

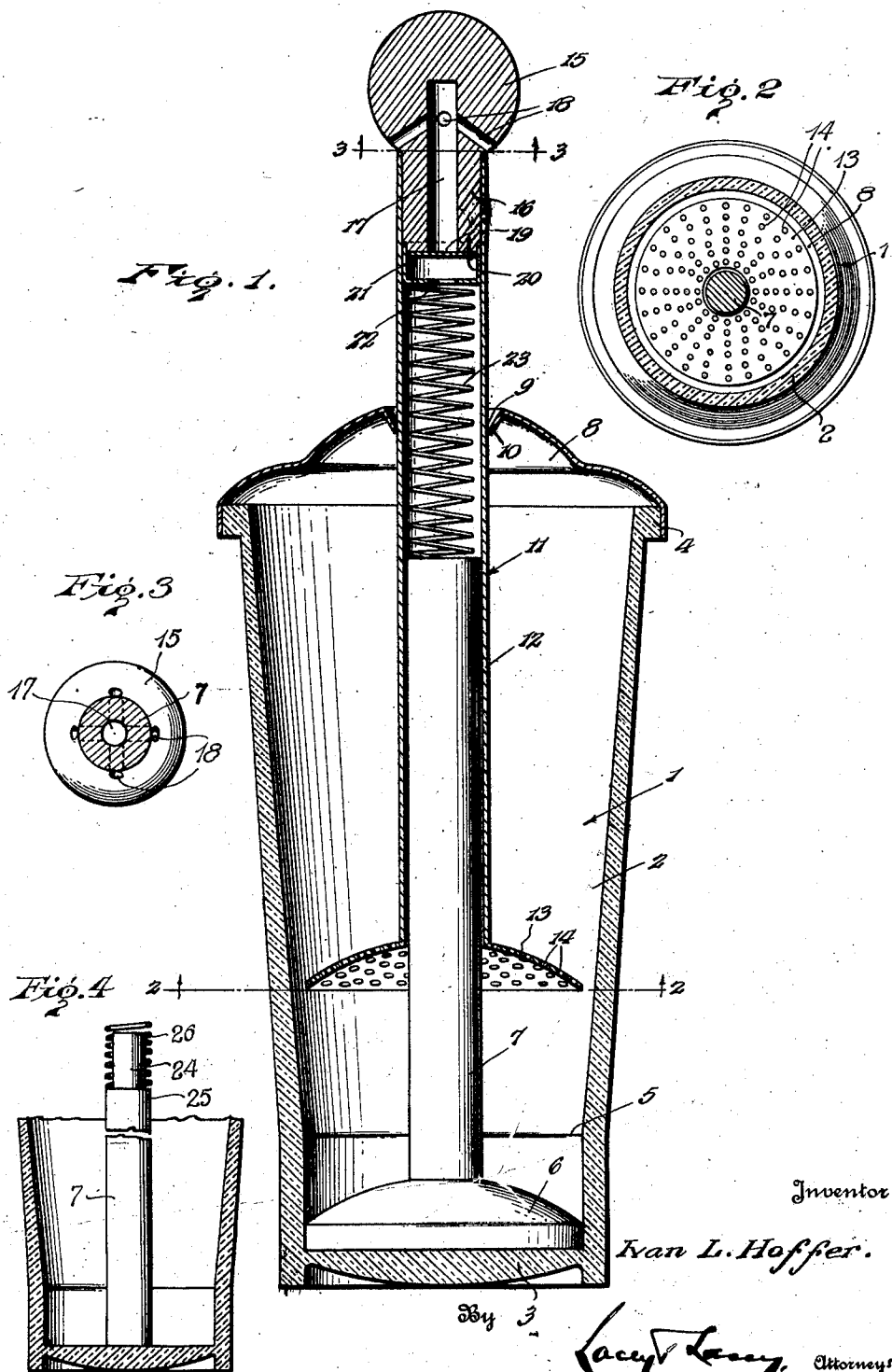
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EGG BEATER

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UNITED STATES PATENT OFFICE.

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EGG BEATER.

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This invention relates to improvements in kitchen utensils of that class which are designed for employment in beating eggs, whipping cream, etc.

One of the objects of the present invention is to provide an egg beater which may be operated with little effort and by the use of which eggs may be beaten to a froth in a short period of time and a froth of the desired consistency obtained.

So far as I am aware all devices of this class heretofore designed have been so constructed that they effect a mere agitation of the material acted upon whether it be eggs, cream, or the like, and as a consequence they have been more or less unsatisfactory for the reason that the froth produced is flat and heavy. It is desirable, of course, to produce a froth which will be fluffy and light, and in some instances a froth having not only these qualities but also possessing the quality of dryness, which latter quality it is practically impossible to impart to the material acted upon by the use of the ordinary devices of this class. Therefore, the invention has as another very important object, to provide a device in the operation of which a light foamy and fluffy froth may be quickly produced, the froth consisting of numberless bubbles of the material and being of such consistency that it will not "fall" even after standing a considerable period of time after it has been produced. In this respect the invention has as its further object to provide a device of this class so constructed that in its operation the substance being acted upon will be thoroughly aerated, air being forced into and through the mass of the substance and the substance being at the same time thoroughly agitated. In this manner the invention contemplates the provision of a device of the class stated, by the use of which a froth of a very desirable consistency may be produced, and, where desired, a substantially dry froth may be produced.

Another object of the invention is to provide an agitating device of the class referred to which will require minimum effort for its operation, the device including a vertically reciprocable member and means urging the member in an upward direction, so that the only manual force required to operate the device is that involved in forcing the member downwardly to the material to be agitated, the means referred to serving

to immediately return the member to its normal position.

In the accompanying drawings:

Figure 1 is a vertical diametric sectional view through the agitating device embodying the present invention, the plunger thereof being shown in elevated position;

Figure 2 is a horizontal sectional view taken on the line 2—2 of Figure 1 looking in an upward direction as indicated by the arrows in said figure;

Figure 3 is a horizontal sectional view taken on the line 3—3 of Figure 1 looking in the direction indicated by the arrows;

Figure 4 is a view similar to Figure 1 illustrating the lower portion of a modified form of the device.

The device embodying the invention comprises a container which is indicated in general by the numeral 1 and which may be of any material found suitable for the purpose, such, for example, as glass, porcelain, metal, etc. The container comprises a wall 2 and a bottom 3 and is open at its top, being preferably provided at its said top with an exterior circumferential bead indicated by the numeral 4. The wall 2 of the container 1 is of inverted conical form except for a portion of its height at its bottom. As will be observed by reference to Fig. 1, the said wall is interiorly of maximum diameter at its open top and is gradually or otherwise decreased in diameter to a point suitably spaced above the bottom 3 from which point, indicated by the numeral 5, the said wall is cylindrical in its contour. Thus there is provided, in the lower portion of the container, the equivalent of a cylinder.

The upper surface of the bottom 3 of the container is flat, and resting thereon is the flat under side of a base 6 which is of circular form and of a diameter to fit relatively snugly within the cylindrical bottom portion of the container. The upper surface of the base 6 is preferably rounded, and upstanding from the base at the center thereof is a stem indicated by the numeral 7, the said stem being preferably circular in cross section.

The open top of the container is adapted to be closed by a lid indicated by the numeral 8, and the said lid may be of any desired contour and of any material found suitable for the purpose, the lid being provided centrally with an opening 9 having a surrounding depending flange indicated by the

numeral 10. The rim of the lid is adapted to fit the bead 4 and, in practice, means will be provided for holding the lid in place upon the rim or bead. The device includes

5 a dasher or plunger indicated in general by the numeral 11 and the said plunger includes a tubular stem which is of cylindrical form and is indicated by the numeral 12. The stem 12 is exteriorly of a diameter to snug-

10 ly and yet freely slidably fit through the opening 9 and be guided by the flange 10, and interiorly the stem is of a diameter slightly greater than the diameter of the stem 7 and slidably fits over the said stem

15 and is guided thereby in its up and down movement as clearly shown in Figure 1 of the drawings, it being understood that the plunger is to be vertically reciprocated, in the use of the device. Supported at the

20 lower end of the stem 12 is a dasher head indicated by the numeral 13 which head is of convex form upon its upper surface and concave upon its under surface and is formed with a plurality of openings indicated by

25 the numeral 14 which openings are distributed throughout the area of the said head. The curvature of the head 13 is the same as that of the upper side of the base 6 so that when the plunger 12 is forced down-

30 wardly to its extreme lower limit of movement, the said head 13 will fit snugly over the rounded upper surface of the said base 6. Likewise the head 13 is of a diameter substantially equal to the internal diameter

35 of the container at its lower cylindrical portion so that when the plunger is forced downwardly within the container, the head will enter this cylindrical portion of the container in the manner of a piston thus caus-

40 ing the substance to be agitated, which is within the container, to pass upwardly through the openings 14 in the head 13 and, at the same time, expelling any air which may be within this portion of the container.

45 In order that the dasher may be reciprocated, a hand knob 15 is provided with a shank 16 which is snugly and frictionally fitted into the upper end of the stem 12 and in this manner held assembled with the said

50 stem. For a purpose to be presently pointed out, the shank 16 of the knob 15, and likewise the said knob itself, is formed with an axially extending air passage indicated by the numeral 17, and any desired number of

55 small air ducts 18 are formed in the knob 15 and extend downwardly and radially from the air passage 17 near the upper end thereof and these ducts open at their outer ends to the atmosphere. The lower end of

60 the air passage 17 opens through the lower end of the shank 16 and, therefore, is in communication with the interior of the stem 12. In the illustrated embodiment of the invention, a flap valve 19 is secured adjacent its

65 margin, as at 20, to the lower end of the said shank 16 and, being of circular form and substantially equal in diameter to the diameter of the said shank, is adapted to lie against the said lower end of the shank and close the air passage 17 at times and under con-

70 ditions presently explained. If found desirable, some other type of valve might be employed. A thimble 21 is fitted onto the lower end of the shank 16 of the knob 15 and houses the valve 19, and is formed with an

75 opening 22 in alinement with the air passage 17. A spring 23 of the compression type is arranged within the tubular stem 12 of the dasher and at its lower end bears against the upper end of the stem 7 and at its up-

80 per end bears against the lower side of the thimble 21.

In the use of the device, the substance or substances to be agitated and frothed, are introduced into the container 1, the guid-

85 ing member comprising the base 6 and stem 7 having been first fitted into the bottom of said container, and the remaining parts of the structure being, of course, at such time removed from the container. The lid,

90 slidably carrying the stem 12 of the dasher 11, is then fitted onto the bead 4 of the container, whereupon the device is ready for use. In its use, the knob 15 is grasped in one hand while the other hand steadies

95 the container 1, and vertical reciprocatory motion is imparted to the dasher at a greater or less speed as may be found expedient. The downward movement of the dasher is, of course, against the tension of the spring

100 23 and the said spring, being compressed upon such movement of the dasher, expands, when the dasher is relieved of pressure, and automatically returns the same to its normal elevated position. At this point it

105 will be evident that the only manual effort required to operate the device is that involved in forcing the dasher downwardly and that no effort is required to be expended in returning the dasher to its ele-

110 vated position. On the said downward stroke of the dasher, the dasher head 13 will, as it enters the cylindrical lower portion of the container 1, act as a piston

115 to more or less compress the substance to be frothed, and through the provision of the openings 14, the substance, together with any air trapped by the head 13 will be forcibly ejected in an upward direction from

120 the said cylindrical lower portion of the container through the said openings 14. Likewise in this movement of the dasher, air will be more or less compressed in the stem 12 of the dasher inasmuch as the stem

125 7 acts substantially as a piston, at this time, and the valve 19 will remain closed. On the return or up stroke of the dasher, a suction will be created within the cylindrical lower portion of the container as the dasher head

130 13 moves upwardly therein, and a very

small quantity of the substance will be drawn back through the openings 14 and, after the head 13 has reached a position above the cylindrical portion 4 of the container, a portion of the substance will flow

over the periphery of the said head 13 and thus be returned to the cylindrical lower portion of the container. Likewise, on this return stroke, a suction will be created in the hollow stem 12 of the dasher resulting in an opening of the valve 19 and a drawing in of air through the duct 18 and the main air passage 17, this air being therefore trapped within the device. The trapped air is compressed on the next down stroke of the plunger and is forced about the stem 7 and delivered beneath the dasher head 13 and into the substance which is being acted upon. As a result of the rapid reciprocation of the dasher, the substance is not only thoroughly agitated due to its forced passage through the openings 14 in the dasher head, but likewise it is thoroughly aerated. After the operation has been continued for a relatively short period of time, as compared to the time required to beat or froth a substance by the use of ordinary beaters, it will be found that the substance has been reduced to a light fluffy, and yet substantial froth, the consistency of the froth at the termination of the frothing operation being such that on the down stroke of the dasher none of the froth will be located below the dasher head 13.

It will be observed by reference to Figure 1, that the flange 10 is of inverted frusto conical form so that an annular pocket will be provided about the dasher stem 12 to collect any of the substance which might be carried up through the opening 9, and return the same to the interior of the container, although the lower edge of the flange will serve, in effect, as a scraper to prevent any appreciable quantity of the substance being carried upwardly through said opening.

It will be understood that while, in the illustrated embodiment of the invention, the dasher is carried by the lid 8, this is not essential, as the lid may be entirely independent of the dasher.

The structure disclosed in Figures 1, 2 and 3 of the drawings is a desirable and practical one but if desired, the structure might be modified as shown in Figure 4, in which figure the stem 7 is devoid of the base 6 and merely rests upon the central portion of the flat bottom 3 of the container, the upper end portion of the stem being slightly reduced in diameter as indicated by the numeral 24 to form a circumscribing shoulder 25, and the spring which is indicated by the numeral 26 and which corresponds to the spring 23, being fitted frictionally onto the reduced end of the stem

and engaging at its lower end against the said shoulder 25.

Having thus described the invention, what is claimed as new is:

1. A device of the class described comprising a container, a guiding member supported in upright position within the container, a dasher comprising a hollow stem and a head supported by the lower end thereof, the said stem loosely slidably fitting the guiding member, a knob having a shank fitted into the upper end of the stem, the said shank having an air passage opening to the atmosphere and communicating with the interior of the stem, a valve upon the lower end of the shank normally closing the corresponding end of the said air passage, an apertured thimble upon the said shank housing the valve, and a spring bearing against the upper end of the guiding member and against the thimble, the said guiding member constituting a piston whereby on the upstroke of the said dasher air will be admitted into the said stem through the air passage and be trapped, and upon the down stroke of the piston the said trapped air will be compressed and delivered past the guiding member and beneath the head of the dasher.

2. A device of the class described comprising a container, the container being interiorly gradually decreased in diameter from its top in the direction of its bottom to a point spaced above the bottom and from this point to the bottom being of cylindrical form, a guiding member supported in upright position concentrically within the container, and a dasher comprising a tubular stem slidably fitting the guiding member and a perforated head at the lower end of the stem of a diameter substantially equal to the internal diameter of the cylindrical portion of the container.

3. A device of the class described comprising a container, a dasher guided for reciprocatory motion in the container and having a head of approximately the same diameter as the internal diameter of the lower portion of the container, and means for supplying air beneath the said dasher head.

4. A device of the character specified comprising a container, a guiding member therein embodying a base supported upon the bottom of the container and in contact at its outer edge with the inner wall of the container and centered thereby, and a stem projected upwardly from the base and disposed centrally of the container, a dasher including a hollow stem reciprocally mounted on the stem of the guiding member and a head carried by the said hollow stem, and a valve mechanism for admitting air to the hollow stem and trapping the air therein for compression between the guiding and hollow stems upon downward movement of the dasher.

5. A device of the character specified, comprising a container having its lower portion of uniform outline for a short distance, thence gradually flared towards its upper edge, a guiding member supported centrally within the container upon the bottom thereof, and a dasher reciprocally mounted upon the guiding member and comprising a head of a size to snugly fit within the lower portion of the container and provided with openings for the escape of the content from the lower portion of the container when the head of the dasher is forced downwardly therein. 10

In testimony whereof I affix my signature.
IVAN L. HOFFER.