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DISPENSING DEVICE WITH ARTICLE RELEASING MEANS

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2 Sheets-Sheet 1

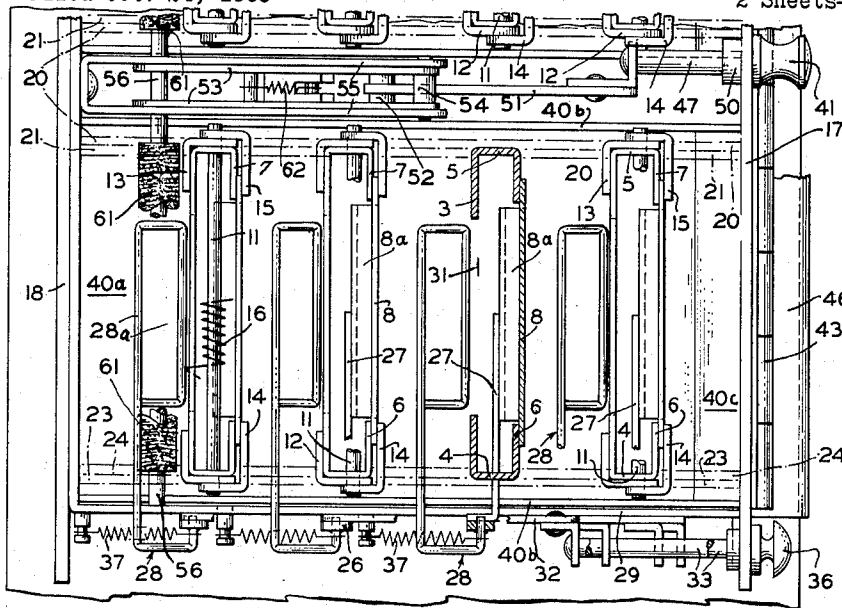


FIG. 1

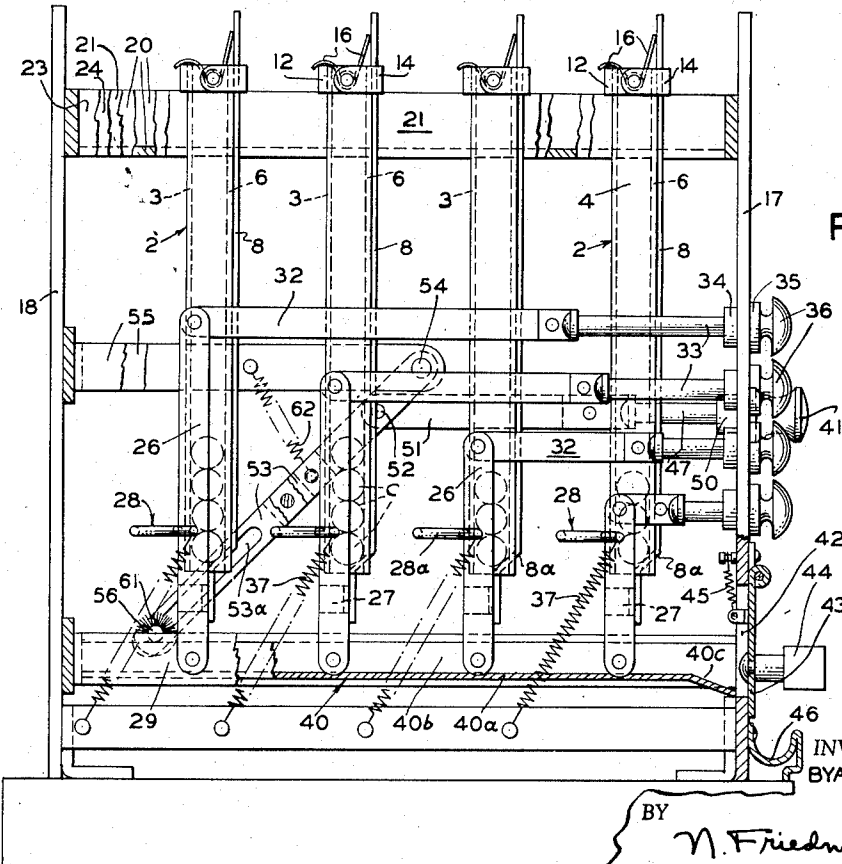


FIG. 2

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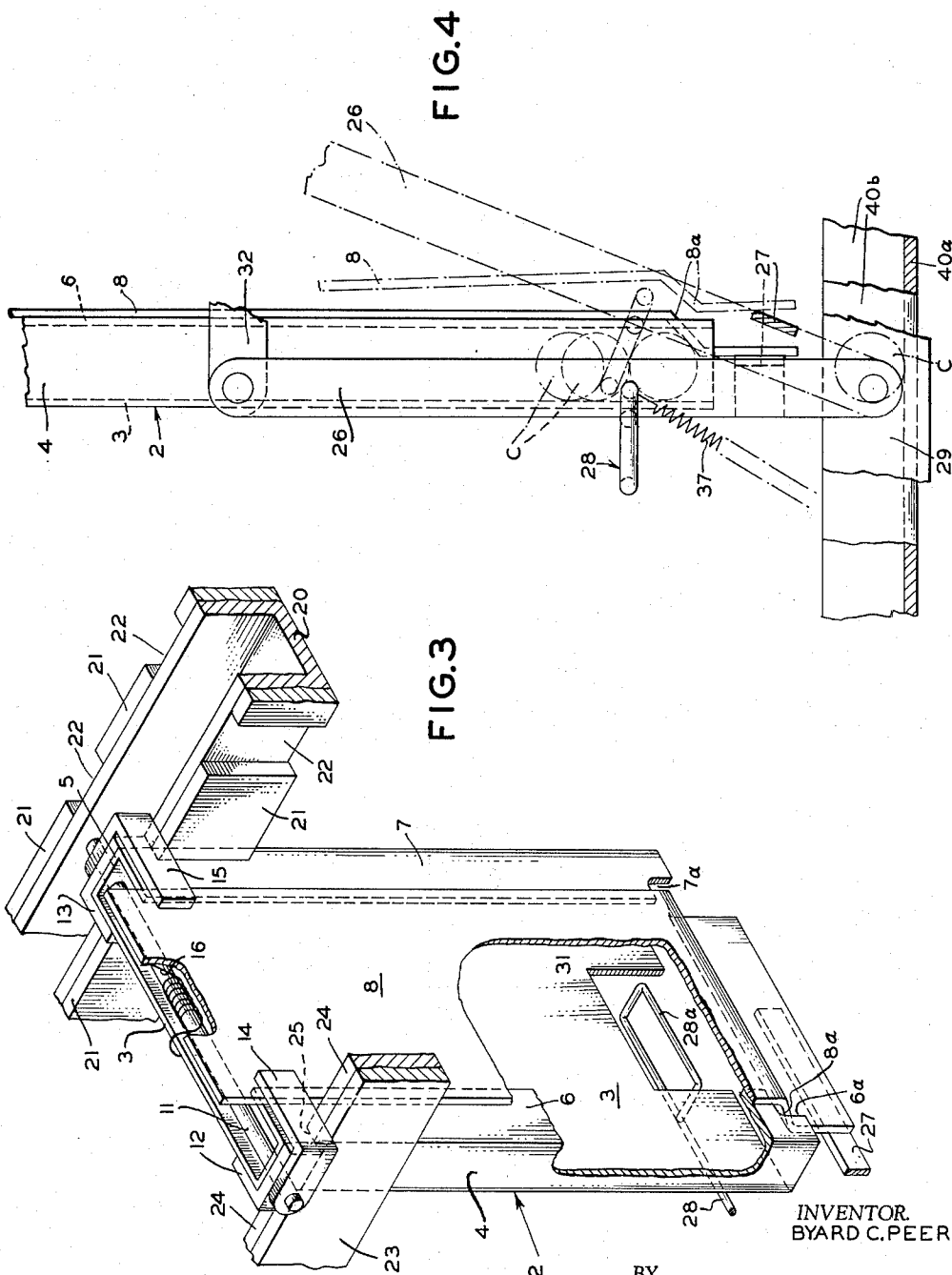
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DISPENSING DEVICE WITH ARTICLE RELEASING MEANS

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This invention pertains to dispensing devices.

More particularly, the invention has to do with dispensing devices of the type in which articles are selectively dispensed from a stack thereof contained in a magazine-like container. Although the present invention is intended primarily for the dispensing of cigarettes, it will be understood that the principles thereof can be employed in dispensers for any of numerous diverse types of articles.

The invention represents an advance over prior art dispensing devices such as disclosed in the following United States patents: 381,239; 536,713; 1,306,201; 1,728,454; 2,553,535; 2,870,937.

Such dispensers known to the art have involved mechanisms comprising numerous parts movable relatively to one another. This significantly increases the cost of manufacture. Further, such mechanisms have a tendency to require servicing at frequent intervals.

Additionally, prior art dispensers of the type from which a selected one of different species of articles are dispensed, have relied on a sloping gravity feed surface to send the dispensed article to a common discharge exit after the article is released from its particular hopper or magazine. However, the selected dispensed article can very easily roll to one side of the sloping surface, and thereby fail to complete its intended movement to the ultimate discharge point.

It is a major object of the present invention to provide a dispensing mechanism which can be economically manufactured and which will be durable in service.

It is a further object of the invention to provide a dispensing mechanism which will not damage the articles to be dispensed.

It is a further object of the invention to provide a dispensing mechanism which is certain in operation and will not cause jamming of the articles to be dispensed.

It is a further object to provide a dispensing device which includes means for positively causing ejection of a dispensed article after the article has been selectively dispensed from a magazine or hopper within the device to a receiving surface, also within the device.

As will be described in detail shortly, in a preferred embodiment the dispenser of the invention includes a magazine for holding a number of articles to be dispensed. One wall of the magazine is movable. This wall includes an inwardly extending ledge which normally blocks the lowermost article within the magazine from being discharged from the magazine. A portion of a selectively movable dispensing control means will, when the control means is operated, swing the movable wall outwardly to displace the blocking ledge sufficiently to release the lowermost article in the magazine. Before the article is released, however, another portion of the control means, rigid with the first portion will move between the end article about to be dispensed and the article just behind it. Accordingly, the endmost article will be discharged from the magazine, while the remaining articles will be held in place. Thereafter, the control means is returned to its normal, unoperated position. This allows the movable wall portion to return under spring bias to its normal position with its blocking ledge in position to once again hold the articles in the magazine.

As a further feature of the invention, there is provided special means for insuring that the article released from the magazine is positively ejected to the final discharge

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point of the dispenser. After leaving the magazine, the dispensed article falls on an underlying receiving surface, which is preferably horizontal. A sweeper or discharge device is then operated. This device travels along the entire length of the surface in rear to front direction to propel the article to the dispenser's discharge opening at the front end of the surface.

The above, and other objects, advantages, and features of the invention will be readily understood by those skilled in the art from the following detailed description when read in conjunction with the accompanying drawings in which:

FIG. 1 is a fragmentary top plan view of the novel dispenser of the invention, parts being broken away and removed for the sake of clarity;

FIG. 2 is a left side elevational view;

FIG. 3 is an enlarged perspective view of an individual magazine of the invention; and

FIG. 4 is an enlarged left side elevational view of the magazine, showing in dot-dash lines the operated or dispensing position of the movable front wall of the magazine, and of related parts.

There will now be described a specific exemplary application of the invention as embodied in a dispenser specifically adapted for dispensing various brands of cigarettes.

The dispenser 1 includes a number of magazines 2, specifically eight, each adapted to hold a number of cigarettes of a given brand. The top plan view of FIG. 1 shows in full the four magazines provided on the left hand side of the dispenser, and partially shows the four additional magazines in the right hand side of the dispenser. It will be understood that the right hand magazines and related structure are constructed and operated in the same manner as the left hand magazines.

Each magazine 2 comprises a rear wall 3, opposed side walls 4, 5; and a front wall structure including two relatively narrow wall portions 6, 7 rigid with the side walls. The magazine also includes larger movable front wall member 8 which overlaps the narrow front wall portions 6, 7. Front wall member 8 is mounted for swinging movement relative to the remainder of the magazine on a shaft 11 which extends across the top of the magazine through opposed angle members 12, 13 rigid with the rear and side walls 3, 4, 5, and additional angle members 14, 15 fastened to front wall 8. A torsion spring 16 mounted on shaft 11 normally biases front wall 8 clockwise (FIGS. 1, 3, 4) into closed, abutting relation with the stationary narrow front wall portions 6, 7. Front wall 8 serves to complete the magazine enclosure partially provided by walls 3, 4, 5 and 6, and thus shields the cigarettes therein against contamination from ambient dirt, dust, etc.

Adjacent its lower end, the movable front wall 8 of each magazine includes an inwardly bent sloping ledge 8a which extends rearwardly into the interior volume of the magazine through notches 6a, 7a provided for this purpose at the lower opposed facing corners of the narrow fixed front wall portions 6, 7.

As best seen in FIG. 4, the stack of cigarettes C (or other articles to be dispensed) are housed within the magazine, ledge 8a normally serving to prevent dispensing movement of the articles toward and through the lower, open end of the magazine. As will be described shortly, means are provided to swing front wall 8 forwardly a sufficient distance to allow the lowermost cigarette to drop out through the bottom of the magazine; while interposing a secondary blocking or retaining means 28 between the lowermost and the next higher cigarettes to thereby hold the remainder of the stack in place.

The magazines are removably supported in the dispenser as follows. The dispenser includes front and rear fixed frames 17, 18 (FIGS. 1, 2). Secured between these

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frames is a channel member 20 which lies at the center of the dispenser between the latter's left and right outer sides. A number of spaced small plates 21 are rigidly fastened to the left leg of channel member 20 to define therebetween slots 22. A bar 23 suitably spaced to left of channel member 20 is secured to front and rear walls 17, 18 and, like the channel member, carries a number of spaced plates 24 defining therebetween slots 25 each laterally aligned with a corresponding slot 22. The arrangement is such that each pair of laterally aligned slots 22, 25 is adapted to slidably receive a magazine 2 with a close fit, as best illustrated in FIG. 3.

When a magazine needs refilling, it is merely manually withdrawn vertically from the dispenser, turned upside down, front wall 8 held open against the bias of spring 16, and reloaded with cigarettes through its lower, open end. The magazine is then slid back into its pair of receiving slots 22, 25. In the fully inserted position of the magazine, its aforementioned angle members 12, 13 fixed to wall 3, 4, 5 support the magazine on the adjacent portions of channel member 20, bar 23, and plates 21, 24.

The right hand group of four magazines shown in FIG. 1 is supported in precisely the same fashion as described above. For this purpose, the right hand leg of channel member 20 (FIG. 3) carries a series of the plates 21. The right hand support for the magazines comprises a second bar and plates (not shown) identical with bar 23 carrying plates 24.

A cigarette is selectively dispensed from any magazine as follows. A separate actuating lever 26 alongside each magazine at the latter's outer side is pivotally secured at its lower end to the dispenser's fixed lever framing 29. Fastened to each lever are two members 27, 28 extending toward the magazine. When lever 26 is swung forwardly, member 27 will release the lowermost cigarette by swinging the magazine's front wall 8 forwardly; and member 28 will move into position simultaneously to hold the remainder of the cigarettes in the magazine in place, as shown in dot-dash lines in FIG. 4.

Member 27 comprises a bar extending closely adjacent and parallel to the inside surface of the lower end of the magazine's rockable front wall 8 below ledge 8a. The outer end of each bar 27 is bent to form a lug by which it is suitably fastened to the related lever 26.

Member 28 comprises a length of rigid round wire or rod. At one end, it is rigidly secured to lever 26, and at its other end it is shaped to form a rectangular loop 28a of a length shorter than the cigarettes contained in the magazine.

When actuating lever 26 is in its normal, vertical unoperated position, loop 28a lies a short distance to the rear of the back wall 3 of the magazine at a height substantially level with the line of contact between the first (lowermost or leading) cigarette and the second (or trailing) cigarette.

When lever 26 is operated by being moved clockwise to the position shown in dot-dash lines in FIG. 4, it will carry loop 28a through an opening 31 (best seen in FIG. 3) in the magazine's rear wall 3, into the interior of the magazine to underlie the second cigarette and thereby restrain all but the lowermost leading cigarette against dispensing movement toward the lower open end of the magazine. At the same time, the forward movement of bar 27 carried by lever 26 will swing the magazine's front wall 8 forwardly about shaft 11, whereby ledge 8a will be removed from its normal blocking relation with the first cigarette. The latter is therefore now free to drop through the lower end of the magazine.

Any selected lever 26 is adapted to be operated to dispense a cigarette as follows. A horizontal link 32 for each lever is pivoted at its rearward end to the upper end of the lever and is rigidly fastened at its forward end to a coupling rod 33 which slidably extends through a bushing 34 in the dispenser's front wall 17. Outside wall

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17, rod 33 terminates in a limiting collar 35 and knob 36. As best seen in FIGS. 1 and 2, the respective knobs 36 for the four left hand magazines 2 are arranged in a vertical row. The corresponding levers 26, links 32, and coupling rods 33 are of the different lengths shown in FIG. 2 to compensate for the height of the related knob, and the fore-aft position of the related magazine.

It will be apparent that to dispense from any desired magazine, the knob 36 corresponding to that magazine is pulled forwardly, causing lever 26 to rock in like direction to effect the dispensing of a cigarette in the manner described earlier. A suitable spring 37 connected to each lever 26 returns the latter—together with its link 32, coupling rod 33, and knob 36—to their normal position of FIG. 2 as limited by collar 35 abutable with wall 17. Torsion spring 16 of the magazine, acting on bar 27 through the magazine's front wall 8, assists somewhat in normalizing the aforescribed operating linkage.

Upon being dispensed from its magazine 2, the cigarette falls to rest on an underlying horizontal tray 40 which has a bottom wall 40a and upstanding side walls 40b spaced apart slightly more than the width of the magazines. Two such trays are provided, one for each of the two sets of four magazines. The operator then pulls forwardly on a knob 41 located approximately on the vertical center line of front wall 17 of the dispenser 1. This will cause a sweeper mechanism to sweep across the trays 40 from rear to front to positively push the cigarette to a downwardly sloping portion 40c at the front of the tray. Here, the cigarette lies at the main or final discharge opening 42 of the dispenser, which is normally closed by a door 43. The door, which is hinged along its upper sides to front wall 17, can then be opened by lifting its knob 44 against the action of a closing spring 45. This permits the cigarette to fall into a receiving trough 46 whence it may be picked up for use.

The sweeper mechanism is constructed and operates as follows. The sweeper operating knob 41 is connected by a coupling rod 47, slidably passing through bushing 50 in front wall 17, to a horizontal link 51. The latter is pivoted at its rearward end on a pin 52 mounted between a pair of identical closely spaced lever arms 53 adjacent the latter's upper end. The levers 53, which are rigidly secured together and operate as a single unit, are pivoted at their upper ends on a shaft 54 and nylon bearings, supported between the forward free ends of a U-shaped member 55 extending forwardly from the rear of the dispenser. A long, laterally extending shaft 56 extends through opposed elongated slots 53a in the lever arms 53. Shaft 56 rides on the upper edges of side walls 40b of trays 40. Two brushes 61 are each carried by shaft 56 between the side walls 40b of a respective one of the two trays 40. It will be seen from the foregoing that when the sweeper operating knob 41 is pulled forwardly, the lever-arm pair 53 will be rocked counterclockwise (forwardly) about its upper pivot 54 thereby carrying sweeper brushes 61 forwardly along trays 40 to push a cigarette in either tray to the sloping tray portion 40c at the front end of the dispenser. Then, when front door 43 is opened, the cigarette will fall into trough 46, ready for use. A suitable return spring 62 for the sweeper mechanism is connected between the lever pair 53 and channel member 55.

While there has been described above a specific embodiment of the invention, it will be understood that numerous modifications can be made as to the form, arrangement, construction, and use of the dispenser and its features. For example, any desired number of magazines can be employed. One magazine could be employed alone, and further could be used as the basis for a portable cigarette case. The magazine or magazines could discharge directly to the user. The sweeper feature need not necessarily be employed with the magazines, or could be employed with other types of magazines and other types of dispensers.

Since numerous other arrangements can be employed,

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still utilizing—alone or in combination—the various features of the invention, it is intended that the foregoing detailed description of a specific embodiment of the invention be illustrative only and not in any way limitative of the following claims.

I claim:

1. In an article dispensing device: a magazine assembly for holding a stack of articles to be dispensed from a discharge exit of said magazine assembly; said articles being adapted to be urged to partake of dispensing movement toward said discharge exit; means for blocking the leading article of said stack against dispensing movement thereof; and dispensing control means including a first member movable to and from an operated position disabling said blocking means to release said leading article for dispensing movement, and a second member movable to and from an operated position restraining a trailing article of said stack against dispensing movement, said first and second members being rigidly connected together for unitary conjoint operating movement in the same direction, said magazine assembly including two opposed back and front vertical wall portions, one of which is mounted for movement toward and away from the other; said blocking means comprising a ledge portion of said movable wall portion, said ledge portion extending inwardly into said magazine assembly.

2. The combination according to claim 1, further including a stationary supporting surface within said dispensing device onto which said article is discharged from said magazine assembly; and selectively operable reciprocatory sweeper means for moving said article along said surface to a desired point.

3. The combination according to claim 2, including spring means biasing said sweeper means to a normally

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unoperated position, and means for effecting an operating stroke of said sweeper means.

4. The combination according to claim 1, including means removably mounting said magazine assembly for withdrawal thereof for refilling and insertion thereof into said dispensing device.

5. The combination according to claim 4, said dispensing control means being free of and unconnected to said magazine assembly and being arranged, at least when in one condition, to be free of the path of removal and insertion movement of said magazine assembly relative to said dispensing device.

6. The combination according to claim 1, further including means rotatably mounting said movable wall portion for rocking movement thereof away from and toward the other wall portion.

7. The combination according to claim 1, said magazine assembly including at least one other fixed substantially vertical wall portion adjacent said movable wall portion and against which said movable wall portion normally abuts.

8. The combination according to claim 7, including means normally urging said movable wall portion against said other fixed wall portion.

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