Aug. 14, 1951 R. KRASBERG 2,563,941

BEATER

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Fig. 1.

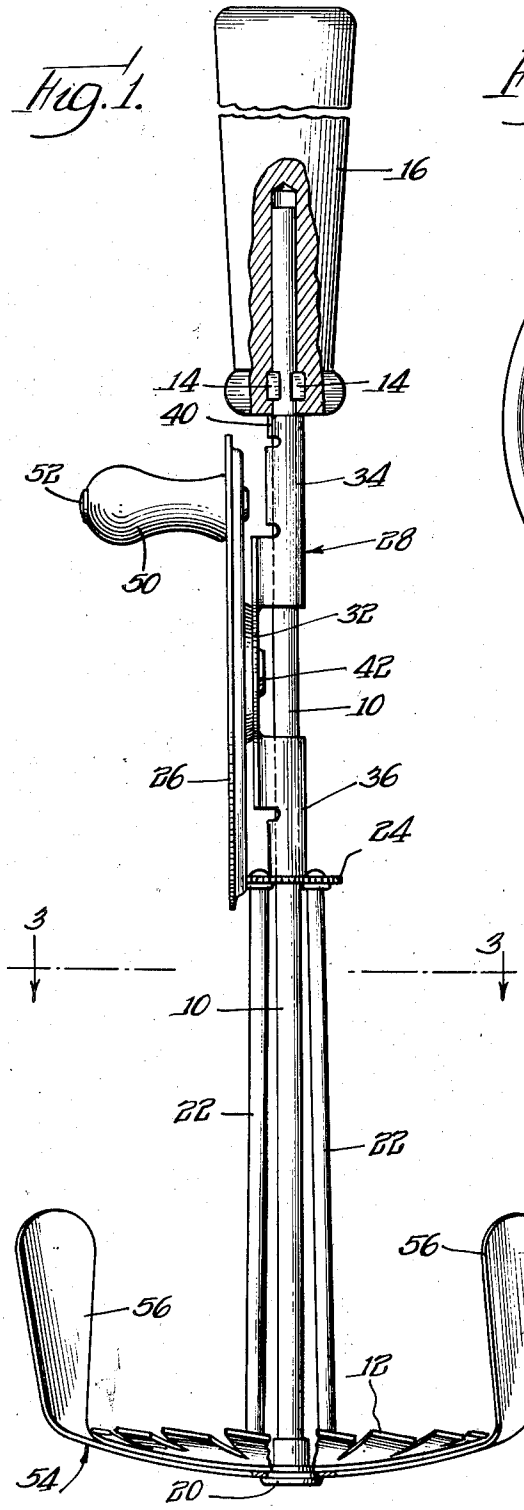
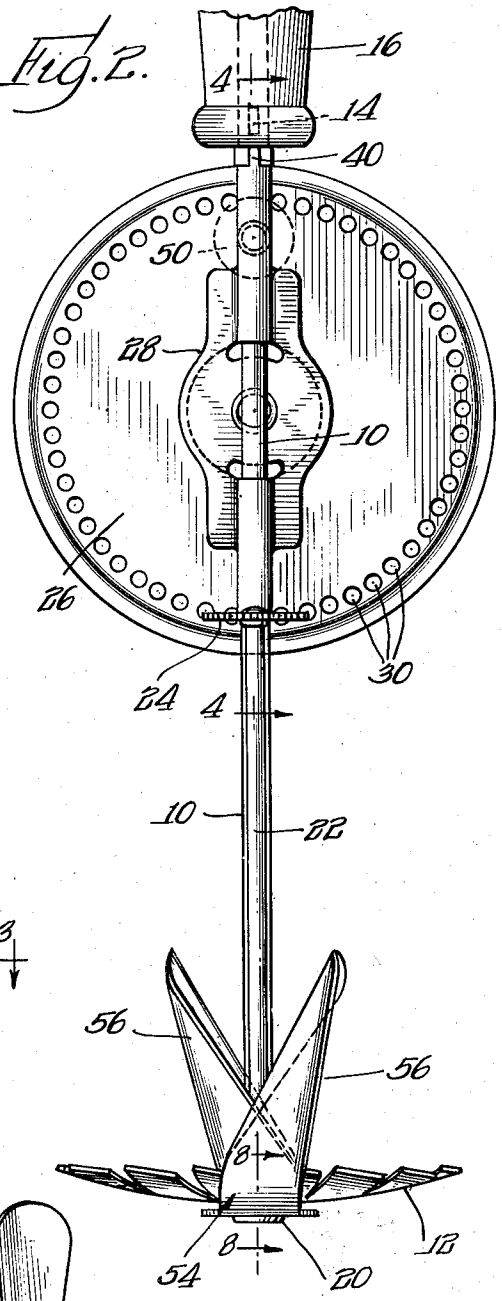


Fig. 2.



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BEATER

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Fig. 3.

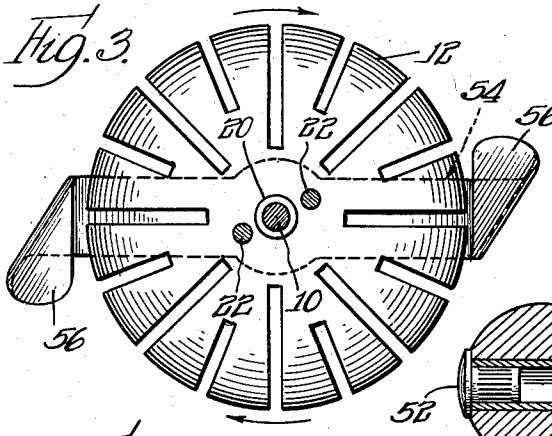


Fig. 4.

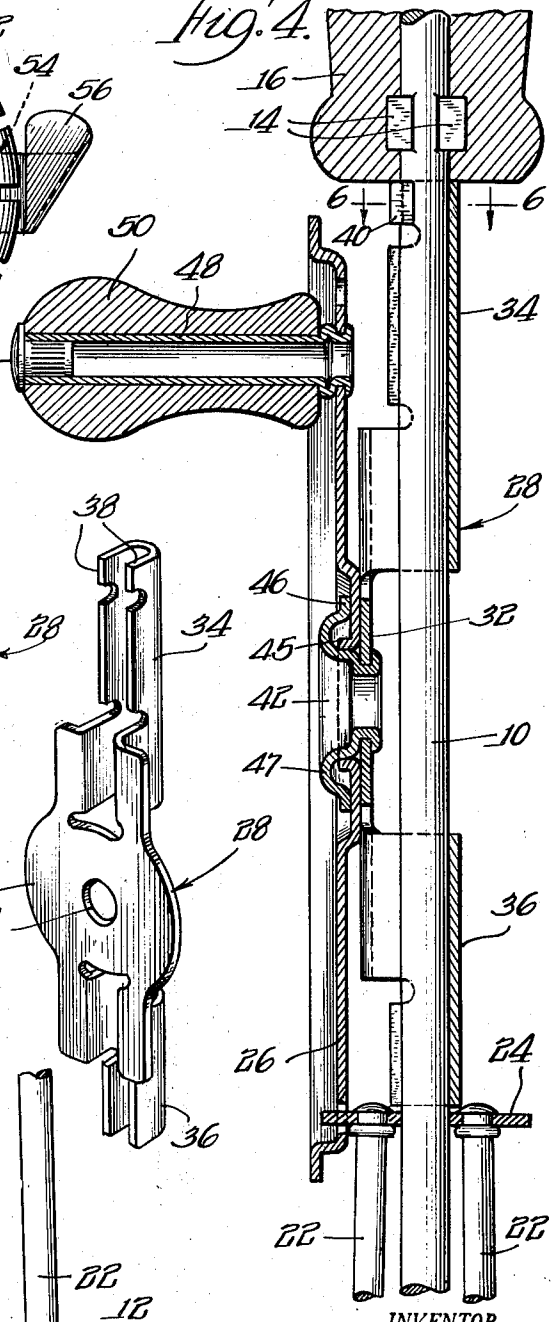


Fig. 5.

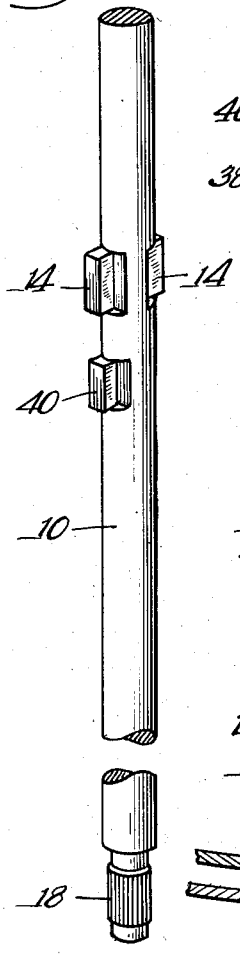


Fig. 6.

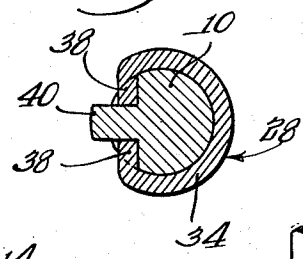
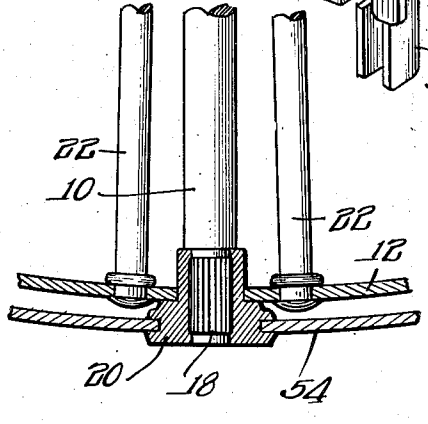


Fig. 7.

Fig. 8.



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BEATER

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Application May 17, 1947, Serial No. 748,706

6 Claims. (Cl. 259—134)

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This invention relates to improvements in beaters used to whip cream, eggs and the like, and it has for its primary object the provision of a novel beater of simple and rugged construction, consisting largely of sheet metal stampings, which functions with a high degree of efficiency to aerate the material that is being whipped.

My invention provides an improved beater having aerators of novel form which function to direct some of the liquid in a vertical circulatory path tangential to the whirling body of liquid, thereby to insure extremely rapid action and thorough aeration in the mixing or beating operation.

A further object is to provide a beater having a stamped metal frame and improved means for mounting the large gear on the frame, including a hollow bearing stud secured to the frame and having an annular embossed flange receiving a complementary flange on the gear, whereby wobbling and undesired looseness of the parts are prevented.

A still further object is to provide various other improvements and features such as will be pointed out in the description with reference to the accompanying drawing wherein:

Figs. 1 and 2 are elevational views of a beater constructed in accordance with and embodying the invention, certain parts being broken away in these views.

Fig. 3 is a horizontal section on the line 3—3 in Fig. 1;

Fig. 4 is a vertical section on the line 4—4 in Fig. 2;

Fig. 5 is a perspective view of a rod or shaft of the beater;

Fig. 6 is a horizontal section on the line 6—6 in Fig. 4;

Fig. 7 is a perspective view of a sheet metal frame or bracket; and

Fig. 8 is a fragmentary vertical section on the line 8—8 in Fig. 2.

The beater includes a metal rod or shaft 10 which normally is positioned vertically and which carries at its lower end a fan or propeller member 12 that serves to agitate or whirl the liquid when rotated. Near its upper end the rod 10 is provided with lateral lugs 14 formed thereon by punching, and a handle 16 of wood or other suitable material having a central bore therein is driven onto the upper end portion of the rod 10 to be securely held by the lugs 14.

The lower end portion of the shaft 10 is of reduced diameter and is knurled as indicated at 18 in Figs. 5 and 8. A bearing member 20 is fitted on the knurled end 18 of the shaft 10 to afford a rest for the beater when in use. The fan 12 is rotatably mounted on a shoulder of the bearing 20 as shown.

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Drive rods 22, of which there are two in number in the present instance, are disposed on either side of the shaft 10 and are secured at their lower ends to the fan 12. The drive rods 20 extend upwardly substantially parallel to the shaft 10 and are secured at their upper ends to a horizontally disposed pinion 24 that is rotatable on the shaft 10.

A large gear 26, preferably comprising a disc-like member stamped out of sheet metal, is supported by a frame or bracket 28 that is carried by the rod 10. The gear 26 is disposed vertically and is provided with holes 30 therein, Fig. 2, to mesh with the pinion 24. The frame 28 comprises a sheet metal stamping, Fig. 7, having a flat middle section 32 and cupped portions 34 and 36 above and below the middle section to receive the shaft 10. The sections 34 and 36, prior to assembly on the shaft 10, are U-shaped in cross section. The frame 28 is secured on the shaft 10 by forming or bending the legs of these U-sections around the shaft thereby to grip it. Lips 38 on the extreme upper end of the upper section 34 are bent sharply inward and are received in notches formed in the shaft 10 by punching out a lug 40 as shown in Fig. 6. Thus the frame 28 is securely held in position on the shaft 10 and cannot be twisted on the shaft. The lug 40 and upper end of the U-section 34 serve as a thrust support for the handle 16.

A hollow bearing stud 42 formed of sheet metal is mounted in an opening 44 in the middle section 32 of the frame 28 and is riveted or otherwise secured to the frame 28. The gear 26 is rotatably mounted on the stud 42, being formed with an annular lip or flange 45, Fig. 4, which bears on a portion of the stud. The bearing stud 42 has a recess inside an annular bead or embossment 47 thereon to receive the flange 45, and it terminates in a flange 46 that bears against the outer face of the gear 26, holding the central portion of the gear 26 against the flat section 32 of the frame 28. The interfitted flange 45 and bead 47, as well as the flange 46, effectively prevent wobbling of the gear 26 on the bearing 42.

The gear 26 is provided with an elongated hollow stud 48 which is secured thereto near the periphery of the gear and extends laterally therefrom. A knob 50 is rotatably mounted on the stud 48 to afford a grip for the user. A knurled knob retainer 52 is press-fitted in the outer end of the stud 48.

An aerator 54 of narrow, elongated form

extends diametrically beneath the fan 12 and is secured to the bearing 20 by being riveted thereto or in any other suitable manner. The aerator 54 comprises a single piece of sheet metal which is bent upwardly at its ends to provide baffles or wings 56. These upstanding baffles 56 are formed and oriented in the fashion illustrated in Figs. 1, 2 and 3 so as to oppose the swirling motion of the liquid, which takes place generally in the direction of the arrows, Fig. 3. As the paddles or blades of the propeller 12 are rotated, they force the liquid against the bottom and sides of the bowl or container while causing it to whirl about. When the liquid encounters the baffles 56, a portion of it is directed tangentially rearward thereby to produce a circulatory motion of the liquid vertically in addition to the horizontal rotary movement. Thus, the liquid is continuously directed against the baffles 56 and then upwardly and back toward the whirling body of liquid, being thoroughly aerated in the process.

It should be noted that the aerator 54 is sufficiently narrow so that it does not materially impede the flow of liquid through the paddles of the fan 12. Extremely rapid whipping action is afforded by the device. The entire beater construction is simple, inexpensive and durable. The stamped frame 28 and bearing stud 42 and the manner in which the gear 26 is mounted on the stud 42 are features which insure dependable operation of the beater over a long period of time.

It is obvious that various changes may be made in the specific embodiment set forth for purposes of illustration without departing from the spirit of the invention. The invention is accordingly not to be limited to the specific embodiment shown and described, but only as indicated in the following claims.

The invention is hereby claimed as follows:

1. A beater comprising a stationary shaft, a bottom bearing member on said shaft, a fan rotatably mounted on said bearing member, means for driving said fan, and an aerator comprising an elongated narrow member secured to said bearing member and supported thereby, said aerator extending beneath said fan and terminating in an upstanding baffle curled over to provide a projected area on a plane perpendicular to said shaft and thereby to direct the swirling liquid in a substantially circulatory vertical movement.

2. A beater comprising a stationary shaft, a bottom bearing member on said shaft, a fan rotatably mounted on said bearing member, means for driving said fan, and an aerator comprising an elongated narrow member secured to said bearing member and supported thereby, said aerator extending beneath said fan and terminating in a pair of upstanding baffles each curled over to provide a projected area on a plane perpendicular to said shaft and thereby to oppose the swirling motion of the liquid and direct the liquid in a substantially circulatory vertical path.

3. A beater comprising a vertical support member, a bearing member at the base of said support member, a fan rotatably mounted on said bearing member, means for driving said fan, and a baffle secured to and supported by said support member and positioned adjacent the periphery of said fan, said baffle comprising a strip of sheet material upwardly directed and twisted to have an overlying surface providing a substantial projected area on a plane perpendicular to said shaft and thereby to direct a portion of the swirling liquid tangentially rearward relative to said fan.

4. A beater comprising a vertical support member, a bearing member at the base of said support member, a fan rotatably mounted on said bearing member, means for driving said fan, said fan having paddles arranged to force the liquid downwardly and outwardly against the wall of the container, and a plurality of baffles secured to and supported by said support member and positioned adjacent the periphery of said fan, each of said baffles being the upwardly bent and twisted extremities of an elongated narrow member stationed below said paddles and so formed as to have an overlying surface providing a substantial projected area on a plane perpendicular to said shaft and thereby to direct a portion of the swirling liquid tangentially rearward relative to said fan.

5. In a beater, a stationary frame, a sheet metal bearing stud secured to said frame, and a gear mounted on said bearing stud, said gear and said stud having complementary flanged and embossed portions to prevent wobbling of said gear.

6. In a beater, a stationary shaft, a stamped sheet metal frame mounted on said shaft, a hollow sheet metal bearing stud secured to said frame, and a gear formed of sheet metal and mounted on said bearing stud, said stud having an annular embossed flange holding said gear against said frame, and said gear having an annular flange received by the embossed flange on said stud.

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