

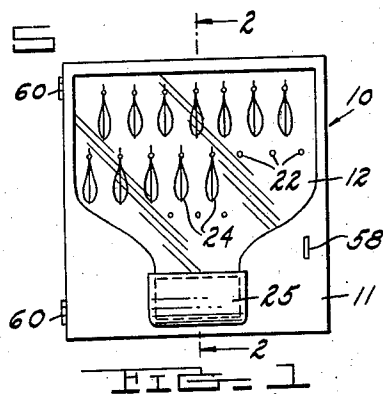
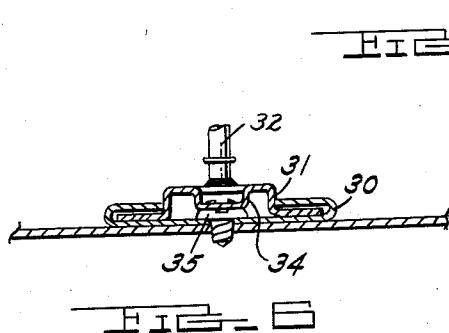
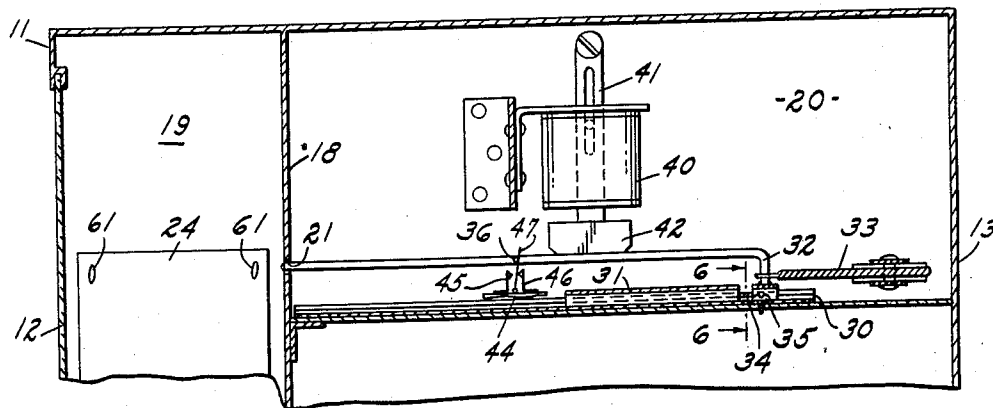
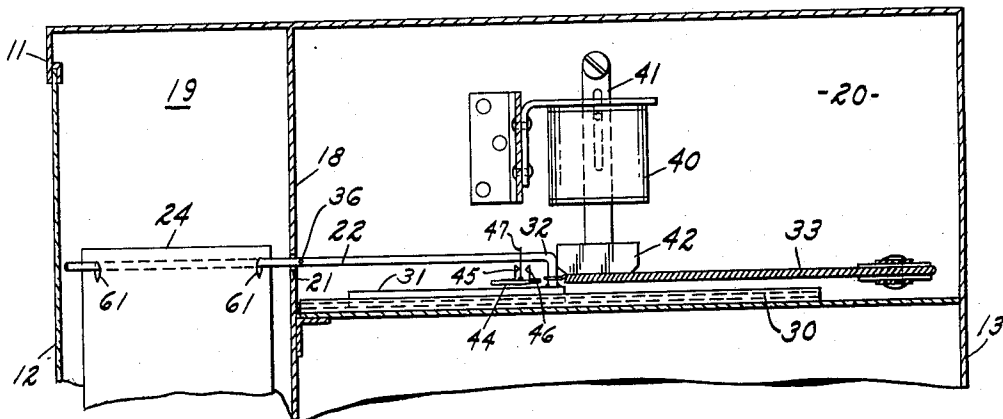
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VENDING MACHINE

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2 Sheets-Sheet 1



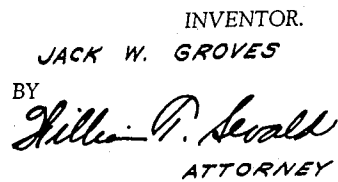
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VENDING MACHINE

2 Sheets-Sheet 2



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2,906,385

VENDING MACHINE

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3 Claims. (Cl. 194—10)

This invention relates to vending machines and particularly pertains to a bag or package vending mechanism and circuits and controls therefor.

Vending machines and operating circuits have been employed heretofore to facilitate the vending of material from machines via coin operated means, however, the several devices of the prior art have not proven entirely satisfactory in the field of selling packaged or bagged material such as potato chips, pop corn, silk stockings, garden seeds, etc. which would be sold in bags or packages.

With the foregoing in view, the primary object of the invention is to provide a vending machine, mechanism, and circuits therefor which is capable of vending bagged or enveloped material which is simple in design and construction, inexpensive to manufacture, easy to use, durable and fool-proof in operation, easy to load and operate, and simple to repair and maintain.

An object of the invention is to provide a vending machine which can be manufactured inexpensively as the component parts are easily made and the assembly of parts readily accomplished.

An object of the invention is to provide a vending machine which can be easily loaded and maintained by the service operator.

An object of the invention is to provide a vending machine which can be adapted to all sizes and shapes of bagged materials without changes in the assembly or arrangement of parts or circuits.

An object of the invention is to provide a vending machine which has extending rods for suspending the bag material thereon in bags which rods are withdrawn to permit the bags to drop in a free fall through a chute to the purchaser.

An object of the invention is to provide actuating mechanism for holding the rods outwardly in a charged or bag supporting condition which are dischargeable through circuits and operating mechanisms via a coil operated switch.

An object of the invention is to provide mechanism so controlling the rods that they automatically lock in their outward position by the manual extraction of the pin outwardly by the service operator.

An object of the invention is to provide a circuit which transfers from operating mechanism to operating mechanisms sequentially so as to by-pass previously discharged units and to activate the next succeeding unit for discharge.

These and other objects of the invention will become apparent by reference to the following description of a vending machine, operating mechanism, and circuits embodying the invention taken in connection with the accompanying drawings in which:

Fig. 1 is a front elevational view of a vending machine showing the rods supporting bags thereon and the chute area thereof.

Fig. 2 is an enlarged cross-sectional view of the front

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portion of the device seen in Fig. 1 taken on the line 2—2 thereof.

Fig. 3 is a top plan view of a vending machine similar to Figs. 1 and 2, partly in cross-section, showing the vending mechanism and circuits in detail.

Fig. 4 is a side elevational view of one of the units seen in Fig. 3 in the loaded or charged position.

Fig. 5 is a view similar to Fig. 4 showing the device in a discharged condition; and

Fig. 6 is a cross-sectional view of Fig. 5 taken on the line 6—6 thereof showing the track, track slide, and rod integration.

Referring now to the drawings wherein like numerals refer to like and corresponding parts throughout the several views, the vending machine, mechanisms, and circuits disclosed therein to illustrate the invention comprises a cabinet 10 having a front wall 11 equipped with a window 12, a rear wall 13, side walls 14 and 15, a bottom 16, and a top; an intermediate vertical wall separator 18 is disposed between the side walls 14 and 15 in spaced relationship between the front and back walls 11 and 13 defining a bag storage area between the separator 18 and the front wall 11 adjacent the window 12 and a mechanism area 20 between the separator 18 and the rear wall 13. The separator wall 18 is provided with spaced banked apertures 21 which slidably house the rods 22 which extend therethrough between the storage area 19 and the mechanism area 20 and the rear end of the rods 22 are connected to the units 23 which are adapted to hold the rods 22 in an extended condition into the storage area 19 to support the bags 24 and which is adapted to retract the rods 22 from extending into the storage area 19 to dump the bags 24 therefrom for delivery to the chute area 25 from which they can be manually extracted by the purchaser.

More particularly the units 23 comprise a track 30 upon which is slidably disposed a track guide 31 on which is secured the downwardly bent interior end portion or shoulder 32 of the rods 22 so that the track 30 and guide 31 guide and support the internal end or shoulder 32 of the rod 22 at one end thereof while the rod 22 is guided at its other end in the apertures 21. The springs 33 are attached to the rod shoulder 32 and displaceably bias the rod inwardly of the separator wall 18, and it is to be noted that the track guide stop 34 is adapted to engage block or screw head 35 to limit the inward travel of the track guide 31 so as to locate the outward end of the rods 22 adjacent the surface of the separator panel 18 so that only a small protrusion extends outwardly of the panel 18 when the rods are in their fully retracted position. The rods 22 are provided with a side arm or tang 36 adapted to abut the separator panel 18 at the desired extended or outward movement of the rods 22 into the storage area 19 and the tangs 36 perform the function of tripping a switch in the circuit in their inward travel when the unit is discharged as hereinafter more fully explained.

A solenoid coil 40 is disclosed adjacent each rod 22 and is equipped with an armature 41 having a block 42 adapted to drop behind the rod shoulder 32 when the rod 22 is moved to its extended position so that the block 42 holds the rod 22 in its extended position against the tension of the spring 33; when the solenoid coil 40 is energized the armature 41 moves upwardly bringing the block 42 upwardly so as to remove it from obstructing the rod shoulder 32 whereupon the spring 33 withdraws the rod 22 from its extended bag supporting position with the stop 34 against the block 35. A switch 44 is located adjacent each rod 22 and includes a solenoid coil pole 45, a transfer pole 46, and a center arm 47 normally contacting the coil pole 45 and movable out of contact therewith by the pin sidearm or tang 36 contacting the arm

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47 and moving it out of contact with the coil pole 45 and into contact with the transfer pole 46 upon one of the units 23 being discharged. Power lead 50 is connected in parallel to one side of each of the solenoid coils as by the parallel leads 50A and the other side of the solenoid coil is connected to the coil pole 45 by the separate leads 51; with the exception of the first switch 44A, the transfer pole 46 of each switch is connected via the transfer pole transfer lead 53 to the next subsequent or following switch center arm 47 for the purpose of bypassing the previously discharged solenoid and for the purpose of connecting the power circuits to the next succeeding undischarged unit 23 and solenoid as hereinafter more fully described; in the instance of the first switch 44A, the power lead 52 is directly connected to the switch center arm 47.

Loading of the machine is accomplished by opening the window front 11 via the hinges 60 to expose the separator panel 18 and rods 22 to the service operator and the slightly extending ends of the rods 22 of the discharged units 22A are manually grasped by the operator and pulled outwardly until the tang 36 abuts the separator panel 18 at which time the shoulder 32 has passed the block 42 permitting the block 42 to fall or drop behind the shoulder 32 to block rearward movement of the rod 22 under the power of the spring 33; the operator upon extracting or pulling out all the pins 22 then places the bags 24 on the pins 22 via their apertures 61 and upon closing the front 11 the machine is ready for operation with the leads 50 and 52 connected to a suitable source of electrical energy and with the coin operated switch 59 located in one of the leads 50 or 52, and it is to be noted that the coin operated switch 59 is adapted to be tripped for momentary closing by placing a coin in the slot 58 as is well understood in the operation of coin operated switches.

Upon a purchaser placing a coin in the slot 58, the coin operated switch 59 momentarily closes supplying electrical energy to the first solenoid coil 40A via leads 50 and 50A on one side thereof and via separate lead 51 leading to the switch coil pole 45 contacting the center arm 47 which is connected to the other power lead 52 on the other side of the first coil 40A so that when coil 40A is energized it lifts the armature 41 to remove the block 42 from behind the shoulder 32 of the rod 22 whereupon the spring 33 withdraws the rod 22 until the slide stop 34 engages the track block 35 whereupon the extending end of the rod 22 has been completely withdrawn from the bag 24 aperture 61 permitting it to drop in a free fall into the chute area 25 where the purchaser can manually extract bag.

Upon the first unit being discharged, the rod side arm or tank 36 contacts the first switch 44A center arm 47 and moves it out of contact from the coil pole 45 and into contact with the transfer pole 46 so that the next unit 23B now lies in a completed circuit controlled by the coin operated switch 59 and the first solenoid coil 40A is by-passed by the disconnect between the coil pole 45 and center arm 47.

Upon the next purchaser inserting a coin in the slot 58, the coin operated switch 59 momentarily closes to supply energy to the next solenoid coil 40B via the circuit comprised of the power leads 50 and 50A on one side of coil 40B and on the other side coil 40B via separate lead 51 and coil pole 45 being in contact with the switch 44B center arm 47 which leads back through transfer lead 53 to the previous switch 44A transfer pole 46 which is in contact with the first switch center arm 47 leading back to the power lead 52 and upon the coil 40B of unit 23B being energized it lifts block 42 out of engagement with shoulder 32 and the second rod 22 withdraws as previously described and drops the bag 24 to the chute area. Upon the second unit 23B being discharged the tang 36 of the unit 23B then moves into contact with the center pole 47 of the switch 44B disconnecting it from the coil pole 45

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and connecting it to the transfer pole 46 so as to transfer the power lead 52 circuit up to the next succeeding or following switch unit 23A to the center arm 47 of the third unit which is in contact with the coil pole 45. It is to be seen that the unit 23A is now connected in the power circuit subject to the coin operated switch 59 via the power leads 50 and 50A on one side of the solenoid coil 40 and via the separate lead 51 and coil pole 45 being in contact with the center pole 47 of the unit 23A leading backward via lead 53 to the transfer pole 46 of the second previously discharged unit which is in contact with the center arm 47 thereof again leading backwardly through the previous transfer lead 53 to the transfer pole 46 of the first previously discharged unit which is in contact with the center arm 47 thereof which in turn leads backwardly to the power lead 52. It is to be understood that the next succeeding undischarged unit will operate the same as the previously described unit until all the units of the machine have been discharged.

It can now be seen that the units of the device are easily placed in their charged or extended position and that the bags 24 can be easily and quickly positioned thereon and that the device is capable of sequentially and individually dispensing bagged material upon the insertion of a coin in the slot leading to the coin operated switch controlling the introduction of electrical energy through the system.

The inventive vending machine and system with these features constitutes a compact, durable, easily repairable and maintainable mechanism easily operated to load and discharge, and while the system has been disclosed and described in conjunction with a vending machine it is obvious that the sequentially operating and activated system can be employed elsewhere with advantage.

It is obvious that when the system is applied to items other than vending machines such as rockets, that upon closing the switch in a power lead for a time longer than necessary to discharge one unit, that the succeeding units will sequentially discharge automatically spaced by the time necessary to complete firing each successive unit.

Although but a single embodiment of the invention has been shown and described in detail, it is obvious that many changes may be made in the size, shape, detail, and arrangement of the various elements of the invention within the scope of the appended claims.

I claim:

1. A vending machine particularly suitable for vending material in bags comprising a cabinet having front, back, and side walls and a top and bottom, an intermediate vertical wall separator disposed between said side walls and spaced between said front and back walls defining a bag storage area between said separator and said front wall and a mechanism area between said separator and said back wall, a chute leading from the bottom of said storage area to the outside of said cabinet; said separator wall having spaced rod receiving apertures, rods slidably disposed in said separator wall apertures retractably extending into said storage area so as to support bags thereon in their extended condition and to dump bags therefrom in their retracted condition, tracks mounted adjacent said separator wall in said mechanism area, rod guides slidably disposed on said tracks connected to said rods, springs connected to said rods biasing said rods into their retracted condition, shoulders on said rods, blocks adapted to drop behind said rod shoulders when said rods are moved to their extended bag supporting condition to hold said rods in their extended condition for supporting bags thereon, solenoid armatures attached to said blocks to lift said blocks out of contact with said rod shoulders to permit said springs to move said rods to their retracted condition so as to dump bags suspended thereon in a free fall from said storage area to said chute to deliver bags to a purchaser, solenoid coils surrounding said armatures, an electrical lead connected in parallel to one side of all said solenoid coils, switches dis-

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posed adjacent said coils, coil poles on said switches, coil leads separately connecting said coil poles to the other side of said coils, flexible arms on said switches normally contacting said coil poles, transfer poles on said switches normally out of contact with said arms, a coin-operated switch controlled lead connected to the first said switch arm, by-pass leads separately connected from each said switch transfer pole to said next switch arm, tangs on said rods contacting said switch arms when said rods are in retracted condition moving said arms out of contact with said solenoid poles and into contact with said transfer poles to by-pass said preceding coils and to connect to said next succeeding coil, and a coin operated switch in said coin operated switch controlled lead; said coin operated switch closing upon receiving a coin completing a circuit via said parallel lead, said solenoid coil, separate coil lead, coil pole, switch arm, and coin controlled lead to energize said coil to lift said armature block to permit said spring to retract said rod to dump a bag and to bring said tang into contact with said arm to break contact with said coil pole and into contact with said transfer pole to connect said coil controlled lead to said next switch arm via said next transfer lead to establish a circuit to said next succeeding coil controlled by said coin operated switch; said coin operated switch successively separately energizing succeeding coil via said arm being moved to connect said next transfer lead in the circuit including the next coil.

2. A vending machine particularly suitable for vending material in bags comprising an intermediate vertical wall separator defining a bag storage area on one side and a mechanism area on the other side, said separator wall having spaced rod receiving apertures, rods slidably disposed in said separator wall apertures, retractably extending into said storage area so as to support bags thereon in their extended condition and to dump bags therefrom in their retracted condition, tracks mounted adjacent said separator wall in said mechanism area, rod guides slidably disposed on said tracks connected to said rods, springs connected to said rods biasing said rods into their retracted condition, shoulders on said rods, blocks adapted to drop behind said rod shoulders when said rods are moved to their extended bag supporting condition to hold said rods in their extended condition for supporting bags thereon, solenoid armatures attached to said blocks to lift said blocks out of contact with said rod shoulders to permit said springs to move said rods to their retracted condition so as to dump bags suspended thereon in a free fall from said storage area to deliver bags to a purchaser, solenoid coils surrounding said armatures, an electrical lead connected in parallel to one side of all said solenoid coils, switches disposed adjacent said coils, coil poles on said switches, coil leads connecting said coil poles to the other side of said coils separately, flexible arms on said switches normally contacting said coil poles, transfer poles on said switches normally out of contact with said arms, a coin-operated switch controlled lead connected to the first said switch arm, by-pass leads separately connected from each said switch transfer pole to said next switch arm, tangs on said rods contacting said switch arms when said rods are in retracted condi-

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tion moving said arms out of contact with said solenoid poles and into contact with said transfer poles to by-pass said preceding coils and to connect to said next succeeding coil, and a coin operated switch in said coin operated switch controlled lead; said coin operated switch closing upon receiving a coin completing a circuit via said parallel lead, said solenoid coil, separate coil lead, coil pole, switch arm, and coin controlled lead to energize said coil to lift said armature block to permit said spring to retract said rod to dump a bag and to bring said tang into contact with said arm to break contact with said coil pole and into contact with said transfer pole to connect said coil controlled lead to said next switch arm via said next transfer lead to establish a circuit to said next succeeding coil controlled by said coin operated switch; said coin operated switch successively separately energizing succeeding coil via said arm being moved to connect said next transfer lead in the circuit including the next coil.

3. A vending machine particularly suitable for vending material in bags comprising a wall defining vertical wall, a bag storage area on one side and a mechanism area on the other side, said wall having at least one rod receiving aperture, a rod slidably disposed in each said wall aperture retractably extending into said storage area so as to support bags thereon in their extended condition and to dump bags therefrom in their retracted condition, a track adjacent said separator wall in said mechanism area at each wall aperture, a rod guide slidably disposed on said track connected to said rod, a spring connected to said rod biasing said rod into retracted condition, a shoulder on said rod, blocks adapted to drop behind said rod shoulder when said rod is moved to extended bag supporting condition to hold said rod in its extended condition for supporting a bag thereon, a solenoid armature attached to said block to lift said block out of contact with said rod shoulder to permit said spring to move said rod to its retracted condition so as to dump a bag suspended thereon in a free fall from said storage area, a solenoid coil surrounding said armature, an electrical lead connected in parallel to one side of said solenoid coil, a switch disposed adjacent said coil, a coil pole on said switch, a coil lead connecting said coil pole to the other side of said coil, a flexible arm on said switch normally contacting said coil pole, a transfer pole on said switch normally out of contact with said arm, a by-pass lead separately leading from said switch transfer pole to a next switch arm, a tang on said rod contacting said switch arm when said rod is in retracted condition moving said arm out of contact with said solenoid pole and into contact with said transfer pole to by-pass said coil and to connect to a next succeeding coil.

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