

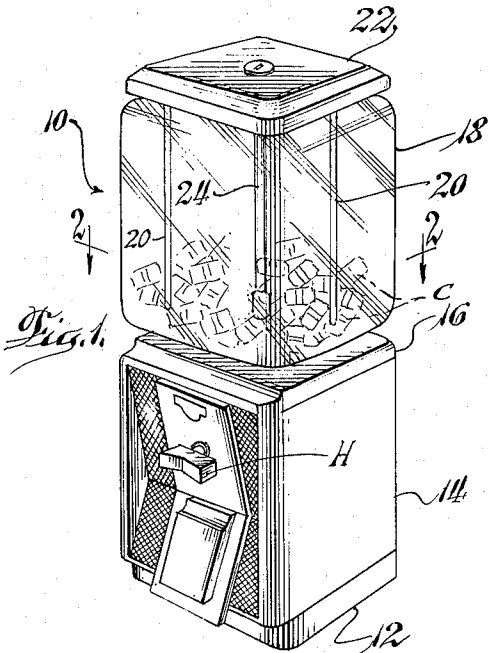
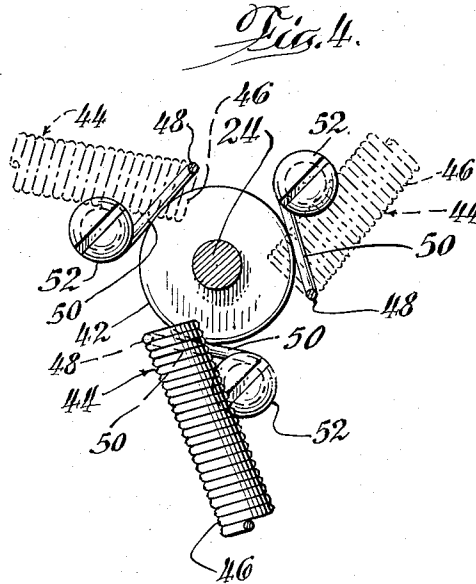
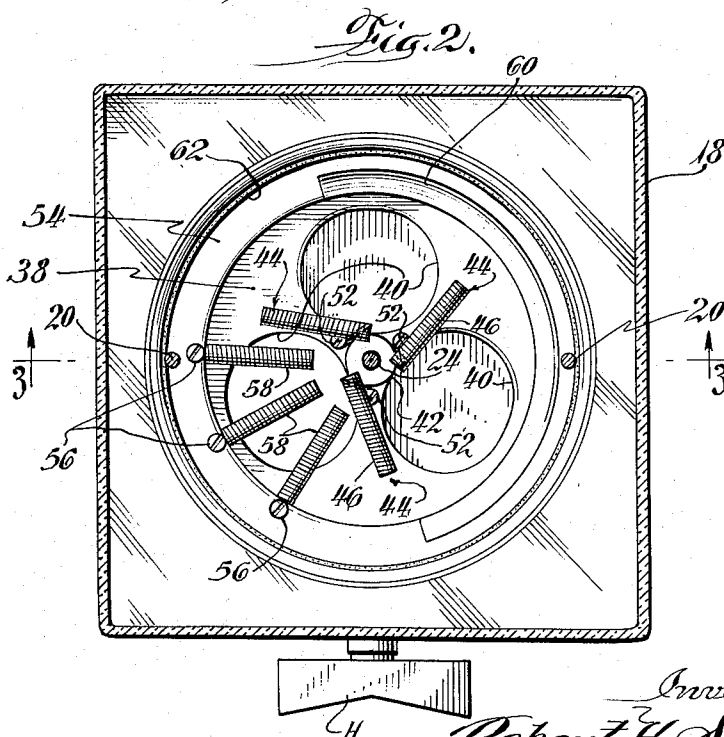
July 4, 1961

R. H. SERENO
VENDING MACHINE

2,990,975

Filed March 18, 1959

2 Sheets-Sheet 1



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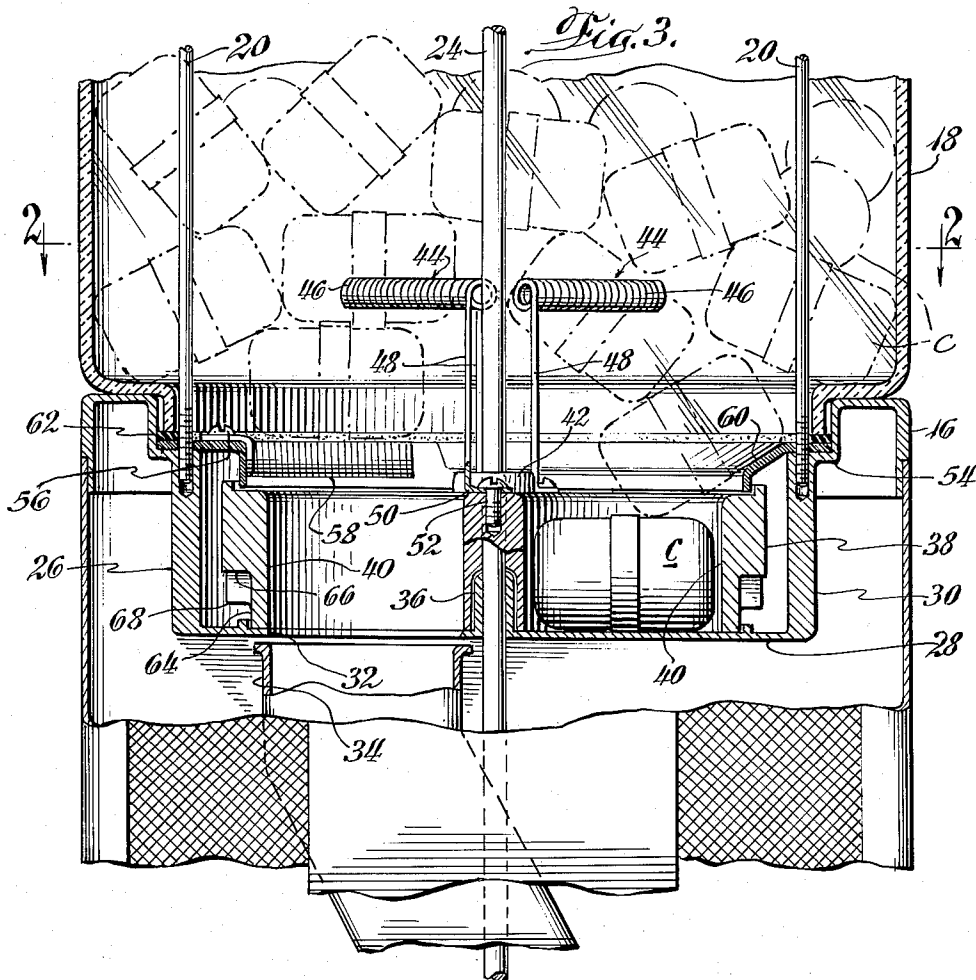
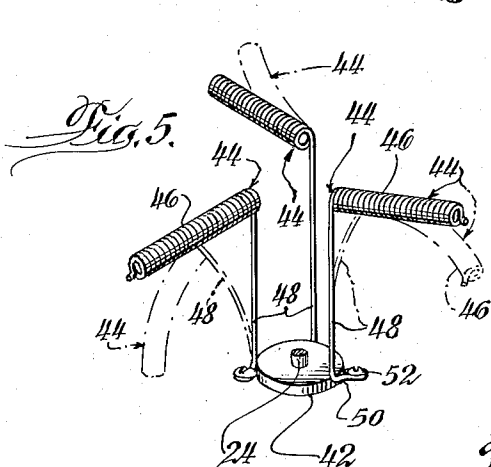
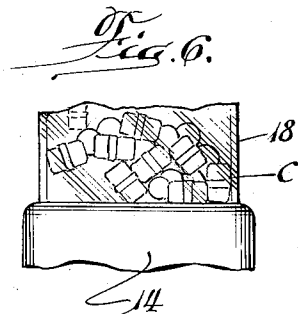
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R. H. SERENO
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2 Sheets-Sheet 2



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2,990,975

VENDING MACHINE

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This invention relates generally to vending machines for dispensing small articles such as gum balls, various candy confections, toys, and especially merchandise such as encapsuled charms or the like. More particularly, the invention relates to improvements in the dispensing mechanism of such machines and more specifically to improved mechanisms insuring a free flow of merchandise by preventing "arching" of the articles.

Coin controlled vending machines of the type described are of course old and well known. Similarly, a wide variety of dispensing mechanisms have heretofore been employed in such machines with varying degrees of success. While many of the prior dispensing mechanisms have been concerned primarily with the problem of insuring that a measured or uniform quantity of the particular article is dispensed during each successive operation of the machine, the instant invention is directed chiefly to another dispensing problem often encountered in such machines.

Generally, the prior dispensing mechanisms comprised a pocketed dispenser element which was rotatably mounted beneath a stationary merchandise storage globe having an article support member. Brushes of one form or another were connected to the underside of the article support for wiping over the surface of the pocketed dispensing element to insure that a uniform amount or number of the articles were permitted to fill each pocket. Where the nature of the articles being vended was such that they were small, fairly uniform in shape and characterized by smooth, non-sticking outer surfaces, the prior dispensing mechanisms provided sufficient agitation to the bulk articles to keep the same free flowing. Thus, where the articles dispensed comprised nuts, small hard gum balls or the like, further dispensing problems generally were not encountered.

On the other hand, where the dispensed article was larger, irregular in shape, or had an exterior surface which was not hard or smooth, the minimal agitation afforded by the prior dispensing mechanisms was not sufficient to maintain the articles in free flowing condition. This was true, of course, because these articles do not have the same granular, free flowing quality possessed by the previously described articles. When this condition occurred, efficient uniform dispensing by the machine was adversely affected. Thus oftentimes it became necessary to open the machine and agitate or break up the arched or clustered articles by hand.

Recognizing the need for overcoming this objectionable feature, attempts have been made to introduce means intended to cure this defect. However, these devices have been generally characterized by their relative ineffectiveness, large, expensive and complicated structure and their tendency to cut or injure the merchandise.

It is therefore an important object of this invention to provide a vending machine of the character described having a dispensing mechanism with means which during normal operation thereof produces the type of agitation necessary to keep the articles in free flowing condition.

It is well known that certain vended articles, in addition to lacking the desired granular bulk quality, have a tendency to build on each other to form hollow spaces when in bulk. Particular reference is made to the merchandise-filled plastic capsules which are becoming increasingly popular in vending machines. These capsules generally comprise a pair of complementary flat-topped

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cylindrical members which are detachably connected, and contain one or more charms, pieces of candy or other articles of merchandise. These capsules also have a protruding annular flange at the point of junction of the two members. Such capsules quite often build on each other to create the condition known in the trade as "bridging" or "arching." This condition occurs when the bulk articles form a bridged space immediately above the pockets of the dispenser, thereby preventing any further articles from falling into the dispenser pockets. Obviously, the machine cannot dispense while this condition exists.

It is therefore another important object of the invention to afford a vending machine of the character described having agitator means associated with the dispensing mechanism to prevent "bridging" or "arching."

A further object is to provide a machine of the character described which is effective for vending virtually any type of relatively small article.

Still another object is to afford a machine of the character described having resilient agitator means whose efficiency is unimpaired by the amount or direction of weight acting thereon.

Yet another object is to provide a machine of the character described having resilient agitator means which cannot injure or damage the articles being dispensed.

Still a further object is to afford a vending machine of the character described in which the dispensing mechanism is simply and inexpensively constructed and yet is most efficient and sturdy.

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 a 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 my 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 bulk vending machine embodying the principles of the invention;

FIG. 2 is an enlarged sectional view taken on the plane of line 2-2 in FIG. 1 and viewed in the direction indicated, the merchandise having been removed to disclose the structure of the dispensing mechanism;

FIG. 3 is a greater enlarged fragmentary sectional view taken on the plane of line 3-3 in FIG. 2 and viewed in the direction indicated;

FIG. 4 is an enlarged top plan view of the resilient agitator means, portions thereof being shown in dotted outline to permit illustration of certain details of construction;

FIG. 5 is a perspective view of the resilient agitator means with the various types of movement thereof being shown in dotted outline; and

FIG. 6 is a reduced fragmentary elevational view of a prior vending machine illustrating the condition of the articles known as "bridging."

Turning first to FIG. 1 of the drawings, it will be seen that reference numeral 10 indicates generally a bulk vending machine embodying the principles of the inven-

tion. Vending machine 10 may comprise a base 12 and a pedestal 14 supported atop said base. Mounted atop the pedestal 14 may be a pedestal cover or globe retaining element 16 in which is positioned a transparent merchandise globe or container 18. A pair of threaded side rods 20 and a top container plate (not shown) may be provided for securely connecting the container 18 to the retaining element 16. A cover such as 22 closes the container 18, and a threaded central connecting rod 24 may be provided for removably connecting together the base 12, the pedestal 14 and the cover 22.

Referring now to FIG. 3 of the drawings, the retaining element 16 may be integrally formed with a depending annular well 26. Well 26 comprises a bottom wall 28 and an annular side wall 30. Bottom wall 28 is formed with a dispensing opening 32 therein, and positioned in alignment with and beneath the opening 32 is a dispensing chute 34. Integrally formed with the bottom wall 28 is an upstanding centrally-apertured central annular boss 36.

Rotatably and removably mounted on the bottom wall 28 and the boss 36 is a dispensing wheel 38. The dispensing wheel 38 is formed with a plurality of open dispensing pockets 40. In the embodiment illustrated, there are three dispensing pockets formed in the wheel 38, said pockets being sized to accommodate one capsule C as indicated in FIG. 3 of the drawings. It should of course be understood that the number and size of dispensing pockets may be varied depending on the particular article being dispensed.

Integrally formed with the dispensing wheel 38 and projecting upwardly therefrom is a centrally apertured circular hub or boss 42. Secured to the wheel 38 in circumferentially spaced relationship around the hub 42 are three upwardly projecting agitator members 44. Each of the agitator members 44 comprises a sturdy but resilient integrally-formed steel wire member having a horizontally positioned coil spring arm 46, an upright wire stem 48 and a relatively short bottom leg 50. The bottom leg 50 may terminate in a loop adapted to accommodate a suitable fastener such as a screw 52 for firmly securing the agitator member 44 to the wheel 38.

It is important to note that each of the bottom legs 50 is in skew with the corresponding spring arm 46, as illustrated in FIGS. 2, 4 and 5. This novel construction thus permits the spring arms 46 and the wire stems 48 to give or yield in any direction as the agitator members 44 are rotated through the bulk articles, as indicated by the dotted outlines in FIGS. 4 and 5. Similarly, the effective radius of the rotating spring arms 46 is increased for greater efficiency. Of course, these characteristics of the agitator members 44 are important in that they permit proper functioning while at the same time preventing any damage to the articles which might be caused by a rigid or limited movement agitator means. Moreover, the yielding movement of the various agitator parts insures agitation in various places and directions which positively prevents "bridging" such as was heretofore prevalent as shown in FIG. 6 of the drawings.

It is likewise important to note that the bottom legs 50 are in tight abutting relationship with the adjacent periphery of the hub 42. The hub 42 thus acts as a reinforcing member for the upright wires 48 and limits to a certain extent the inward bending thereof toward the center. Thus, while the desirable resilient agitator members 44 are employed, the possibility of the permanent distortion of these members which might be caused by the stress of an unduly large force acting toward the center of the dispensing wheel 38 is substantially reduced.

Positioned atop the dispensing wheel 38 is an annular retaining ring 54. Secured to the retaining ring 54 by any suitable means such as screws 56 are a plurality of converging resilient brushes 58. Said brushes 58 are positioned in vertical alignment with the dispensing opening 32 to insure that the serving being dispensed is uniform in every case. A portion of the retaining ring 54 may be

sloped inwardly as at 60 to facilitate the flow of the capsules C toward the dispensing pockets 40. In order to afford a better seal between the globe 18 and the retaining element 16 an annular rubber sealing ring 62 may be positioned on the retaining ring 54 as indicated in FIG. 3.

To link the dispensing wheel 38 to the actuating handle H, said wheel is formed with a reduced diameter bottom portion 64 forming a shoulder 66 (see FIG. 3). Integrally formed and depending from the shoulder 66 are a plurality of gear teeth 68 which are radially spaced around the entire periphery of the portion 64. The teeth 68 are adapted to mesh with gears attached to the handle H for operating the machine 10 in a manner well known to those versed in the art. To permit this meshing, a suitable slot (not shown) may be formed in the bottom wall 28.

It should thus be apparent without further description that I have provided a vending machine having novel dispensing and agitating means. The agitator means are desirably resilient and free to move in various planes and directions to prevent "bridging" or other impediments to ready and uninterrupted merchandise dispensing. At the same time, the novel mounting of the agitating means insures their effectiveness without permanent distortion thereof even when subjected to such forces as might be exerted by fairly large and weighty articles. The agitator means are inexpensively fabricated and yet are most efficient and safe for use with all types of articles.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing 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. In a vending machine having a merchandise container and a support assembly for said container; a pocketed dispensing wheel rotatably mounted in said support assembly below said container, a plurality of resilient agitator elements secured to said dispensing wheel and projecting upwardly therefrom said agitator elements being characterized by the ability to yield in a plurality of planes, each of said agitator elements comprising an integrally formed wire member having a horizontal top coil spring arm, an upright stem and a horizontal bottom leg, the free end of said bottom leg being secured to said dispensing wheel, said bottom leg being in skew with said coil spring arm, and a hub projecting upwardly from said dispensing wheel, said agitator elements being positioned in circumferentially spaced relationship around said hub, said bottom legs being positioned in abutting relationship with the adjacent periphery of said hub so that said free end of said bottom leg leads the point of contact of said bottom leg with said hub whereby said hub reinforces said stem to reduce the possibility of permanent distortion thereof.

2. In vending machine including a merchandise container and a support assembly for said container: a pocketed dispensing wheel rotatably mounted in said support assembly below said container, an upwardly projecting hub integrally formed with said dispensing wheel, three resilient agitator members mounted in circumferentially spaced relationship around said hub, each of said agitator members comprising an integrally formed spring steel wire member having an elongated horizontal coil spring arm, an elongated straight upright stem depending from one end of said arm and a short straight horizontal leg formed at the other end of said stem, said leg terminating in an integrally formed loop, said leg being in skew with said arm, said loops secured to said dispensing wheel

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so that said legs are in tight abutting relationship with the adjacent periphery of said hub with said loops leading the point of contact of said legs with said hub, said agitator members adapted to yield in every direction, said hub reinforcing said agitator members to reduce the possibility of permanent distortion thereof.

3. In a vending machine including a merchandise container and a support assembly for said container; a dispensing wheel rotatably mounted in said support assembly below said container, an upwardly projecting hub integrally formed with said dispensing wheel, a plurality of resilient agitator members mounted in circumferentially spaced relationship around said hub, each of said agitator members comprising an integrally formed wire member having an elongated coil spring top arm, an elongated upright stem and a short horizontal leg, said leg terminating in a loop, each of said loops being secured to said dispensing wheel so that said leg is in tight abutting relation-

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ship with the adjacent periphery of said hub, said loop leading the point of contact of said leg with said hub so that said hub reinforces said agitator member to reduce the possibility of permanent distortion thereof.

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