July 24, 1962 F. A. CAKE 3,045,987

AGITATING AND MIXING DEVICE

Filed April 25, 1960

Fig. 1

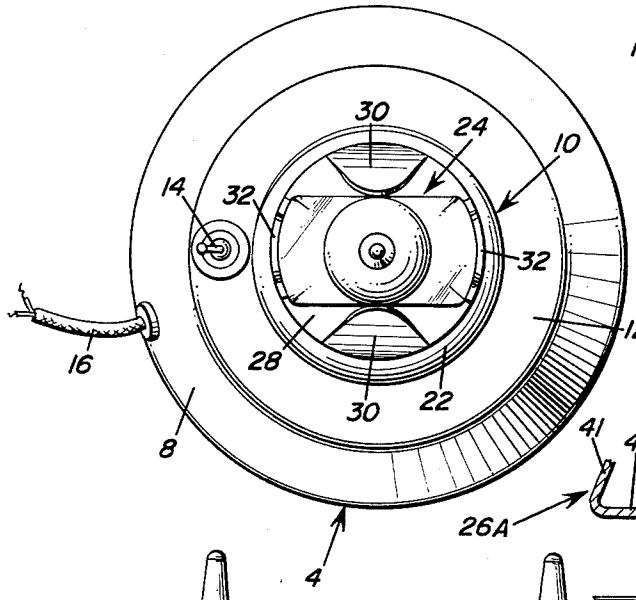


Fig. 4

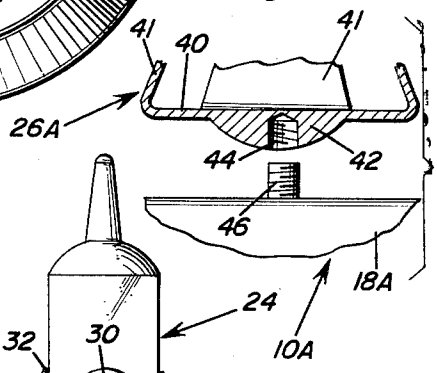


Fig. 2

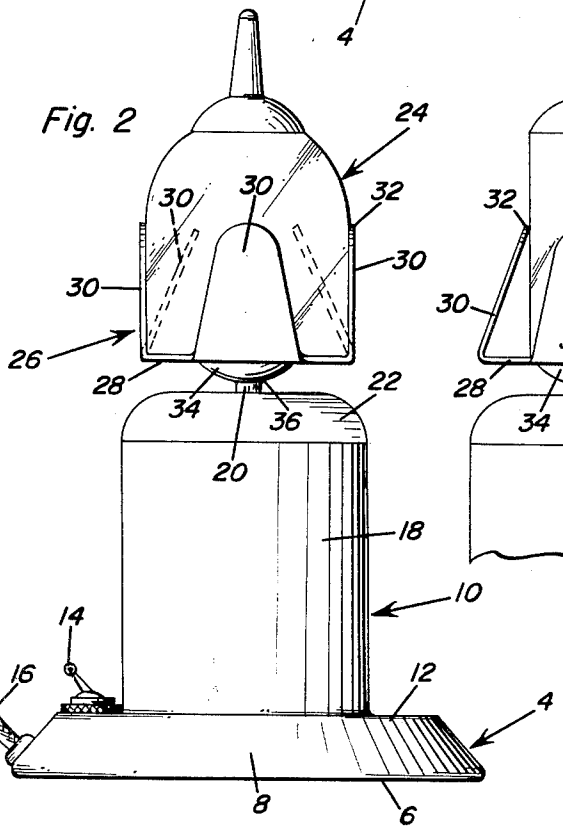


Fig. 3

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AGITATING AND MIXING DEVICE

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This invention relates to an improved portable container supporting, holding and container-contents agitating device for use where, for example, the container is filled, or partly so, with a chemical, medicinal or pharmaceutical mixture the nature of which requires the ingredients thereof to be commingled and united as a step preparatory to prescribed use.

More particularly, the device was perfected to serve in the home for mixing nail polish, medicines and the like but, obviously, the construction is such that it may be advantageously used in drug stores, hospitals, clinics, doctors' offices and elsewhere where the fluidity of the container's contents necessitates vigorous shaking. To these ends a novel cradle-like holder is provided and is joined for whirling to a driven shaft, preferably a shaft on a spring-responsive or an electric motor rated to operate at a recommended but safe speed.

Briefly, the invention is characterized by a rotating and contents mixing device embodying portable self-standing means having an upstanding rotatable shaft, and a container holder mounted atop the shaft, preferably a cradle-like holder embodying container embracing and retaining fingers.

The aforementioned self-standing portable part of the over-all construction is a motor mounted on a base with the driven shaft vertically disposed. The holder is suitably mounted for operation atop the shaft and, specifically speaking, it takes the form of a springy clip, that is, a clip having a bottom with upstanding circumferentially spaced inwardly converging resilient fingers which lend themselves to accommodate and reliably hold a readily insertable and removable liquid containing bottle or an equivalent container.

It is within the purview of the invention to join the cradle or holder to the motor shaft either on center or off-center, the latter arrangement being desirable in that it rotates the bottle or container in a manner to more vigorously agitate the mixture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a top plan view of an agitating and mixing device constructed in accordance with the principles of the present invention;

FIG. 2 is an elevational view;

FIG. 3 is a fragmentary elevational view at right angles to FIG. 2 and which illustrates the slight off-center drive; and

FIG. 4 is a fragmentary view, with parts in elevation and section and showing one form of separable joint between the cradle-type holder and driven shaft.

The portable support and motion transmitting means is preferably of the type illustrated but, obviously, a spring-responsive motor could be satisfactorily used; in fact, even a crank and gear operated (not shown) shaft rotator might be employed.

As illustrated in FIG. 2 in particular, the numeral **4** designates a suitable base with a flat bottom **6** which renders the base self-standing. The marginal edge of the base **8** may be inclined. The motor **10** is centered atop the base and is of a cross-section less than the diameter of the base and provides a surrounding ledge **12** which is

here utilized to accommodatingly mount the off-on switch **14**. The current conducting cable is denoted at **16**. These components are not specifically detailed inasmuch as they may, according to the manufacturer's requirements, vary in construction and position. Insofar as the motor is concerned, only the motor housing or casing **18** is illustrated, the driven shaft **20** extending through the top portion thereof at **22**. A rectangular container is denoted at **24**. As already mentioned the expression "container" is being used here in a broad sense to designate a bottle or the like containing fluid designated as a "mixture" and which is such in fluidity to require mixing as a step preparatory to use. Containers will vary in size and shape and for this reason the holder may have to vary in size. As here shown, this holder is of cradle-like form and is denoted generally by the numeral **26**. It comprises a bottom plate or disk **28** having marginal upstanding equidistant circumferentially spaced fingers **30**. These fingers are possessed of prerequisite resiliency and they toe-in and assume converging relationship and are therefore adaptable to varying usage. The upper free end portions **32** are preferably rounded to facilitate inserting the bottle or container **24**. At the central or hub portion the bottom is provided on its underside with a plano-convex or an equivalent boss **34** which is connected at **36** to the upper end of the rotating shaft **20**. Although the invention operates satisfactorily with the holder axially lined up with the axis of the shaft, it is preferred that the junctional connection as at **38** in FIG. 3 be slightly off center.

In practice the motor may rotate either clockwise or counterclockwise and generally at variable speeds particularly to promote safety when the invention is primarily marketed for home use.

It is thought to be a matter within the purview of the invention to provide a separable connection between the holder **26** and the shaft in order to permit holders of different sizes to be utilized especially wherein the container would not fit suitably in the holder shown.

More specifically, the motor **10A** embodies a casing **18A**. The cradle-type holder **26A** embodies a base or plate **40** having fingers **41**, said plate provided on the bottom with a convex boss **42** having an off-center screw threaded socket **44** for the screw-threaded end of the motor shaft **46**.

It is also a matter of moment to mention that while the means **26** is referred to as a holder and is also designated as cradle-like in form or construction, the holder may also be designated, properly, it is believed, as a container supporting and holding clip.

It is believed that the simplicity of the invention is such that the mode of using it is clear and does not require a statement of instructions for use here.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A portable fluid mixer comprising a base, an upstanding electric motor mounted on said base and including a vertical shaft comprising a threaded upper end portion, a holder removably mounted on the shaft, and a fluid mixing container removably mounted in the holder, said holder including a horizontal disk for receiving the container thereon, and means for releasably securing the container on the disk, said holder further including an integral plano-convex circular boss on the underside of the disk concentric therewith, said boss having a threaded vertical socket therein receiving the threaded upper end

portion of the shaft for securing the holder thereon, said socket being off-center whereby the boss has the multiple functions of a detachable coupling, a vibrator and a flywheel for the holder.

2. A portable fluid mixer comprising a base, an upstanding electric motor mounted on said base and including a vertical shaft comprising a threaded upper end portion, a holder removably mounted on the shaft, and a fluid mixing container removably mounted in the holder, said holder including a horizontal disk for receiving the container thereon, and means for releasably securing the container on the disk, said holder further including an integral plano-convex circular boss on the underside of the disk concentric therewith, said boss having a threaded vertical socket therein receiving the threaded upper end portion of the shaft for securing the holder theron, said socket being off-center whereby the boss has the multiple functions of a detachable coupling, a vibrator and a flywheel for the holder, said container being of rectangular horizontal section for agitating the fluid therein upon rotation of said container.

3. A portable fluid mixer comprising a base, an upstanding electric motor mounted on said base and including a vertical shaft comprising a threaded upper end portion, a holder removably mounted on the shaft, and a fluid mixing container removably mounted in the holder, said holder including a horizontal disk for receiving the container thereon, and means for releasably securing the

container on the disk, said holder further including an integral plano-convex circular boss on the underside of the disk concentric therewith, said boss having a threaded vertical socket therein receiving the threaded upper end portion of the shaft for securing the holder thereon, said socket being off-center whereby the boss has the multiple functions of a detachable coupling, a vibrator and a flywheel for the holder, said container being of rectangular horizontal section for agitating the fluid therein upon rotation of said container, said holder still further including on the periphery of the disk a plurality of circumferentially spaced, normally upwardly convergent resilient fingers clampingly engageable under tension with the side and end walls of the rectangular container for frictionally securing same on the disk for rotation therewith, said fingers being identical whereby the rectangular container may be mounted in different rotatably adjusted positions in the holder.

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