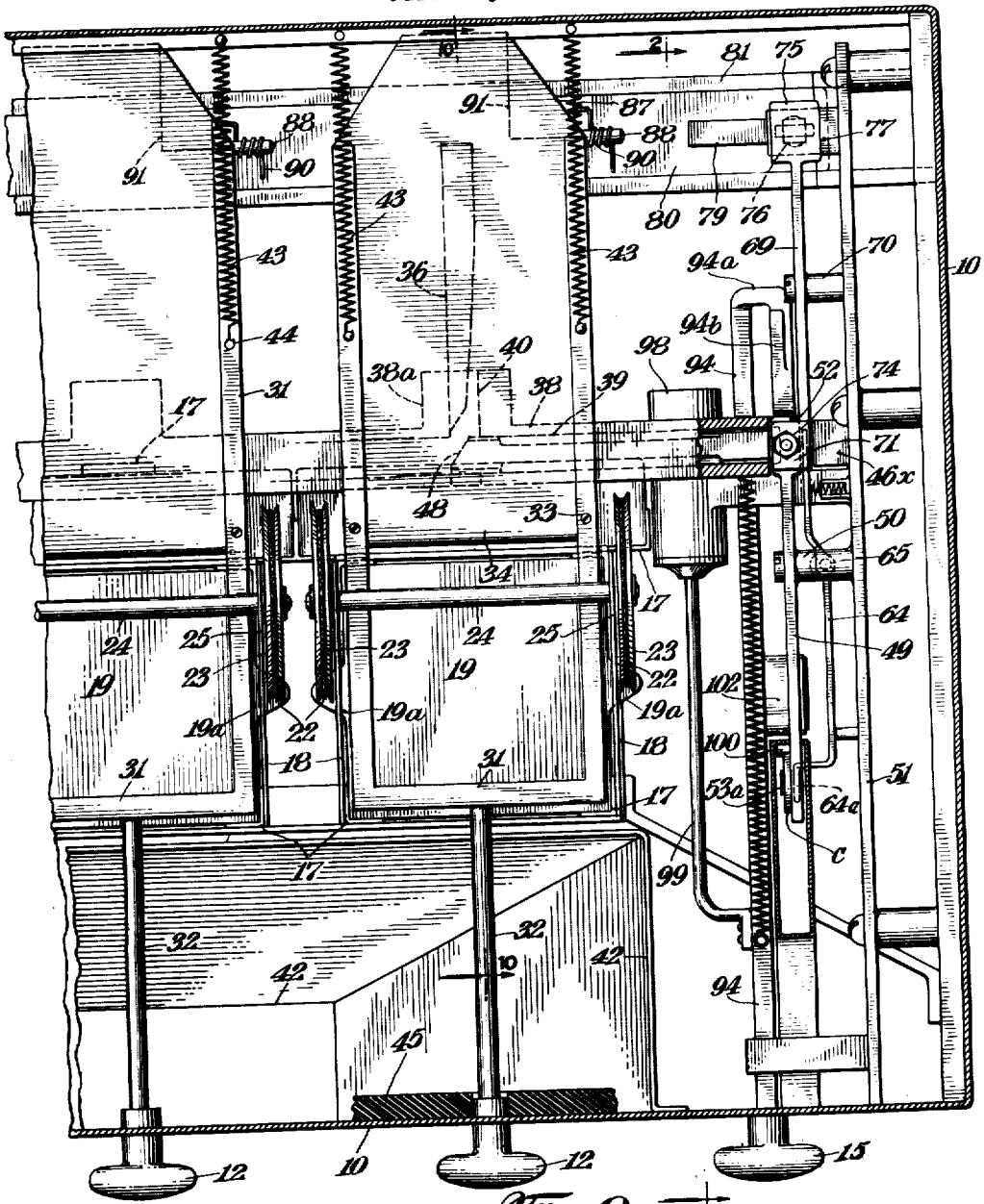


Fig. 8.

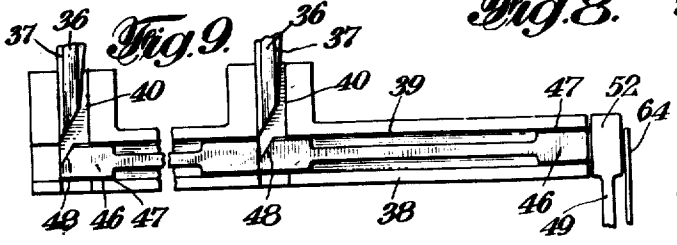


Fig. 9.

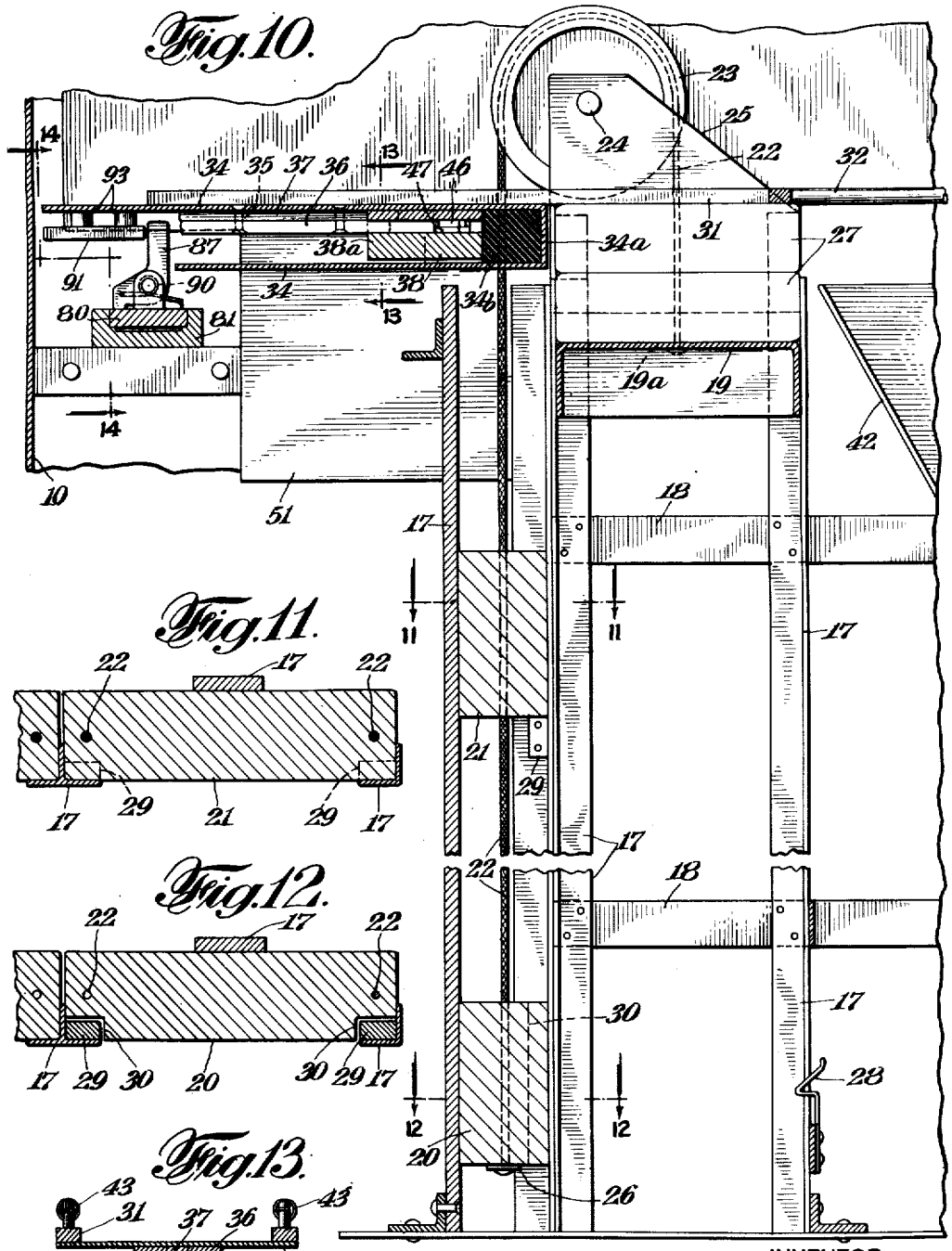
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VENDING MACHINE

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Fig. 10.



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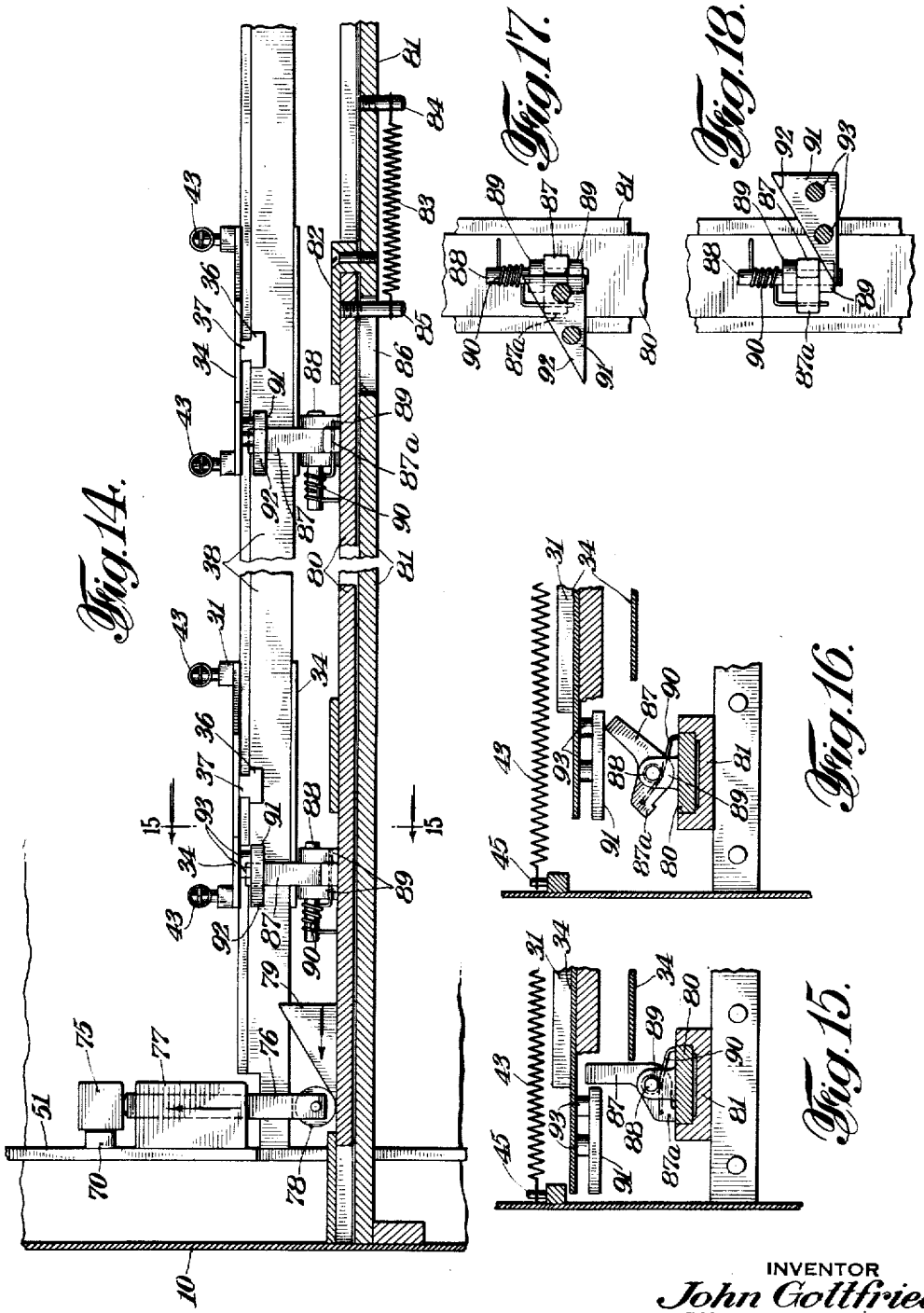


Fig. 14.

Fig. 17.

Fig. 18.

Fig. 16.

Fig. 15.

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Patented Dec. 20, 1932 1,891,640

UNITED STATES PATENT OFFICE

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VENDING MACHINE

Application filed September 16, 1930. Serial No. 482,263.

My invention relates to article vending machines and particularly those which are coin controlled, and its general object is to provide a new and improved machine of that class.

Among the specific objects of the invention one is to provide new and improved counterweight devices whereby the weight employed to elevate a stack of vendible articles is automatically lessened as the weight of the stack decreases. A second object is to improve and simplify means for preventing a vending operation when an article or package stack is exhausted, the package support itself functioning as a stop to prevent a vending operation. A third specific object is to improve and render more certain the operation of the devices which normally prevent operation of the vending mechanism. A fourth specific object is to improve and render more certain the operation of the coin return mechanism.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

My invention will be described in detail in connection with the accompanying drawings which illustrate the preferred form of invention and wherein

Fig. 1 is a perspective view of the machine;

Fig. 2 is a fragmentary vertical sectional view showing the upper part of the machine, the section on which the view is taken corresponding generally with the section line 2—2 in Fig. 8;

Fig. 3 is a fragmentary vertical sectional view corresponding with Fig. 2 but omitting some of the parts shown therein and showing their parts in different relationships, Fig. 3 showing the position of the parts after a coin has been inserted;

Fig. 4 corresponds with Fig. 3 but shows the position of the parts during the operation of returning a coin to the intending purchaser;

Fig. 5 corresponds with Fig. 2 but illustrates the position of the parts near the completion of the return movements following a vending operation;

Fig. 6 is a perspective view corresponding with Fig. 5;

Fig. 7 is a fragmentary vertical sectional view taken on the plane indicated by the section line 7—7 in Fig. 6;

Fig. 8 is a fragmentary horizontal sectional view;

Fig. 9 is a fragmentary horizontal sectional view taken on the plane somewhat below the plane on Fig. 8;

Fig. 10 is a fragmentary vertical sectional view taken on the plane corresponding with the section line 10—10 in Fig. 8;

Figs. 11 and 12 are fragmentary horizontal sectional views taken on planes indicated respectively by the section lines 11—11 and 12—12 of Fig. 10.

Fig. 13 is a vertical sectional view taken on the plane indicated by the section line 13—13 of Fig. 10;

Fig. 14 is a fragmentary vertical sectional view looking at parts from the rear of the machine and taken on the plane indicated at the section line 14—14 in Fig. 10;

Fig. 15 is a vertical sectional view taken on the plane indicated at the section line 15—15 in Fig. 14;

Fig. 16 is a view corresponding with Fig. 15 but showing certain of the parts in different relationships;

Fig. 17 is a fragmentary plane view partly in section of the parts in Fig. 15; and

Fig. 18 is a view corresponding with Fig. 17 but showing different relationships of the parts.

As illustrated in Fig. 1 the machine is enclosed in a casing 10 provided at its lower front part with doors 11 giving access to the interior. As illustrated the machine which is of the multiple key type is provided with a plurality of finger pieces or keys 12, five of such keys being illustrated and each operative on an associate stack or supply of articles or packages. The common receptacle of the articles vended by the machine when any of the finger pieces 12 is operated is illustrated at 13. At the upper part of the machine is a coin receiving slot 14 and at the right

and somewhat below the slot is a key or finger piece 15 operative to return a coin to the intending purchaser, the receptacle for the returned coin being indicated at 16.

The casing 10 encloses a frame-work for supporting the elements of the vending mechanism, said frame-work as thoroughly shown in Figs. 8, 10 and 11 comprising uprights 17 and horizontally disposed bars 18. Certain of the uprights provide guides for article carriers, supports or platforms, which preferably are constituted by sheet metal members 19 of suitable form, these being slidable up and down along uprights or guides 17. Associated with each support or platform 19 is a counterweight element comprising a plurality of weights, two of such weights being shown in the present instance and designated by the numbers 20 and 21. Normally the upper weight 21 rests on the lower and the two are adapted to slide up and down between certain of the uprights 17.

The counterweight element is connected with its associate platform by flexible connection or cord 22 of wire or the like, such connection running over a grooved pulley 23 pivoted at 24 in bearing plates 25 supported on the frame-work. Cord 22 runs through perforations in the counterweights 20 and 21 and is provided at its end with suitable devices 26 preventing withdrawal. It will be understood that there are two pulleys 23 and two cords 22 associated with each platform and its counterweight element, the cords being attached to ears or tabs 19*a* at about the middle of the sides of the platforms, and running over their associate pulleys through their apertures in the counterweights, said apertures being formed near the sides of the counterweights and at midway of their depth so that the pull may be equalized. Preferably each pair of pulleys 23 are connected to turn together, their pivots being constituted by shaft 24, which bears near each end in one of the bearing plates 25.

The vendible articles indicated at 27 are arranged in stacks or piles on the platforms 19 which during the loading operation are retained in their lowermost position by spring detents 28.

The machine as illustrated was especially designed for vending packages of cigarettes and the articles 27 illustrated are cigarette packages, but it is to be understood of course that the machine may be adapted for vending any suitable vendible units of merchandise, and that the term "package" as employed herein comprehends any suitable unit.

The construction is such that the pull of the counterweight element 20, 21, 26 is transmitted through cords 22 to the middle of the sides of the platform 19 and tends constantly to raise said platform. After the platform has been loaded with a suitable number of packages 27 the detent 28 is released by hand, thus freeing the parts so that they may be properly controlled during vending operations. Such vending operations as hereinafter explained result in withdrawal or removal of the packages 27 one by one from the top of the stack and the consequent upward movement step by step of the platform under the pull of the counterweight element. Obviously as the number of packages on the platform decreases the weight to be acted on by the counterweight lessens, and in order to compensate for this lessening weight and maintain as uniform an operation on the vending mechanism as possible, provision is made for automatically reducing the counterweight element. The means employed provides for each counterweight element a pair of abutments or stops in the form of blocks 29 suitably secured at predetermined points to certain of the uprights or guide bars 17. The lower weight 20 of each counterweight element is provided with cut-outs 30 which as shown in Fig. 12 register with the stops 29 so that the weight 20 may pass down freely over said stops without being affected thereby. The upper weight 21, however, is not so cut out and its opposite corners will contact with the top of the stops 29 which will arrest the weight 21 and hold it as shown in Fig. 10 allowing the lower weight 20 to continue its downward movement alone. It will be understood that on return movement of the parts for a reloading operation the weight 21 will be picked up or lifted by the weight 20 in the course of its upward movement to the starting position which it will occupy when the platforms are being loaded with packages.

The vending mechanism proper whereby the packages 27 are withdrawn one by one from the top of the stack and allowed to drop into the receptacle 13 comprises, as best shown in Figs. 8, 10 and 14, a U-shaped frame 31 horizontally disposed and adapted for sliding movement, said frame being open at the rear and its closed front side being provided with a forwardly extending pull rod 32 which passes through the casing 10, and receives at its forward end outside the casing one of the finger pieces or keys 12. Suitably attached as by rivets 33 to the underside of the frame 31 and somewhat to its rear is a sheet metal plate 34 bent into a U-shape viewed from the side. Secured within the U-shaped plate 34 at the underside of its top portion as by rivets 35 is a forwardly extending cam bar 36 having under-cut side edge portions 37.

The series of frame members constituted each by a frame 31 and attached plate 34 are supported side by side and guided for forward and rearward operative sliding movements by a cross bar 38 which is longitudinally grooved at its upper side as indicated at 39 constituting in effect a trough. The upper and lower parts of the plates 34 fit

around the trough-like bar 38, the cam bars 36 being received in cross grooves 40 in rearward extensions 38*a* therefrom. Plates 41 suitably secured to the slide bar fit into the undercuts 37 of the cam bars and co-operate to hold and guide the operating frames 31, 34 in all of their positions. Normally the front face 34*a* of the plate 34 is opposite to and slightly in the rear of the uppermost package 27 on the associate stack, this uppermost package being held against upward movement by the frame element 31.

The hand-controlled vending frames are normally locked or restrained from being pulled forward to withdraw or expel the package as hereinafter explained. However, when the vending mechanism is unlocked or released and one of the frames is pulled forward the face 34 acting against the rear face of the package will pull the package forward, withdrawing it from its stack and permitting it to fall through a guide chute 42 which leads to the receptacle 13. The entrance way or mouth to this guide chute is flared or expanded so that it underlies all of the points at which packages may be withdrawn from the five stacks. To restore the frame members 31 and 34 to normal position each is provided with a pair of draw springs 43 connected at their forward ends to pins 44 on the frame 31, the rear ends of the springs being hooked around fixed anchor pins 45. These springs tend to maintain filler blocks 34*b* within the plates 34 in contact with the front face of the bar 38. These filler blocks 34*b* are preferably of rubber or other resilient material suitably secured in place as such material lessens noise of operation. Similarly a buffer strip 45 of rubber or the like may be suitably secured to the inner face of the front of the casing 10 to limit the forward pull of the frame 31, 34.

As has been stated the vending mechanism proper is normally locked against operation. The locking or restraining mechanism comprises in the present instance a series or train of slide bars (Figs. 6–10) which are seated in the groove 39 in the bar 38 and adapted for endwise sliding movements therein. In the present instance there are employed two trains of these slide bars, the upper slide bars 46 overlying and resting on the lower set 47. These slide bars are alike in construction, each comprising a neck or narrow portion joining enlarged ends, the left enlarged end of each slide bar having a cam edge 48. However, the end portions of the top slides or bars 46 are slightly narrower than the end portions of the under slide bars 47 for a purpose hereinafter explained.

The trains of slide bars are adapted for contractive engagement with each other so that one may transmit movement to the others of the train within the guideway 39. A spring 46*a* connected at its right-hand end to a pin 46*b* projecting upward from the right-hand slide bar 46 and at its other end to a fixed anchorage 46*c* tends constantly to urge the right-hand slide bar 46 towards the left and to maintain the train of slide bars in contact, with the left-hand slide bar abutting against the closed end of the guide bar or trough 38 (Figs. 6 and 7). A similar spring 47*a*, connected to a pin 47*b* projecting downward from the right-hand slide bar 47 and having fixed anchorage 47*c*, performs a similar function for the lower train of slide bars 47. Normally the cam edges 48 are in the vertical planes of the forward ends or points of the cam bars 36. The slide bars do not completely fill the trough end to end when released as hereinafter explained, but there is then sufficient lost motion to permit one of the cam bars 36 to be drawn forward, entering the space afforded by the cam 48 and the slide bar registering with it and permitting the cam bar 36 during the forward pull of the vending mechanism to cam or push rightward the slide bar against whose cam edge 48 it acts, as well as all of the other slide bars of the train which lie to the right of the operated slide bar. It will be understood that the operation just described applies to both trains of slide bars 46 and 47, these two trains operating similarly during actuation of the mechanism of which they constitute a part. Thus operated the slide bars completely fill the trough, the right-hand ones abutting against a fixed stop 46*x* so that operation of any other of the key controlled vending members 31, 34 will be prevented by the pointed end of their cam bars 36 meeting an unyielding obstruction in the slide bar train.

As stated, the upper trains of slide bars 46 are slightly narrower than the lower train; and the purpose of this is to prevent control of the slide bar trains improperly through frictional action of the pointed end of one of the cam bars 36 on said slide bar train. For example, it will be understood that once one of the vending frame members 31, 34 has been operated to cam rightward certain of the slide bars, they might be maintained in this position by pulling forward a frame member to the right of the operated frame member so as to cause the point of the cam bar 36 to press against the slide bar opposite the associate passageway 40 and hold it frictionally against the front wall of the trough 39. So held, repeated improper operations of the frame member first operated would be possible. However, by narrowing the upper train of slide bars such improper operation is prevented, since while the point of the cam bar 36 might engage and frictionally hold a lower bar 47, the upper train 46 would always be free.

The train of slide bars 46 and 47 are normally held against sliding movements by

means comprising a coin controlled element or lever 49 illustrated in Figs. 2, 6 and 8. The lever 49 which swings vertically is of the first order, having a fixed fulcrum or pivot 50 projecting inward from a horizontal fixed frame bar 51. The rear of the lever 49 terminates in block like portion or stop 52 which normally lies contiguous to and in the path of the right-hand members of the slide bar trains 46 and 47 and interposed between them and the frame stop 46*x* (Fig. 7). The front arm of the lever 50 terminates in downward extensions 50*a* spaced apart and provided with lateral pins 53. These pins in turn are so spaced that they will arrest a selected coin of the proper diameter but will permit coins of lesser diameter to drop between them. The weight of the selected coin resting on the pins 53 will tip the lever 49 and raise the stop or lock 52 freeing the slide bars 46, 47 and permitting a vending operation under actuation of one of the finger pieces 12.

As has been stated, the coin which will operate the coin lever 49 is a selected one and to this end suitable coin selecting mechanism may be employed, that illustrated in the drawings being disclosed and claimed in my copending application Serial No. 448,500, filed April 30, 1930, and not being comprised other than generally in the present invention. Accordingly the coin selecting mechanism need be but briefly described. As shown in Fig. 1. the coin-receiving slot 14 affords entrance to an angular coin chute constituted by a number of angularly related sections 54, 55 and 56. Iron and steel coins are eliminated by a horseshoe magnet 57 which deflects them into an out passage-way 58. Retained coins rolling down the inclined chute section 56 and subsequently falling through the lower portion thereof which is open or without bottom, first come within the influence of a permanent magnet 59 by which their trajectories are affected according to their magnetic qualities. Assuming that the machine is to be operated by silver quarter dollars, such coin designated as C will fall through a chute 60 and will be arrested by the pins 53 on the coin lever 49. A flat spring 53*a* may be employed to bear lightly against the side of the selected coin to insure its proper seating on pins 53 and its retention thereon. Other coins less influenced by the magnet 59 will engage with a deflector plate 61 which will deflect them sidewise into a chute 62 that communicates with the return receptacle 16. A deflector 63 will act similarly on the coins more greatly influenced by the magnet 59 than silver quarter dollars.

The coin C having tipped the coin lever 49 and freed the vending mechanism for operation as has been described, the coin is automatically ejected from its seat on the lever 49 by means operating independently thereof. The ejecting means comprises a second lever 64 fulcrumed between its ends on a fixed pivot 65, said pivot being vertical and disposed below the horizontal pivot 50 of the lever 49. In consequence the lever 64 is adapted to swing in a different direction from the lever 49 and at substantially right angles thereto. As will be clearly understood from Figs. 6 to 8 the forward arm of the lever 64 terminates in an inwardly offset contact portion 64*a* whose plane is slightly to the right of the plane of the operating coin C as it rests on the lever 49. The tipping of said lever by the coin brings the lower portion of the coin opposite the contact face 64*a* so that when the lever 64 is actuated the arm 64 moving to the right will cause the contact face 64*a* to eject the coin laterally from the pins 53. When thus ejected the coin will of its own weight drop straight downward through the lower left hand portion of the chute 62 which is open at 62*a* and will enter the flaring open mouth 66 of a coin chute 67 communicating with a receptacle contained within the machine casing. The swinging of the lever 64 as described is effected by a block 68 which is secured to and projects downward from the right-hand end portion of the right-hand slide bar 47. This block, when the trains of slide bars 46 and 47 are moved rightward during the vending operation, will contact at its right-hand face with the rear arm of the lever 64 and will swing the lever about the pivot 65 as described. The parts are timed so that the coin ejecting function of the lever 64 will take place at the proper time in relation to the releasing of the operating trains.

In order that the mechanism shall operate with certainty and ease, it is essential that the coin receiving lever 49 shall be freely mounted, that is, the lever should be normally free to swing on its pivot so that it may be properly responsive to the weight of the selected coin to release the vending mechanism. It is also essential that the lever 49 be restored quickly and certainly to its locking position after a package has been vended. To this end I have provided a restoring means for the lever which is normally ineffective but is brought into operation towards the end of the return stroke of a vending key or finger piece 12. This restoring means is operative independently of and apart from the lever 49 itself. As shown in Figs. 2, 6, 8, 10, 14 it comprises a lever 69 arranged at the right-hand side of the machine and to the rear of the lever 49, said lever 69 having a fixed pivot 70 between its ends. The forward arm of the lever 69 terminates in inturned parallel lips 71 perforated to receive a vertically disposed spring pin 72 having a reduced shank portion which receives a compression spring 73 confined between the upper lip 71 and the body portion of the pin. Outside the upper lip 71 the shank portion is threaded and receives ad-

justable nuts 74 for limiting downward movement of the pin. Normally the lower end of the pin 72 is disposed above and spaced from the stop block portion 52 of the lever 49. The rear arm of the lever 69 terminates in a block-like portion or weight 75 which overlies a square pin 76 arranged to slide vertically in a stationary bearing block 77, the lower end of the pin 76 carrying a pivoted roller 78. The roller 78 is disposed for actuation by a cam 79 which is mounted on and projects upward from the right-hand end portion of a slide bar 80 which is arranged for end-wise sliding movements in a stationary trough 81 of bar-like construction which extends transversely of the machine near its rear, being behind and somewhat below the bar 38.

Viewed from the rear as in Fig. 14 the right-hand end portion of the trough 81 is provided with a closure 82 which limits movement of the slide bar 80, and normally said slide bar is maintained in contact with said closure by a spring 83 anchored at one end to a fixed pin 84 and having its opposite end engaging a pin 85 carried by the slide bar 80 and projecting downward therefrom through a slot 86 in the trough 81.

It will be apparent that movement of the slide bar 80 towards the right-hand side of the machine will cause its cam 79 acting on the roller 78 to lift the pin 76, the upper end of which acting on the block 75 will swing the lever 69 downward causing the spring pin 72 to co-operate with the coin lever 49 to restore it to normal position. This cooperation is preferably effected by a sudden action in the nature of a snap action which will occur during the latter portion of the return stroke of a vending frame 31, 34. To obtain this result the slide bar 80 has mounted on its upper face a set of spring fingers 87, one in alignment with each of the vending frames (Figs. 8, 10, 14, 15). The spring fingers 87 are angular in shape comprising an upright portion and a horizontal portion having a stop face 87*a*. Each finger is provided with a pivot pin 88. Pairs of ears 89 project upward from and integral with the slidable cam bar 80, each pair being spaced apart to receive the associate finger 87 and provide bearings for its pivot pin. The pivot pin 88 projects outside one of the ears 89 and receives a coiled spring 90 arranged to maintain the finger normally in upright position as shown in Figs. 10, 15 and 17.

Just to the rear of each finger 87 at its upper portion is a horizontally disposed cam plate 91 having a working edge or face 92, said plate being secured as by pins or rivets 93 to the under side of the rear portion of the upper part of the plate 34 of the associate vending frame.

The construction is such that when one of the vending frames is pulled forward by its key 12 the associate cam plate 91 will depress the finger 87 which will turn on its pivot due to the yield of its spring 90 so that the forward movement of the vending frame will not be interfered with and the finger will ride over the under face of the cam plate 91 without affecting the slide bar 80 (Fig. 16). As soon as the plate 91 clears the finger the latter will snap back to normal position under influence of its spring.

On the return stroke of the vending element, however, as it approaches the end of its movement the cam edge 92 will engage with the finger 87 as illustrated in Fig. 18 and the finger now being unyielding by reason of the contact of its stop face 87*a* with the bar 80 will force said bar rightward, causing the cam 79 through the connecting train of devices to swing the lever 69 on its pivot thus bringing the spring pin 72 into effect to restore the lever 49 to normal position as has been described. As soon as the cam edge 92 clears the finger 87 the cam bar 80 will be restored to normal position by its spring, thus releasing the lever 69 which will return to normal position shown in Fig. 2 by reason of its rear arm weight 75 overbalancing its forward arm.

Comparing Figs. 2, 3 and 4 it will be observed that normally and prior to the action of the coin C, the spring pin is spaced above the lever portion 52 as shown in Fig. 2. When the coin acts, its weight will turn the lever 49 and bring its portion 52 in close proximity to the end of the pin 72, as illustrated in Fig. 3, so that the spring device constituted by the pin 72 and its spring 73 will be positioned to act promptly when the slide bar 80 with its cam 79 begins its operation, which, it will be borne in mind, is after the coin has been ejected from the lever 49. The restored position of the lever 49 is illustrated in Fig. 5 which shows the lever 69 still acting on said lever 49 just prior to releasing. The construction is such that a rapid and effective return movement of the lever 49 is insured by means which is operated independently of it and which normally is ineffective and disconnected from said lever 49, thus leaving it free to function with certainty and accuracy.

It sometimes happens that after a coin has been inserted the vending mechanism cannot be operated to vend or withdraw an article, as, for example, where the operated key 12 is associated with an exhausted stack. In such cases, of course, the coin inserted by the intending purchaser should be returned to him and means are provided for this purpose which are operative by the finger piece or key 15. As illustrated in Figs. 2, 3, 4, 6 and 8, the coin return key 15 is connected to the front end of a slide rod 94 which is square in cross section and has a sliding fit in a stationary bearing member 95. The rear end

portion of the rod 94 is curved upward behind the bar 38 and has its right-hand upper end off-set or bent rightward, as indicated at 94*a*. Integral with or secured to this off-set portion is a cam plate 94*b* which normally lies behind and in the vertical plane of the stop-block portion 52 of the lever 49.

A draw-spring 96 connected to the rod 94 and to the stationary pin 97 on the bearing element 95 tends to draw the rod 94 with its cam 95 rearward. A dashpot 98 of ordinary construction is supported on the bearing member 95 and has its piston rod 99 attached to the rod 94.

In operation, assuming that the lever 49 has been tipped to the position shown in Fig. 3 by a coin which the intending purchaser desires to be returned, he pulls the finger piece 15 outward, thus drawing the rod 94 forward and causing the cam 94*b* to move horizontally forward and act against the lower rear corner of the block 52 of the lever 49. This camming action has the effect of still further tipping or turning the lever on its pivot to the position shown in Fig. 4. As the lever 49 swings downward from the Fig. 3 to the Fig. 4 position the under edge of coin C will be brought into contact with a pin 100 which projects laterally from the chute 62. As downward movement of the lever continues, the effect of the pin 100 will be to hold back the coin which will thereby be rolled off of the pins 53 as illustrated in Fig. 4 and will pass down the extension of the chute 62 into the return receptacle 16.

The dash-pot will operate to slow up the return movement of the coin return elements when released and is employed preferably as an extra precaution in association with a gate device which prevents the coin from passing downward into the mouth 66 of the chute 67. Normally the gate 101 occupies a depending position, hanging straight down from its pivot 101*a* on the rear lower portion of the chute 62 and leaving open the left hand lower end 62*a* of said chute, the opening 62*a* registering with the mouth 66. The gate 101 is adapted to be actuated by a spring 102 carried by a projection 103 on the rod 94.

As said rod is pulled forward the free end of the spring 102 acting against the gate 101 will swing it upward and forward, closing the opening 62*a*. Owing to the yield of the spring the forward movement of the rod 94 may continue to effect release of the coin after the gate has been closed. The gate of course will drop to open position through gravity on the return of the parts to normal position.

Various changes may be made without departing from the spirit and scope of the invention.

Having thus described my invention, I declare that what I claim and desire to secure by Letters Patent is:

1. In a vending machine, the combination of article extracting means, a device normally preventing operation of said extracting means, spring means for insuring return of said device from abnormal releasing position to normal locking position, said spring means being normally ineffective and becoming operative on said device only near the end of the return movement of said package extracting means to normal position after operation, and means for rendering said spring means effective independent of said device, the tension of said spring means remaining constant until the instant of operation and returning to its constant normal state on the return of the package extracting means to normal.

2. In a vending machine, the combination of hand-controlled means for withdrawing vendible articles one at a time, a lever normally locking said means and movable to unlocking position by the weight of the coin, a normally inactive spring, and means for tensioning said spring and rendering it effective on said lever at a predetermined point in the vending operation by a snap action.

3. In a vending machine, the combination of means for withdrawing vendible articles comprising a plurality of hand-controls, a coin-controlled lock normally preventing operation of said means, a restoring spring for said lock, and means separately operative by said hand-controls for rendering said spring effective by a snap action.

4. In a vending machine, the combination of means for withdrawing vendible articles comprising a plurality of hand-controls, a coin-controlled lock normally preventing operation of said means, a restoring spring for said lock, and means separately operative by said hand-controls for rendering said spring effective, said last recited means comprising slide bars provided with a cam for tensioning said spring.

5. In a vending machine, the combination of means for withdrawing vendible articles comprising a plurality of hand-controls, a coin-controlled lock normally preventing operation of said means, a restoring spring for said lock, and means separately operative by said hand-controls for rendering said spring effective, said last recited means comprising a slide bar provided with a plurality of cams, each operative by one of said hand-controls, and also provided with a cam operative on said spring.

6. In a vending machine, the combination of means for withdrawing vendible articles comprising a plurality of hand-controls, a coin-controlled lock normally preventing operation of said means, a restoring spring for said lock, and means separately operative by

said hand-controls for rendering said spring effective, said last recited means comprising a lever carrying said spring, a slide bar and a cam operative by said hand-controls and effective on said last named lever.

7. In a vending machine, the combination of hand-operated slide frames independently controllable for withdrawing vendible articles, a train of slide bars, a coin-controlled lock for said slide bars, and means operative by said slide bars for ejecting the coin from control of said lock.

8. In a vending machine, the combination of means for withdrawing vendible articles comprising a plurality of hand-controls, a train of slide bars, a coin-controlled lock for said slide bars, each of said hand-controls being effective to operate said slide bars, and means operative by said slide bars for ejecting the coin from control of said lock.

9. In a vending machine, the combination of means for withdrawing vendible articles comprising a plurality of hand-controls, a train of slide bars, a coin-controlled lock for said slide bars, each of said hand-controls being effective to operate said slide bars, and means operative by said slide bars for ejecting the coin from control of said lock, said slide bars when operated by one of said hand-controls providing a lock for preventing operation of all of the other hand-controls.

10. In a vending machine, the combination of hand-operated slide frames for withdrawing vendible articles, a train of slide bars, a coin-controlled lock for said slide bars, cams on said slide frames for operating said slide bars, and means operative by said slide bars for withdrawing said lock from the control of a coin.

11. In a vending machine, the combination of hand-operated slide frames for withdrawing vendible articles, a train of slide bars, a coin-controlled lock for said slide bars, cams on said slide frames for operating said slide bars, and means operative by said slide bars for withdrawing said lock from the control of a coin, said slide bars when under operation by one of said cams preventing movement of all of the other cams and the slide frames on which they are mounted.

12. In a vending machine, the combination of means for withdrawing vendible articles comprising a plurality of hand-controls, a train of slide bars operated by each of said hand-controls, a coin-receiving lever normally operating to lock said slide bars and movable to ineffective position by a coin, and a second lever operated by said slide bars for removing the coin from the control of said lock.

13. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, means for withdrawing the coin from said lever and retaining it in the machine, and separate means for withdrawing the coin from said lever and returning it to the intending purchaser.

14. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, means for withdrawing the coin from said lever and retaining it in the machine, and separate means for withdrawing the coin from said lever and returning it to the intending purchaser, said separate means including a key operative independently of the key-controlled vending means.

15. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, means for withdrawing the coin in one direction from said lever and retaining it within the machine, and separate means for withdrawing the coin at right angles to the first direction of withdrawal and returning it to the intending purchaser.

16. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, a withdrawing lever effective to withdraw the coin from the coin-controlled lever and directing it through a passageway, and a second key-operated withdrawing-lever effective to withdraw the coin from said coin lever and direct it through another passageway.

17. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, a withdrawing lever effective to withdraw the coin from the coin-controlled lever and directing it through a passageway, and a second key-operated withdrawing-lever effective to withdraw the coin from said coin lever and direct it through another passageway, the two withdrawing means being effective to move the coin in directions at right angles to each other.

18. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, and key-controlled means for withdrawing the coin from said lever and returning it to the intending purchaser.

19. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, and key-controlled means for withdrawing the coin from said lever and returning it to the intending purchaser comprising a device for tipping the lever beyond the position to which it is moved by the coin and an abutment acting on the coin to eject it from the lever when so tipped.

20. In a vending machine, the combination of key-controlled means for vending articles, a coin-controlled lever normally locking said means, a coin retaining passage, and key-con-

trolled means for withdrawing the coin from said lever and returning it to the intending purchaser, comprising a gate for closing the coin retaining passage and devices for slowing up return movements of the key-controlled returning means.

JOHN GOTTFRIED.

CERTIFICATE OF CORRECTION.

Patent No. 1,891,640. December 20, 1932.

JOHN GOTTFRIED.

It is hereby certified that the name of the assignee in the above numbered patent was erroneously written and printed as "Cameo Scale Corporation," whereas said name should have been written and printed as "Camco Scale Corporation" as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of February, A. D. 1933.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.

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