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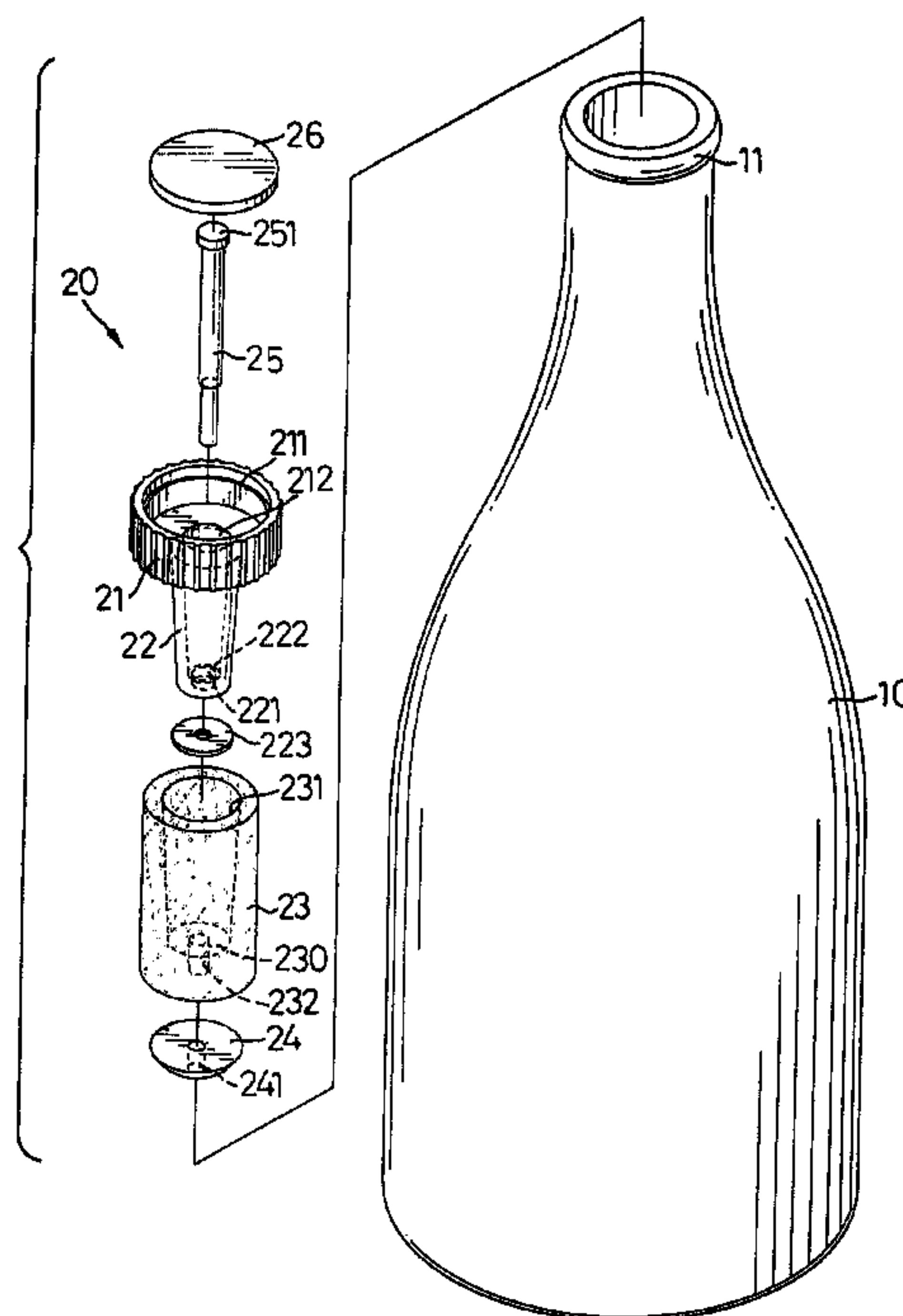
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(54) Title: A HAND REMOVABLE AND RE-USABLE BOTTLE STOPPER



(57) Abrégé/Abstract:

The bottle stopper includes a plug and a cylindrical stopper member slidably mounted to an elongated rod. The stopper member has a tapering cavity and the plug has a tapering shaped and size complementary to the cavity of the stopper member. The plug may be pushed to a lowermost position to mate with the cavity of the stopper member for causing the stopper member to be in an expanded mode for sealing the bottle. The plug may be pulled upwards outside of the cavity of the stopper member to change the stopper member into a contracted mode such that it may be extracted by merely lifting the plug further upwards. The stopper may be re-used repeatedly.

ABSTRACT OF THE DISCLOSURE

The bottle stopper includes a plug and a cylindrical stopper member slidably mounted to an elongated rod. The stopper member has a tapering cavity and the plug has a tapering shaped and size complementary to the cavity of the stopper member. The plug may be pushed to a lowermost position to mate with the cavity of the stopper member for causing the stopper member to be in an expanded mode for sealing the bottle. The plug may be pulled upwards outside of the cavity of the stopper member to change the stopper member into a contracted mode such that it may be extracted by merely lifting the plug further upwards. The stopper may be re-used repeatedly.

A HAND REMOVABLE AND RE-USABLE BOTTLE STOPPER

FIELD OF THE INVENTION

This invention relates to a stopper and especially to a bottle stopper which can be removed from the bottle without the use of a corkscrew, and it can be re-used repeatedly.

5 BACKGROUND OF THE INVENTION

A cork stopper is commonly used for closing the mouth of a wine bottle so as to provide an air tight seal to prevent the wine from becoming spoiled. In such seal, an upper portion of the stopper is located outside of the bottle and a lower portion of it is located within the neck portion of the wine bottle. A tool such as a corkscrew is commonly required for removing the cork
10 stopper from the wine bottle; and it is extremely difficult to remove the cork stopper when such tool is not available.

Furthermore, when a conventional cork stopper is removed from the wine bottle, it will invariably swell and will become very difficult to be re-inserted into the mouth of the bottle again to provide the same air tight seal as it originally provided. For this reason, once the cork stopper
15 is removed from a bottle of wine, the wine will have to be consumed fairly quickly, or to be transferred to another container, or a new cork stopper or cap must be used to prevent the wine remaining in the bottle from becoming spoiled.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a bottle stopper which does not require
20 the use of a corkscrew for its extraction from the bottle.

It is another object of the present invention to provide a bottle stopper which can be re-used repeatedly.

Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Figure 1 is an exploded perspective elevation view of the stopper of the present invention shown adjacent to a bottle.

Figure 2 is a partial sectional side elevation view showing the stopper of the present invention inserted into the mouth of the bottle.

10 Figure 3 is an enlarged isolated cross sectional side elevation view of the mouth portion of the bottle showing the stopper of the present invention partially removed therefrom.

Figure 4 is an enlarged isolated cross sectional side elevation view showing the stopper of the present invention completely removed from the bottle.

Figure 5 is a perspective elevation view showing a bottle having a conventional cork stopper inserted in its mouth portion.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figures 1 and 2, the stopper 20 for the opening 11 of a bottle 10 comprises a a plug 21, a cylinder 23, a retainer 24, a pin 25, and a disc 26. The plug 21 is hollow and substantially T-shaped in side cross section, with a head and an integral tapered neck 22 extending downward from the head. The neck tapers from a larger diameter at the top to a smaller diameter at the bottom as shown. The circumferential wall of the head has an outer diameter equal to the outer diameter of the neck of the bottle 10. The circumferential wall defines a top opening leading into a top cavity in the head. The neck 22 has a tapered cavity 212 in

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communication with the top cavity of the head. An opening 221 is formed in the bottom wall 222 of the cavity 212. The disc 26 is securely mounted within a circumferential step 211 formed in the inner face of the circumferential wall.

The cylinder 23 is hollow and has an outer diameter dimensioned to fit in the mouth opening 11 of the bottle 10. The cylinder 23 has a large cavity 231 with a top opening. The large cavity 231 inside the cylinder 23 tapers from a larger upper diameter to a smaller lower diameter, and it is dimensioned to mate in a complementary manner with the tapered neck 22 of the plug 21. A small bore 232 is formed at the bottom wall of the large cavity 231.

The pin 25 has an elongated rod with a cap 251 formed integrally at its top end. The cap 251 has a circular diameter larger than the bottom opening 221 of the neck 22 of the plug 21. The rod has a length such that it extends through the bottom opening 221, the small bore 232 of the cylinder 23, and a hole 241 formed in a retainer 24 for mounting the head and the cylinder together. The retainer 24 has an outer diameter slightly smaller than the outer diameter of the cylinder 23. As shown in Figure 2, in assembly, the head is mounted to the cylinder 23 by inserting the pin 25 through the tapered cavity 212 of the plug 21 so that it sequentially extends through the bottom opening 221 of the neck 22, the small bore 232 of the cylinder 23 until its protruding bottom tip is securely mounted in the hole 241 of the retainer 24. In this manner, the retainer 24 is secured against the bottom surface of the cylinder 23.

As shown in Figure 3, the pin 25 has a suitable length so that the plug 21 may be lifted out of the cylinder 23 and yet the disc 26 mounted on the step 211 will not be pushed out from its mounted position when the plug 21 is at its lowermost position within the cylinder 23. At its uppermost position, the plug 21 is completely lifted out of the large cavity 231 of the cylinder 23.

At this uppermost position, the stopper 20 is in a contracted mode. At the lowermost position, when the plug 21 is pushed inside the large cavity 231 of the cylinder 23, the outer wall of the neck 22 urges against the inner wall of the large cavity 231 of the cylinder 23 for enlarging the stopper 20 to an expanded mode.

5 Still referring to Figure 2, in use, the plug 21 is first pushed into the large cavity 231 of the cylinder 23, thereafter, due to the design of the plug 21, the stopper 20 can be inserted into the opening 11 of the bottle 10.

10 Referring to Figures 3 and 4, to remove the stopper 20 from the opening 11 of the bottle 10, the head of the plug 21 is pulled upwards outside of the cylinder 23 to its uppermost position at which the cap 251 of the pin 25 will abut the inner flange of the bottom opening 221 at the bottom wall 222 of the cavity 212 while the retainer 24 will also abut the undersurface of the cylinder 23. The stopper 20 may then be extracted from the bottle 10 by merely further pulling the head of the plug 21 upwards such that the retainer 24 will carry the stopper 20 out from the bottle 10.

15 As shown in Figure 1, a ring gasket 223 may be optionally provided between the plug 21 and the bottom wall of the large cavity 212 of the cylindrical stopper 23. Furthermore, the head of the plug 21 may optionally have surrounding ridges formed on the outer surface of its circumferential wall so as to facilitate its insertion into or removal from the cylinder 23. The cylinder 23 may be made of cork or other conventional stopper material.

20 Although the stopper of the present invention is shown in the above exemplary embodiment for use with a wine bottle, it will be appreciated by those skilled in the art that it may also be used with bottles for other similar liquid material.

From the above description, it is noted that the present invention has the following advantages:

1. The stopper may be removed without using a corkscrew; and
2. The stopper can be re-used repeatedly for providing effective preservation of the liquid content remaining in the bottle.

In comparison, the conventional bottle prior art sealing method as shown in Figure 5 does not provide the above advantages. As illustrated, the wine bottle 30 has a mouth 31 fitted with a common cork stopper 32. An upper portion 321 of the stopper is located outside of the mouth of the bottle while a lower portion 322 of it is located within the neck portion of the wine bottle. A tool such as a corkscrew must be used for removing the cork stopper 32 from the wine bottle. It is extremely difficult to remove the cork stopper 32 when such tool is not available. Furthermore, when the cork stopper 32 is removed, it will swell so that it is very difficult to be re-inserted into the mouth of the bottle. The stopper 32 is thus not re-usable.

It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meansing of the terms in which the appended claims are expressed.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A hand removable and re-usable stopper for a bottle opening, comprising:
 - a cylindrical stopper member adapted for sealing said bottle opening,
 - 5 a cavity formed in said stopper member, said cavity tapering from a top opening to a bottom wall having a smaller diameter than said top opening,
 - a plug member having a tapered shape complementary to said cavity of said cylindrical stopper member and adapted for mating engagement within said cavity, said plug member slidably mounted on an elongated rod extending through a bore formed in said bottom wall of
 - 10 said plug member and a bottom opening formed in said cylindrical stopper member, and
 - a retainer located below said cylindrical stopper member and secured to a lower end of said elongated rod.
2. A hand removable and re-usable stopper as claimed in Claim 1 wherein said plug member has an opened top and a downwardly tapering cavity formed therein, and said elongated rod
- 15 having a step formed thereon and located in said bore, and said step of said elongated rod having a diameter larger than said bore in said bottom wall of said plug member and being operative for pushing said plug member downward to a lowermost position to mate within said cavity of said cylindrical stopper member whereby said stopper member is in an expanded mode for sealing said bottle opening.
- 20 3. A hand removable and re-usable stopper as claimed in Claim 2 including a cap formed at a top end of said elongated rod, said cap having a diameter larger than said bore at said bottom wall of said plug member whereby said plug member is disengageable from said large cavity of

said cylindrical stopper member by lifting said cap upwards to locate said elongated rod to an uppermost position for causing said stopper member to change to a contracted mode whereby said stopper member is removable from said bottle opening by merely lifting said plug member further upwards.

5 4. A hand removable and re-usable stopper as claimed in Claim 3 including a head casing formed at a top end of said plug member and being operative to enhance the lifting and insertion of said plug member from said cylindrical stopper member.

5. A hand removable and re-usable stopper for a bottle opening, comprising:

10 a cylindrical stopper member adapted for sealing said bottle opening and being variable selectively to an expanded mode and a contracted mode,

an open top cavity formed in said stopper member, said cavity tapering from a top opening to a bottom wall having a smaller diameter than said top opening,

an opening formed at said bottom wall of said cavity,

15 a plug member with a neck portion having a downwardly tapering shape and size complementary to said cavity of said stopper member and adapted for mating engagement within said cavity of said stopper member,

a tapering cavity formed in said plug member, said tapering cavity of said plug member tapering from an opened top to a bottom opening having a smaller diameter than said opened top therein,

20 an elongated rod extending slidably through said plug member and said cylindrical stopper member and having a bottom end secured to a retainer located below said cylindrical stopper member,

a cap formed at a top end of said elongated rod, said cap having a diameter larger than said bottom opening of said tapering cavity of said plug member.

6. A hand removable and re-usable stopper as claimed in Claim 5 including a head casing formed at a top end of said plug member, said head casing having a circumferential wall with an outer surface having ridges formed thereon.

7. A hand removable and re-usable stopper as claimed in Claim 6 including a disc covering over said head casing, said disc being mounted within an inner circumferential step of said head casing.

8. A hand removable and re-usable stopper as claimed in Claim 7 wherein said elongated rod includes a step engageable with a flange portion of said bottom opening of said tapered cavity of said plug member and being operative for pushing said plug member to a lowermost position for said neck portion to mate with said cavity of said cylindrical stopper member and causing said stopper member to be in said expanded mode for sealing said bottle opening.

9. A hand removable and re-usable stopper as claimed in Claim 8 wherein said plug member is operative to be lifted to an uppermost position outside of said cavity of said cylindrical stopper member for changing said stopper member to said contracted mode, and for causing said cap of said rod to abut said flange portion of said bottom opening of said tapered cavity of said plug member whereby said stopper member is extractable from said bottle opening by merely lifting said plug member further upwards.

10. A hand removable and re-usable stopper as claimed in Claim 9 including a ring gasket located between said plug member and said bottom wall of said cavity of said cylindrical stopper member.

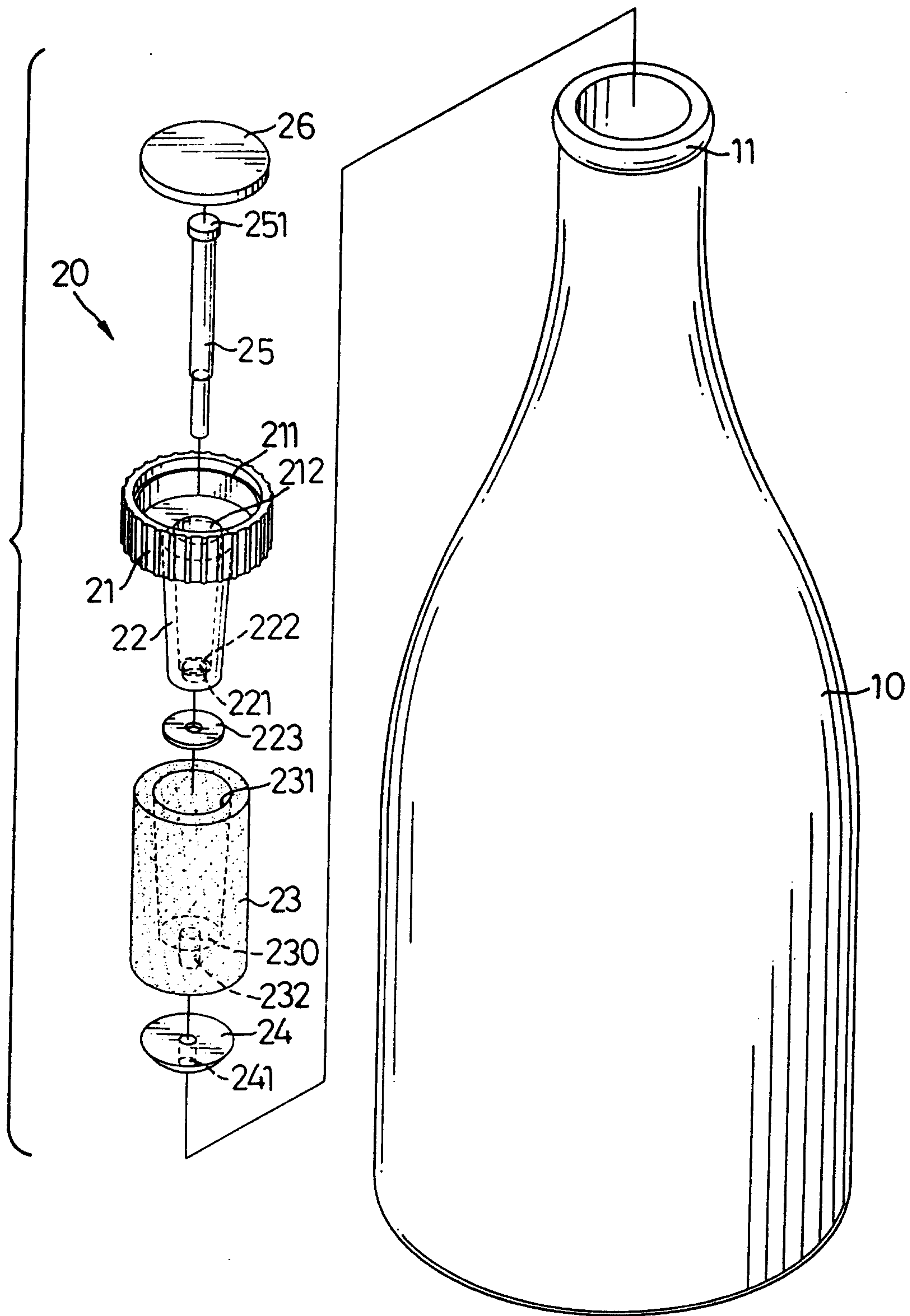


FIG.1

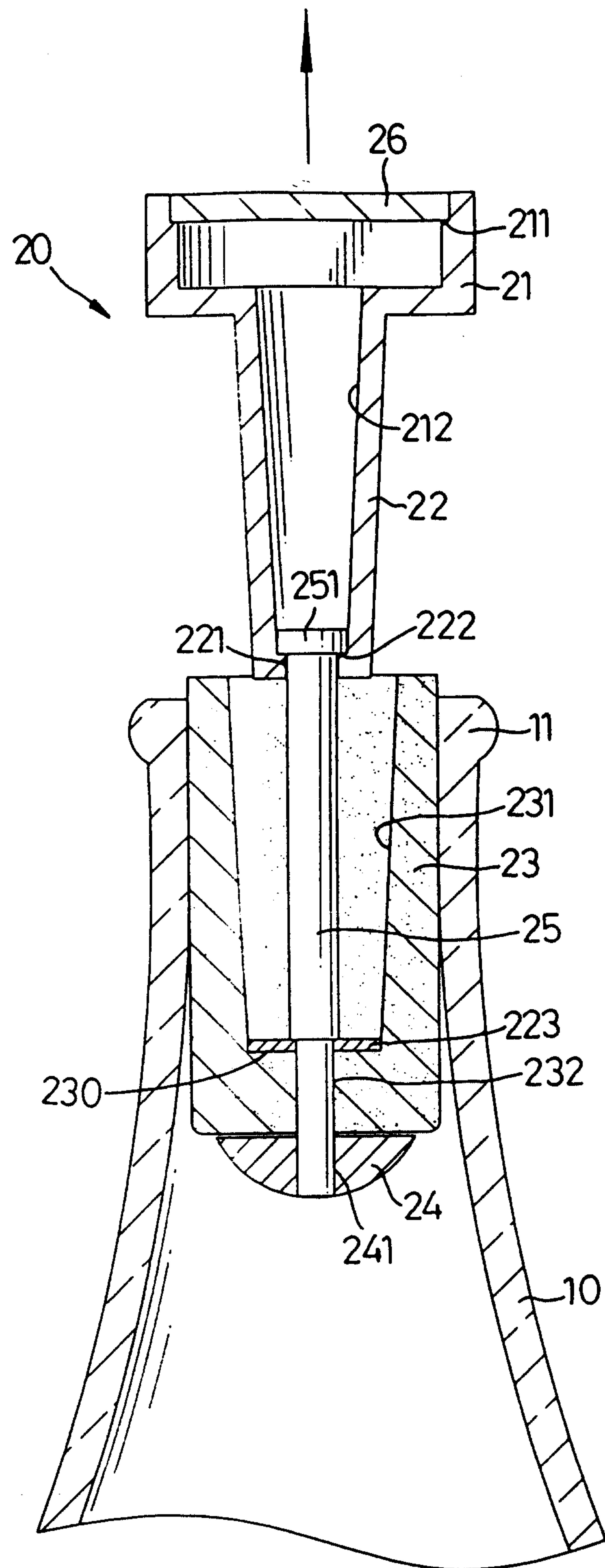


FIG. 3

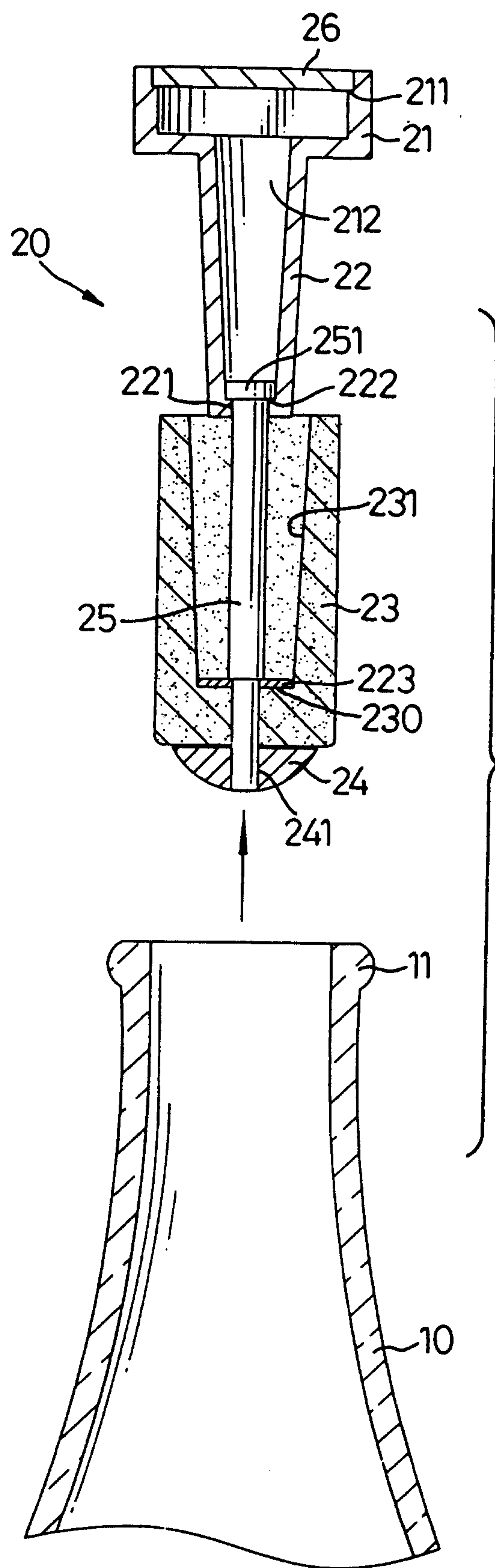


FIG. 4

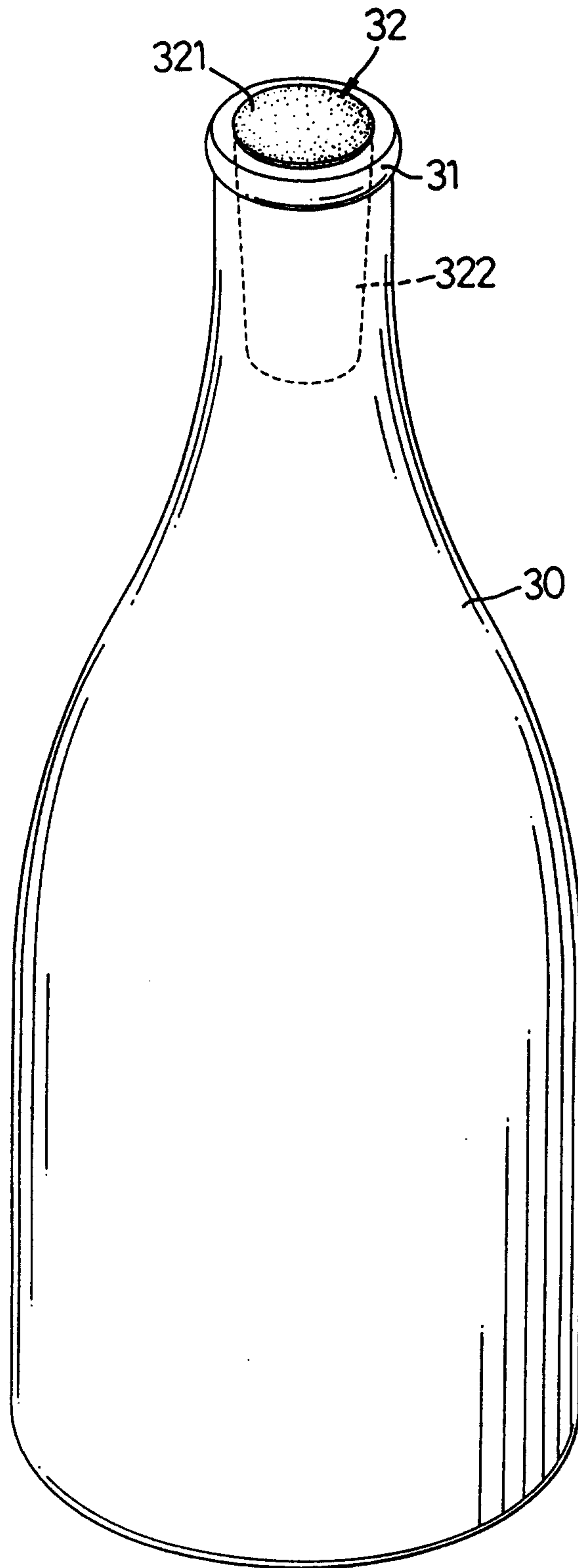


FIG. 5
PRIOR ART

