Aug. 25, 1931. A. W. THOMPSON 1,820,406

POURING ATTACHMENT FOR BOTTLES

Filed Sept. 4, 1930 3 Sheets-Sheet 1

Fig.1.

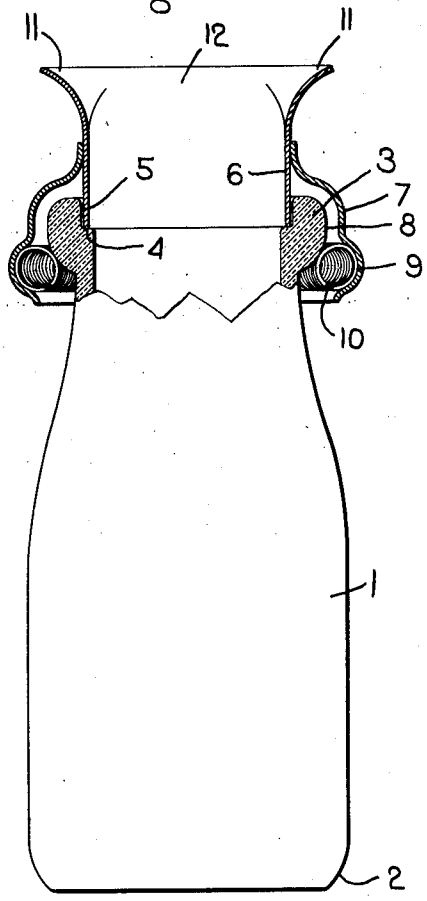
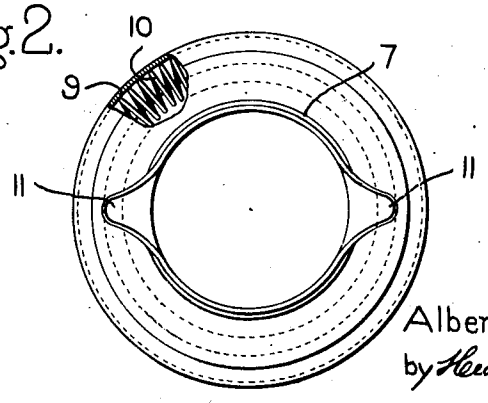


Fig.2.



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Filed Sept. 4, 1930 3 Sheets-Sheet 2

Fig. 3.

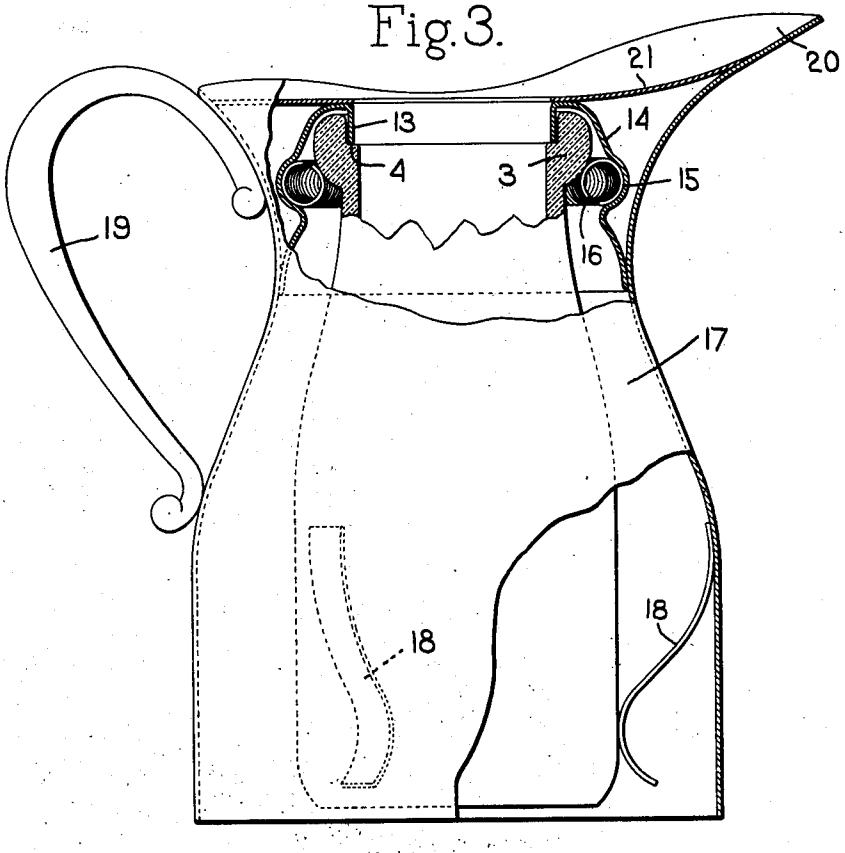
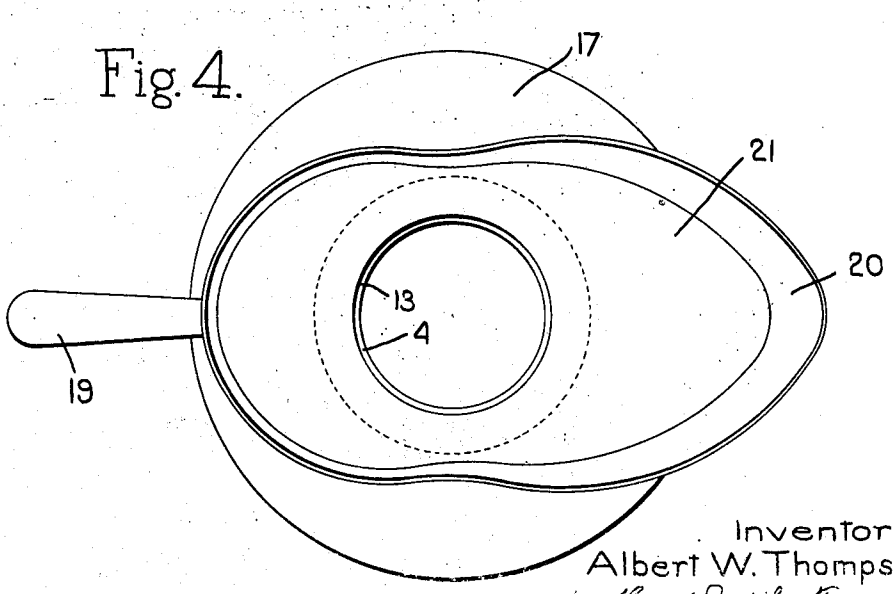


Fig. 4.



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Filed Sept. 4, 1930 3 Sheets-Sheet 3

Fig. 5.

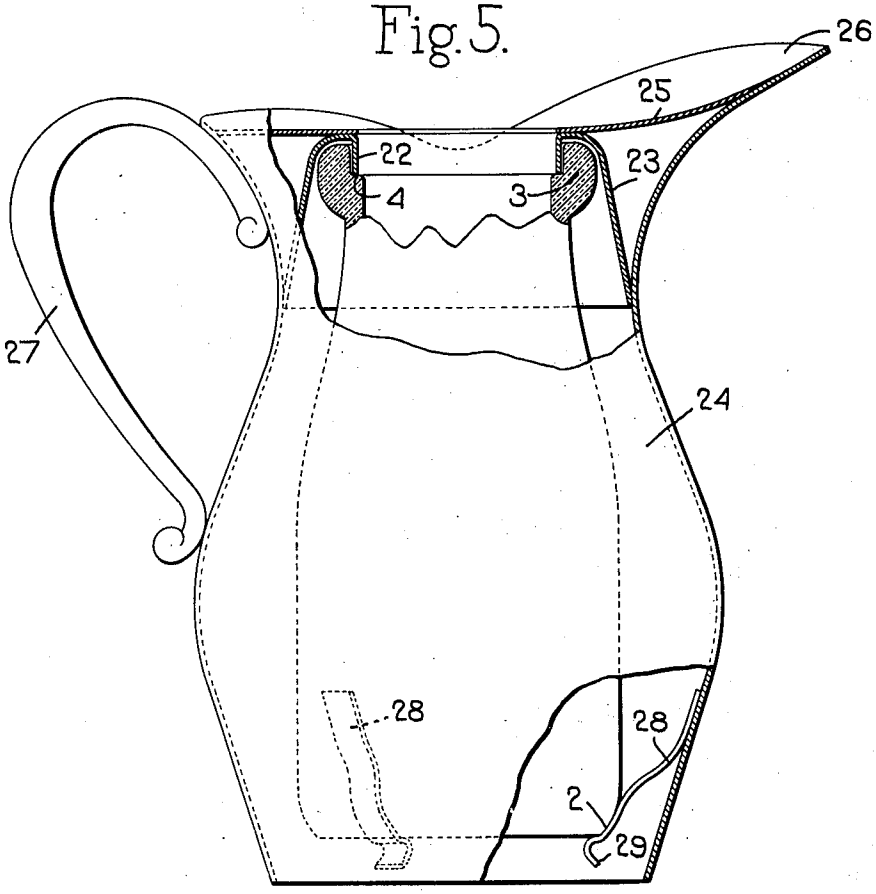
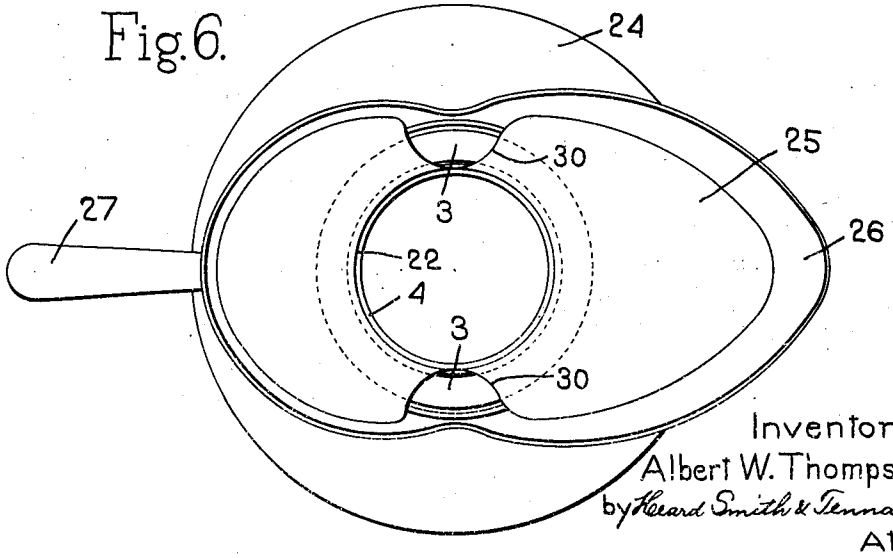


Fig. 6.



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UNITED STATES PATENT OFFICE

ALBERT W. THOMPSON, OF LOWELL, MASSACHUSETTS

POURING ATTACHMENT FOR BOTTLES

Application filed September 4, 1930. Serial No. 479,690.

My invention has for its object the provision of a device to be quickly and conveniently attached to bottles of certain types to facilitate the pouring out of the fluid contents of such bottles without unnecessary waste of their contents, and in particular to avoid adhesion of portions of the fluid to the mouth or outside surface of the bottle with consequent uncleanliness and waste. My invention is in particular designed and adapted for use with the ordinary glass bottles that are used for the retail distribution of milk, cream, and similar fluids, whose dimensions have been reduced to standards which are accepted by the dairy industries and whose use has become universal.

It is a customary practice generally required by law to sterilize such bottles before filling, and after filling a circular cardboard cap is placed upon the cap shelf for the purpose of retaining the fluid content of the bottle. The dimensions of the surface of the cap shelf itself and the adjoining surfaces are defined by standard sizes and tolerances that are common to quart, pint, half-pint and certain other special sizes. In handling the filled bottles in the process of their distribution, the external surface of the bottle, including the surface of the lip in the neighborhood of the cap, are exposed to contamination, but the presence of the cap meanwhile preserves the sterilized condition of the cap shelf surfaces and the contents of the bottle.

One important feature of my invention is the provision of novel means for attaining fluid-tight registration between the lower end of the conduit and the surface of the cap shelf of the bottle, with the result that the contents of the bottle may be conveniently poured and discharged without coming into contact with any surface of the bottle which has been exposed to contamination in handling.

In order to accomplish this desirable end, I have provided novel elastic means for locking the device to the bottle by locking engagement of the elastic means with the under-part of an external surface of the bottle below its greatest diameter, in organization such that the elastic reaction of the elastic means provided will compensate for variation in the external parts of the bottle, thereby making the device self-positioning so that when locked upon the bottle the reaction of the elastic means will hold the lower end of the outlet conduit in positive self-positioned and fluid-tight engagement with the cap shelf.

This is preferably accomplished in the preferred embodiment of my invention by providing an annular spiral or coil spring seated within the external portion of the device itself, and having when undistorted by compression an internal diameter slightly less than the external diameter of some external annular surface of the bottle such as the lip at its mouth or such as its base. The dimensions of the device are such, and in particular the vertical distance between the lower end of the conduit and the annular elastic means is such that when the device is forced into engagement with the bottle, the spring will first be compressed by passing over the surface with which it is to engage and will then expand into contact with that surface below its greatest diameter at the moment when the lower end of the conduit comes into contact with the cap shelf and will thereby establish a condition of self-positioned locking engagement.

In its simplest and most elementary embodiment my device takes the form of a cap provided with the characteristic aforesaid conduit adapted to register on the cap shelf at its lower end, and having an upper terminus of any desired shape adapted for the convenient pouring of the contents. In this preferred form the outer portion of the device need have only sufficient vertically downward extent to enable the elastic means provided at its lower end conveniently to be forced over the greatest external diameter of the bottle mouth and expand into engagement with its contracted returning surface below the bottle-lip, thereby to position the device in a condition of elastic locking with the lower end of the conduit maintained in fluid-tight engagement with the cap shelf.

This embodiment of my invention possesses the novel and advantageous characteristic of a pouring device attachable to several different sizes of bottles. Since the va-

riation in the external lip dimensions of quart, pint and half-pint milk and cream bottles is relatively slight, the flexibility of the novel elastic means that I have provided is such that it becomes possible to use one and the same device on all three sizes as well as on certain special intermediate sizes.

I contemplate, however, other preferred embodiments of my invention in which the outer shell or casing that is characteristic of my invention is extended downward so as to enclose the entire bottle, and in this case the elastic means may be similar to that in the aforesaid simple form or it may be attached to the lower end of the extended casing. In the latter case the device when attached to the bottle is so organized that the elastic means may be forced over the base of the bottle into locking engagement under the base, with the result that fluid-tight contact between the cap shelf and the lower end of the conduit, which is an integral part of the device, is thereby secured.

These latter embodiments of my invention may be therefore adapted to ornamental purposes and designed to resemble pitchers of any suitable form, for which if desired high-grade materials such as silver may be used. My device is therefore capable of embodiment either in simple and inexpensive forms suitable for wide commercial use, or in more ornamental and attractive forms adapted for use on the table in private homes.

In either case the device is self-contained in a complete assembly which is quickly attachable to and separable from the bottle by the application of only so much force as is necessary to compress or distort the elastic locking means by the act of attachment or separation.

The drawings illustrate three forms of the attachment in which the broad features of the invention may be embodied. The elastic means illustrated in the preferred embodiments is an annular spiral coil spring of wire, thus providing in the surfaces of the individual coils a multiplicity of elastic means. This particular construction, from a mechanical standpoint, is not only especially efficacious for the purposes of this invention, but is also economical to manufacture.

In the drawings:

Fig. 1 is a side elevation partially in vertical cross section of a standard type of milk-bottle with a preferred form of my invention in position thereon ready for pouring.

Fig. 2 is a top plan view, partially broken away, of the construction shown in Fig. 1.

Fig. 3 is a side elevation, partially in vertical cross section and partially broken away, showing another preferred form of my invention in which the outer casing is in the form of a pitcher in position on a standard type of milk-bottle.

Fig. 4 is a top plan view of the construction shown in Fig. 3.

Fig. 5 is a view similar to Fig. 3 of another form of my invention.

Fig. 6 is a top plan view of the construction shown in Fig. 5.

The standard milk or cream-bottle, in connection with which the different forms of my invention are conveniently illustrated, presents a cylindrical body portion 1 presenting a convex annular corner 2 at the bottom. The body portion of this bottle tapers upwardly and at the top terminates in the annular convex lip 3. The mouth of the bottle presents a flat, annular horizontal cap shelf 4 from which rises the cylindrical wall 5. As already pointed out, the dimensions of the bottle, particularly of the cap shelf 4, wall 5 and lip 3 are standard. The bottle is commonly closed and furnished the user with a pasteboard or paper cap in the form of a circular disk pressed into place against the cylindrical wall 5 and seated on the cap shelf 4. This cap is removed when the contents of the bottle are to be utilized.

In Figs. 1 and 2 is illustrated one of the simplest and most elementary embodiments of my invention. This attachment may be formed of suitable metal and finished or plated in any suitable manner. It essentially comprises an inner annular or cylindrical outlet conduit 6 slightly smaller in exterior diameter than the diameter of the bottle wall 5 and thus, at its lower end, adapted to register upon the cap shelf 4 of the bottle and an outer casing 7 of suitable annular form to extend from the conduit above the top of the bottle freely around and below a convex annular surface of the bottle, such as the exterior annular surface 8 of the lip.

In the construction illustrated, the annular lower portion of this outer casing is provided with an internal concave seat 9. In this seat is positioned an annular coil spring 10. The internal diameter of this spring is less than the external diameter of the lip 3 of the bottle, and the position and arrangement of the parts are such that when the attachment is forced down onto the bottle into the position shown in the drawings this spring will be compressed as it passes over the lip and then expand under the inward returning lower curved portion of the convex surface 8 of the lip when the lower end of the conduit 6 registers with the cap shelf 4. Thus the reaction of the spring against the lower curved portion of the bottle lip constantly holds the lower end of the conduit in fluid-tight engagement with the cap shelf. It will be observed that the several coils of the spring are equi-spaced, and thus constitute multiple elastic retaining means in uniform annular spacing.

The conduit 6 and the outer casing 7 are shown as made of separate pieces of metal, and are secured together by a driving fit, by soldering, by welding, or in other suitable manner. The upper portion of the complete attachment is also preferably formed to present one or more pouring spouts, and in the construction illustrated in Figs. 1 and 2 two of such spouts 11, arranged diametrically opposite, are formed in the upwardly-extending portion 12 by properly shaping the said portion.

The form of the invention illustrated in Figs. 3 and 4 embodies the same type of elastic retaining means and the same relation of the said means with respect to the bottle lip as that already described, but in this case the casing is formed to enclose the entire bottle and to present the appearance of a pitcher. In this construction the inner annular conduit 13 is located, when in position on the bottle, as already described, with its lower end registering with the cap shelf 4 of the bottle. The portion 14 of the outer casing is conveniently formed integral with the conduit, is provided with an annular seat 15 in the same relation to the bottle lip as the seat 9 already described, and with the annular coil spring 16 constructed and positioned in the same manner as the spring 10, as already described. It will thus be seen that when the attachment is forced upon the bottle the reaction of this coil spring 16 against the lower external convex surface of the lip 3 of the bottle will act to maintain the same fluid-tight engagement between the lower end of the conduit 13 and the cap shelf 4 as before.

In this construction, however, the outer casing presents a main body 17 of the shape of a pitcher. This body is open at its lower end and extends slightly below the bottom of the bottle. As the bottle, especially when filled with liquid, is comparatively heavy, means are provided to maintain the bottle and the casing of the pitcher concentric. For that purpose a plurality of equi-spaced metal spring members 18, herein shown as three in number, are secured at their top ends to the inner surface of the casing and at their lower ends are curved and pressed radially against the outer surface of the bottle. As the pitcher casing is of substantially larger diameter than the bottle, as shown, the bottom of the bottle may readily be grasped by the fingers and held for the removal and replacement of the attachment.

The pitcher casing is shown as provided with a suitable handle 19, and at the top is given any suitable shape to present a pouring spout 20. A deck plate 21 conveniently forms a part of the pitcher casing, being secured, at its inner edge, to the top of the casing portion 14 so as to surround the outlet from the conduit 13 and, at its outer edge, to the main body of the casing. The deck thus encloses the parts 14 and 16 and causes the attachment, when viewed from the top, to present a pleasing appearance.

The form of the invention shown in Figs. 5 and 6 embodies the same broad principles, but in addition serves to illustrate another form which the invention may take, particularly in the construction and position of the elastic retaining means. In this case, the elastic retaining means co-operate with and react against the annular convex surface on the bottle presented at its lower end at 2. In this construction the inner annular conduit 22 and the outer casing, comprising the portion 23, the main casing body 24 and the enclosing deck 25, together with the spout portion 26 and handle 27, may all be substantially as described in connection with Figs. 3 and 4 except that in this case the portion 23 of the outer casing, since it does not contain the elastic retaining means, is shaped simply to connect the inner annular conduit 22 to the main casing body and except that the lower portion of the main body casing 24 is tapered downwardly and inwardly and extends further beneath the bottom of the bottle. In this construction the multiple elastic retaining means are shown as resilient spring plates 28. These plates, herein shown as three in number, are shown as secured to the inner wall of the main body casing 24 near the bottom and projected downwardly and inwardly so as to press upwardly and radially inward against the convex surface 2 of the bottle. At their lower ends these plates are curved downward and radially outward at 29. When the bottle is forced upward through the bottom of the pitcher casing, the spring plates 28 are pressed radially outward, and when the lower end of the annular conduit 22 registers on the cap shelf 4 of the bottle these spring plates 28 snap over the annular convex corner 2 of the bottle and react thereagainst to maintain the lower end of the conduit 22 in fluid-tight engagement with the cap shelf of the bottle.

In the form of the invention thus illustrated in Figs. 5 and 6, where the elastic retaining means engage and react upon the bottom of the bottle and where the body of the pitcher casing presents at its lower end an opening of a diameter only slightly greater than the diameter of the bottle, it is necessary to provide for the ready removal of the bottle from the attachment or the separation of the bottle and the attachment. For that purpose the outer casing is shown as provided with apertures therethrough over the lip of the bottle and at each side of the pouring spout 26 and out of the path of the flow of the bottle-contents from the annular conduit 22 through the spout 26. These openings are shown as formed by removing or cutting away the deck 25 at 30 to an extent

sufficient to expose the lip 3 of the bottle and enable a person holding the pitcher-casing to press the bottle downward out of the casing with the fingers, pressing on top of the bottle lip at the apertures 30.

It will thus be seen that in all forms in which the invention is embodied, the inner annular outlet conduit extends freely within the cylindrical wall of a bottle mouth, being for that purpose slightly smaller in exterior diameter than the diameter of the cylindrical wall; that the lower end only of this conduit registers upon the cap shelf of the bottle so that when the contents of the bottle are poured out through the conduit, they pass immediately into the conduit without coming into contact with any surface of the bottle which has been exposed to contamination in handling; that clearance is provided between the attachment and the top surface of the bottle thus to insure registration of the lower end of the conduit with the cap shelf; and that the elastic retaining means extend below the lower end of the conduit and are forced over a convex annular surface of the bottle into elas ic locking engagement with a returning lower surface so as to force the lower end of the conduit into, and maintain it in, registration with the cap shelf by the reaction of the said elastic retaining means. There is thus presented a simple, efficient and sanitary pouring attachment.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A pouring attachment for bottles of the class described comprising an inner annular outlet conduit adapted to extend freely within the cylindrical wall of the bottle mouth and at its lower end only to register upon the cap shelf of the bottle, and an outer casing having an annular lower portion provided with elastic retaining means extending below the lower end of said conduit and adapted to be forced over a convex annular surface of said bottle into elastic locking engagement with its returning lower surface, with clearance between the attachment and the top surface of the bottle, to maintain fluid-tight engagement between the cap shelf of said bottle and the lower end of said conduit by the reaction of said elastic retaining means.

2. A pouring attachment for bottles of the class described comprising an inner annular conduit adapted to extend freely within the cylindrical wall of the bottle mouth and to register at its lower end only upon the cap shelf of the bottle and an outer shell having multiple elastic retaining means in uniform annular spacing positioned thereon and extending below the lower end of said conduit, said elastic retaining means having a smaller normal internal diameter than the external diameter of an annular convex surface of said bottle and adapted to be elastically locked to said bottle with clearance between the attachment and the top surface of the bottle and with the lower end of said conduit held in fluid-tight engagement with the cap shelf thereof by the reaction of said elastic retaining means.

3. A pouring attachment for bottles of the class described comprising an inner annular conduit adapted to extend freely within the cylindrical wall of the bottle mouth and to register at its lower end only upon the cap shelf of the bottle, and an outer casing having an annular portion with multiple elastic retaining means positioned thereon in annular arrangement and adapted to encircle an annular covex surface of said bottle with said elastic retaining means engaging under compression the under surface thereof below its greatest diameter to hold the lower end of said conduit, with clearance between the attachment and the top surface of the bottle, in fluid-tight engagement with said cap shelf by virtue of the reaction of said elastic retaining means.

4. A pouring attachment for bottles of the class described comprising an inner annular outlet conduit presenting at its upper end a pouring spout and adapted to extend freely within the cylindrical wall of the bottle mouth and at its lower end only to register upon the cap shelf of the bottle and an outer casing having an annular lower portion provided with elastic retaining means extending below the lower end of said conduit and adapted to be forced over a convex annular surface of said bottle into elastic locking engagement with its returning lower surface with clearance between the attachment and the top surface of the bottle to maintain fluid-tight engagement between the cap shelf of said bottle and the lower end of said conduit by the reaction of said elastic retaining means.

5. A pouring attachment for bottles of the class described comprising an inner annular outlet conduit adapted to extend freely within the cylindrical wall of the bottle mouth and at its lower end only to register upon the cap shelf of the bottle, an outer casing extending above and clear of the top surface of the bottle and having an annular lower portion extending below the lip of the bottle when the lower end of the outlet conduit registers upon the cap shelf, and an annular coil spring having an internal diameter less than the external diameter of the lip of the bottle and seated within the outer casing in such relation to the lip that when the attachment is forced onto the bottle the spring will expand over the lip and then contract into elastic locking engagement with the lower surface of the lip and maintain fluid-tight engagement between the cap shelf and the lower end of the outlet conduit.

6. A pouring attachment for bottles of the

class described comprising the construction defined in claim 5, in which the outer casing extends to the bottom of and encloses the bottle, together with means on the lower portion of the outer casing for engaging the bottle and maintaining the casing concentric the bottle.

7. A pouring attachment for bottles of the class described comprising an inner annular outlet conduit presenting at its upper end a pouring spout and adapted at its lower end to extend freely within the cylindrical wall of the bottle mouth and to register upon the cap shelf of the bottle, an outer casing extending above and clear of the top surface of the bottle and having an annular lower portion extending below the bottom of the bottle and enclosing the bottle, and a plurality of equi-spaced elastic elements secured to the casing extending beneath and acting radially inward and upward upon the bottle to center it in the casing and to maintain fluid-tight engagement between the cap shelf of the bottle and the lower end of the conduit.

8. A pouring attachment for bottles of the class described comprising the construction defined in claim 7, in which the outer casing presents apertures therethrough over the lip of the bottle and at each side of the spout out of the path of flow from the conduit through the spout, the said apertures enabling the bottle to be removed from the attachment by holding the attachment and pressing the bottle through said apertures.

In testimony whereof, I have signed my name to this specification.

ALBERT W. THOMPSON.