CONTAINER FOR MAINTAINING IN SEPARATE CONDITION LIQUIDS WHICH ARE TO BE MIXED TOGETHER AND WHICH MAY BE MANIPULATED TO COMMINGLE SUCH LIQUIDS

Fig. 1

Fig. 2

Fig. 3

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CONTAINER FOR MAINTAINING IN SEPARATE CONDITION LIQUIDS WHICH ARE TO BE MIXED TOGETHER AND WHICH MAY BE MANIPULATED TO COMMINGLE SUCH LIQUIDS

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ABSTRACT OF THE DISCLOSURE

A container for keeping separate two liquid components which are to be intermixed for dispensing immediately prior to use. The container is formed as two receptacles having a screwed threaded connection providing an outlet opening for one receptacle and an inlet opening for the other receptacle through which fluid from said other receptacle flows into the one receptacle when the outlet and inlet are open. The outlet and inlet are initially closed by a frangible closure and the receptacles are partly screwed together, there being means operable by a further screwing together of the receptacles for breaking the frangible closure when it is desired to intermix the two components. Means is also provided for holding the receptacles, when loaded and connected together, against such further screwing together to prevent accidental breaking of the frangible closure and premature intermixing of the components.

In a modified form of the invention one of the receptacles has a discharge outlet for the intermixed product and the frangible closure has means connected thereto and extending to a position to be pulled through the discharge outlet to break the frangible closure.

This invention relates to containers for liquids which are to be maintained in separated, isolated condition and then to be mixed together for use.

The invention is capable of wide use in connection with the mixing and dispensing of materials which are to be kept separated until required for use and are then to be mixed together immediately before application. The invention finds particular utility for the storing and dispensing of liquids which must be kept separated until immediately before use, such as the components of photographic developers, two component plastic adhesives and coatings, or the components of solutions for the treatment of the hair for the tinting or dyeing of the same.

For example, in the treatment of the hair for the coloring of the same it has been customary heretofore to make use of certain dyes or tinting materials in solution and to mix such material with a suitable activating solution, such as a solution of hydrogen peroxide immediately before applying the mixture to the hair. In carrying out such treatment the dye solution and the hydrogen peroxide solution are customarily kept in separate containers, making it necessary that proper proportions of the two liquids be poured into another container and mixed together before applying the mixture to the hair. Such procedure, not only requires the exercise of considerable judgment in the selection of the tinting material to be employed and the careful and accurate measurement of the liquids, but also a thorough mixing of the separate components, but may also be wasteful and untidy.

The present invention has for an important object the overcoming of the above disadvantages of the use of separate containers for each of two liquids which are to be kept separate to be commingled in predetermined proportions to form a mixture only when required for immediate use, by the provision of a container made up of two receptacles connected together and having means for preventing admixture of the liquids but which may be operated to allow the commingling of the liquids when desired.

A further object of the invention is the provision of a container for liquids which is constructed to receive and maintain in a separate condition solutions which are to be mixed together for use, and including means for allowing the commingling of the solutions when desired and the dispensing of the resulting mixture.

Another object of the invention is to provide a container which is made up of two separate receptacles each of which is designed to hold a separate component of a mixture to be formed, the receptacles being constructed to be joined together with the contents thereof maintained in a separate condition, and including means whereby the components may be commingled and to allow the dispensing of the mixture when formed.

A further object of the invention is the provision of a unitary container made up of separate receptacles connected together and adapted to hold a plurality of different liquids which are to be maintained out of contact until required for use, and including means which are operable by manipulation of the receptacles without separating the same to allow commingling of the liquids and the dispensing of the mixture formed.

Briefly described the invention comprises a container formed of two separate receptacles or bottles, each adapted to hold a different liquid, one of the receptacles having an internally threaded opening formed with an internal annular inner end shoulder and having a frangible closure element seated on said shoulder, and the other receptacle being formed with an externally threaded neck adapted to be threadably inserted in said opening and formed with means for penetrating said closure element when said neck is screwed into said opening a predetermined distance to allow the liquid in one container to flow into the other container, whereby the liquids may be commingled.

Releasable means is provided for holding the receptacles against relative rotation in a direction to screw the neck of the one receptacle into the opening of the other beyond a predetermined distance, when the receptacles are assembled with the liquids therein, to prevent accidental disruption of the closure element and the resulting commingling of the liquids.

The invention may include means for piercing or opening the closure between the receptacles other than by screwing of the neck of the one receptacle into the opening of the other.

The objects and advantages of the invention may best be understood from the following detailed description of the same when considered in conjunction with the annexed drawings, wherein—

FIGURE 1 is a longitudinal, central, cross-sectional view of a preferred embodiment of the invention, showing the receptacles in assembled condition and showing the means by which the liquids in the receptacles are maintained separate;

FIGURE 2 is a cross-sectional view, taken along the line 2—2 of FIGURE 1, looking in the direction indicated by the arrows;

FIGURE 3 is a view similar to that of FIGURE 1, showing the container after the receptacles have been manipulated to allow the liquids to be commingled;

FIGURE 4 is a view similar to that of FIGURE 1, illustrating a somewhat different form of the invention;

FIGURE 5 is a fragmentary view, partly broken away and partly in cross section, showing a portion of the invention as illustrated in FIGURE 4, the device being shown in condition to allow the commingling of the liquid; and
FIGURE 6 is a further modification of the invention showing the same in condition for the commingling of the liquids. Turning now to the drawings in greater detail, the container of the invention, as illustrated in FIGURES 1, 2 and 3, comprises upper and lower bottle-like receptacles designated 10 and 12, respectively, formed of suitable material, such as glass or plastics, each of which is adapted to contain a liquid which is to be maintained separate from the liquid in the other receptacle and is to be mixed with the liquid of the other receptacle immediately before the mixture is to be used.

The receptacle 10 is preferably somewhat dome-shaped, while the receptacle 12 may be of generally cylindrical shape, to provide a container which is more or less bottle-like when the receptacles are combined. The receptacle 12 has a substantially flat upper end face 34 and a central, internally projecting, annular, upper end wall 16 forming an internally threaded opening 18. The wall portion 16 is formed at its inner end with an internal, annular portion 22 forming an upwardly facing internal annular shoulder 24. A fragile closure element or seal 26 is seated on the internal shoulder 24, which element may take the form of a disc of suitable material, such as metal, plastic, rubber, or the like, by which the lower receptacle is closed and whereby the liquids in the receptacles are prevented from mixing.

The upper receptacle 10 has a substantially flat lower end face 26 and is formed with an external, central, externally threaded neck 28 having a central opening 30 therethrough. The neck 28 may be threadably inserted in the internally threaded opening 18 of the lower receptacle to connect the receptacles together.

At its upper end the receptacle 10 has a central, internally threaded opening 34, closed by a screw plug 36.

The neck 28 is formed at its outer end with a more or less sharpened end edge portion 38 positioned for engagement with and to pierce or break the closure element 26 when the receptacles are screwed together beyond a predetermined limit, as shown in FIGURE 3, to allow the liquids in the receptacles to be commingled.

For the purpose of holding the receptacles against relative rotation in the container, there are provided a plurality of sharpened edges 38 to penetrate or break the seal 26 when the receptacles are initially assembled a spacer element 40 is positioned between the receptacles in engagement with the end faces 14 and 26, as shown in FIGURE 1, which may conveniently take the form of a generally U-shaped element having arms 42 and 44 which may be disposed on opposite sides of the neck 28 and is provided with a bottom lug or extension 46, serving as a handle for the removal of the element. The element 40 may be releasably retained in place in any suitable manner, as by the use of an adhesive or a flexible band, not shown, surrounding the receptacles and closing the space between the same.

In making use of the container constructed as described above, one liquid may be poured into the lower receptacle 12, which is then closed by the seal element 26 and the neck 28 of the upper receptacle is then screwed into the opening 18 with the spacer 40 in place to connect the receptacles together, as shown in FIGURE 1, after which the other liquid is poured into the upper receptacle through the opening 34 which is then closed by plug 36.

The amounts of the liquids poured into the receptacles will be the amounts which are to be mixed together to form the composition which is to be dispensed but which must be kept in a separate condition before needed for immediate use.

When it is desired to dispense the mixture of the two components contained in the receptacles, the spacer 40 is first removed and the upper receptacle is screwed into the lower receptacle to cause the elements to cut or break through the seal 26 to allow the liquid in the upper receptacle to flow into the lower receptacle to commingle the liquids. For this purpose it may at times also be necessary to remove the closure plug 36 to permit the liquid in the receptacle 10 to flow into the receptacle 12. When the two liquids have been thoroughly mixed, the mixture may be dispensed by inverting the receptacles to allow the mixture to flow out of the opening 34. Under some conditions it may be desirable to form the receptacles of plastic whereby the same will be rendered flexible so that the plug 36 formed may be readily dispensed by squeezing the receptacles.

A somewhat modified form of the invention is illustrated in FIGURES 4 and 5 of the drawings, wherein the seal penetrating or breaking portion of the neck of the upper receptacle has been eliminated, whereby it then becomes unnecessary to employ the spacer 40 between the receptacles. In this form of the invention the seal forming element 26' is of the fragile or tearable type, having a portion 48 which may be torn away or otherwise removed by pulling, and which is attached to a rod or wire 50 having an upper end loop or eye 52 for pulling the same. The rod or wire 50 is preferably of a length such that the loop 52 will be within the upper receptacle in the opening 34 thereof in position to be available to pull the rod when the plug 36' is removed. The plug 36' in this case may be formed with an inner end recess 54 into which the loop 52 extends when the plug is screwed into the opening 34. In other respects this form of the invention resembles that shown in FIGURES 1, 2 and 3, and is similarly loaded with the two separate liquid components in the receptacles. In this form of the invention, the two liquids are mixed by removing the plug 36' and pulling on the loop 52 of rod 50 to tear out the portion 48 of the seal 26', as shown in FIGURE 5, whereupon the liquid in the receptacle 10' will flow into receptacle 12' to commingle the liquids, which may then be dispensed as before.

A further modification of the invention is illustrated in FIGURE 6, wherein the seal forming element 26' is like the seal 26 previously described and is adapted to be pierced or broken, as by means of a rod 56, insertable through the opening 34" and having a point 58 at its lower end. In other respects, this modification of the invention is like that of FIGURES 4 and 5 and is similarly loaded. Upon removal of the plug 36" from the opening 34" and piercing of the seal 26" by the rod 56, the liquid in the receptacle 10" may flow into receptacle 12" to be commingled with the liquid therein. The dispensing of the mixture thus formed may take place through the opening 34" as previously described.

It will thus be seen that the invention, constructed as hereinabove described, provides a container formed of combined receptacles for maintaining two liquid components in a separate condition, whereby the components may be easily and quickly commingled immediately prior to use and dispensed.

The invention is disclosed herein in connection with certain specific embodiments of the same, which are intended as illustrations only, it being evident that various changes can be made in the construction of the parts within the spirit of the invention and the scope of the appended claims.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. A mixing and dispensing container for liquids which are to be maintained out of contact prior to dispensing of the mixture thereof comprising,

(a) a first receptacle for one liquid, having an internally threaded outlet opening,

(b) a second receptacle for another liquid to be mixed with said one liquid, having an inlet opening and an externally threaded neck surrounding said inlet opening for said second receptacle, said first receptacle being screwable into said second receptacle in said outlet opening to connect the receptacles together with said inlet opening positioned to
receive liquid from said first receptacle through said outlet opening,
(c) frangible closure means positioned to close said openings against the flow of liquid therethrough, said second receptacle having a discharge opening, and 5 
(d) means connected to said frangible means and extending to a position to be pulled outwardly through said discharge opening to break said closure means to allow the flow of liquid through said inlet and outlet openings.

References Cited

UNITED STATES PATENTS

2,593,165 4/1952 Metzger 222—80
3,182,858 5/1965 Beaudoin 222—546 X

FOREIGN PATENTS

1,136,793 1/1957 France.

STANLEY H. TOLLBERG, Primary Examiner.