W. J. McLAUGHLIN & W. R. NICOLL.

AGITATOR AND RIPENER.

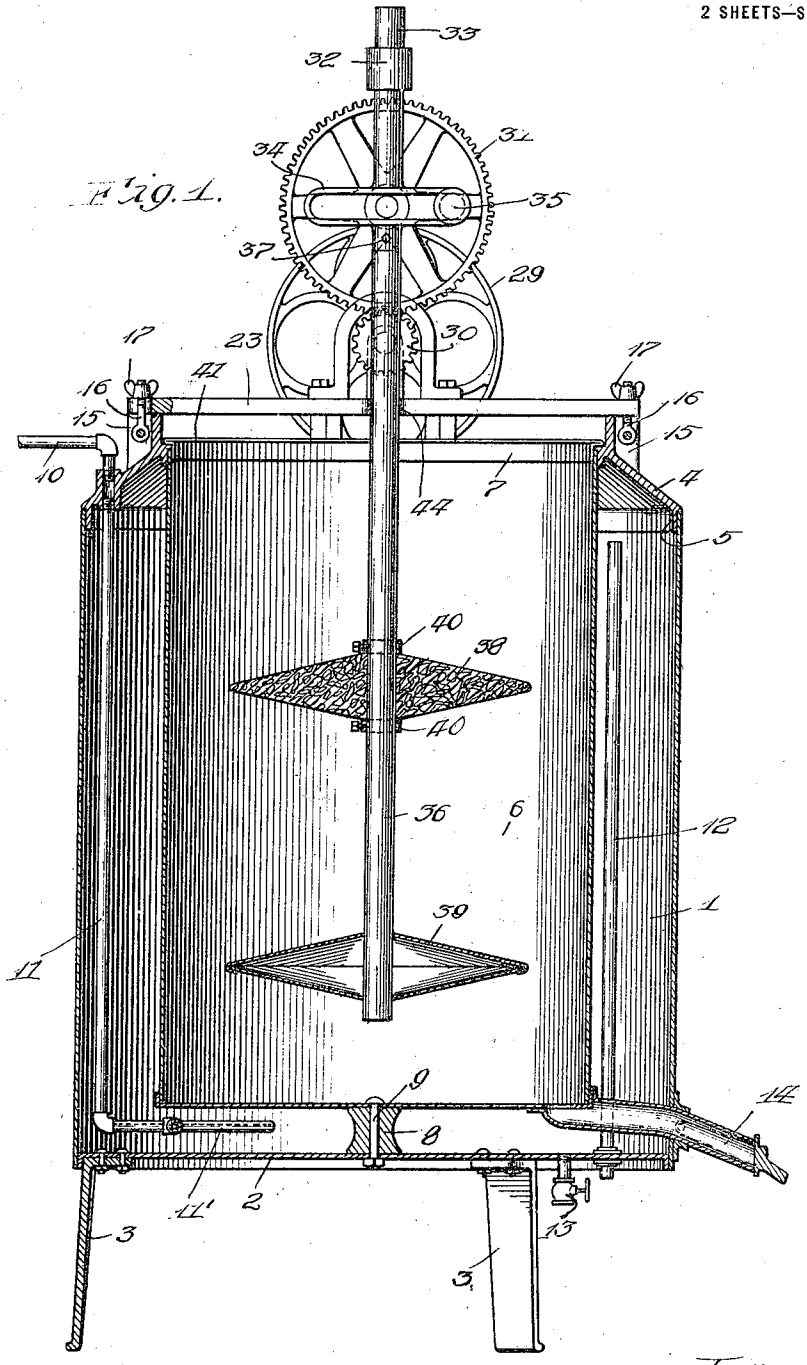
APPLICATION FILED JULY 29, 1916.

1,268,592.

Patented June 4, 1918.

2 SHEETS—SHEET 1.

Fig. 1.



Witness:

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2 SHEETS—SHEET 2.

Fig. 2.

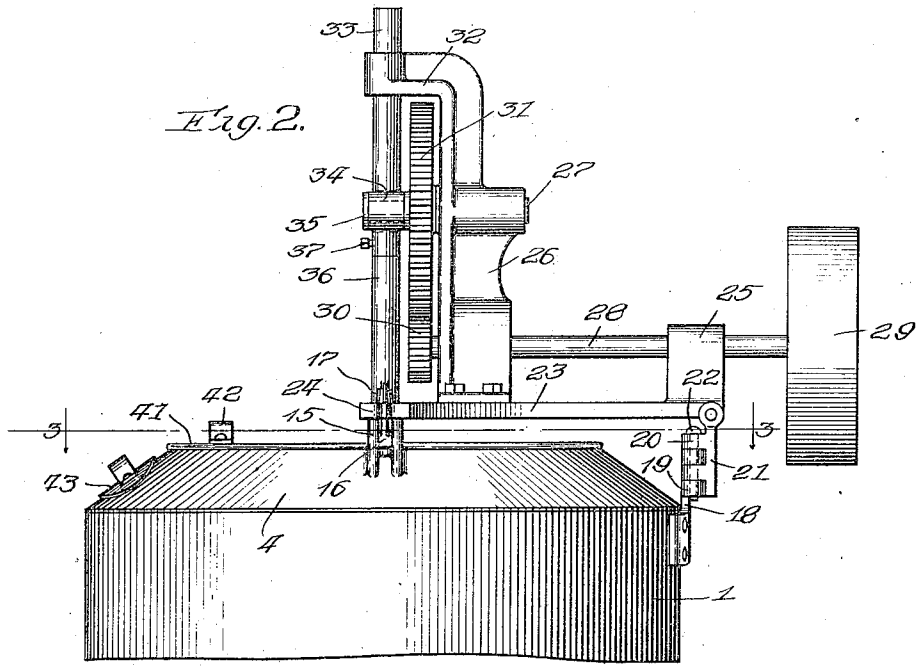
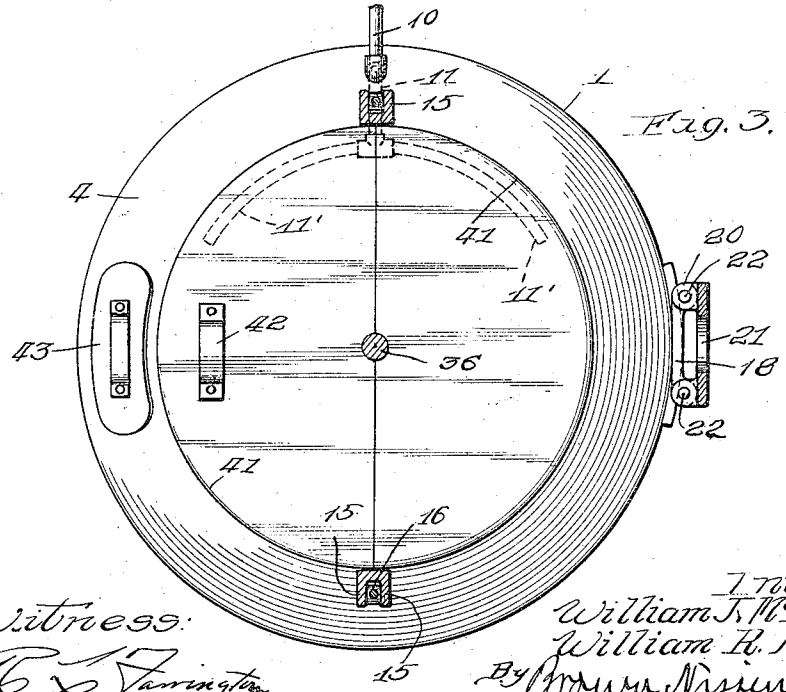


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AGITATOR AND RIPENER.

1,268,592. Specification of Letters Patent. Patented June 4, 1918.

Application filed July 29, 1916. Serial No. 111,976.

To all whom it may concern:

Be it known that we, WILLIAM J. McLAUGHLIN and WILLIAM R. NICOLL, citizens of the United States, residing at Owatonna, in the county of Steele and State of Minnesota, have invented certain new and useful Improvements in Agitators and Ripeners, of which the following is a specification.

This invention relates particularly to an apparatus for treating milk and cream, although of course, it may have a more general application to any liquid. In the treatment of milk or cream it may be used as a cream ripener, a pasteurizer, a cooler, a starter can, an agitator, a buttermilk machine, a cream temperature holder, and the like.

The principal object of the invention is to provide an apparatus of this class in which a liquid is agitated so that the maximum heating or cooling effect can be obtained by means of the jacket which surrounds the inner receptacle. The invention consists in the novel construction, combination and arrangement of parts.

In the accompanying drawings,—

Figure 1 is a view mostly in section showing a device constructed in accordance with the principles of our invention; Fig. 2 is a side elevation of the operating parts taken at right angles to the view in Fig. 1; and, Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

In treating some liquids, particularly milk and cream, it is desirable either to heat or to cool them to a particular temperature for performing certain other operations, or for holding the liquid at a desired temperature. If the liquid is merely held in a jacketed container it will not be of uniform temperature throughout, and the effect of the jacket is more apparent at the sides of the container than at a distance therefrom. For this reason, means is provided for circulating or agitating the liquid so that it will be uniform throughout the container.

In the present invention, there is an outer receptacle 1, having a thick bottom plate 2, to which a number of supporting legs 3 are secured. At the top, this receptacle is provided with a ring 4 of cast metal, or the like, which is inclined upwardly from the edge of the receptacle 1, and has a flange 5 for holding it in position with respect to the receptacle. From the inside of the ring 4, an inner receptacle 6 is suspended by means of a rim 7 secured to the top of the receptacle 6, the bottom being spaced from the bottom of the outer receptacle by means of a pedestal 8, held in place by a bolt 9. The space thus formed between the sides and bottoms of the receptacles forms a jacket for heating or cooling liquid in the inner receptacle.

Connected to the ring 4 is a pipe 10, and extending downwardly therefrom is a discharge pipe 11 with curved distributing wings 11′ for admitting heating or cooling fluid to the outer receptacle.

Connected to and through the bottom of the outer receptacle 1, is an overflow pipe 12 which extends nearly to the top of the outer receptacle, and a faucet 13 is connected through the bottom 2 for discharging fluid from the receptacle 1. A draw-off 14 is also connected to the bottom of the inner receptacle 6 and extends through the wall of the outer receptacle for emptying receptacle of liquid when desired.

Extending upwardly at opposite sides of the ring 4 are lugs 15, in which the bolts 16 are pivoted, with winged nuts 17 threaded on the ends thereof. Secured to the upper edge of the receptacle 1, at right angles to the lugs 15, (see Fig. 2) is a support 18, having perforated ears 19 at each side thereof for coöperating with perforated ears 20, of a hinge member 21, which is held in connection with the support 18 at each side thereof by means of a pin 22, thus making it possible to swing the hinge member 21 about either pin 22 as an axis by removing the other pin. Pivoted to the hinge member 21 is a plate 23, which has notched extremities 24 adapted to be engaged by the winged nuts 17.

Projecting from the plate 23 is a bearing standard 25, and secured to the plate adjacent the center of the receptacles is a standard 26 for mounting a shaft 27 and a shaft 28, the other end of the shaft 28 being also mounted in the bearing standard 25, with a driving pulley 29 at the outer end thereof. At the inner end of the shaft 28 is a driving pinion 30, which meshes with a gear 31 mounted on the shaft 27. The standard 26 has an overhanging portion 32 at the top which provides a bearing for a vertical

shaft 33, which has a slotted yoke 34 adjacent the gear 31. Projecting from the gear 31 is a crank pin 35 which engages in the slot of the yoke 34, and when the gear 31 is rotated reciprocates the shaft 33 up and down.

A rod or bar 36 is secured to the shaft 33 below the yoke 34 thereof by means of a set screw 37, or any other suitable means, and this bar 36 is of sufficient length to reach just above the bottom of the inner receptacle 6 when the shaft 33 is in its lowermost position. Secured to or mounted on the bar 36, within the receptacle 6, are a plurality of agitators 38 and 39. The former of these is represented as being made of cork, or some other buoyant material, and may be secured to the bar 36 in any suitable manner, as by means of collars 40. The other agitator 39 is also buoyant being made of sheet metal, or the like, which makes a fluid-tight connection with the bar 36. These agitators 38 and 39 do not fill the inner receptacle 6, but leave sufficient space between them and the sides of the receptacle for the free passage of fluid. The agitators may be regular or irregular in shape, it is contemplated that they may be round or square, or may consist of a number of projecting fingers, even or uneven in length.

The top of the receptacle 6 is provided with a cover consisting of two semi-circular portions 41, one or both of which are provided with a handle 42. The ring 4 is also provided with an opening, and a lid 43 therefor, by means of which ice, and the like, may be inserted or removed from the jacket surrounding the receptacle 6.

In operation, the pulley 29 is rotated by any suitable source of power, and its motion is transmitted to the gears to reciprocate the shaft 33 and the bar 36 connected thereto. The reciprocation of this bar moves the agitators 38 and 39 up and down in the receptacle 6, which causes a swirling movement of the liquid within the receptacle, drawing the liquid away from the wall and mixing and replacing it with the other liquid. It should be noted that the agitators are graduated in thickness from the bar 36 to the outer edges thereof, and this shape assists in producing the desired movement of the liquid when the agitators are operated. As both of the agitators are buoyant, they tend to support the weight of the bar 36, and only a very slight power is required to operate the agitators.

In removing the agitators from the receptacle 6 for cleaning, and the like, or for rendering accessible the receptacle 6, the bar 36 may be easily disconnected from the shaft 33 by loosening the set screw 37 and the winged nuts 17. The plate 23 may then be rotated upwardly about the hinge members 41, and if desired, the plate 23 and the parts connected to it, may be swung in either direction on one of the pins 22, either when the plate is rotated upwardly, or when it is simply disconnected from the bar 36 and from the bolts 16, and simply swung to the right or left on the pivot pins 22. The agitators 38 and 39 may then be removed from the receptacle 6 by removing one section 41 of the lid or cover, whereupon the agitators may be lifted from the receptacle. It should be understood that the edge of the supporting plate 23 which extends across the receptacle is provided with a recess 44, as shown in Fig. 1, which forms a guide for the vertical movement of the bar 36 and the shaft 33, the upper bearing 32 serving to hold the shaft in position.

By making the upper agitator 38 adjustable, it can be slid along the bar 36 and held in any desired position, thereby permitting a more efficient use of the device with different quantities of liquid in the receptacle 6. The lowermost agitator 39 can be affixed to the bar 36, for it will be used with any quantity of liquid.

We claim:—

1. In apparatus of the class described, the combination with a fluid receptacle, of a loose-fitting agitator movable therein, and means for reciprocating the agitator having a separable connection with the agitator and a hinge connection by means of which the said reciprocating means can be rotated free from the agitator in more than one direction when it is disconnected therefrom.

2. In apparatus of the class described, a vertical fluid receptacle, an agitator reciprocable therein, means for operating the agitator pivoted at one side of the receptacle, and diameter fastening means at right angles to the side pivot for holding the operating means against the receptacle adjacent the center thereof.

3. In apparatus of the class described, the combination with a fluid receptacle, of an agitator movable therein, and means for reciprocating the agitator pivoted at one side of the receptacle to swing oppositely about two different but parallel axes.

4. In apparatus of the class described, the combination with an upright fluid receptacle, of an agitator movable therein, and means connected to the agitator adjacent the center of the receptacle pivoted at the side of the receptacle to swing laterally and upwardly therefrom at the center.

5. In apparatus of the class described, the combination with an upright fluid receptacle, of an agitator movable therein, and means connected to the agitator adjacent the center of the receptacle pivoted to swing about a vertical axis and about two spaced axes at right angles thereto.

6. The combination with an upright fluid

receptacle, of a vertically movable agitator therefor, and means to move the agitator having a mounting at one side of the receptacle for swinging the operating means in both directions clear of the top of the receptacle about two separate vertical axes.

7. The combination with an upright fluid receptacle, of a vertically movable agitator therefor, means to move the agitator having a mounting at one side of the receptacle comprising a pivot for swinging the operating means upwardly from the receptacle, and two vertical removable pivots about one of which the operating means can be swung when the other is removed simultaneously with or independently of the other pivotal mounting.

8. The combination with a fluid receptacle, of an agitator having a central shaft and movable therein, means for moving the agitator, and a plate for supporting said means extending across the top of the receptacle and recessed to fit around one side of the shaft and a pivotal mounting at right angles to the shaft at the side of the receptacle.

9. The combination with a fluid receptacle, of an agitator comprising a shaft, means for moving the agitator, a support therefor comprising a plate extending across the receptacle and around one side of the shaft, a pivotal mounting at right angles thereto at the side of the receptacle, and means for engaging the ends of the supporting plate at the ends thereof which extend across the receptacle.

10. The combination with a fluid receptacle, of an agitator having a central shaft, means for moving the agitator, a support therefor comprising a plate extending across the receptacle around one side of the shaft and to the side thereof at right angles, means at the sides of the receptacle for releasably engaging the ends of the plate which extend across the receptacle, and a pivotal mounting for the plate at the side of the receptacle by which the plate can be swung upwardly or laterally clear of the receptacle.

11. The combination with a receptacle, of an agitator therefor, means for moving the agitator, a support therefor comprising a plate having a pivotal mounting at the side of the receptacle comprising a pivot for swinging the plate upwardly clear of the receptacle, and two removable pins spaced apart about either one of which the plate can be swung laterally clear of the top of the receptacle when the other pin is removed.

12. The combination of a fluid receptacle, of an agitator movable therein, a longitudinally reciprocable shaft having a transversely slotted yoke connected to the agitator, a gear having a crank pin engageable in the yoke, and means for rotating the gear to reciprocate the shaft and the agitator.

13. In apparatus of the class described, an upright fluid receptacle, means for agitating fluid therein comprising a vertically movable bar, and one or more agitators movable therewith, one of which is hollow and affixed to the lower end of the rod.

14. The combination with an upright fluid receptacle, of a vertically movable agitator therefor, operating means for the agitator, and two vertically removable pivots about one of which the operating means can be swung in one direction when the other pivot is removed.

In testimony whereof we have signed our names to this specification on this 25th day of July, A. D. 1916.

WILLIAM J. McLAUGHLIN.
WILLIAM R. NICOLL.

Witnesses:
CARL K. BENNETT,
G. B. BENNETT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."