Oct. 6, 1964 G. MILLER 3,151,787

DISPENSING BOTTLE TAP

Filed Oct. 31, 1961

FIG. 1

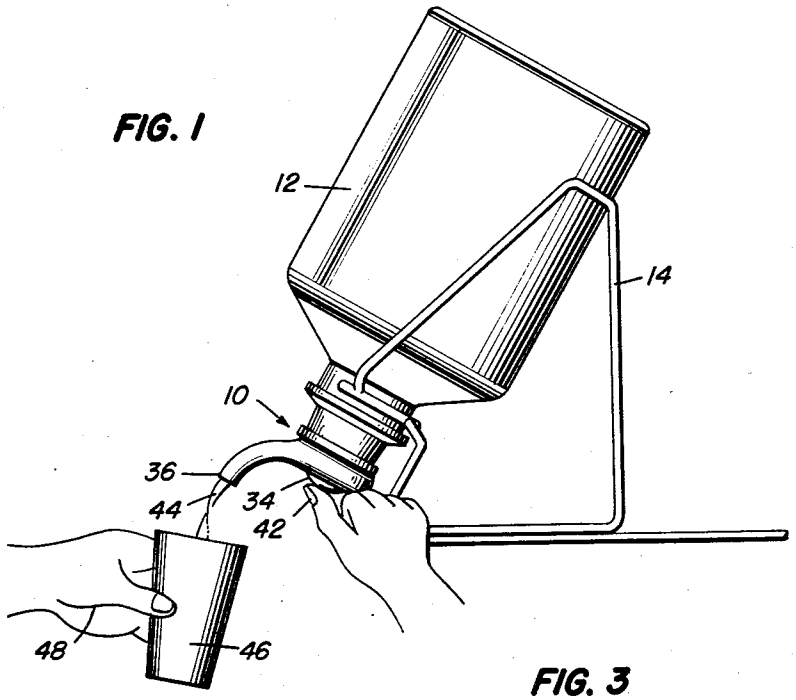
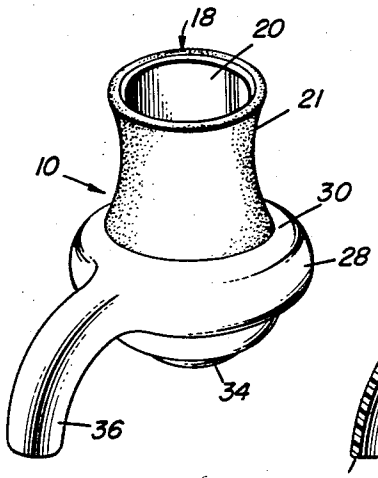
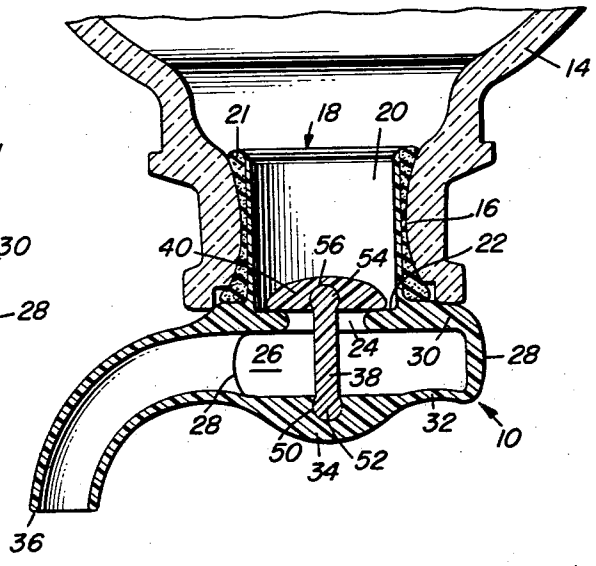


FIG. 3

FIG. 2





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DISPENSING BOTTLE TAP

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1 Claim. (Cl. 222—518)

This invention relates to a dispensing bottle tap particularly intended for use as a tap in a bottle containing a liquid to be dispensed, when the bottle is placed in substantially more or less inverted position, and to provide a tap that is substantially a one-piece molded tap, either being molded in finished form in one piece, or, being made in at least two pieces for convenience of manufacture and then the two pieces are integrally adhered together so as to form a finished one-piece tap, preferably of a readily sterilizable material, so that the tap may be used in connection with food drinks such as milk, juices, or other liquid food products.

It is a further object of this invention to provide a dispensing bottle tap that is comparatively inexpensive and provides a suitable dispensing tap for a liquid food bottle supported on a stand such as illustrated in the patent to Jaros, No. 2,925,235 issued February 16, 1960. In this patent, a liquid dispensing bottle is illustrated on a wire stand particularly intended for use in a refrigerator with the stand holding the bottle in inverted position and showing a conventional tap, this invention having for one of its objects to provide a suitable, inexpensive, readily cleanable and sterilizable tap usable in such bottle.

Still a further object of this invention is to provide a dispensing bottle tap which may be readily and easily inserted in and removed from a dispensing bottle and may be readily cleaned as by holding it and running water from a faucet, and may be readily washed or sterilized in any suitable manner, the tap being free of any sharp corners or crevices in which food or bacteria could lodge or be retained.

Still a further object of this invention is to provide an assembled one-piece dispensing tap which is easy to insert in or remove from a bottle, and is easy to use for controllably dispensing the contents of the bottle to a suitable container such as fruit juices or milk from a bottle to a drinking glass.

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawing, in which:

FIG. 1 is a side elevation of the tap of this invention in operative position.

FIG. 2 is a perspective view of the tap per se.

FIG. 3 is an enlarged sectional view through the tap as mounted in operative position.

There is shown at **10** the dispensing tap of this invention intended for use in an inverted bottle such as **12**, which may be mounted on any suitable stand as at **14** for holding the bottle in substantially inverted position, the details of one particular stand for this purpose being illustrated in the aforementioned patent. However, any suitable stand may be used with a bottle of any suitable size, so long as the particular tap is of a size complementary to and confined to the inner extent of the internal neck **16** of the bottle **14**.

The tap **10** includes a hollow shank or sleeve **18** complementary to the internal neck **16** of the bottle with which it is to be used. The hollow shank or sleeve **18** is made of any suitable material having sufficient resiliency yet sufficient rigidity to retain itself by a friction fit within the bottle neck **16** against the weight of the liquid. In the form herein illustrated, the hollow shank or sleeve **18** is shown as made of a substantially rigid internal cylindrical sleeve part **20** and an external sleeve part **21** of resilient compressible material adhered to the rigid internal sleeve part **20**. Any suitable resilient compressible plastic material, either in synthetic material or rubber material may be used for the external sleeve part **21**. The internal sleeve part **20** and substantially all the remaining portions of the tap **10** are made of any suitable non-compressible and non-stretchable yet flexible plastic molded to the proper shape, one example of such suitable plastic being polyethylene, polyisobutylene, or mixtures of these two. This particular plastic meets the requirements in that it is flexible but is virtually non-compressible and non-stretchable.

At the exit end of the sleeve part **20** there is integrally molded a valve seat **22** extending inwardly therefrom and apertured as at **24** providing an exit aperture. Simultaneously molded with this apertured valve seat **22** is the delivery compartment **26** which also includes an annular wall **28** depending from an externally extending flange **30** and terminating in an internally extending thin flexible wall **32**. Integral with this thin flexible wall **32** is a thickened boss **34** and integrally extending from the compartment **26** through the annulus **28** is a dispensing spout **36**.

Extending from the boss **34** through the compartment **26** and through the valve seat aperture **24** is a valve stem **38** at whose other end within the interior rigid annulus **20**, there is provided a valve **40**, the valve **40** being biased by the flexible annular wall **32** against the valve seat **22**. Finger pressure on the boss **34** will flex the flexible wall **32** and through the valve stem **28** will lift the valve **40** above its valve seat **22** and permit liquid to be dispensed from the bottle **14** into compartment **26** to exit through the dispensing spout **36**. As illustrated in FIG. 1, the thumb **42** has pushed in the valve boss **34** to open the valve and permit liquid **44** to exit from the spout **36** and be caught in a vessel **46** held by a left hand **48**.

The entire tap **10** as finished is a one-piece item, but for convenience in manufacture, it will obviously be necessary to make the external resilient compressible sleeve part **21** separately from the remainder of the tap, making it preferably of a slightly smaller internal diameter than the external diameter of the rigid sleeve part **20**, so that when placed thereon, it will readily adhere thereto, and, of course, a suitable plastic cement may be interposed between the contacting surfaces of the annulus **20** and the sleeve part **21**.

Either the valve **40** or the valve stem **38** will be molded as a separate piece from the remainder of the tap **10**. Preferably, the valve **40** and valve stem **38** may be molded as a single piece, in which case a ball **50** is formed on the end of the valve stem **38** and a complementary socket **52** is formed within the boss **34**. To assemble the same, the valve stem **38** with the valve **40** integrally formed thereon will be placed through the aperture **24** in valve seat **22** and pressed against the boss **34**, resting on a suitable support so that the ball **50** will snap into the socket **52**, a suitable plastic cement being first placed on the surface of the ball or of the socket so that the assembled stem and boss will form an integral piece free of any cavities.

Alternatively, a ball **54** may be formed at the other end of the valve stem **38** and the valve **40** will have a complementary cooperating socket **56** to receive the same after the suitable cement has been placed thereon and form it into an integral piece with the valve stem. Obviously, if it is more convenient for manufacturing purposes, both balls and sockets may be used, and the parts assembled in a manner convenient to the manufacturer but preferably, only one ball and socket arrangement should be necessary at either end of the valve stem **38**. Preferably, as illustrated, all the corners and edges of

all the parts are rounded and smooth so as to avoid proivding any corners or crevices in which bacteria or food may lodge to decay and be difficult to remove. With all the parts smooth and rounded, it is obvious that the entire tap can be easily cleaned in sudsy water. By holding it under a water faucet with the boss **34** pushed inwardly, water from the faucet will flow freely therethrough and rinse out all accumulated liquid, whether it is the liquid left therein after removing it from the bottle, or the sudsy water used in sterilizing the tap. The compressible sleeve part **21**, in combination with the rigid sleeve part **20** will permit the tap to be readily inserted into or removed from the bottle neck **16**, yet will removably adhere to the neck of the bottle to support the weight of the liquid within the bottle and keep the liquid in the bottle until the valve **40** is lifted from its seat **22** by pressure against the boss **34** to cause discharge of the liquid **44** from the spout **36** as illustrated.

There is thus provided an easily cleanable, easily insertible and removable dispensing tap for a bottle such as a half gallon or gallon jug for milk or liquid food or juices which may be conveniently stored in the refrigerator on a stand somewhat as illustrated, permitting the contents to be dispensed from time to time by sliding the stand to the forward edge of the refrigerator shelf and holding a vessel **46** under the spout **36** to receive the liquid **44**. Obviously, although particularly intended for dipensing foods, it can likewise be used for dispensing any liquid from any suitable sized bottle of any suitable material.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

A readily removable and replaceable integrally assembled liquid dispensing sterilizable one-piece tap comprising a sleeve, said sleeve including an outer sleeve part of compressible material, and an inner cylindrical sleeve part of substantially rigid material against which said outer sleeve part is biased complementary to the dispensing inner side of the neck of a liquid supply bottle, the longitudinal extent of said sleeve being confined solely to the inner extent of the neck of the bottle, a valve seat wall extending integrally from said inner rigid sleeve part across the dispensing end of said sleeve and having a valve stem receiving aperture substantially centrally thereof, an annular wall depending from said dispensing end of said sleeve beyond said valve seat wall, a thin flexible annulus extending inwardly from said annular wall, a thickened boss supported by and intermediate said thin flexible annulus forming a compartment below said valve seat wall, a valve stem supported on said boss extending through said aperture in said valve seat wall, a valve seat on said valve seat wall about said sleeve side of said aperture therein, a valve head on said valve stem within said sleeve, said thin flexible annulus biasing said valve head against said valve seat, and a dispensing spout forming a continuation of said annular wall.

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