March 12, 1957 J. P. HARTNETT 2,784,873

DISPENSERS

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Fig.1

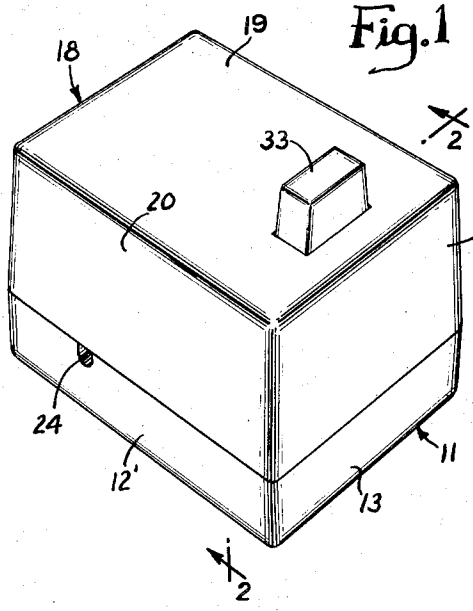


Fig.2

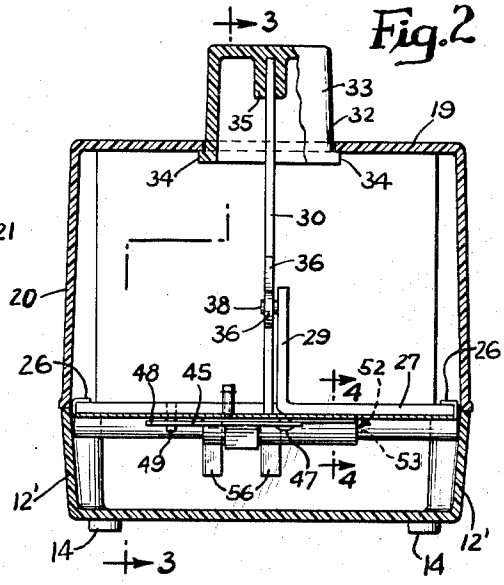


Fig.3

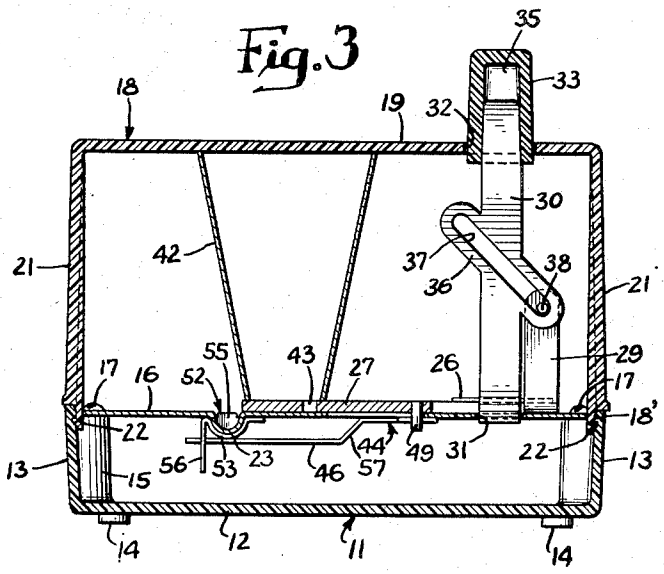
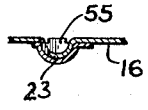


Fig.4



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DISPENSERS

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Fig. 5

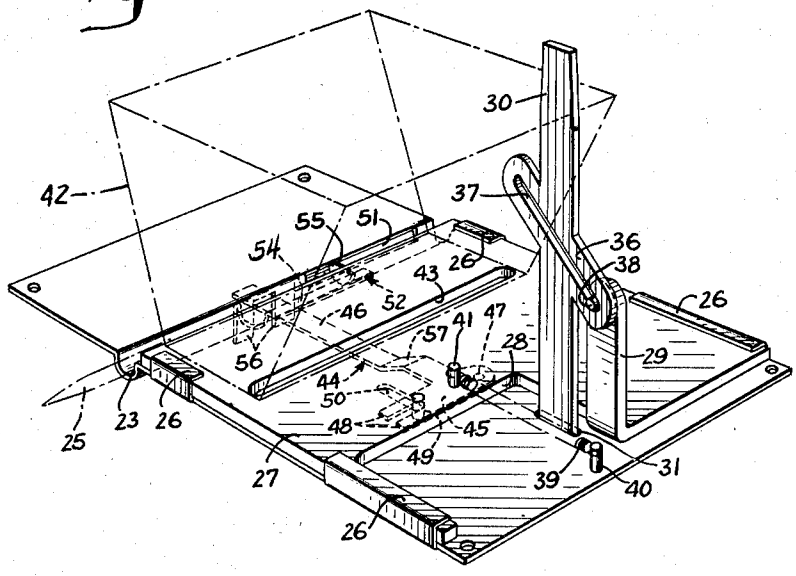
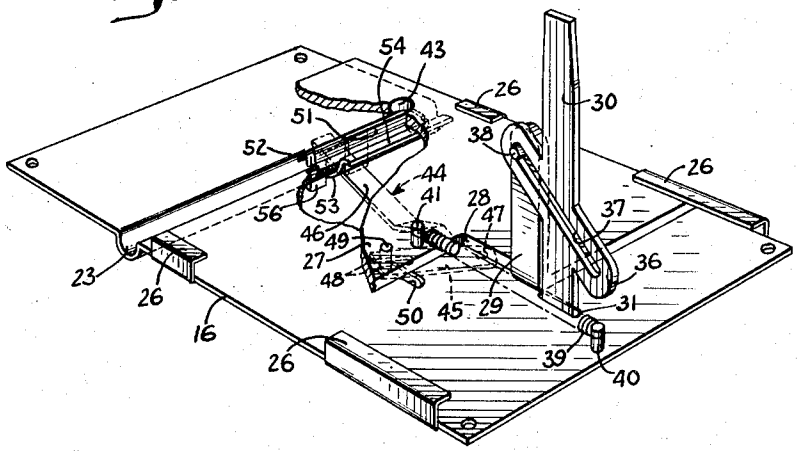


Fig. 6



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2,784,873

DISPENSERS

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Application April 21, 1953, Serial No. 350,128

2 Claims. (Cl. 221—238)

The invention relates to a dispenser for toothpicks, matches, and similar elongated articles having a substantially cylindrical shape. The dispenser is adapted to partially eject each article individually, and the person who is to use it removes it manually from its partially ejected position.

The present apparatus is characterized by the inclusion of a tray-like base portion and a cover therefor which may be readily secured to the base to protect the contents from dirt, dust, and promiscuous handling. The cover may be readily removed when the dispenser requires re-filling. The dispensing apparatus is simple, inexpensive, and durable. A finger piece projecting from the cover is pressed inwardly to actuate the dispensing apparatus to eject one end portion of an individual article through an aperture in one wall of the dispenser. When the finger pressure is removed, the dispensing apparatus is automatically returned to its normal position, and is ready for another dispensing operation as soon as the partially ejected article is removed from the container. Any person operating the dispenser can touch only the article partially ejected by actuation of the dispensing apparatus, so the cleanliness of the individual articles is obvious.

It is, therefore, an object of the present invention to provide an apparatus embodying novel structural details permitting the dispensing of individual tooth-picks, or other similarly shaped articles, through an aperture provided in a closed container adapted to hold a plurality of the articles in sanitary condition.

Another object of the invention is to provide a dispensing apparatus that may be easily assembled.

Another object is to provide a dispenser which must be separately actuated for each article dispensed, and from which a second article may not be removed until after the first article dispensed has been removed.

Another object is to provide a dispenser that can not deliver two articles simultaneously, and can not be jammed in normal operation.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of the invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same characters of reference are employed to indicate corresponding or

similar parts throughout the several figures of the drawings:

Fig. 1 is a perspective view of a dispenser embodying the features of the invention;

Fig. 2 is a vertical transverse cross sectional view, taken substantially along the line 2—2 of Fig. 1;

Fig. 3 is a vertical longitudinal cross sectional view, taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a transverse cross sectional view of the dispensing trough, taken along the line 4—4 of Fig. 2;

Fig. 5 is a detail perspective view of the dispensing apparatus, with the housing omitted to clarify the illustration, and showing, in dotted lines, a partially ejected article in position to be removed; and

Fig. 6 is a detail perspective view, similar to Fig. 5, showing the dispensing apparatus in the opposite position from Fig. 5, with parts broken away to facilitate illustration of the subject matter.

Referring to the accompanying drawings, the dispenser comprises a hopper for holding a supply of the articles, dispensing apparatus, a housing for containing the hopper and the dispensing apparatus, and a finger operable member projecting outside the housing to actuate the dispensing apparatus to partially eject an article through an aperture provided in one wall of the housing. More specifically, the housing comprises a tray-like base 11 which is preferably made of plastic, but may be made of metal or any other suitable material. The base portion includes a flat bottom wall 12, upstanding side walls 12', and upstanding end walls 13. A plurality of feet 14 of felt or similar material secured to the lower surface of the bottom wall 12 provide a cushioning surface for the device. A boss 15 of slightly less height than the side and end walls is provided inside each corner of the base. A substantially flat platform 16 is supported at its corners by the bosses 15 and is secured thereto by screws 17. The inner surface of each end wall is provided adjacent its upper edge with a horizontally extending recess 18', for a purpose hereinafter described.

The cover 18 comprises a top wall 19, depending side walls 20, and depending end walls 21. The cover is preferably made of the same material as the base, and the depending side and end walls have a slight resiliency. Each end wall 21 has a toothed projection 22 depending from the central portion of its lower edge. The resiliency of the end walls 21 is sufficient to permit the projections 22 to ride over the inner surface of the upper edge of the end walls 13 and to snap into the recesses 18' to securely hold the cover member 18 in latched relationship to the base 11 with the lower edge surfaces of the side and end walls of the cover abutting the upper edge surfaces of the side and end walls of the base.

The platform 16 is provided with a transversely extending trough 23 axially aligned with an aperture 24 extending through one of the side walls 12'. The cross sectional area of the trough is large enough to receive one of the articles 25 to be dispensed, but is too small to hold two of them. The longitudinal edges of the platform 16 are provided with inwardly extending flanges 26 spaced uniformly above the surface of the platform. A plate 27, slidable longitudinally relative to the platform 16, is positioned on the platform with its longitudinal edges extending under the flanges 26. The plate 27 is of approximately the same cross sectional area as the portion of the platform 16 lying on one side of the groove 23 except for one corner portion which is cut away, as indicated at 28, for a purpose hereinafter described. An arm 29 extends upwardly from the plate 27 adjacent one edge of the cut out portion 28.

A vertically disposed plunger 30 is positioned adjacent the arm 29 and extends through a slot 31 provided therefor in the platform 16. The upper end of the plunger

extends upwardly through an opening 32 in the top wall 19. An inverted cup-shaped member 33 is fitted into the opening 32 and is provided with laterally extending flanges 34 underlying the edges of top wall 19 adjacent the opening 32 to prevent vertical displacement. The upper end of the plunger 30 is secured in a depending centrally disposed boss 35 formed in the cup-shaped member 33. The outer edges of the cup-shaped member 33 taper inwardly in the upward direction to a slight extent so that it may easily be depressed by finger pressure to depress the plunger 30. A cross arm 36 integral with the plunger 30 is angularly disposed relative thereto, and is provided with an elongated slot 37 having its lower end positioned adjacent the end wall 21. A pin 38 projecting from the arm 29 extends through the slot 37. When the plunger 30 is depressed the pin 38 rides in the slot and moves the plate 27 longitudinally relative to the platform 16. The vertical distance between the opposite ends of the slot 37 is approximately equal to the vertical distance between the bottom of plunger 30, in its uppermost position, and the bottom wall 12 so that the maximum permissible longitudinal movement of the plate 27 is attained simultaneously with the engagement of the lower end of the plunger 30 with the bottom wall 12 when the cup-shaped member 33 is depressed from its normal position. A tension spring 39, having one end secured to a stud 40 projecting upwardly from the platform 16 and its other end secured to a stud 41 projecting upwardly from plate 27, pulls the plate 27 back to its initial position, thereby moving the plunger 30 and cup-shaped member 33 upwardly to their normal positions, as soon as the downward pressure on the cup-shaped member is released.

A hopper 42, for holding a supply of the articles 25, is rigidly secured to the upper wall 19 of the cover 18. The hopper is provided with an open end adapted to fit against the top surface of the plate 27 when the cover 18 is positioned on the base 11. The hopper may be filled with the cover 18 in inverted position, and the base 11 may be secured to the cover before the dispenser is turned right side up, to prevent the articles 25 from spilling out of the hopper. The portion of the plate 27 underlying the hopper 42 is provided with an elongated slot 43 of the same length as that of the hopper. When the plate 27 is in its normal position the slot 43 is positioned under the open end of the hopper and is spaced longitudinally from the trough 23 a distance equal to the longitudinal distance between the vertical planes extending through the opposite ends of the slot 37. Consequently, when the plunger 30 is depressed to the limit of its downward movement the slot 43 overlies the trough 23. The width of slot 43 is just sufficient to allow one of the articles 25 to pass therethrough, so that one such article lies in the slot 43 as the plate 27 moves past the hopper 42 to bring the slot 43 in registration with the trough 23. The longitudinal movement of the plate 27 under the open end of the hopper causes the articles 25 to roll and thereby tends to keep them straight in the hopper. At the point of registration the single article falls through the slot 43 into the trough 23.

A bell crank 44, having a transverse arm 45 and a longitudinal arm 46, is pivotally secured to the underside of platform 16 by a pin 47. The free end of crank arm 45 is bifurcated, as indicated at 48, to straddle a pin 49 which projects downwardly from the underside of plate 27 through a longitudinally extending slot 50 provided therefor in platform 16. Longitudinal movement of the plate 27 carries the pin 49 with it and therefore causes the bell crank 44 to move pivotally about the pin 47.

The trough 23 is cut away adjacent the end remote from the aperture 24, as indicated at 51. An ejector 52 is provided with a portion 53 curved to fit around the outer surface of the trough 23, a lateral flange 54 extending through the cut away portion 51 of the trough 23, an end plate 55 fitting in the trough 23 and arranged transversely thereof, and a pair of transversely spaced

depending flanges 56. The longitudinal arm 46 of bell crank 44 is offset vertically, as indicated at 57, to permit the free end to pass beneath the bottom 53 of ejector 52 and extend between the flanges 56. Accordingly, pivotal movement of the bell crank 44 moves the ejector 52 longitudinally relative to the trough 23. The dispensing apparatus is in its normal position in Figs. 3 and 5, wherein the end plate 55 of the ejector is in its foremost position. As the plunger 30 is depressed the plate 27 is moved towards the trough 23 and the bell crank is moved in clockwise direction to retract the ejector 52. The end plate 55 reaches its rearmost position simultaneously with the registration of slot 43 and trough 23 so that the end plate does not interfere with the article 25 dropping through slot 43 into the trough. The finger pressure is then released from the cup-shaped member 33 and the spring 39 pulls the plate 27 back to its normal position. This movement of plate 27 moves the bell crank 44 in counter-clockwise direction, thereby moving end plate 55 forwardly to partially eject the article 25 laying in trough 23. The movement of the end plate is limited so that only the end portion of the article 25 projects through the aperture 24. When the article 25 is removed from the dispenser the dispensing apparatus is in position to start another cycle upon downward pressure on the cup-shaped member 33.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claims.

What I claim and desire to secure by Letters Patent of the United States is:

1. A dispenser comprising a housing having an aperture in one side wall thereof, a platform rigidly secured in said housing, said platform having a transversely extending trough axially aligned with said aperture, a plate mounted on said platform and slidable longitudinally relative thereto, means normally holding said plate in predetermined position, said plate having a transversely extending slot normally spaced longitudinally from said trough, a hopper having an open end disposed above said slot, an arm projecting upwardly from said plate, a pin projecting laterally from said arm, a vertically movable plunger provided with an angularly disposed longitudinally extending slot engaging said pin, whereby vertical movement of said plunger is effective to move said plate longitudinally relative to said platform, the distance between the position of said transverse slot and said trough when said plunger is in its uppermost position being substantially equal to the horizontal distance between the opposite ends of said angularly disposed slot, whereby said transverse slot is positioned directly above said trough when said plunger is in its lowermost position, an ejector having an end plate positioned in said trough, a bell crank pivoted to said platform and engaging said ejector to move said end plate along said trough upon pivotal movement of said bell crank, and means on said first mentioned plate engaging said bell crank to move it pivotally upon longitudinal movement of said first mentioned plate.

2. A dispenser comprising a housing having an aperture in one side wall thereof, a platform rigidly secured in said housing, said platform having a transversely extending trough axially aligned with said aperture, a plate mounted on said platform and slidable longitudinally relative thereto, means normally holding said plate in predetermined position, said plate having a transversely extending slot normally spaced longitudinally from said trough, a hopper having an open end disposed above said slot, an arm projecting upwardly from said plate, a pin projecting laterally from said arm, a vertically movable

plunger provided with an angularly disposed longitudinally extending slot engaging said pin, whereby vertical movement of said plunger is effective to move said plate longitudinally relative to said platform, the distance between the position of said transverse slot and said trough when said plunger is in its uppermost position being substantially equal to the horizontal distance between the opposite ends of said angularly disposed slot, whereby said transverse slot is positioned directly above said trough when said plunger is in its lowermost position, an ejector having an end plate slidably mounted in said trough, a bell crank having one arm engaging said ejector, and a pin rigidly secured to said first mentioned plate, said bell crank having another arm engaging said last mentioned pin to move said bell crank pivotally upon

longitudinal movement of said first mentioned plate, the pivotal movement of said bell crank being effective to slide said end plate along said trough.

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