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VENDING MACHINE WITH MAGAZINE AGITATOR

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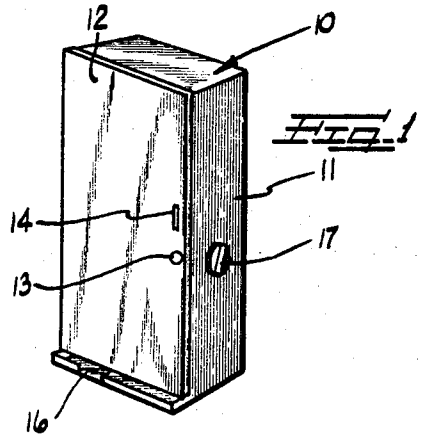


Fig. 1

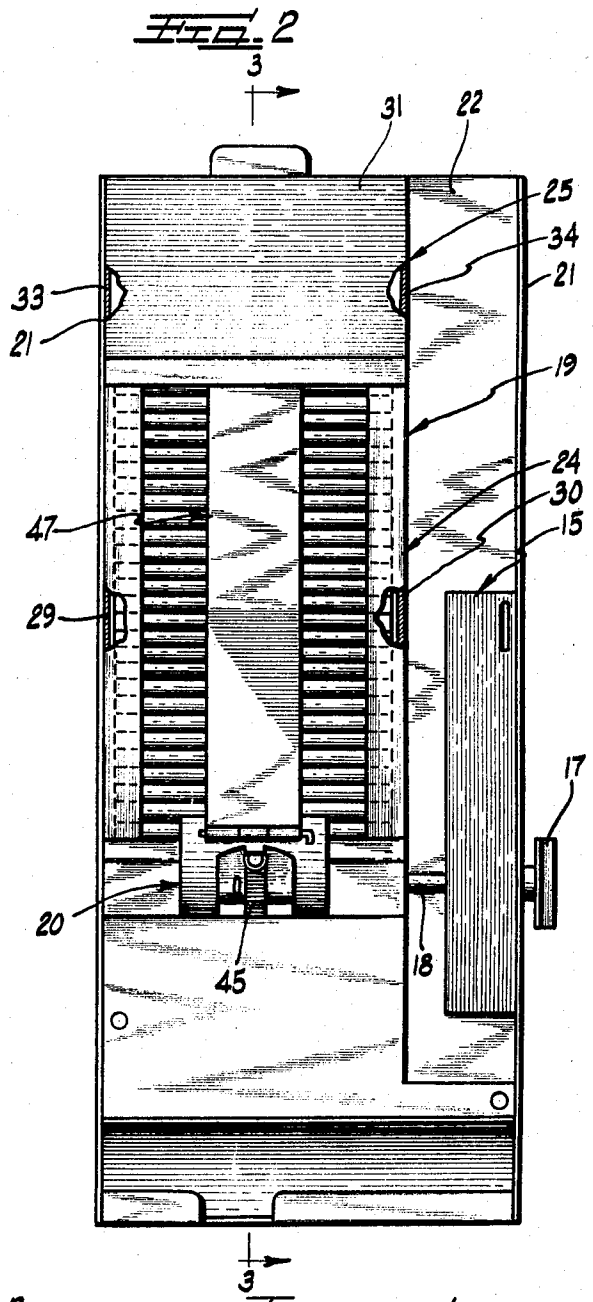


Fig. 2

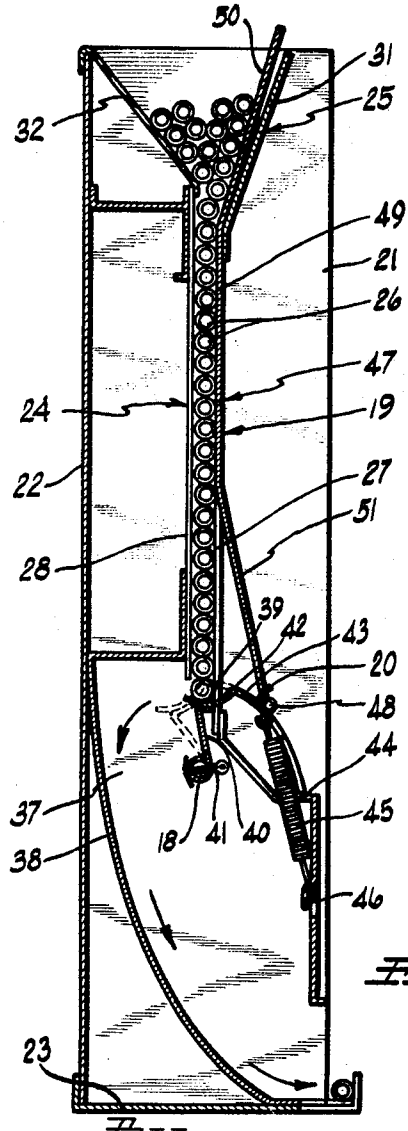


Fig. 3

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VENDING MACHINE WITH MAGAZINE AGITATOR

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ABSTRACT OF THE DISCLOSURE

A vending machine having a magazine for receiving articles in a single row and feeding same to a dispensing device, a hopper receiving articles in juxtaposed and superimposed relation for feeding to the magazine, and rigid agitating means in said hopper driven by said dispensing device for agitating the articles to facilitate delivery to the magazine.

This invention relates in general to a dispensing or vending machine, and more particularly to a dispensing or vending machine of the coin operated type that is especially suitable for dispensing of elongated generally tubular or circular articles, such as pencils or ball-point pens, although other uses and purposes may be apparent to one skilled in the art.

While dispensing machines have heretofore been developed for dispensing of tubular or circular articles, the capacity of the machines for a particular size has been limited. Further, the problem of bridging in a magazine of a machine has been a cause of malfunctioning thereby limiting the usefulness of such machines.

The present invention overcomes the above difficulties by providing a magazine in a vending machine that is capable of having a large capacity so that a machine of a certain size can operate without service for longer periods of time. Moreover, the present invention provides means for preventing bridging of articles in a magazine so that the full capacity may be dispensed without malfunctioning.

It is therefore an object of the present invention to provide an improved dispensing machine for dispensing of elongated tubular or circular-like articles in conjunction with a coin operated mechanism whereby the capacity of the machine is greater than heretofore developed like machines.

Another object of this invention resides in the provision of a dispensing or vending machine including a machine for holding elongated tubular or circular-like articles, wherein agitating means is provided in the magazine for agitating the articles and preventing bridging and jamming so that all of the articles may be effectively dispensed from the machine.

Other objects, features and advantages of the invention will be apparent from the following detailed disclosure, taken in conjunction with the accompanying sheet of drawing, wherein like reference numerals refer to like parts, in which:

FIG. 1 is a perspective view of a machine according to the present invention;

FIG. 2 is a front elevational view of the machine according to the present invention removed from its casing to show operative parts; and

FIG. 3 is a vertical sectional view taken substantially along line 3—3 of FIG. 2, and illustrating the dispensing device in normal and dispensing position.

Referring now to the drawings, the dispensing or vending machine of the present invention generally includes an enclosure or cabinet **10**, FIG. 1, having a rear section **11** and a front door or cover section **12** defining a substantially rectangularly-shaped cabinet. The front door **12** is

normally locked to the rear section **11** by a key-operated lock **13** and also includes a coin slot **14** that leads to a suitable coin mechanism **15**, FIG. 2, and a dispensing slot **16** is provided at the lower end of the door **12**. The articles dispensed from the machine pass through the slot **16** and are held in a pocket until removed therefrom by a person operating the machine. A knob **17** operates the machine to cause dispensing of an article when a coin has been received by the coin mechanism **15**.

The machine is shown removed from the cabinet in FIGS. 2 and 3. The knob **17** operates, through the coin mechanism **15**, a rock shaft **18** extending horizontally and below a magazine **19**. The rock shaft drives a dispensing device **20** that causes dispensing of articles one at a time from the magazine **19**.

The magazine **19** is mounted between opposed upstanding walls **21**, **21** that extend upwardly from a rear wall **22**, all of which extend upwardly from a bottom wall **23**. The magazine includes a lower section **24** and an upper section **25**. The lower section receives and holds a stack of articles **26** in superimposed relationship, while the upper section **25** holds and supports a stack of articles in side-by-side and superimposed relationship.

The lower section **24** of the magazine includes front and back parallel spaced, upstanding guide plates **27** and **28** closed at opposite sides by opposed end guide plates **29** and **30**. The magazine lower section **24** is provided with an inlet at the upper end associated with the upper section **25** and an outlet at the lower end associated with the dispensing device **20**. The lower magazine section may take any suitable form as long as it is capable of supporting and guiding a plurality of elongated tubular or circular-like articles in superimposed relationship to the dispensing device **20**.

The upper magazine section **25** includes front and back upwardly diverging walls **31** and **32** closed at the sides by parallel opposed end walls **33** and **34** thereby defining a large inlet at the upper end and a small outlet at the lower end. The outlet of the upper magazine section feeds into the inlet of the lower magazine section, and the magazine may be replenished with articles by inserting same into the inlet of the upper section **25**. Thus, the upper section **25** is somewhat trough-shaped in cross section and capable of holding a plurality of articles in side-by-side and superimposed relation, and a greater number of articles for the height compared to a similar height of a section of the lower magazine section **24**.

Adjacent the lower outlet end of the magazine lower section **24** is a discharge chute **37** that is provided with a downwardly and forwardly curving wall **38** for guiding articles dispensed from the magazine **19** to the pocket at the lower end of the machine. The chute may be arranged to guide a dispensed article in any suitable direction.

In order to dispense the articles **26** from the magazine **19** one at a time, the dispensing device **20** includes a slightly upwardly convex, but substantially flat supporting portion **39** supported by means of a bracket **40** on the rock shaft **18**. A suitable pin such as a cotter key **41** may be provided to extend through holes in the bracket **40** and the shaft **18** to cause the bracket and shaft to rotate together. As seen in solid lines in FIG. 3, the dispensing device **20** is in normal position whereby the flat supporting portion **39** engages the lowermost article **26** in the stack and supports the stack in the magazine. An upstanding pusher portion **42** extends upwardly from the front edge of the flat portion **39** a height slightly less than the height of an article and serves to push and article from the magazine when the dispensing device **20** is rotated in a counterclockwise direction as shown in FIG. 3. Extending forwardly and downwardly from the upper

edge of the pusher portion **42** is an arcuate support portion **43** that is adapted to support the stack of articles in the magazine when the lowermost article is being dispensed during the dispensing cycle, and as shown in dotted lines in FIG. 3. The lower end of the arcuate support portion stops against a stop plate **44** when the dispensing device **20** is in the normal position and a spring **45** is proviaded to normally bias the dispensing device **20** to the normal position. The spring is hooked at one end onto the dispensing device **20** and at the other end onto a fixed lug **46**. Thus, upon rotation of the rock shaft **18**, the dispensing device **20** is also rotated to dispense the lowermost article from the magazine and into the discharge chute **37**. Upon release of the rock shaft **18**, the dispensing device **20** is returned to its normal position by its spring **45**.

In order to prevent bridging or jamming of the articles **26** in the magazine, and especially in the upper section **25**, an agitating device **47** is provided and operable during the dispensing cycle. This agitating device includes an elongated plate hingedly connected at **48** to the dispensing device **20** and extending along a part of the lower magazine section **24** and within the upper magazine section **25**. The plate includes a flat portion **49** that extends along the front guide means of the lower magazine section **24** in engagement with the forward edges of the articles **26**. While the first flat portion **49** is shown to extend along the upper part of the lower magazine section **24**, it may be extended along the lower part or all of the lower section if desired. A second plate portion **50** extends from the upper end of the first plate portion **49** at an angle and generally along the front wall **31** of the magazine section **25** to thereby engage the articles **26** in the upper magazine section that are adjacent the front wall. The lower end of the first flat portion **49** is connected to a section **51** that is in turn hingedly connected at **48** to the dispensing device **20**. Thus, the agitating device **47** is pivotally connected at its lower end to the dispensing device **20** and free at its upper end while extending in the upper magazine section **25**. Upon rotation of the dispensing device **20**, it will be appreciated that an upward movement and a downward movement will be given to the agitating device **47** and thereby cause imparting to those articles in engagement therewith an agitation that will enhance movement through the magazine and prevent bridging or jamming of the articles in the magazine especially at the outlet of the upper section **25** and the inlet of the lower section **24**.

The general idea of having a dispensing machine with a dispensing device like that in the present machine is shown in U.S. Patent 2,821,329, and therefore the present invention involves the inclusion of the agitating member with such a dispensing device and the enlargement of a magazine to enable a larger capacity of articles.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention, but it is understood that this application is to be limited only by the scope of the appended claims.

The invention is hereby claimed as follows:

1. A machine for vending elongated tubular articles comprising an upstanding magazine adapted to receive a stack of articles, said magazine having a lower section and an upper section, the lower section having an inlet at the upper end and an outlet at the lower end and including front, back and opposed side guide means for maintaining the articles in single columnar superimposed relation and the upper section having an inlet at the upper end and an outlet at the lower end and including stationary front, back, opposed side and bottom guide means for receiving the articles in side-by-side and superimposed relation and arranged so that its outlet feeds to the inlet of said lower section, a discharge chute beneath said magazine, a horizontal rock shaft extending below the lower section of the magazine, a dispensing device mounted on said shaft for movement therewith and coacting with the oulet of said magazine lower section to control dispensing of articles into said chute, said dispensing device including a slightly upwardly convex, supporting portion adapted when in its normal position to engage the lowermost article in the lower section of the magazine and support the stack therein, an upstanding pusher portion on one side of the flat portion of a height less than the height of an article, whereby the lowermost article will be dispensed rearwardly into the chute upon tilting movement of the dispensing device, an arcuate support portion curved forwardly and downwardly from the upper edge of the pusher portion and adapted to support the stack of articles when the lowermost one thereof is being dispensed, spring means for yieldingly maintaining said dispensing device in its normal position, and rigid agitating means operably driven by said dispensing device to agitate the articles in the upper section of said magazine during the dispensing cycle and prevent jamming at the outlet of the upper section and the inlet of the lower section, said agitating means including a first rigid flat portion extending along and in engagement with articles in the magazine lower section and a second rigid flat portion extending at an angle from the upper end of the first flat portion and within the magazine upper section along the front guide means thereof.

2. A machine for vending elongated tubular articles as defined in claim **1**, wherein said first flat portion is hingedly connected to said dispensing device.

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