

[54] DRINKING STRAWS

[76] Inventor: Stanley G. Zubalik, 126 S. 127th St., Tacoma, Wash. 98444

[22] Filed: Feb. 14, 1972

[21] Appl. No.: 225,951

[52] U.S. Cl. 239/33, 220/90.2, 229/7 S

[51] Int. Cl. A47g 19/22

[58] Field of Search 239/33, 24; 206/37; 229/7, 87, 7 S; 220/90.2; 215/1 A

[56] References Cited

UNITED STATES PATENTS

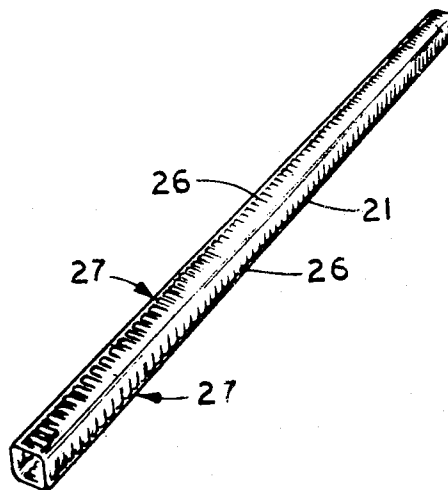
3,445,033	5/1969	Sweet et al.	239/33 X
3,189,171	6/1965	Miller	239/33 X
3,438,578	4/1969	Peterson et al.	229/7 S X
2,432,132	12/1947	Allen	229/7 S X

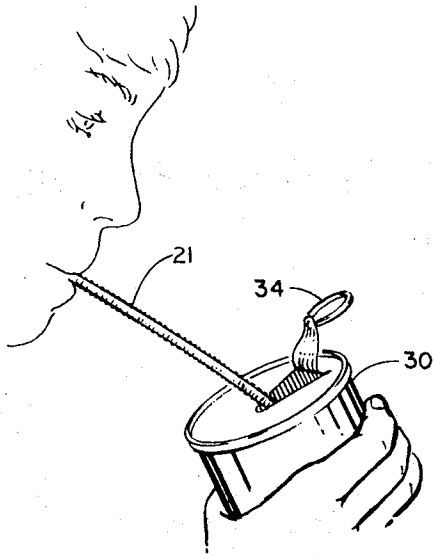
Primary Examiner—M. Henson Wood, Jr.
Assistant Examiner—Michael Y. Mar
Attorney—Roy E. Mattern, Jr.

[57] ABSTRACT

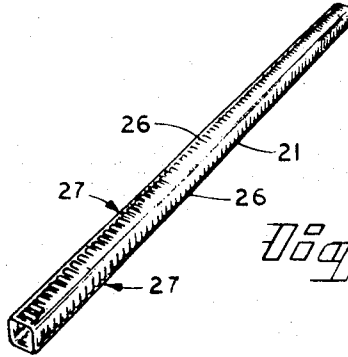
A drinking straw is compacted for storage, transport and especially for direct attachment to beverage containers designed for individual use and normally serving one person, such as those dispensed by vending machines. Also drinking straws are compacted for direct attachment in a group on other larger beverage containers such as family size, which are designed to contain multiple normal servings, thereby providing straws for more than one person. The availability of multiple straws, for example, is especially desirable when ice cream floats are served to a group.

9 Claims, 14 Drawing Figures

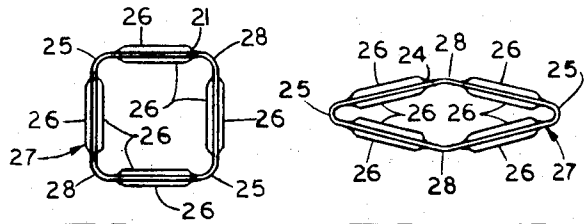




ပုံစံ-၁

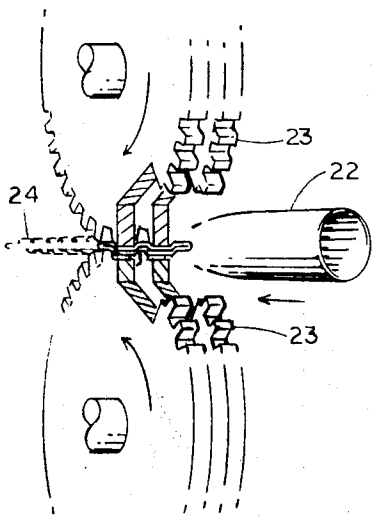


ပုံစံ-၂

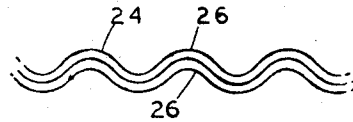


ပုံစံ-၃

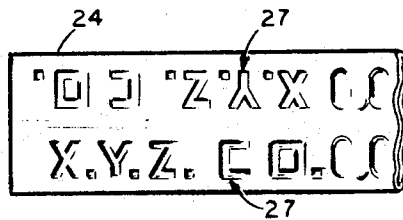
ပုံစံ-၄



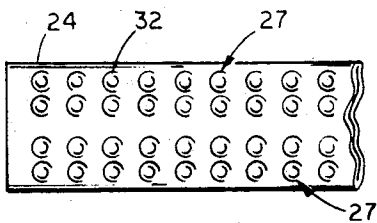
ပုံစံ-၅



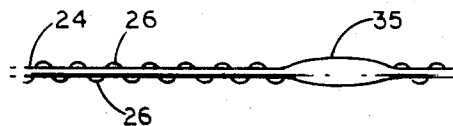
ပုံစံ-၆



ပုံစံ-၇



ပုံစံ-၈



ပုံစံ-၉

PATENTED DEC 25 1973

SHEET 2 OF 2

3,780,944

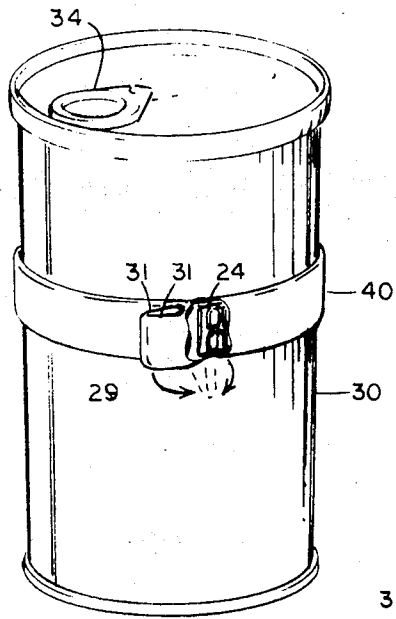


Fig. 10

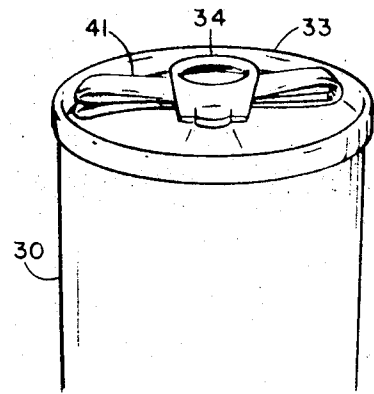


Fig. 11

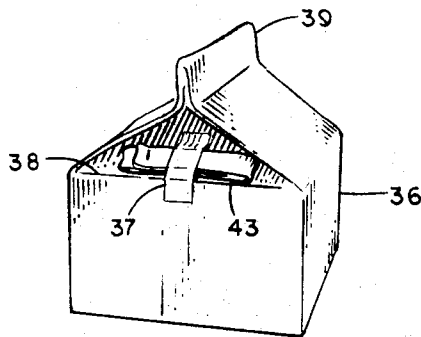


Fig. 12

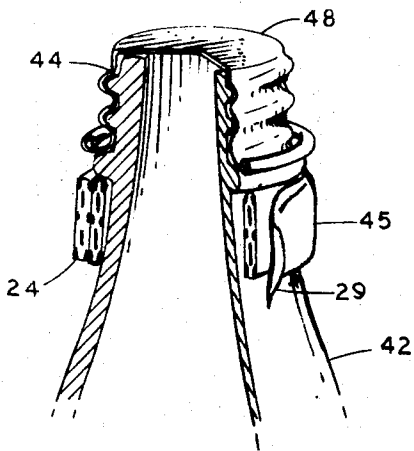


Fig. 13

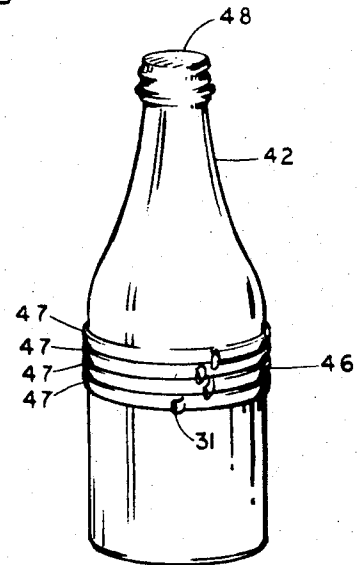


Fig. 14

DRINKING STRAWS

A straw originally produced by conventional means is compacted in a machine, by being passed between spur gears or specially designed embossed face gears, to produce four specific spaced apart full length patterns and initially two full length folds. The spaces serve to determine where the initial two folds and two subsequent full length folds are formed, and the embossments serve to increase the strength of the four patterned sectional areas. Eventually, during subsequent folding, the embossments assure the straw will always be easily opened and remain open to allow beverages to be drawn through the straw.

When the straw originally produced by conventional means is made of certain plastic materials that strongly compact together making it difficult to separate them, then the gears used in making the compacted straw must be especially formed to create a short non-compacted length referred to as a pinch pocket. It subsequently serves as the starting place in reopening the straw.

After the compaction of the straw in the machine, it is preferably placed within a sealed sanitary cover or wrapping. When so protected, it is then often endwise folded, curved, and/or bent and thereafter secured to the beverage container. The securing of the wrapped compacted straw is undertaken in ways best governed by the size and shape of the respective container and/or the operations of vending machines.

The individual purchaser of the filled container having the straw affixed, completes the preparation of the straw to receive the liquid. After removing the straw from the beverage container, the wrapped straw is extended to its full length. Then a slight opening in the wrapping is made to break the seal, and thereafter the straw is passed through a restricted space determined by the position of the customer's thumb and forefinger, which are used to momentarily press the originally folded edges toward one another to effectively first open and then compact the straw again. This time upon compaction or closing of the straw adjacent pairs of embossed patterns are placed in contact with one another. During this customer forming operation, the wrapper may be removed at anytime. After these forming operations have been quickly performed by the customer, the straw, because of its acquired resiliency enhanced by the strengthening embossments, remains open and ready for use.

BACKGROUND OF THE INVENTION

The advent of vending machines and popularization of individually packaged consumable liquids has placed in the hands of the consumer containers which in most cases are awkward to drink from and are not always sanitary. Also, some containers have been known to cause abrasions to the upper lip and tongue, especially when used by children. A convenient adequate supply of cups, glasses or straws is not always available and those that are may not be sanitary due to mishandling.

In contrast, this compacted, prestressed, flexible drinking straw eliminates all such problems. Sealed within a sanitary wrapping, and when wrapped, attached directly to each individual container or placed within or attached to a multiple container package, it is always readily available on a one to one basis for all customers. Flexibility of attachment to a container is an obvious advantage to bottling and packaging compa-

nies, dairies, breweries, etc. Moreover, the simplicity of readying this immediately available straw for use is an obvious advantage to children and adults alike. The use of this invention eliminates the prior need of completely removing the flip top tab from the lid on cans, which if not discarded in appropriate containers, becomes litter and dangerous to persons with bare feet on beaches and in other recreational areas.

Prior inventions are found to be limited in application as follows. The compact drinking straw illustrated in U.S. Pat. No. 3,189,171 cannot be flattened and wrapped around the periphery of a can. The dispensing straw associated with the bottle cap as shown in U.S. Pat. No. 1,680,341, has a sharp crease, and consequently, it is usually hard to bring back to a form that will not readily collapse when suction is applied. The self elevating drinking straw depicted in U.S. Pat. No. 3,099,565; the self rising straw shown in U.S. Pat. No. 3,211,379; and the drinking straw illustrated in U.S. Pat. No. 2,997,195 are limited to use with bottles having narrow necks, in order to make retrieval of the straw relatively easy. The combined container and straw Patent set forth in U.S. Pat. No. 2,547,362 is limited to use with one type of carton.

SUMMARY OF THE INVENTION

This invention relates to a preformed, initially compacted and flexible drinking straw made of plastic or other suitable resilient material, often wrapped and preferably attached to each bottle, can or carton, sold in normal retail outlets or dispensed by a vending machine. However, the straw is not necessarily limited to such marketing directed to one for each consumer expected to drink from a particular container, for the straws may be sold in bulk.

A flexible plastic drinking straw, first available in conventional form and eventually to be twice folded lengthwise to form four equal sides, is first flattened, preferably using machines, to form two identical sides, and thereafter sealed in a sanitary wrapper. This wrapped straw is then attached to the exterior of individual consumable liquid containers, or wrapped straws, in a group, are attached to the exterior of family sized containers, available for immediate use, one to each consumer, when the container is opened. Because the straw is fabricated from plastic or other suitable resilient material, and during the folding and embossing operation it is prestressed, it may be further manipulated during packaging without interfering with its end use. Each wrapped and compacted straw may be placed around the periphery of a can or neck of a bottle. Other compacted and wrapped straws may be end folded a convenient number of times and fixed to cartons, cans or bottles. Moreover, other compacted and wrapped straws may be packaged within or attached outside of a six-pack or other multiple container carton. Yet when each compacted and wrapped straw is removed for use, it is readily formed into its intended square shape upon breaking the seal of the wrapper and thereafter simply pressing it along the folded edges as it is drawn between a thumb and a forefinger of the consumer. The versatility and ease of manufacture of this compacted, flexible, longitudinally folded prestressed plastic drinking straw, preferably individually wrapped, to be distributed on a one to one consumer basis with each beverage container and/or package,

distinguish it from other straws previously available for use.

DRAWINGS OF PREFERRED EMBODIMENTS

Preferred embodiments of the invention are illustrated in the accompanying drawings, wherein:

FIG. 1, shows in perspective, the straw just removed from the container and manipulated into its open square cross sectional shape, often remaining conveniently bowed, to obtain liquid from this particular beverage container, without requiring the complete removal of its pull top tab;

FIG. 2, shows in perspective, on a larger scale, the embossed straw unwrapped and formed, by a consumer, into its square cross sectional shape ready for use;

FIG. 3, is an enlarged end view of the straw shown in FIGS. 1 and 2, which was initially compacted and embossed in a machine, and then just before use, passed between the thumb and forefinger to press the originally folded edges together, after which it recovers, to assume the illustrated square cross sectional shape;

FIG. 4 is an end view of an originally round cross sectional straw after it has been passed through a compacting and embossing machine to indicate how it regains some of its cross sectional area because of its resiliency;

FIG. 5, is a partial perspective view, with portions removed for clarity, of a conventional round plastic straw being compacted and embossed between gears or their equivalent;

FIG. 6, shows the partial longitudinal cross section of a straw taken through an embossment of one selected pattern;

FIG. 7, is a partial top view of a compacted straw having an embossment using advertising indicia in lieu of a regular embossment as indicated in FIGS. 1 through 6.

FIG. 8, is a partial top view of a compacted straw having small dome embossments;

FIG. 9, is a partial side view of a compacted straw near one end where the compaction is not completed for a short distance to intentionally leave a so called bubble where a consumer commences the reopening operations, such a bubble being necessary when certain types of tougher plastic materials are initially used in making some conventional straws, which are subsequently compacted during a selected embossment process;

FIG. 10, shows in perspective, a compacted, wrapped, and sealed, straw affixed around the periphery of a can and having joined tab ends to be twisted to get the wrapped straw off the can and then to remove the enclosed straw;

FIG. 11, shows, in a partial perspective view, a compacted, wrapped, sealed, prefolded, straw held in place on the top of a beverage can by slipping this straw under its metal pull tab;

FIG. 12, is a perspective view of a compacted wrapped, sealed, prefolded, straw affixed with an adhesive tape to the recessed side of a beverage carton;

FIG. 13, shows, in a partial perspective view, how a compacted, wrapped, sealed, and rolled straw is dropped over the neck of a beverage bottle and then the bottle is capped; and

FIG. 14 is a perspective view of a family size beverage bottle having a group of compacted, wrapped,

sealed, and rolled, straws arranged around the bottle for use by customers on a one to one basis.

DESCRIPTION OF PREFERRED EMBODIMENTS

Each embodiment provides a compacted, preferably individually wrapped, and sealed straw, having preferably embossed portions, to be made available, on a one to one basis, to each consumer of a beverage to be taken from container. These straws are preferably attached to each container before distribution to customers, often by utilizing vending machines which deliver the beverage container with the compacted, wrapped, and sealed straw securely affixed thereto.

As the subsequent description is read and the figures are viewed, it will be realized that presently available conventional round straws are first obtained and thereafter they are modified. However, the modifications would be applicable to square straws, which, for example, might be extruded. In addition, the practice of this invention includes the production of compacted straws from any initial materials which would be formed to bring about the desired results of this invention. Presently, plastic drinking straws made preferably from polyethylene and polypropylene materials are used in creating the compacted wrapped and sealed straws positioned on beverage containers on a one to one consumer basis.

One preferred embodiment is straw 21, shown in use in FIG. 1, and ready for use in FIG. 2, and having a cross section as illustrated in FIG. 3. It is particularly suited to fabrication from a standard commercially available round drinking straw 22, of polypropylene, polyethylene or equivalent material. As illustrated in FIG. 5, the initially round straw 22 is passed between rotating embossing gears 23 of a compacting machine, not shown, which during operations compacts the round straw 22 into a flattened straw form 24 with corners 25 generously rounded. Following compaction, straw 24, partially opens, as illustrated in FIG. 4. The resulting straw embossments 26 serve to increase the strength and resiliency of four patterned sectional areas 27, formed by the gear action. The embossment gears 23 may be designed to form either corrugations, product advertising indicia, or other forms such as the domes 32, as shown respectively in FIGS. 6, 7 and 8.

In reference to some plastic materials from which straws are made, when the embossment process is undertaken, the compaction is very effective and remains so to a high degree. Therefore, at selective times different embossment gears, not shown, are used which are intentionally formed so the resulting straw will not be compacted during a portion of its length, leaving a so called bubble length portion 35, as illustrated in FIG. 9.

Subsequently, finger or hand forming of the straw is undertaken by the consumer commencing at this bubble length portion. Also the lateral spacing of the four embossment patterns serves to determine where full length folds 28 will be later hand formed by the consumer, when the originally folded edges or round corners 25 are pressed toward one another to first open and then close straw 21 to prepare the straw 21 for its intended use. After its hand closure, it reopens for use as shown in FIGS. 1, 2 and 3. If no embossments were made and the movement of forming rollers or other machinery components were used to only fold the straw, the resulting straw would be usable to a cus-

tomer. However, the embossments improve the resulting straw in so many ways, that the operation of embossing gears is preferred over the operation of forming rollers.

However, preferably, after compaction of the straw 24, upon driving embossing gears 23, it is preferably placed in its flattened form 24 in a sanitary wrapping or cover 29. Thereafter, the compacted, wrapped, and sealed straw is affixed to an individual container which may then be conveniently dispensed with the straw 24 upon operation of a vending machine or by providing other distribution means. In FIG. 10 the wrapped and sealed straw 40 is affixed around the periphery of a beverage can 30. The tabs 31, formed when sealing the ends of the protective or sanitary wrapping 29, together subtend away from the surface of the can 30 where they are adhered together, and thereafter folded back forming a convenient appendage to be later unfolded by a consumer. Subsequently, upon twisting and pulling the unfolded extending tabs 31, the wrapped, flattened straw 40 is easily removed from the can. Preferably the straw is then manipulated by the customer into its open straw form 21 as shown in FIGS. 1, 2 and 3 before the wrapper is completely removed.

Shown in FIG. 11 is another method of packaging, whereby the compacted, wrapped, and sealed, straw 41 is prefolded over itself to fit within the confines of the beverage can lid 33, where it is secured by trapping it under the pull top tab 34. If pull top tabs 34 are not used, the same compacted, wrapped, sealed, and folded straw 41 may be affixed to the can lid 33 by using a small gummed label, not shown, or by gluing the back of the folded straw wrapping 29 directly to the beverage can lid 33. In FIG. 12, the compacted, wrapped, sealed, and folded straw 43 is shown affixed to the sloping recessed top portion 38 of a plastic coated carton 36, such as are used for dispensing individual milk and juice beverages. The method of retention of this folded and wrapped straw 43 is undertaken by using a gummed label 37 or by direct gluing of the back of wrapper 29 of folded straw 43 onto the carton 36.

An alternate location, not shown, to affix a compacted, wrapped and sealed straw 43 to the carton 36, is a side of the top upper vertical extremities 39, where machine placement is undertaken.

In FIG. 13, one of many ways, is shown to affix a compacted, wrapped, and sealed straw 45 to a beverage bottle 42. The compacted, wrapped, and sealed, straw 45 is rolled, preferably by machine, not shown, into a doughnut shape with the inner diameter just large enough to be slipped over the head rim 44 of the beverage bottle 42, after filling the bottle 42, but prior to closing it with a cap 48. Then after the bottle 42 is capped, the rolled and sealed straw 45 remains in place until removed by the consumer. In FIG. 14, a group 46 of individually compacted, wrapped, and sealed straws 47 are shown arranged tightly around a family sized bottle, and are ready for use, on a one to one basis, by those persons who are to drink the beverage.

The foregoing attachment methods are a sampling of methods employed to affix compacted, wrapped, and sealed, flattened straws of the various configurations 40, 41, 43, 45, 46, 47 to various containers of many types produced by many companies. At all times the method of preparing the straw 21 for use, undertaken by the consumer, is somewhat similar. After removal of the wrapped and sealed flattened straw in one of its

configurations from its respective container, it is extended to its full length and the seal is broken to expose an end of the compacted straw 24. Then the compacted straw 24 is passed through a restricted space determined, preferably, by the position of the customer's thumb and forefinger. This action presses the originally folded opposite edges 25 toward one another to effectively first open and then recompact the straw 24 again, but in the opposite direction. This second folding operation creates two new opposite edges or rounded corners 28, which upon release of the pressure and in conjunction with the two originally folded edges or rounded corners 25 and supplemented by the four embossed patterned sectional areas 27, allows a second inherent resiliency recovery resulting in a lasting formation of a substantially square straw 21 ready for reliable non-collapsible usage while the consumer is drinking.

SUMMARY OF ADVANTAGES

An ultimate straw 21 of substantially square cross section is derived initially from a conventional plastic straw 22 of round and/or a possibly square cross-sectional shape. It is reduced in cross-sectional open area by operating an embossing machine to thereby provide a compacted straw 24 capable of quick resilient recovery for use by a consumer. Therefore, before use, and while compacted, it is conveniently wrapped and sealed. Thereafter, while packaged in its sanitary wrapper, it is attached, on a one to one consumer basis directly to a beverage container. When so packaged, it and the beverage container, as a marketing unit, is often distributed by utilizing a coin operated vending machine manipulated by the customer. The consumer is then completely serviced having the compacted, wrapped, sealed, and sanitary straw at the moment he or she needs it. The plastic material used for the straw 21 is enhanced in strength and formed during the embossing process so there is always an internal opening recovery capability. It is always possible for the consumer to draw liquids up through the straw 21, after making convenient and quick manipulations using his or her fingers to open its cross-sectional area. The straws soon after compaction are continuously wrapped end to end with spaces left between, where the wrapping material is sealed and then severed. The severance may often occur subsequently, at the opportune time, for example, just before or during attachment of the compacted, wrapped, sealed, straw to the beverage container. Often, the wrapped straws are machine applied to the containers.

The embossments are of many designs, including advertisements. All of the embossed designs result in the straws being compressed and compacted at the outset, and later on being refolded by the consumer to place the embossments in directly resulting, opposing abutment, positions to insure that liquids will always soon pass through the straw and never be blocked during the use of the straw 21. The customer will always have, delivered with the beverage, on a one to one basis in reference to each consumer, a reliable sanitary straw to use almost immediately in drinking his or her selected beverage.

I claim:

1. A straw to pass liquids, which is essentially preflattened to be shipped, stored, and handled with beverage containers, wherein the preflattened body thereof has

7

8

continuously embossed portions compressed for packaging as the embossed portions overlie one another.

2. A straw, as claimed in claim 1, wherein the embossments are formed as indicia to indicate information regarding the beverage or to convey a message.

3. A straw, to pass liquids, which is essentially pre-flattened to be shipped, stored and handled with beverage containers and which is wrapped completely and sealed under hygienic conditions, and which after breaking the seal and either before or after removing the wrapping is then compressed with finger forces applied at its edges to first open the straw and then to compress it again to form opposite folded edges, and then upon release to form a square cross section, thereby providing the straw with adequate internal clearance for the passage of the beverage from the container to the consumer.

4. A plastic straw, to pass liquids, which is essentially preflattened to be secured to a beverage container and to be suitable as an overall beverage product for vending machine marketing, and which has embossed portions which are slightly spaced apart into four elongated groups and the embossed portions thereof overlie and closely fit one another.

5. A plastic straw, as claimed in claim 4 which is indi-

vidually wrapped and sealed.

6. A plastic straw, as claimed in claim 5, while within or after removal of the seal wrapper is compressible by a consumer applying finger forces at its folded edges to open the straw, then go beyond to close it again creating new folded edges, and then upon release, creating an opened cross sectional straw, thereby providing adequate internal clearance for the passage of the beverage.

7. A plastic straw, as claimed in claim 6, which, when first compressed by a consumer, is arranged so the embossed portions are positioned in opposing patterns to thereby subsequently insure adequate access for the passage of the beverage.

8. A plastic straw, as claimed in claim 5, when wrapped and sealed, has excess wrapping extending at each end which is adaptable to be secured together when the wrapped, sealed, flattened straw is positioned on a beverage container.

9. A plastic straw, as claimed in claim 4, wherein the embossed portions have incomplete embossments to create a bubble structure where reopening operations are commenced.

* * * * *

30

35

40

45

50

55

60

65