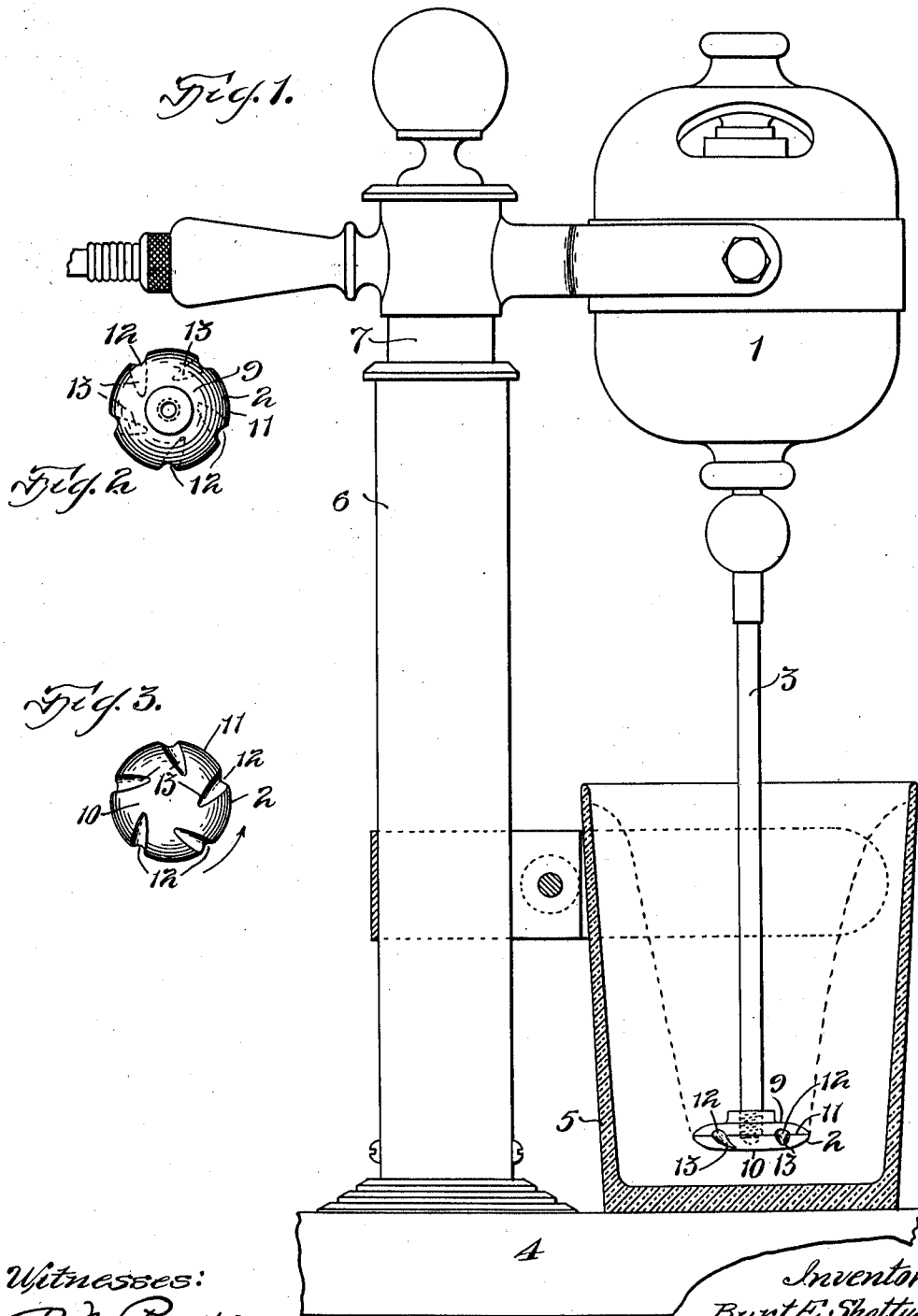


B. E. SHATTUCK.
MIXING AGITATOR.
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1,004,209.

Patented Sept. 26, 1911.



Witnesses:

P. M. Pezzetti
F. A. Polstone

Inventor:
Burt E. Shattuck

By *Wm. H. Brown* *Dwight H. May*
Atty.

UNITED STATES PATENT OFFICE.

BURT E. SHATTUCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO DOW SURGICAL BATTERY COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

MIXING-AGITATOR.

1,004,209.

Specification of Letters Patent.

Patented Sept. 26, 1911.

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To all whom it may concern:

Be it known that I, BURT E. SHATTUCK, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Mixing-Agitators, of which the following is a specification.

The subject of the present invention is an agitator or beater designed for mixing beverages, particularly those containing eggs, and for beating eggs, whether intended for beverages or otherwise.

The agitator or beater forming the subject matter of the present invention was originally shown, described and claimed in an application filed by me January 13th, 1911, Serial No. 602,410 for an apparatus for mixing beverages, and the present application is a combination of the one above cited.

The object of the invention herein described is mainly to provide a beating or agitating device capable particularly of breaking up an egg into minute particles and thoroughly mixing these particles with whatever liquid is mingled with the egg, in the least possible time.

In the accompanying drawings I have shown for illustration a mixing apparatus in connection with which the beater in which the present invention is embodied may be used, and have also illustrated the beater in detail.

In the drawings, Figure 1 represents the mixing apparatus as a whole in elevation. Fig. 2 is a plan view of the beater alone, and Fig. 3 is an underplan view of the beater.

The same reference characters indicate the same parts in all the figures.

I will first describe briefly the mixing apparatus of which the beater forms a part. This device consists of a motor 1, preferably an electric motor, which is supported upon a standard, and by which the agitator or beater 2 is driven. The latter is mounted upon a shaft 3 which is connected to the armature shaft of the motor. The entire apparatus is mounted upon a base 4 in such a way that the motor is elevated above the base and the shaft 3 with the beater on its lower end extends toward the base and is adapted to extend into a tumbler 5 or other container in which the egg and other materials to be mixed therewith are placed, when the tumbler is set on the base.

The column or standard which supports

the motor is secured to the base plate and consists preferably of two members 6 and 7 telescopically joined so as to permit of the motor and beater being raised clear of the tumbler or container 5. The particular construction of the column forms no part of the present invention and is fully illustrated in the parent application above cited, and therefore need not be described in detail here.

The beater or agitator which particularly constitutes the subject matter of the present invention is given a peculiar form especially adapted to break up and distribute the substance of eggs. As is well known, it is a difficult matter to beat up eggs, particularly where they are mixed with liquids to produce a beverage, so completely, and to mingle them so thoroughly with the liquid, as to avoid leaving lumps of the yolk and strings of the white of the egg. Prior to my invention it has been not only difficult to secure this result even after prolonged beating, but it has been impossible in any very brief period of time. My invention enables the egg to be completely broken up and thoroughly distributed through the liquid mingled therewith in a few seconds of time, that is, within a very small fraction of a minute.

The beater consists of a disk of circular form and slight thickness as compared with its diameter. On its top and bottom 9 and 10 respectively it is approximately flat, but toward the circumference these surfaces are convex, meeting at a well-defined equatorial line or girdle 11. In the circumference of the disk are notches 12 which are sharply defined and form cutting edges where they meet the surfaces of the disk. On the under side of the disk these notches join grooves 13 of gradually diminishing depth. These grooves are preferably not radial, but tangent to a circle concentric with the disk and of considerably less diameter. Thus the grooves are inclined to the radii of the disk, and the inclination is such that the inner ends of the grooves lie back of the radii of the notches, considered with reference to the direction of rotation. That is the direction of rotation being that indicated by the arrows in Figs. 2 and 3, the grooves may be said to lag behind the notches. Thus they act on the liquid in a manner such as to tend to draw it toward the axis, thus in a way

counteracting the centrifugal force developed by the rotation of the disk.

I have found that when a beater of the character described is placed in a glass containing a quantity of liquid and an egg, and set into rapid rotation by means of the motor, the membrane inclosing the yolk, and the viscous white of the egg are cut and divided into minute particles by the sharp edges of the notches 12. The grooves, which are deepest at the circumference of the disk and gradually diminish in depth to nothing at the under side thereof, keep the liquid in continual circulation, forming a vortex in the liquid, drawing the liquid at the bottom of the container inward and upward to the top of the vortex, and thus causing it to rise in the sides of the vortex and descend along the walls of the container. Thereby every particle of the liquid is brought again and again into contact with the notches and the grooves and thoroughly agitated and mixed. In particular the particles of the egg are completely broken up and disseminated thoroughly through the liquid.

As illustrating the proportions of the beater I may state that in diameter it is about one inch, and in actual thickness about one-quarter of an inch, the width and depth of the notches and grooves being in the proportions thereto substantially as shown in the drawings. Although the dimensions given are those preferred, as they enable the most satisfactory results to be secured, yet I wish it to be understood that they are given for illustration simply, and not as a limitation to any particular dimensions.

I claim,—

1. A beater or agitator comprising a disk having substantially flat top and bottom surfaces, and being convex at its periphery, having also notches with sharp edges in its periphery.

2. A beater or agitator comprising a disk having means in its periphery for beating the fluid substance in which it rotates, and having means on its under side for exerting a centripetal action upon the fluid.

3. A beater or agitator consisting of a disk having notches in its periphery of which the sides are abrupt with respect to the path of rotation of the disk.

4. A device for beating eggs and the like

consisting of a rotary disk having a substantially flat bottom, and provided with notches in its periphery and grooves in its under side, such grooves extending from the notches with gradually diminishing depth on the under side of the disk, and being tangent to a circle concentric with the disk and of less diameter than the same.

5. A device adapted to beat eggs and the like, comprising a circular disk having concave notches with abrupt sides and edges in its periphery.

6. A beating or agitating device comprising a disk having notches in its periphery and grooves of gradually diminishing depth extending from such notches to their disappearance in the under side of the disk, the disk being adapted to rotate, and the grooves being so disposed with respect to the direction of rotation that their outer ends are in advance of the inner ends.

7. A beater or agitator consisting of a disk approximately one inch in diameter and one-fourth of an inch in thickness, flat on its top and bottom and beveled convexedly from a distance of about one-eighth of an inch inside its circumference at both top and bottom to an edge midway between the planes of its top and bottom faces, having notches in such edge, spaced widely apart, and grooves of gradually diminishing depth in the bottom face extending from the notches at acute angles to the radii from such notches respectively, the surfaces of the disk between such notches and grooves being relatively extensive and smooth.

8. The combination with a container, of a shaft adapted to rotate extending downward into the container, and a single beater secured to the end of said shaft; the beater being a disk held by the shaft clear of the bottom of the container, having notches in its periphery and grooves in its bottom face extending at such angles from the notches as to tend to draw the fluid in the container toward the center, the faces of the disk between the notches and grooves being smooth.

In testimony whereof I have affixed my signature, in presence of two witnesses.

BURT E. SHATTUCK.

Witnesses:

G. L. JOHNSON,
P. W. PEZZETTI.