Jan. 14, 1964 H. R. PAYNE 3,117,663

SHELF ASSEMBLY FOR VENDING MACHINES

Filed March 14, 1963

FIG. 1.

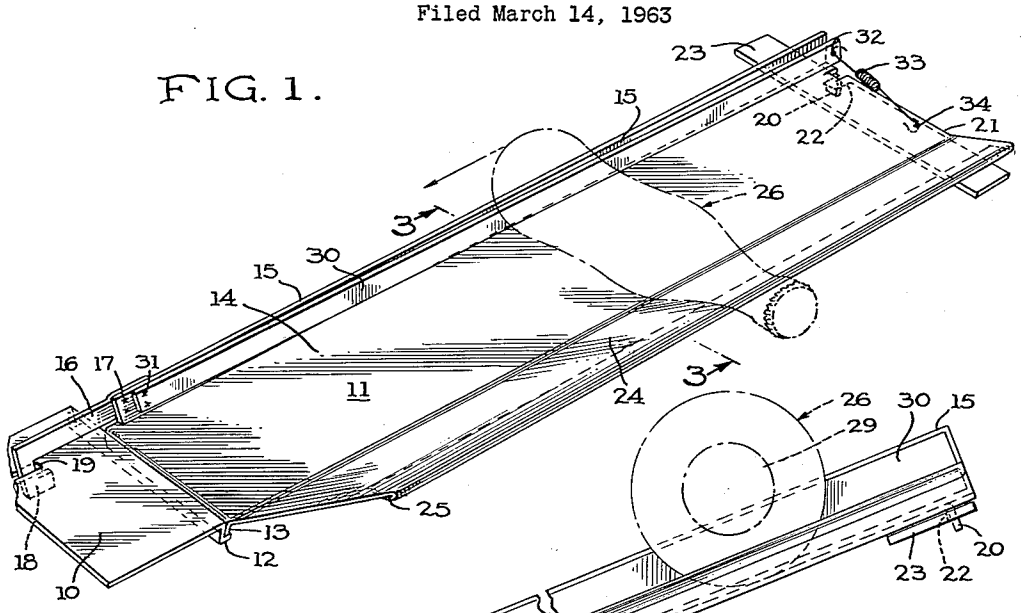


FIG. 2.

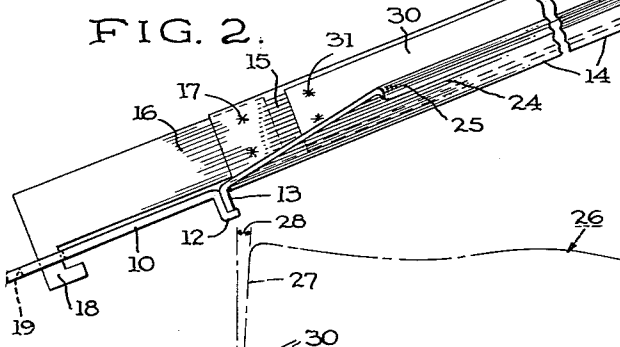


FIG. 3.

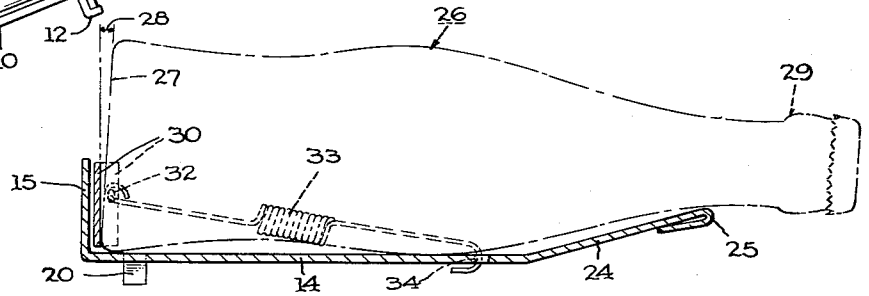
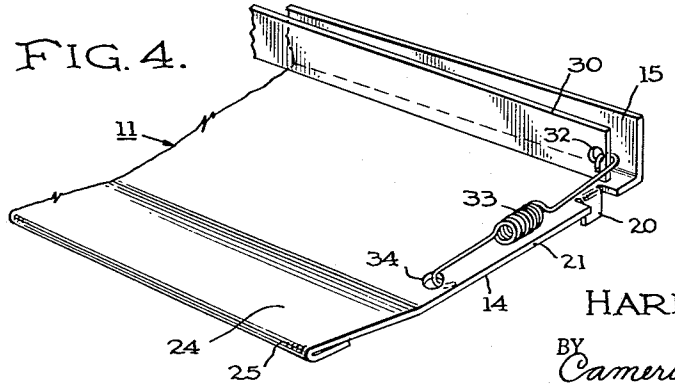


FIG. 4.



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SHELF ASSEMBLY FOR VENDING MACHINES

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This invention relates to shelf assemblies for vending machines and more particularly to such assemblies for vending machines of the type in which a plurality of sloping shelves are arranged one above the other in the vending machine with articles disposed on the shelves to roll under the force of gravity to a dispensing position for each shelf.

More particularly still, this invention relates to shelf assemblies which are provided with resilient means engaging the base of the articles on the shelf to prevent binding of the base as the article rolls towards dispensing position so that the article will roll evenly and uniformly on the shelf and not turn axially with respect to the direction of movement.

In vending machines of the type shown in the Hsu et al. Patent No. 2,875,922 of March 3, 1959, a plurality of vertically disposed shelves are employed with each shelf holding a plurality of generally cylindrical articles, hereinafter referred to as bottles. These shelves slope toward the dispensing position so that the bottles can roll down the shelves to dispensing position. It has been found that the bases of the bottles in engagement with the upstanding rear edge of the shelf tend to bind or stick as the bottles roll down the shelf so that the neck portion of the bottle advances with respect to its base and the bottle becomes canted on the shelf. This may interfere with the proper movement of the remainder of the bottles toward the dispensing position and may also interfere with the proper operation of the release mechanism at the dispensing position.

Others have attempted to provide shelf assemblies assuring the even rolling of the bottles down the shelves as in U.S. Patent No. 3,008,783 of November 14, 1961. These shelf assemblies are, however, usually expensive to make which is undesirable in the highly competitive vending machine industry.

I have now found that bottles disposed on a sloping shelf in a vending machine can be made to roll evenly down the shelf by preventing binding of the base of the bottle against the upstanding rear edge of the shelf through the use of a resilient member placing pressure on trailing edge of the base of the bottle. This force prevents the base of the bottle from binding against the upstanding edge of the shelf and the bottle will roll uniformly and evenly down the shelf.

It is therefore the object of the present invention to provide a novel shelf assembly for a vending machine provided with resilient means engaging the trailing edge of the bases of the bottles on the shelf to prevent the bases of the bottles from binding against the upstanding edge of the shelf so that the bottles will roll uniformly and evenly and in parallel relationship down the shelf to dispensing position.

The present invention is capable of various mechanical embodiments. A preferred embodiment of the present concept is shown in the accompanying drawing and is described hereinafter to illustrate the invention. This illustrative embodiment should in no way be construed as defining or limiting the invention.

In the accompanying drawings, in which like reference characters indicate like parts, FIG. 1 is a perspective view of a preferred embodiment of a shelf in accordance with the present invention showing a preferred way of applying pressure to the trailing edges of the bases of the bottles on the shelf;

FIG. 2 is a side view of the embodiment of FIG. 1;

FIG. 3 is a cross sectional view on the line 3—3 of the embodiment of FIG. 1 at right angles to the long axis thereof; and

FIG. 4 is an enlarged detail of the right end of the embodiment of FIG. 1.

Referring now to the several figures, a platform or vending station is generally indicated at **10** to receive a bottle at a time from the associated shelf **11**. The bottle is vended from platform **10** by any suitable and conventional means, not shown. Platform **10** is supported by and within the housing of the vending machine, also not shown. Platform **10** is provided with a downwardly and outwardly extending flange **12** receiving down turned flange **13** of shelf **11**. Shelf **11** is provided with a flat bottom **14** and with an upstanding rear edge or wall **15** disposed at approximately right angles to bottom **14**. A hook **16** is suitably secured to edge **15** as by spot welding at **17** and the hook portion **18** thereof engages in slot **19** in platform **10** to lock shelf **11** securely in position with respect to platform **10**.

A tab **20** is turned down from end **21** of base **14** and is received in a slot **22** in support member **23** which is carried by the vending machine housing, not shown. Support **23** is disposed above platform **10** in the vending machine housing to provide shelf **11** with the desired downward slope so that the bottles will roll freely down shelf **11** to platform **10**.

Shelf **11** is provided with a longitudinal planar front wall portion **24** upturned with respect to bottom **14** terminating in turned edge **25**, edge **25** being disposed beneath the necks of the bottles disposed on shelf **11**. As seen in FIG. 3, the taper of the bottles **26** resting on bottom **14** causes the bases **27** of the bottles **26** to lie at an angle of a degree or two from wall **15** as shown at **28**. The lower portion only of the edge of bottom **27** would therefore engage rear wall **15**.

However, as pointed out above, I have found that even this limited engagement of the edge of bottom **27** with wall **15** is sufficient to retard the movement of the bases of bottles **26** so that the neck portion **29** of bottles **26** can roll more freely and may advance ahead of bases **27** so that bottles **26** may become undesirably canted on shelf **11**. Binding of bases **27** of bottles **26** is overcome by applying a continuing force to the trailing edges of bases **27**. To obtain this force a resilient member **30** substantially coextensive with wall **15** is secured at one end thereto as by spot welds **31**. A hole is bored in the other end of member **30** at **32** to receive one end of spring **33**. The other end of spring **33** is hooked into hole **34** in bottom **14**. Spring **34** urges member **30** away from wall **15**.

When the vending machine is loaded for the vending of bottles, a plurality of bottles are disposed on shelf **11** each in engagement with the next and with their long axes substantially parallel to ends **13** and **21** of shelf **11**. The bottles and their contents are relatively heavy and when the bases **27** of the bottles are forced against member **30**, member **30** will move toward wall **15** expanding spring **33**. Only the trailing edge of base **27** of each bottle is engaged by member **30** so that a force is constantly exerted on the trailing edge of the base of each bottle as the bottles move down shelf **11** toward platform **10**. This force applied to the trailing edge of each bottle prevents the base of each bottle from binding against member **30** and the bottles roll to vending position on platform **10** uniformly and evenly, maintaining their long axes approximately parallel to ends **21** and **13** of shelf **11**. The necks of the bottles are prevented from rolling

ahead of the bases of the bottles and the bottles are prevented from rolling out of the desired alignment.

It should now be apparent that the present invention in every way satisfies the objective discussed above.

Changes in or modifications to the illustrative embodiment of this invention as described above may now be suggested to those skilled in the art without departing from the present inventive concept. Reference should therefore be had to the appended claims to determine the scope of this invention.

What is claimed is:

1. In a shelf assembly for vending machines having a bottle vending station, and for supporting and feeding bottles to the station, an elongated planar shelf bottom of substantially uniform width having opposed ends mounted in an inclined position adjacent to said station with one end lower than the other end, a rear wall extending substantially the length of said bottom and extending upwardly at approximately right angles thereto, a substantially planar front wall extending the length of said bottom opposite said rear wall and extending upwardly

with respect to said bottom and underlying the necks of the bottles on said bottom, the bases of the bottles on said bottom being adjacent said rear wall and resilient means mounted on and converging downwardly with said rear wall applying pressure to the trailing edge of the bases of each of the bottles.

2. In an assembly as described in claim 1, said resilient means comprising strip means having opposed ends and substantially coextensive with said rear wall and secured at one end to said wall adjacent said station and spring means urging the other end of said strip means away from said wall.

3. In an assembly as described in claim 2, said spring means being secured to said strip means and to said bottom.

References Cited in the file of this patent

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