PATENT SPECIFICATION

DRAWINGS ATTACHED

904,010

Date of Application and filing Complete Specification Dec. 7, 1960.

No. 42079/60.

Complete Specification Published Aug. 22, 1962.

Index at acceptance:—Class 14(2), E10.

International Classification:—B67d.

COMPLETE SPECIFICATION

Improvements in or relating to Drinking Straws and Drinking Appliances

I, YAT CHUEN YUEN, of 214A, Des Voeux Road Central, Hong Kong, a Chinese Citizen, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to drinking straws, and to drinking appliances of the kind comprising a beverage container, a closure therefor, and a straw normally held down in the container by the closure.

A drinking straw made in accordance with the invention is characterised by the feature that it comprises a plurality of parts slidably mounted one on the other, in the manner of a telescope, one of the parts having an open end and forming a mouthpiece.

A drinking appliance of the kind referred to made in accordance with the invention is characterised by the feature that the straw comprises a plurality of parts slidably mounted one on the other in the manner of a telescope, one of the parts forming a mouthpiece having an open end through which the beverage can be sucked by a consumer when the closure has been removed.

The straw may be made of paper or any other suitable material, but in a preferred embodiment it is made of synthetic plastic material.

In the accompanying drawings, which illustrate how the invention may be carried into effect:—

Fig. 1 shows a bottle containing a straw and a beverage, carbonated or otherwise, with the closure cap in position,

Fig. 2 shows the same bottle with the closure cap removed and the straw in the drinking position.

Figs. 3 to 12 illustrate respectively straws in accordance with the invention.

Fig. 13 illustrates a straw in which the mouthpiece is fitted with a movable plug, the latter being shown in a position in which it seals the bore of the straw.

Fig. 14 is a view similar to Fig. 13 but showing the plug moved up with the mouthpiece into a position in which the bore of the straw is unsealed.

Fig. 15 is a perspective view of the plug shown in Figs. 13 and 14.

Figs. 16 and 17 are views similar to Figs. 13 and 14 but showing the plug in a reverse position, and

Figs. 18 and 19 illustrate other straws made according to the invention.

In all the figures of the drawings like reference numerals denote similar parts.

Referring first to Figs. 1 and 2 of the drawings the reference numeral 10 denotes a bottle containing a beverage which may be carbonated or not, the bottle being sealed in known manner in Fig. 1 by a closure 11 of the crown cork or plastic type, and having packed therein, before the closure is applied, a drinking straw denoted generally in Figs. 1 and 2 by the reference numeral 12. The straw is of telescopic or other construction and may be made in various ways as illustrated for example in Figs. 3 to 19 of the drawings. The arrangement is such that as shown in Fig. 1 the straw is packed in the closed or contracted state in the bottle 10 and is retained therein by the closure 11, and when the closure 11 is removed, the upper end of the straw is projected from the bottle as shown in Fig. 2. This can be effected in various ways as will now be described with reference to Figs. 3 to 19 of the drawings.

As shown in Figs. 3—12 and Figs. 13 to 19 of the drawings the straw 12 is made in two parts, each of which may be made for example of synthetic plastic material, namely

[*Price* 4s. 6d.]

one part 12^1 (referred to hereafter as the "lower part") and a second part 12^2 (referred to hereafter as the "mouthpiece"), the two parts being mounted telescopically on one another.

In Fig. 3 which shows separately the straw shown in Figs. 1 and 2, a hermetically sealed buoyancy member or lighter than water ring 13 is secured to the main length 12^1 of the straw and the arrangement is such that when the cap 11 of the bottle is removed the member 13 lifts the straw so that the mouthpiece projects beyond the neck of the bottle as shown in Fig. 2, in position for drinking the beverage contained in the bottle. To reach the beverage in the bottom of the bottle the parts 12^1 and 12^2 are extended.

Fig. 4 is similar to Fig. 3 but differs therefrom in that instead of being slidably mounted on the outer surface of the lower part 12^1 the mouthpiece 12^2 is slidably mounted inside this lower part.

In Fig. 5 the mouthpiece is formed with an enlarged diameter part 14, the upper and lower ends of which are of reduced diameter so as to provide a tight frictional fit on the external surface of the lower part 12^1. These reduced diameter parts enclose in a substantially hermetic manner an annular space 15 between the part 12^1 and the mouthpiecs 12^2, which space constitutes a buoyancy chamber acting when the cap 11 is removed to raise the straw into the drinking position. To reach the beverage in the bottom of the bottle the parts 12^1 and 12^2 are extended.

Fig. 6 illustrates a modification of Fig. 5. In Fig. 6 the lower end only of the mouthpiece 12^2 is of reduced diameter so as to provide a tight frictional fit on the external surface of the lower part 12^1. In this construction the upper end of the part 12^1 is outwardly flared to provide a shoulder 16 having a tight frictional fit on the inner surface of the mouthpiece, thus again forming a buoyancy chamber 15 which acts when the cap 11 is removed to raise the straw into the drinking position. To reach the beverage in the bottom of the bottle the parts 12^1, 12^2 are extended.

In Fig. 7 the upper end of the lower part 12^1 is formed with a reduced diameter part 12^3 which is a tight frictional fit on the outer surface of the mouthpiece 12^2. The latter is slidably mounted inside the part 12^1 and is formed at its lower end with an inclined shoulder 17 which is a tight frictional fit against the inner surface of the part 12^1 and which co-operates with the reduced diameter part 12^3 to form a buoyancy chamber 15 between the two parts similar to that above described. When the straws in the drinking position the parts 12^1, 12^2 are extended to reach the bottom of the bottle 10.

In Fig. 8 the mouthpiece 12^2 is again slidably mounted in the lower part 12^1 but in this construction the latter is formed with two spaced interval shoulders 18, 19 disposed respectively at the top and bottom of an enlarged diameter part 20 to provide between them a buoyancy chamber 15. The parts 12^1, 12^2 are extended to reach the bottom of the bottle.

In Fig. 9 the outer or upper end 21 of the mouthpiece 12^2 is oblique and the upper end of the lower part 12^1 is closed by a disc 22 of slightly larger diameter than that of the mouthpiece, this disc being adhesively secured to the upper end of the lower part 12^1. When the cap 11 has been removed from the bottle the whole straw is forced upwardly by air entrapped in the part 12^1 and the mouthpiece is drawn over the end of the main length 12^1 into the drinking position, the oblique end 21 removing the disc 22 to enable the beverage to be drawn from the bottle, the parts 12^1, 12^2 being extended to reach the bottom of the bottle.

Fig. 10 is a modification of Fig. 9. In Fig. 10 the disc of Fig. 9 is replaced by a flanged plug 23, the flange of which has a diameter a little larger than that of the mouthpiece.

When the cap 11 has been removed, the straw is again forced upwardly by the air entrapped in the part 12^1 and the mouthpiece is drawn over the main length 12^1 into the drinking position and removes the plug, whereupon the parts 12^1, 12^2 can be extended to reach the bottom of the bottle.

In Fig. 11 the mouthpiece 12^2 is longer than the lower part 12^1 and fits telescopically in the latter. The lower end of the mouthpiece is formed with an internal rim 24 constituting an abutment surface for one end of a coil spring 25, the other end of which bears against an abutment surface formed by a rim or ring 26 fitted in the lower end of the lower part 12^1. When the cap 11 is fitted on the bottle the spring 25 is compressed, and when the cap is removed the spring is extended and lifts the mouthpiece 12^2 into the drinking position.

In Fig. 12 the mouthpiece 12^2 is again longer than the lower part 12^1. The latter is made of resilient material and is formed with peripheral corrugations 27 between its upper and lower ends and is provided at the top of the corrugated part with a shoulder 28 to support the lower end of the mouthpiece 12^2. When the straw is fitted in the bottle the corrugations permit the part 12^1 to contract in length under the pressure of the cap 11. When the latter is removed the part 12^1 is extended to bring the mouthpiece into the drinking position.

A straw similar to that shown in Fig. 12 may be made in one piece, in which case the shoulder 28 may be eliminated.

In the construction shown in Figs. 13 to 15 an apertured plug 30 (see in particular Fig. 15) is fitted with a good friction fit in the mouthpiece 12^2.

* C L M S *

The plug comprises a hollow part 31 and a solid base 32 of somewhat smaller diameter than the part 31. The hollow part 31 is formed with six equiangularly spaced slotted apertures 33 in its wall, these apertures extending throughout substantially the whole length of the wall.

The straw is packed in the bottle 10 with the disc 32 fitting with a smooth frictional fit in the lower part 12^1 of the straw and the hollow part 31 fitting with a rather tighter frictional fit against the inner wall surface of the mouthpiece as shown in Fig. 13. When the cap 11 is removed the pressure of the air trapped in the straw acting on the disc 32 presses the latter out of the neck of the bottle 10. When the mouthpiece 12 is extended as shown in Fig. 14 the beverage in the bottle can be sucked through the part 12^1, the slotted apertures 33 in the wall of the plug and the open top of the mouthpiece.

The construction shown in Figs. 16 and 17 is a modification of the construction shown in Figs. 13 and 14. In this modified construction the mouthpiece 12^2 slides telescopically with a good friction fit in the upper end of the lower part 12^1, and the plug 30 is reversed i.e. the disc 32 fits with a smooth frictional fit in the inner end of the mouthpiece and the hollow slotted part 31 fits with a rather tighter frictional fit against the inner surface of the lower part 12^1. In this reverse arrangement when the cap 11 is removed the pressure of air trapped in the lower part 12^1 forces up the straw so that the beverage can pass through the slotted apertures 33 in the wall of the part 31 and through the lower end of the mouthpiece, whereupon the beverage in the bottle can be sucked through the lower part 12^1, the slotted apertures 33, the enlarged section 14^1 of the lower part 12^1 and the open top of the mouthpiece. To reach the beverage in the bottom of the bottle 10 the part 12^2 is extended as shown in Fig. 17.

The straws shown in Figs. 18 and 19 comprise a lower part 12^1 and a mouthpiece 12^3. In Fig. 18 the mouthpiece is mounted telescopically on the lower part 12^1 and in Fig. 19 the mouthpiece is mounted telescopically in the lower part 12^1. The straws shown in Figs. 18 and 19 may be made of synthetic plastic or other suitable material having a density which is less than that of the liquid beverage in the bottle 10 so that the straws will be buoyant and will rise automatically when the crown cork 11 is removed.

WHAT I CLAIM IS:—

1. A drinking straw characterised in that it comprises a plurality of parts slidably mounted one on the other, one of the parts having an open end and forming a mouthpiece.

2. A drinking straw according to Claim 1 characterised in that one of the parts is fitted with a buoyancy device.

3. A drinking straw according to Claim 1 characterised in that a buoyancy chamber is provided between two parts.

4. A drinking straw according to Claim 1 characterised in that it is made of synthetic plastic or other material having a relatively low density so that the straw is buoyant in the beverage with which the straw is to be used.

5. A drinking straw according to Claim 1 characterised in that the outer or mouthpiece end of the straw is closed by a removable plug which is automatically withdrawn when the mouthpiece is slid into the drinking position.

6. A drinking straw according to Claim 1 characterised in that the outer end of the mouthpiece is oblique and serves to remove a disc closing the outer end of another part when the mouthpiece is moved into the drinking position.

7. A drinking straw according to Claim 1 characterised in that one of the parts is formed with peripheral corrugations which allow it to contract under longitudinal pressure and extend when the pressure is removed.

8. A drinking straw according to Claim 1 comprising two parts characterised in that the inner or lower ends of the two parts are formed with internal shoulders which constitutes abutments respectively for the two ends of a coil spring disposed between the two parts, the arrangement being such that the spring and consequently the length of the straw can contract under applied longitudinal pressure and extend when the pressure is removed.

9. A straw according to Claim 1 comprising two parts characterised in that the mouthpiece part is slidably mounted on the other part and the passage through the straw is sealed by a movable plug having two diameters, namely a larger diameter part having a slotted wall which is a frictional fit in the mouthpiece and a smaller diameter solid part which is a frictional fit in the other part of the straw and seals the passage through the straw until such time as the plug is moved out of the other part of the straw, whereupon liquid can flow through the slotted wall of the plug into the mouthpiece.

10. A straw according to Claim 1 comprising two parts characterised in that the mouthpiece is slidably mounted in the other part of the straw and the straw is sealed by a movable plug having two diameters namely a smaller diameter solid part which is a frictional fit in the mouthpiece and a larger diameter part having a slotted wall which is a frictional fit in the other part of the straw, the arrangement being such that the smaller diameter solid part seals the passage through the straw until such time as the mouthpiece is moved into the drinking position.

11. A drinking straw made substantially as described with reference to and as illustrated in any one of Figs. 3 to 14 or Figs. 13 to 15 or Figs. 16 and 17 or Figs. 18 or 19 of the accompanying drawings.

The plug comprises a hollow part 31 and a solid base 32 of somewhat smaller diameter than the part 31. The hollow part 31 is formed with six equiangularly spaced slotted apertures 33 in its wall, these apertures extending throughout substantially the whole length of the wall.

The straw is packed in the bottle 10 with the disc 32 fitting with a smooth frictional fit in the lower part 12^1 of the straw and the hollow part 31 fitting with a rather tighter frictional fit against the inner wall surface of the mouthpiece as shown in Fig. 13. When the cap 11 is removed the pressure of the air trapped in the straw acting on the disc 32 presses the latter out of the neck of the bottle 10. When the mouthpiece 12 is extended as shown in Fig. 14 the beverage in the bottle can be sucked through the part 12^1, the slotted apertures 33 in the wall of the plug and the open top of the mouthpiece.

The construction shown in Figs. 16 and 17 is a modification of the construction shown in Figs. 13 and 14. In this modified construction the mouthpiece 12^2 slides telescopically with a good friction fit in the upper end of the lower part 12^1, and the plug 30 is reversed i.e. the disc 32 fits with a smooth frictional fit in the inner end of the mouthpiece and the hollow slotted part 31 fits with a rather tighter frictional fit against the inner surface of the lower part 12^1. In this reverse arrangement when the cap 11 is removed the pressure of air trapped in the lower part 12^1 forces up the straw so that the beverage can pass through the slotted apertures 33 in the wall of the part 31 and through the lower end of the mouthpiece, whereupon the beverage in the bottle can be sucked through the lower part 12^1, the slotted apertures 33, the enlarged section 14^1 of the lower part 12^1 and the open top of the mouthpiece. To reach the beverage in the bottom of the bottle 10 the part 12^2 is extended as shown in Fig. 17.

The straws shown in Figs. 18 and 19 comprise a lower part 12^1 and a mouthpiece 12^2. In Fig. 18 the mouthpiece is mounted telescopically on the lower part 12^1 and in Fig. 19 the mouthpiece is mounted telescopically in the lower part 12^1. The straws shown in Figs. 18 and 19 may be made of synthetic plastic or other suitable material having a density which is less than that of the liquid beverage in the bottle 10 so that the straws will be buoyant and will rise automatically when the crown cork 11 is removed.

WHAT I CLAIM IS:—

1. A drinking straw characterised in that it comprises a plurality of parts slidably mounted one on the other, one of the parts having an open end and forming a mouthpiece.

2. A drinking straw according to Claim 1 characterised in that one of the parts is fitted with a buoyancy device.

3. A drinking straw according to Claim 1 characterised in that a buoyancy chamber is provided between two parts.

4. A drinking straw according to Claim 1 characterised in that it is made of synthetic plastic or other material having a relatively low density so that the straw is buoyant in the beverage with which the straw is to be used.

5. A drinking straw according to Claim 1 characterised in that the outer or mouthpiece end of the straw is closed by a removable plug which is automatically withdrawn when the mouthpiece is slid into the drinking position.

6. A drinking straw according to Claim 1 characterised in that the outer end of the mouthpiece is oblique and serves to remove a disc closing the outer end of another part when the mouthpiece is moved into the drinking position.

7. A drinking straw according to Claim 1 characterised in that one of the parts is formed with peripheral corrugations which allow it to contract under longitudinal pressure and extend when the pressure is removed.

8. A drinking straw according to Claim 1 comprising two parts characterised in that the inner or lower ends of the two parts are formed with internal shoulders which constitutes abutments respectively for the two ends of a coil spring disposed between the two parts, the arrangement being such that the spring and consequently the length of the straw can contract under applied longitudinal pressure and extend when the pressure is removed.

9. A straw according to Claim 1 comprising two parts characterised in that the mouthpiece part is slidably mounted on the other part and the passage through the straw is sealed by a movable plug having two diameters, namely a larger diameter part having a slotted wall which is a frictional fit in the mouthpiece and a smaller diameter solid part which is a frictional fit in the other part of the straw and seals the passage through the straw until such time as the plug is moved out of the other part of the straw, whereupon liquid can flow through the slotted wall of the plug into the mouthpiece.

10. A straw according to Claim 1 comprising two parts characterised in that the mouthpiece is slidably mounted in the other part of the straw and the straw is sealed by a movable plug having two diameters namely a smaller diameter solid part which is a frictional fit in the mouthpiece and a larger diameter part having a slotted wall which is a friotional fit in the other part of the straw, the arrangement being such that the smaller diameter solid part seals the passage through the straw until such time as the mouthpiece is moved into the drinking position.

11. A drinking straw made substantially as described with reference to and as illustrated in any one of Figs. 3 to 14 or Figs. 13 to 15 or Figs. 16 and 17 or Figs. 18 or 19 of the accompanying drawings.

12. A drinking appliance of the kind comprising a beverage container, a closure therefor, and a straw normally held down in the container by the closure characterised by a straw made according to any one of Claims 1 to 16.

For the Applicant:
COPE & CO.,
Chartered Patent Agents,
65, Victoria Street,
London, S.W.1.

Leamington Spa: Printed for Her Majesty's Stationery Office by the Courier Press.—1962.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.