United States Patent [19]

Schlaf

[11] **3,731,841**

[45] **May 8, 1973**

[54] **VENDING MACHINE WITH SCREW CONVEYOR TYPE CELLULAR MAGAZINE**

[76] Inventor: **Stanley O. Schlaf,** Route 1, Winfield, Mo. 63389

[22] Filed: **Mar. 30, 1971**

[21] Appl. No.: **129,488**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 787,877, Dec. 30, 1968, Pat. No. 3,572,546.

[52] **U.S. Cl.** **221/75,** 279/79

[51] **Int. Cl.** **G07f 11/00**

[58] **Field of Search** ..... 221/75, 86; 279/76, 279/79, 1 B

[56] **References Cited**

UNITED STATES PATENTS

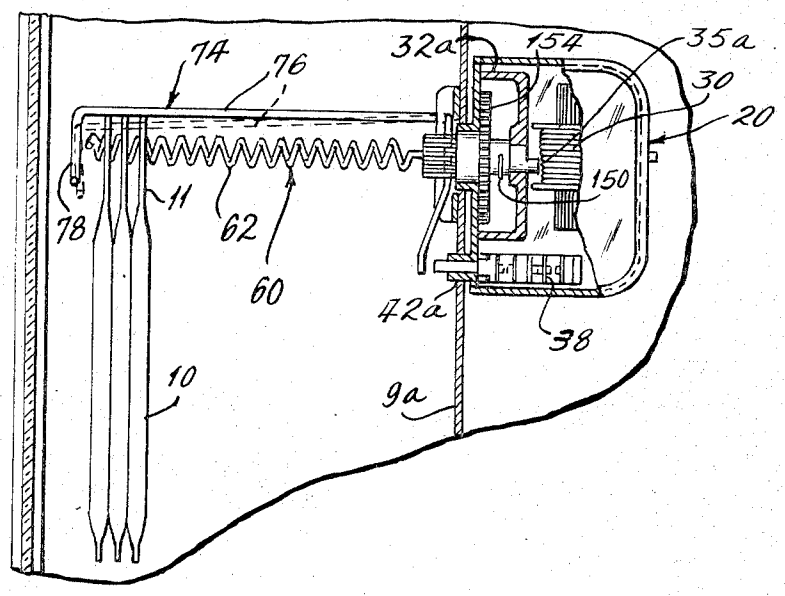
3,355,064	11/1967	Schlaf	221/75 X
1,814,274	7/1931	Williamson	279/79
1,985,697	12/1934	Stecher	221/75 X
3,294,281	12/1966	Schlaf	221/75 X
2,540,937	2/1951	Edens	279/79

Primary Examiner—Robert B. Reeves
Assistant Examiner—David A. Scherbel
Attorney—Gravely, Lieder & Woodruff

[57] **ABSTRACT**

A dispensing machine having article carrying spindles provided with thin mounting shanks which fit into sockets in drive shafts forming part of drive units. Each spindle shank has a tang which is engaged by a transversely extending pin in the drive shaft to which the spindle connects. The pins extend through the sockets and are adapted to shift laterally therein under spring bias so that the spindles can be detached for loading. An adapter for converting existing dispensing machines for use with thin-shank spindles of the aforementioned variety. The adapter fits rigidly in the enlarged sockets of a drive shaft on such existing machines and has a socket adapted to receive the shank of the spindle as well as a laterally shiftable pin to hold the spindle therein.

5 Claims, 16 Drawing Figures



Patented May 8, 1973 3,731,841

3 Sheets-Sheet 1

FIG. 1

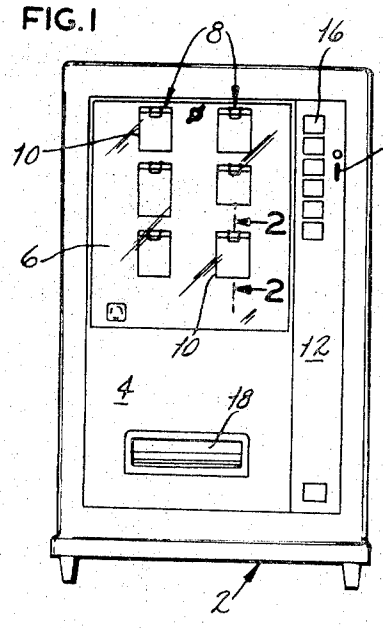


FIG. 4

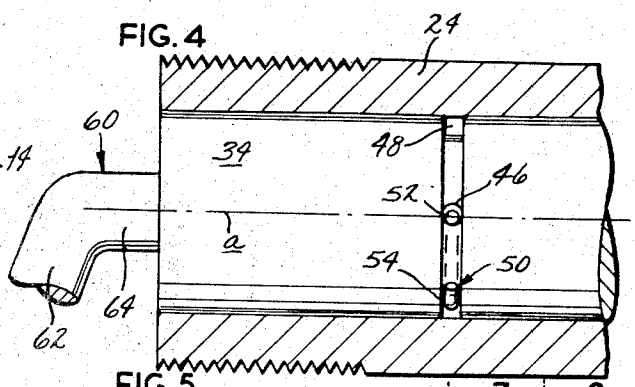


FIG. 5

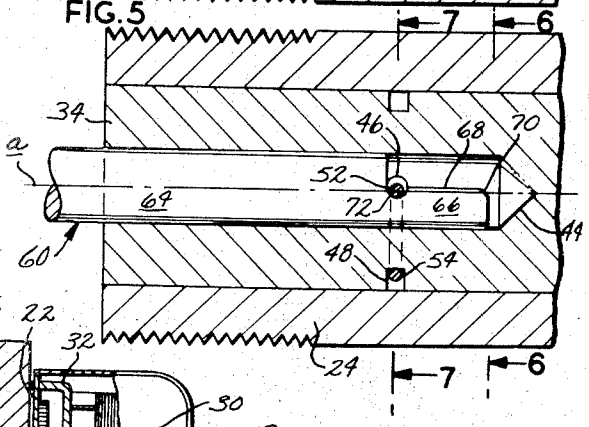


FIG. 2

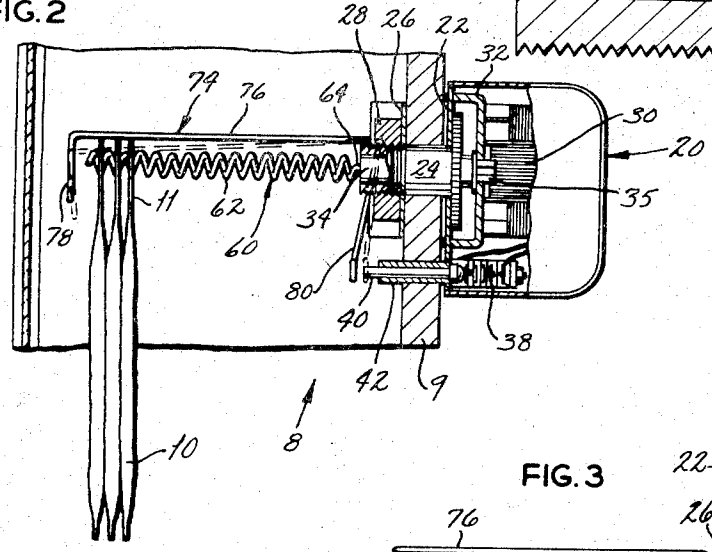
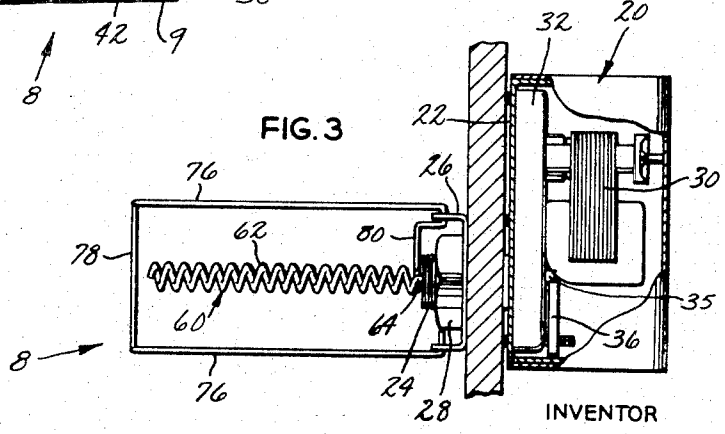


FIG. 3



INVENTOR
STANLEY O. SCHLAF
BY Gravely, Lieder & Woodruff
ATTORNEYS

Patented May 8, 1973 3,731,841

3 Sheets-Sheet 2

FIG. 6

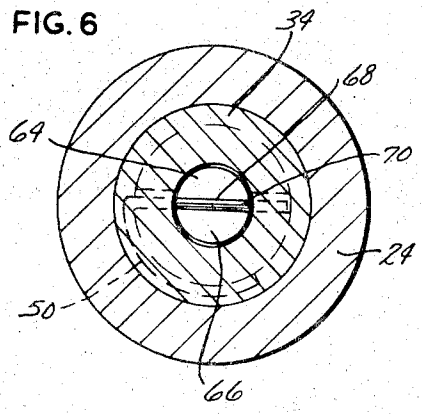


FIG. 7

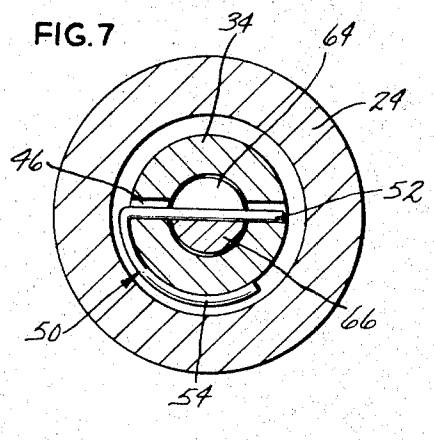


FIG. 8

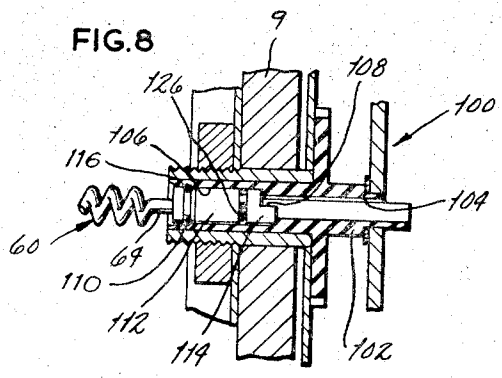
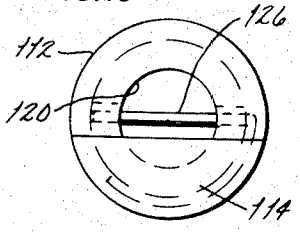


FIG. 10



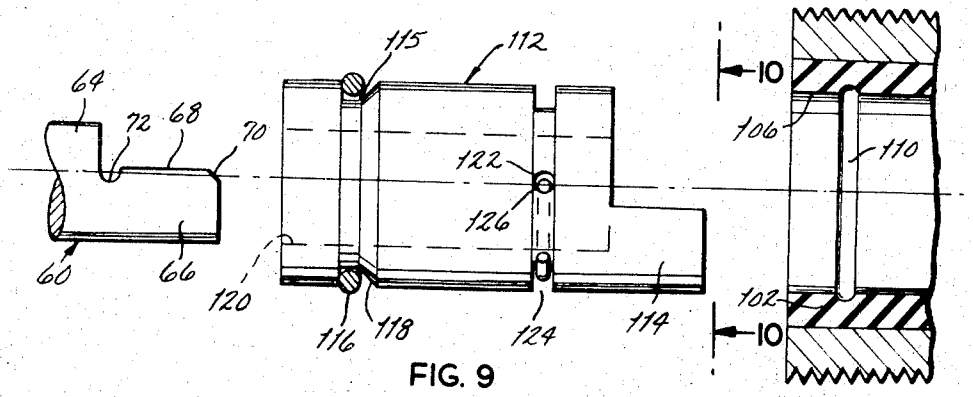


FIG. 9

INVENTOR
STANLEY O. SCHLAF
BY Gravely, Lieder & Woodruff
ATTORNEYS

3 Sheets-Sheet 3

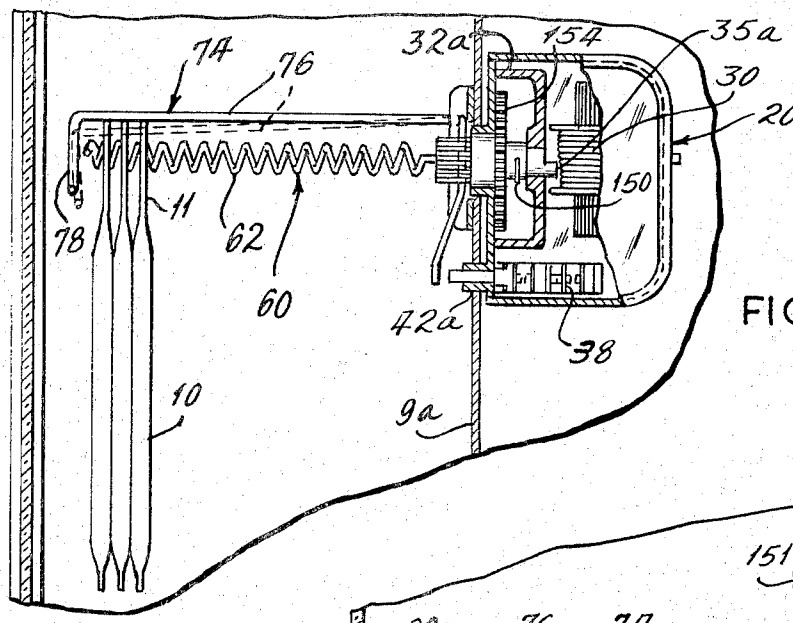


FIG.11

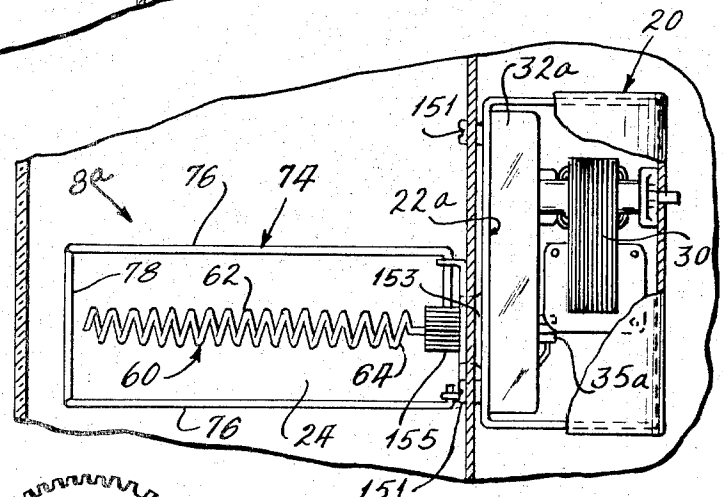


FIG.12

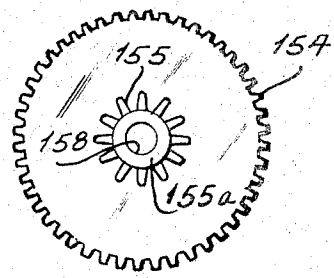


FIG.14

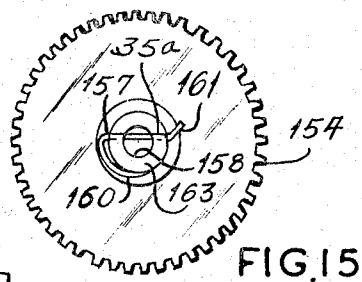


FIG.15

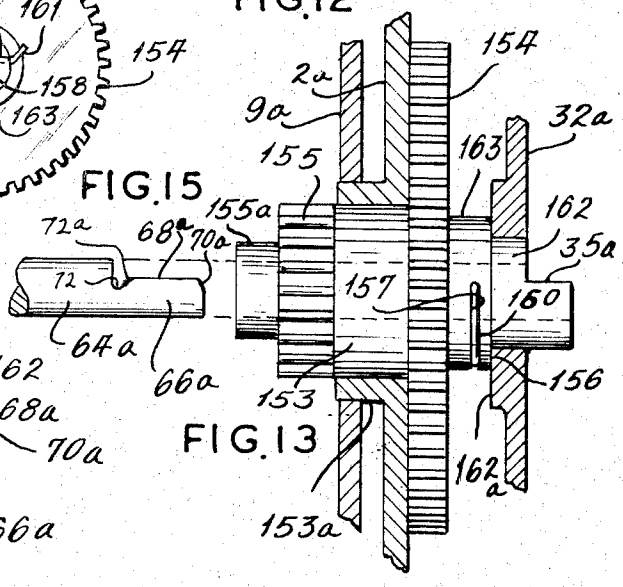


FIG.13

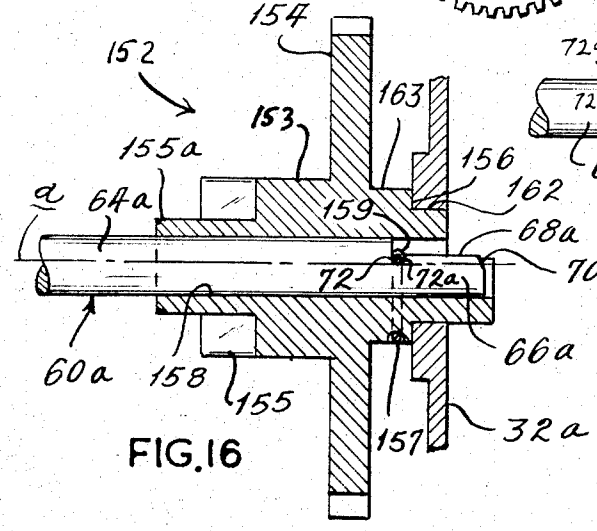


FIG.16

INVENTOR:
STANLEY O. SCHLAF

BY Gravely, Lieder & Woodruff
ATTORNEYS.

VENDING MACHINE WITH SCREW CONVEYOR TYPE CELLULAR MAGAZINE

REFERENCE TO RELATED APPLICATION

This application contains subject matter in common with and is a continuation-in-part of application Ser. No. 787,877 filed Dec. 30, 1968 now U.S. Pat. No. 3,572,546 issued Mar. 30, 1971.

BACKGROUND OF THE INVENTION

This invention relates in general to dispensing machines and, more particularly, to improved means for detachably holding spindles in the drive units of such machines.

Spindle-type vending machines such as those disclosed in my U.S. Pat. Nos. 3,294,281 and 3,355,064 are currently utilized to dispense a wide variety of packaged products such as snack foods, candies and other confections, bakery goods, articles of clothing, etc. These machines are provided with helical spindles which extend horizontally, while the packages are provided with apertured tabs through which the helical portions of the spindles extend. When the spindles rotate, the packages are run off their forward ends and dispensed individually. Normally the dispensing devices are coin operated, and the insertion of predetermined amounts of coins closes a "credit" circuit to enable a selector to actuate a drive unit which will rotate the selected spindle an amount sufficient to run one package off the end of that spindle. In order to dispense the package in the order in which they are placed on the spindle, that is, on a first in-first out basis, so that the food product contained therein will not remain in the dispensing machine over extended periods of time and become stale, the spindles are detachable from the drive mechanism which rotates them, thereby enabling one to load each spindle from its rear end.

The spindles of dispensing devices of current manufacture are detachable at enlarged hubs or other enlarged connecting devices on the spindles, and these hubs or devices fit within axial sockets in the ends of the drive shafts forming part of the drive mechanisms. Since the hubs are larger than the wire forming the helicies of the spindles, they present an obstructure to loading and consequently the spindles are often quite difficult to load. Moreover, the apertured tabs of the packages on occasion may tear when forced over the large hubs, causing loss or inconvenience to the operator.

The present invention is embodied in a dispensing machine having a rotatable drive shaft provided with a socket into which the shank end of a dispensing spindle fits. The drive shaft carries a laterally shiftable cross pin which is spring biased for engagement with and retention of the shank on the spindle. The invention is further embodied in an adapter for insertion into the enlarged sockets in the drive shafts of existing dispensing machines. The adapter has a socket which accepts the thin shanks of the aforementioned spindles and a cross pin for retaining the shanks in the adapter.

One of the principal objects of the present invention is to provide a dispensing machine with dispensing spindles which can be easily detached for loading purposes so that items carried by the spindles are dispensed in the order in which they are installed on the spindles.

Another object is to provide dispensing spindles which are easily and quickly loaded with articles and which do not damage the articles as they are loaded. A further object is to provide existing dispensing machines with adapters so that they can accept dispensing spindles of the type stated. An additional object is to provide for securement purposes an adequate spring detent means, the flexure of which is limited to within the elastic limit of the spring material. Still another object is to provide rotational positioning of the discharge end of a helical dispensing spindle. These and other objects and advantages will become apparent hereinafter.

The invention also consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed. In the accompanying drawings which form part of the specification and wherein like numerals and letters refer to like parts wherever they occur:

FIG. 1 is an elevational view of a dispensing machine having dispensing spindles and drive units constructed in accordance with and embodying the present invention;

FIG. 2 is an elevational view, partially broken away and in section, of a dispensing spindle and drive unit of the present invention;

FIG. 3 is a plan view of the spindle and drive unit of FIG. 2;

FIG. 4 is an enlarged sectional view of the hub on the drive unit showing a drive shaft in full journaled therein;

FIG. 5 is an enlarged sectional view similar to FIG. 4, but showing the drive shaft in section, thereby exposing the shank of the spindle;

FIGS. 6 and 7 are sectional views taken along lines 6—6 and 7—7, respectively, of FIG. 5;

FIG. 8 is a fragmentary sectional view of an existing drive unit showing an adapter constructed in accordance with the present invention inserted into it;

FIG. 9 is an exploded fragmentary view showing the spindle, adapter, and drive unit of FIG. 8;

FIG. 10 is a sectional view taken along line 10—10 of FIG. 9;

FIG. 11 is a vertical sectional view of a modification of the invention;

FIG. 12 is a horizontal sectional view of the modification shown in FIG. 11;

FIG. 13 is an enlarged exploded fragmentary view of the drive unit;

FIG. 14 is a left end elevational view of the drive member of FIG. 13;

FIG. 15 is a right end view of the drive member of FIG. 13; and

FIG. 16 is a greatly enlarged sectional view of the drive member of FIG. 13.

Referring now to the drawings, 2 designates a vending machine having a front wall 4 provided with a transparent panel 6 through which a plurality of dispensing units 8 (FIGS. 2 and 3) can be observed. Each dispensing unit 8 projects through a support panel 9 in the machine 2 and carries a quantity of depending bags 10 arranged in an orderly rearwardly extending row. The front wall 4 is further provided with a selector panel 12 having a coin slot 14 as well as a plurality of selector buttons 16 for activating the various dispensing units 8. Beneath the transparent panel 6 a

discharge chute 18 opens outwardly through the front wall 4 for delivery of the selected bag 10 to the customer after he inserts a coin in the slot 14 and depresses the selector button 16 corresponding to the bag 10 he desires to purchase.

Turning now to FIGS. 2 and 3, each dispensing unit 8 includes a drive mechanism 20 mounted on a U-shaped frame 22 having a threaded stud or hub 24 projecting outwardly from one of its sides and extending through the support panel 9. Beyond the front face of the panel 9, that is beyond the face exposed through the transparent panel 6, the stud 24 projects through a support bracket 26, and beyond the bracket 26 a nut 28 threads over the stud 24, securing both the bracket 26 and the frame 22 to the support panel 9 of the machine 2. The drive mechanism 20 includes a motor 30 and a gear casing 32, the former being mounted on and driving a gear train contained within the latter. The gear casing 32, in turn, is bolted to the frame 22 and its gear train terminates at a drive shaft 34 which projects into and is journaled within the stud 24. The opposite end of the drive shaft 34 extends through the wall of the gear casing 32 where it forms a semi-circular cam 35 which actuates a spring loaded follower 36 pivoted on the casing 32. The follower 36, in turn, operates certain contacts of a switching device 38, other contacts of the switching device 38 being operated by a plunger 40 which extends through a guide sleeve 42 fitted into the frame 22. The sleeve 42 also projects through the support panel 9 and positions the frame 22 on the panel 9. The end of the plunger 40 projects axially beyond the end of the sleeve 42 and when the plunger 40 is depressed, it sets the switching device 38 such that the motor 30 cannot be energized. The drive mechanism 20, excepting its drive shaft 34, and the switching device 38 are more completely described in U.S. Pat. No. 3,355,064.

As will be seen by reference to FIGS. 4 and 5, that portion of the drive shaft 34 which is journaled within the stud 24 is provided with an axially extending cylindrical hole or bore or socket 44 as well as a diametrically reduced cross bore 46 which intersects the socket 44 in slightly offset relation to the axis *a* of the shaft 34. At its ends the cross bore 46 opens into an outwardly opening annular groove 48 cut into the drive shaft 34. The cross bore 46 and groove 48 accept and confine a spring detent clip 50 including a straight cross portion or pin 52 which projects through the cross bore 46 and across the socket 44 as well as an arcuate retaining portion 54 attached to one end of the cross portion 52 and extending through a segment of the annular groove 48. The diameter of the wire from which the spring clip 50 is formed is less than the diameter of the cross bore 46 so that the cross portion 52 fits loosely within the cross bore 46 and is free to move laterally therein, but is restrained from exceeding its elastic limit. Irrespective of the position of cross portion 52 in the cross bore 46, the cross portion 52 extends through the socket 44 as a chord thereof and in so doing forms a chordal space in the socket 44. Moreover, the arcuate portion 54 is biased toward the cross portion 52 so that the latter is continually urged toward one side of the bore 46 or, in other words, is normally disposed eccentrically within the cross bore 46. The diameter of the cross portion 52, the diameter of the cross bore 46, and the disposition of the arcuate portion 54 in the groove 48 are all such that when the cross portion 52 is biased to its normal eccentric position within the cross bore 46, its axial centerline will intersect the axial centerline *a* of the drive shaft 34. Thus, the cross portion 52 can shift in only one transverse direction away from its normally presented diametrically extending position. Since the wall of the stud 34 completely encircles the annular groove 48, removal of the spring clip 50 is precluded without disassembly of the drive mechanism 20.

The drive shaft 34 of the drive assembly 20 rotates a dispensing spindle 60 wound from a single length of round stock into a helical portion 62 and an axial mounting shank 64 projecting from one end of the helical portion 62 into the socket 44 of the drive shaft 34. At its end the shank 64 is provided with an axially extending tang 66 having a land 68 which rearwardly terminates at a chamfered camming edge 70. The tang 66 is slightly greater in thickness than the radius of the socket 44 so that when it is oriented properly and inserted rearwardly through the socket 44, its camming edge 70 will engage the cross portion 52 of the spring clip 50 and urge that portion away from its eccentric position within the cross bore 52. Nevertheless, the tang 66 is still thin enough to pass under the cross portion 52 when that portion is shifted away from its normally presented eccentric position. The opposite end of the tang 66 is traversed by a recess 72 of arcuate cross-sectional shape and the ends of the recess 72 marginally register with the cross bore 46 when the shank 64 is fully inserted within the socket 44. Thus, as the shank 64 is advanced rearwardly into the socket 44, the cross portion 52 of the clip 50 will slide across the land 68 until the recess 72 is encountered, at which time it will snap into the recess 72 by reason of the natural bias imparted by the arcuate portion 54. In this position the cross portion 52 fits within the recess 72 and retards withdrawal of the shank 64 from the socket 44. Of course, if the spindle 60 is pulled away from the drive shaft 34 with sufficient force, the arcuate faces of the recess 72 will cam the cross portion 52 outwardly against the bias of the clip 50, until it rides up over the land 68, at which time the spindle 60 can be withdrawn with very little effort.

The bags 10 are loaded onto the spindle 60 by inserting the shank 64 through the apertures in the tabs 11 thereon. When the spindle 60 is fully loaded, each convolution of its helical portion 62 will carry a bag 10 and those bags 10 will, of course, gravitate to the lowest portion of the convolution (FIG. 2). The tabs 11 extend laterally and upwardly from the helical portion 62 where they support a sensing rod 74 having a pair of arms 76 which are journaled in the bracket 26. At their opposite ends the arms 76 are connected through a downwardly turned bight portion 78 located beyond the end of the spindle 60. At the bracket 26 one of the arms 76 continues downwardly beyond the point where it is journaled in the provision of an arcuating arm 80 which terminates in alignment with the exposed end of the plunger 40. When all of the bags 10 have been run off the spindle 60, the sensing rod 74 will drop downwardly and swing the actuating arm 80 toward the support panel 9 and into engagement with the plunger 40, depressing it and breaking the electrical initiating circuit to the motor 30 at the switching device 38.

OPERATION

To load the vending machine 2 with the bags 10, the spindles 60 are withdrawn from their respective drive mechanisms 20 by pulling them away from the support panel 9. As each spindle 60 is pulled outwardly, the arcuate face of its recess 72 cams its mating cross portion 52 of the clip 50 laterally onto the surface of the land 68, thereby affording easy withdrawal of the spindle 60. When the shank 64 passes outwardly beyond the cross portion 52 of the spring clip 50, the cross portion 52 will again snap back into its normal position wherein it is presented eccentrically within the cross bore 46.

The bags are then fitted onto the spindle 60 by inserting the shank 64 through the apertures in the tabs 11 and then drawing the bags 10 across the convolutions of the helical portion 62 until each convolution retains a different bag 10. Since the shank 64 is the same diameter as the convolutions of the spindle 60, the bags 10 are easily installed without danger of tearing. Moreover, slit lines need not be provided in the tabs 11 at the apertures to accommodate oversized hubs as is the case with spindle-type vending machine of current manufacture. After the spindle 60 is filled with bags 10, it is twisted until the end of the last convolution is in the three o'clock position, at which time the shank 64 is inserted into the socket 44 and the entire spindle 60 is pushed rearwardly toward the support panel 9. As the shank 64 advances through the socket 44, the beveled camming surface 70 on the end of the tang 66 will engage the cross portion 52 of the clip 50 and can it outwardly in the cross bore 46 against the bias imparted by the arcuate portion 54. Continued advancement of the shank will urge the cross portion 52 up over the land 68. When the recess 72 reaches the cross portion 52, the latter will snap into the former and preclude axial withdrawal of the spindle 60 under normal operating forces. Since the thickness of the tang 66 is slightly greater than the radius of the socket 44 and since the cross portion 52 of the clip 50 can shift transversely in the socket 44 beyond its centered position in one direction but not the other, the shank 64 can be inserted in only one position with respect to the drive shaft 34, that is, with the end convolution of the helical portion 62 presented at three o'clock when the drive mechanism 20 is at rest. Inasmuch as only a short span of the cross portion 52 is exposed to the shank 64 within the socket 44 and, furthermore, in view of the fact that both ends of the cross portion 52 are confined within the cross bore 46, the clip 50 will not bend easily when engaged by an inaccurately positioned spindle shank 64 or one applied with excessive force. Moreover, the diameter of the cross portion in relation to the diameter of the cross bore 46 is such that movement of the former to any position within the latter will not flex the spring clip 50 beyond its elastic limit.

To obtain a bag 10 from the vending machine 2, the customer places the proper amount of coin in the slot 14 and then depresses the selector button 16 corresponding to the spindle 60 which carries the bagged item 10 he desires. This completes a circuit through the switching device 38 to the motor 30, energizing the same and rotating the drive shaft 34. As the drive shaft 34 rotates, the cam 35 on itS inner end moves the follower 36, and as the end of one revolution of the drive shaft 34 approaches, the follower 36 will return to its initial position and set the switching device 38 such that it breaks the electrical circuit to the motor 30. The motor 30 rotates the drive shaft 34 in a direction which advances the bags 10 in unison toward the transparent panel 6. As the spindle 60 rotates through one revolution, the bag 10 on the end convolution of the helical portion 52 will pass off that convolution and drop downwardly into the chute 18 where it can be withdrawn from the machine 2 by the customer. Succeeding bags 10 are dispensed in a similar manner.

When the service man restocks a partially spent spindle 60, he merely withdraws that spindle 60 as previously noted and passes new bags 10 over the shank 64 and the unoccupied section of the helical portion 52 until all of the convolutions are again filled. Accordingly, the spindles 60 dispense the bags 10 on a first in, first out basis, and this prevents retention of any individual bags 10 within the machine 2 over extended periods of time. If the bags 10 contain food products, this feature will normally prevent them from becoming stale within the machine 2.

After the last bag 10 is dispensed from a spindle 60, the sensing rod 74 will drop downwardly swinging the actuating arm 80 toward the plunger 40 and depressing the same. The inwardly disposed plunger 40 sets the switching device 38 such that the motor 30 will no longer operate when its corresponding selector button 16 is depressed.

From the foregoing it is apparent that the spring biased cross portion 52 disposed eccentrically in the offcenter cross bore 46 not only retentively and detachably secures the spindle 60 in the drive shaft 34, but also positions the spindle 60 such that it will properly dispense the bags 10 when rotated.

It is possible to easily adapt vending machines of current manufacture, such as the ones disclosed in U.S. Pat. No. 3,355,064, for use with spindles 60 also. As will be seen by reference to FIGS. 8–10, those vending machines have drive units 100 which are similar to the drive units 20. The gear train of each drive unit 100, however, terminates at a drive shaft 102 having a rearwardly opening bore 104 and a forwardly opening counterbore 106, the juncture of the two being at a stepped shoulder 108. Near the forward end of the drive shaft 102 the wall defining the counterbore 106 is provided with an annular groove 110 (FIG. 9) of arcuate cross-sectional shape. Heretofore, the counterbore 106 of such drive units 100 have served as sockets for reception of hubs or other types of enlarged connecting devices on the ends of helical dispensing spindles. Since the hubs or connecting devices on such spindles are larger than the wires of their corresponding convolutions, difficulty has sometimes been encountered in loading such spindles from their rear ends.

In order for the drive shaft 102 to receive the small shank 64 of the spindle 60, an adapter 112 is snugly inserted into the counterbore 106 and that adapter 112 is provided at its rear end with an axially extending tongue 114 which conforms to the configuration of the stepped shoulder 108. Accordingly, the adapter 112 is precluded from rotating with respect to the drive shaft 102. At its opposite end the adapter 112 is provided with an outwardly opening annular groove 115 which axially aligns with the groove 110 in the drive shaft 102. The groove 115 accommodates a circular spring clip 116 which is contained completely therein as the

adapter 112 is inserted through the counterbore 106, but springs outwardly into the groove 110 when the adapter 112 is fully inserted, thereby locking the adapter 112 within the drive shaft 102. The groove 115 has a rear face 118 which is chamfered at approximately 45° so that any outwardly directed axial force applied to the adapter 112 is transferred to the drive shaft 102 through the circular spring clip 116 along a line of action presented at approximately 45° to the axes of the adapter 112 and the drive shaft 102.

The adapter 112 is further provided with an axially extending bore or socket 120, a cross bore 122 which intersects the socket 120 in slightly offset relation to the axis of the latter, and an outwardly opening annular groove 124 into which the outer ends of the cross bore 122 open. The cross bore 122 and annular groove 124 are similar to the cross bore 46 and annular groove 48 on the drive shaft 34 and they receive and retain a spring detent clip 126 which is similar to the spring detent clip 50.

The adapter 112 serves as a bushing for reducing the diameter of the counterbore 106 in the drive shaft 102, and its socket 120 snugly receives the shank 64 of the spindle 60, while the spring detent clip 126 retentively engages the tang 66 and secures the spindle 60 to the adapter 112, as well as to the drive shaft 102, all in the manner previously described.

MODIFICATION

FIGS. 11–16 show a still further improved form of the invention. In this form of the invention a sheet metal support panel 9*a* is utilized. Openings for the sold-out switch sleeve 42*a* and the small motor hub 150 are punched in the support panel at the time of fabrication. The drive mechanism 20 is mounted on the backside of the support panel 9*a* by means of screws 151 which pass through the support panel 9*a* and into threaded bosses (not shown) in the gear casing 32. This method of fabrication is less expensive than the thick support panel, permits more dispensing spindle length, and eliminates the threaded stud which formerly had to be securely attached to the metal gear case cover and required a large threaded nut to hold the same in engagement with the support panel.

The heart of this form of the invention is embodied in a molded one-piece plastic gear and spindle retainer 152. This is shown in FIGS. 13–16. The gear and spindle retainer 152 comprises a center or hub portion 153 which has the final gear 154 positioned thereon. This output gear 154 is connected through a train of gears (not shown) to the main driving member of the motor 30. When the rotor of the motor is energized, the final gear 154 rotates on its hub bearings, 153 and 162 (front and rear) respectively.

The left or front bearing 153 is rotatable journaled in a short extruded boss or motor hub 153*a* upset in the gear case cover 32*a*. The boss 153*a* fits in the opening 150 in the support panel 9*a*. The right or rear bearing 162 is rotatably journaled in a bass 162*a* on the rear wall of the gear case 32*a*. At the termination of the front hub 153 is a secondary drive gear 155 which is utilized to drive a variety of other dispensing mechanisms which may be used in replacement of the spindle delivery system illustrated in this invention.

A tapered nose 155*a* is at the forward end of the front hub 153. Toward the rear of the front hub 153 and within the gear casing 32*a* is a spacer portion 163 which terminates in an internal shoulder 156. The shoulder 156 serves to space the gear 154 from the rear wall of the gear housing 32*a* and acts as a thrust bearing surface for the rotation of the retainer 152. Rearwardly or rightward of the rear bearing 162 is a cam 35*a* for operating the cam follower 36 as hereinbefore described.

Positioned through the spacer portion 163 of the retainer 152 is a retainer pin 157. The pin 157 passes through an internal through bore 159 in the spacer 163 to define a chord of the circular cross section of the bore or socket 158. The pin 157 is slightly above center and has a certain lateral movement. It is retained within the cross bore 159 by a return end 160 and a second upturned pin end 161.

The spindle shank 64*a* is provided with a recess 72 having a tapered lead-in shoulder 72*a* adjacent to a tang 66*a* on which is a land 68*a*. The end of the tang 66*a* is tapered at 70*a* to provide a camming surface for raising the pin 157 so that the tang 66*a* can slide beneath the pin until the pin 157 snaps into the groove 72. This then springably retains the spindle 60*a* within the hub 152, acting as a detent.

One advantage of this arrangement is that it has a much shorter distance between the front of the motor housing and the last helix on the spindle 60*a*. This allows more turns to be made in each spindle 60*a* and thus more packages can be loaded on and dispensed on each such spindle 60*a*. The operation of this form of the invention is identical to the operation of those forms previously described. However, as pointed out, this form of the invention provides a much more inexpensive construction and provides a larger loading capacity for each spindle.

This invention is intended to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure which do not constitute departures from the spirit and scope of the invention.

What is claimed is:

1. In a vending machine including a panel having front and rear faces, a gear case attached to the panel opposite to the rear face thereof and having therein a gear train and a bore which opens outwardly and is accessible adjacent to the front face of the panel, and a motor mounted on the gear case for driving the gear train, the improvement residing in a rotatable final drive element comprising: a cylindrical hub journaled in the bore of the gear case and having a cylindrical socket extending therethrough, the socket being coaxial with the outer surface of the hub and opening outwardly adjacent to the front face of the panel, a final gear attached to the hub and being positioned in the gear case where it meshes with the gear train, an auxiliary gear attached to the hub beyond the opposite end of the bore, the auxiliary gear being exposed adjacent to the front face of the panel where a gear driven dispensing mechanism may be engaged therewith; a spring loaded cross pin extended transversely across the socket and being shiftable generally perpendicular to the axis of the socket for a limited distance, whereby the shank of a helical dispensing spindle may be in-

serted into the socket and an axially extending land on the end of the shank may be engaged with the cross pin so that the spindle is locked to the drive element for rotation therewith.

2. The construction of claim 1 wherein the gear case is mounted on the backside of the panel by means of screw fasteners which pass through the panel and extend into the gear case.

3. The construction of claim 2 wherein the panel is of sheet metal.

4. The construction of claim 1 wherein the auxiliary and final gears are formed integral with the hub; and wherein the final drive element further includes a spacer portion formed integral with the final gear on the side thereof opposite from the hub and disposed within the interior of the gear case, the cylindrical socket extending into the spacer portion and the spring loaded cross pin being mounted on the spacer portion.

5. The construction according to claim 1 wherein a rear portion projects rearwardly from the final gear, the rear portion having aligned transversely extending holes therein, the cylindrical socket extending into the rear portion and intersecting the transversely extending holes, the cross pin being fitted loosely into the holes in the rear portion and further being connected with an arcuate return which extends along the exterior surface of the cylindrical portion and spring loads the cross pin.

* * * * *