

[54] **TELESCOPIC DRINKING STRAW**

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[56] **References Cited**

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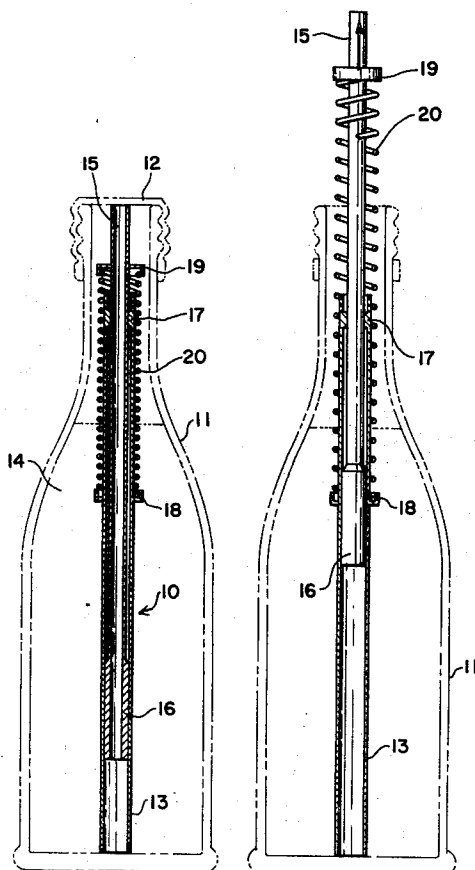
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ABSTRACT

A telescopic drinking straw in which a first elongated tubular cylinder has a second tubular cylinder slidably disposed therein. The first cylinder and the second cylinder are provided with annular flanges which retain the ends of a coil spring disposed over the cylinders. The spring forces the second cylinder vertically upward out of the first cylinder when the cap of a container in which the straw is packaged is removed, thereby making the straw available to the user for drinking of the liquid in the container. The outer cylinder of the drinking straw may also be provided with a plurality of slots at a particular point along its length. One end of the telescopic outer portion is affixed to the inner section of the straw, so that when the outer section is compressed downwardly to be packaged into a bottle, the portion containing the slots will extend outwardly and act as a spring forcing the outer telescopic section against the inner surface of the container cap. When the cap is removed, the extended portions contract inwardly, forcing the telescopic section out of the container.

10 Claims, 5 Drawing Figures



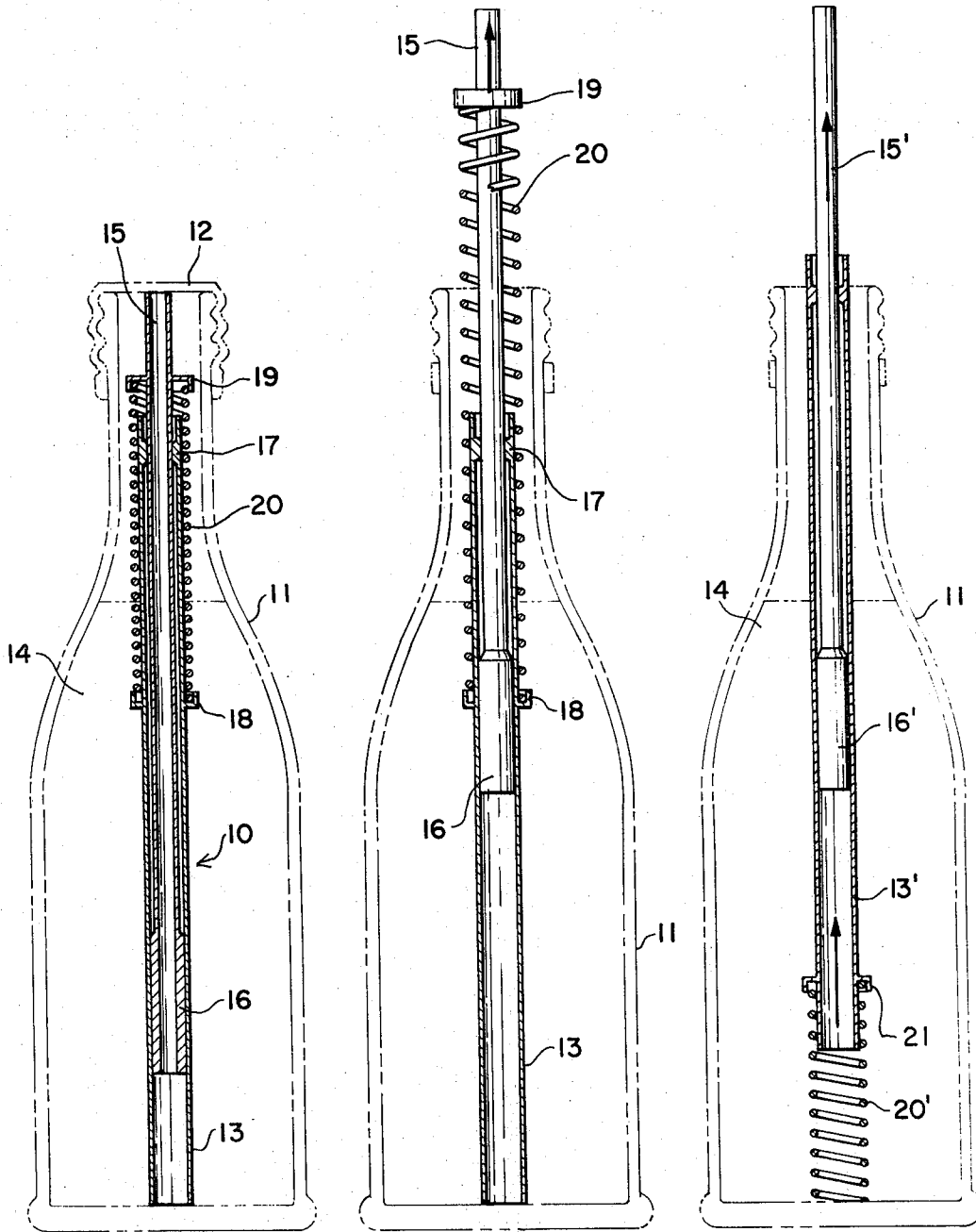
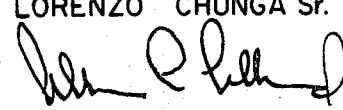


Fig. 1.

Fig. 2.

Fig. 3.

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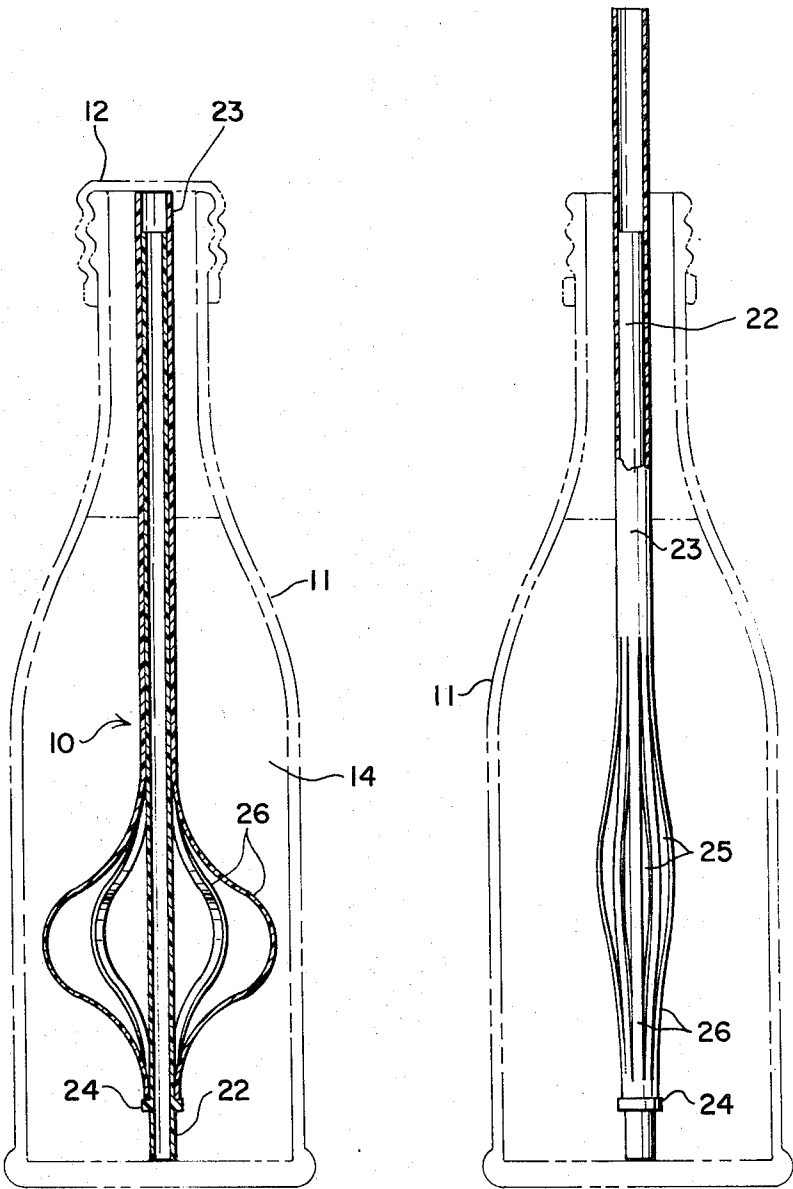


Fig. 4.

Fig. 5.

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TELESCOPIC DRINKING STRAW

The present invention relates to drinking straws, and in particular, to a telescopic drinking straw, consisting of two or more tubular cylinders, one of which is spring loaded so that the straw will be ejected out of the neck of a container when the latter is opened.

Presently, many different methods are used to eject a straw from a bottle or container when the cap is removed. Some manufacturers have affixed bell-shaped elements to the lower portion of the straw to collect carbon dioxide gases given off when the bottle is opened and raise the straw out of the bottle; some have used telescopic sections provided with air jackets submerged in the liquid so that the straw will rise out of the bottle when the cap is removed; and others have used the compressed air in the bottle to raise a telescopic portion of the straw which is sealed at one end and positioned over the main portion of the straw to expose drinking apertures in the sealed section. These drinking straws, however, are not particularly reliable since they depend on the creation of some type of gas present in the liquid or container to raise the straw. Such devices may be suitable for soft drinks, but are totally inappropriate for other non-gaseous liquids. Furthermore, these devices often do not provide a sufficient force to eject the straw from the bottle.

Accordingly, the present invention provides a telescopic drinking straw comprising a first tubular cylinder for disposal within the liquid contained in the bottle, and a second tubular cylinder slidably disposed within the first tubular cylinder of the straw. The second cylinder has a lower end portion whose diameter snugly fits within the diameter of the first cylinder. The remaining portion of the second cylinder has a substantially smaller diameter so as to be slidably disposed through an annular abutment provided on the interior wall of the first cylinder at its upper end. Both the first and second cylinders are provided with annular flanges, opening inwardly towards each other along the longitudinal axes of the cylinders, affixed to the outside surfaces of each cylinder near the upper ends thereof. A coil spring is disposed about the first and second cylinders and is retained in place between the flanges. When the cap is sealed on the container, the spring forces the second cylinder against the inside surface of the cap. Thus, when the bottle is opened, the second cylinder is ejected forcefully from the container to enable immediate drinking of the liquid.

In a second embodiment of the invention, the first and second cylinders are arranged as described above. However, a single annular flange opening vertically downward is provided on the lower end of the first cylinder. A coil spring is retained over the end of the first cylinder, by the annular flange and also abuts the bottom surface of the container so that when the container is capped, the spring will be compressed against the lower surface of the container. When the container is opened, the spring will force the entire telescopic straw up out of the neck of the bottle, and the user may then extend the second cylinder from within the first cylinder manually.

In another embodiment of the invention, the outer telescopic portion of the straw is provided with a plurality of slots cut therein at a selected position along its length. A plurality of flexible bands are thus formed, which are compressed and forced outwardly when the straw is packaged in a container. The lower end of the

outer telescopic portion is affixed to the inner portion, and, as a result, the flexible bands act as a spring and force the outer telescopic section upwardly against the inner surface of the container cap. When the cap is removed, the flexible bands pull inwardly and force the outer telescopic section upwardly out of the neck of the container.

It is therefore an object of the present invention to provide a drinking straw which may be prepackaged within a beverage container and be of immediate use to the consumer upon opening the container.

It is another object of the present invention to provide a drinking straw which may be prepackaged in a container and thereby eliminate the need for dispensing separately packaged drinking straws.

It is a further object of the present invention to provide a telescopic drinking straw which is forcefully ejected from the neck of a beverage container when the container is opened.

It is also an object of the present invention to provide a telescopic drinking straw which is simple in design, easy to manufacture, and efficient and reliable in operation.

Other objects and features of the present invention will become apparent from the following detailed description considered in connection with the accompanying drawings which disclose several embodiments of the invention. It is to be understood, however, that the drawings are designed for the purpose of illustration only and not as a definition of the limits of the invention.

In the drawings, wherein similar reference characters denote similar elements throughout the several views:

FIG. 1 is a cross-sectional view of a telescopic drinking straw constructed in accordance with the present invention, showing the drinking straw packaged within a beverage container;

FIG. 2 is a partial cross-sectional view of the drinking straw shown in FIG. 1, shown in its extended position after the cap has been removed from the container, and

FIG. 3 is a partial cross-sectional view of another embodiment of a telescopic drinking straw constructed in accordance with the present invention, shown in its extended position after removal of the cap of the container;

FIG. 4 is a partial, cross-sectional view of another drinking straw constructed in accordance with the present invention, showing the beverage straw packaged within a beverage container; and

FIG. 5 is a partial, cross-sectional view of the drinking straw shown in FIG. 4, shown in its extended position after the cap of the beverage container has been removed.

Referring to FIGS. 1 and 2, there is shown telescopic drinking straw 10 disposed within bottle 11 which is sealed by cap 12. First tubular cylinder 13 is disposed within the bottle in liquid 14. Second tubular cylinder 15 is slidably disposed within cylinder 13, and has end portion 16 whose diameter is slightly less than that of cylinder 13 so that it fits snugly within the first cylinder. The remaining portion of cylinder 15 has a diameter considerably smaller than end portion 16 so that it may be slidably disposed between an annular abutment 17 provided on the interior wall of cylinder 13. Thus, cylinder 15 may be slidably moved within cylinder 13, but its outward movement from cylinder 13 is limited by the annular abutment when it is engaged by end portion

16. Cylinders 13 and 15 are constructed of any suitable material, such as that presently used for conventional drinking straws, including plastic, metal, wax or resin-coated or impregnated paper, and vegetable or synthetic fibers.

On the exterior surfaces of cylinders 13 and 15, retaining means shown as annular flanges 18 and 19 define annular recesses which face inwardly towards each other along the longitudinal axes of the cylinders. Spring means shown as coil spring 20 is disposed about the cylinders, and has each of its ends secured in the flanges. The spring is constructed of any suitable material, such as plastic or metal, and is compressed upon the straw between the flanges prior to sealing the container. The spring then forces cylinder 15 against cap 12 and cylinder 13 against the bottom surface of bottle 11 while the bottle is closed. Thus, when cap 12 is removed, spring 20 will force cylinder 15 upwardly out of the bottle as illustrated in FIG. 2, so that the straw will be readily available to the user for drinking the liquid.

In FIG. 3, another embodiment of the telescopic straw of the present invention is illustrated. Cylinders 13' and 15' are substantially the same as cylinders 13 and 15 in the previously described embodiment. However, in this embodiment, cylinder 13' is provided with annular flange 21 at the lower end thereof over which coil spring 20', which is the same as spring 20 in the previous embodiment, is disposed. When the bottle is capped, spring 20' is compressed between flange 21 and the bottom surface of bottle 11, and cylinder 15' will be positioned substantially within cylinder 13'. When the cap of the bottle is removed, spring 20' will force cylinder 13' upwardly so that the entire straw protrudes from the neck of the container. The user may then manually pull cylinder 15' upwardly out of cylinder 13' in order to drink the liquid. The materials used to construct cylinders 13' and 15', and spring 20', are the same as those described with respect to the embodiment of FIGS. 1 and 2.

In FIGS. 4 and 5, another embodiment of the telescopic straw of the present invention is shown. Drinking straw 10 is disposed within bottle 11 having a cap 12 sealing the container. A first tubular cylinder 22 is disposed within liquid 14 and has a second tubular cylinder 23 slidably disposed over it. One end of cylinder 23 abuts an annular flange 24 affixed to the outer surface of cylinder 22 near one end thereof. Cylinder 23 is provided with a plurality of elongated slots 25 cut longitudinally along its length, which form a plurality of elongated bands of material 26 which are flexible outwardly. When cap 12 is placed on container 11 and the outer cylinder 23 forced downwardly over cylinder 22, flexible bands 26 will be bent outwardly as shown in FIG. 4. The bands are elastic, and act as a spring, forcing cylinder 23 up against the inner surface of the cap 12. When the cap is removed, bands 26 will spring inwardly to reassume their original shape, and outer cylinder 23 will be forced upwardly over cylinder 22 and out of the neck of container 11. The straw is then easily accessible to the user, and may then be drawn manually out of the container to further elongate the telescopic straw.

It should be noted, that slots 26 may be disposed at any point along the length of outer cylinder 23. It is not necessary that the slots be located at the lower end of the cylinder, as illustrated.

The outer cylinder 23 may be constructed of any type of suitable, plastic, elastomeric or other resilient inert material.

While only several embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that many changes and modifications may be made thereunto without departing from the spirit and scope of the invention.

What is claimed is:

1. A telescopic drinking straw, comprising;
 - a first elongated tubular cylinder,
 - a second elongated tubular cylinder, having a diameter less than the diameter of said first cylinder, slidably disposed within said first cylinder,
 - retaining means rigidly affixed to the exterior surfaces of said first and second cylinders, and
 - spring means, disposed about said first and second cylinders, and secured by said retaining means, for exerting oppositely directed forces on said retaining means and said first and second cylinders so that said second cylinder is ejected from said first cylinder and the neck of the container in which the straw is packaged when the cap of the container is removed.
2. The telescopic drinking straw as recited in claim 1 further comprising abutment means rigidly affixed to the interior wall of said first cylinder at one end thereof, and wherein said second cylinder includes a first portion having a diameter substantially smaller than said first cylinder which is slidable between said abutment means, and a second portion having a diameter slightly smaller than that of said first cylinder for providing a snug fit within said first cylinder and comprising one end of said second cylinder, for engaging said abutment when said second cylinder is ejected from said first cylinder and thereby limiting the outward movement of said second cylinder from said first cylinder.
3. The telescopic drinking straw as recited in claim 2, wherein said retaining means comprises first and second annular flanges rigidly affixed to the exterior surfaces of said first and second cylinders respectively, defining a pair of annular recesses around said cylinders opening inwardly towards each other along the longitudinal axes of said first and second cylinders.
4. The telescopic drinking straw as recited in claim 3, wherein said spring means is a coil spring disposed over said first and second cylinders having its ends disposed in said first and second annular flanges on said cylinders.
5. A telescopic drinking straw, comprising;
 - a first elongated tubular cylinder,
 - a second elongated tubular cylinder, having a diameter smaller than that of said first cylinder, slidably disposed within said first cylinder,
 - retaining means affixed to the exterior surface of said first cylinder at one end thereof, and
 - spring means disposed over the end of said first cylinder so as to engage said retaining means and the bottom surface of the container in which the straw is packaged, for ejecting said first and second cylinders out of the container when the cap of the container is removed and thereby allowing said second cylinder to be manually withdrawn from said first cylinder for drinking the liquid in the container.
6. The telescopic straw as recited in claim 5 further comprising abutment means affixed to the interior sur-

5

face of said first cylinder at one end thereof, and wherein said second cylinder includes a first portion having a diameter substantially less than that of said first cylinder which is slidable between said abutment means, and a second portion having a diameter slightly less than that of said first cylinder for providing a snug fit within said first cylinder and comprising an end portion of said second cylinder, for engaging said abutment means when said second cylinder is withdrawn from said first cylinder and thereby limiting the outward movement of said second cylinder from said first cylinder.

7. The telescopic drinking straw as recited in claim 6, wherein said retaining means comprises an annular flange affixed to the exterior surface of said first cylinder at the lower end thereof which defines an annular recess around said cylinder opening downwardly along the longitudinal axes of said first and second cylinders.

8. The telescopic drinking straw as recited in claim 7, wherein said spring means is a coil spring disposed over one end of said first cylinder, having one end retained in said annular flange and the other end thereof abutting the bottom surface of the container in which the straw is packaged.

6

9. A telescopic drinking straw, comprising;
a first elongated tubular cylinder,
a second elongated tubular cylinder having a diameter smaller than that of said first cylinder, slidably disposed within said first cylinder,
retaining means affixed to the exterior surface of said first cylinder at a selected point thereon, and
elongated, flexible spring bands formed by a plurality of elongated slots cut in said first cylinder, said bands being forced outwardly when said first cylinder is compressed downwardly over said second tubular cylinder, for ejecting said first cylinder out of the container when the cap of the container is removed and thereby allowing said first cylinder to be manually extended from the container for drinking the liquid therein.

10. The telescopic drinking straw as recited in claim 9, wherein said retaining means comprises an annular flange affixed to the exterior surface of said second cylinder at the lower end thereof, said flange defining an annular recess around said cylinder opening upwardly along the longitudinal axes of said first and second cylinder.

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