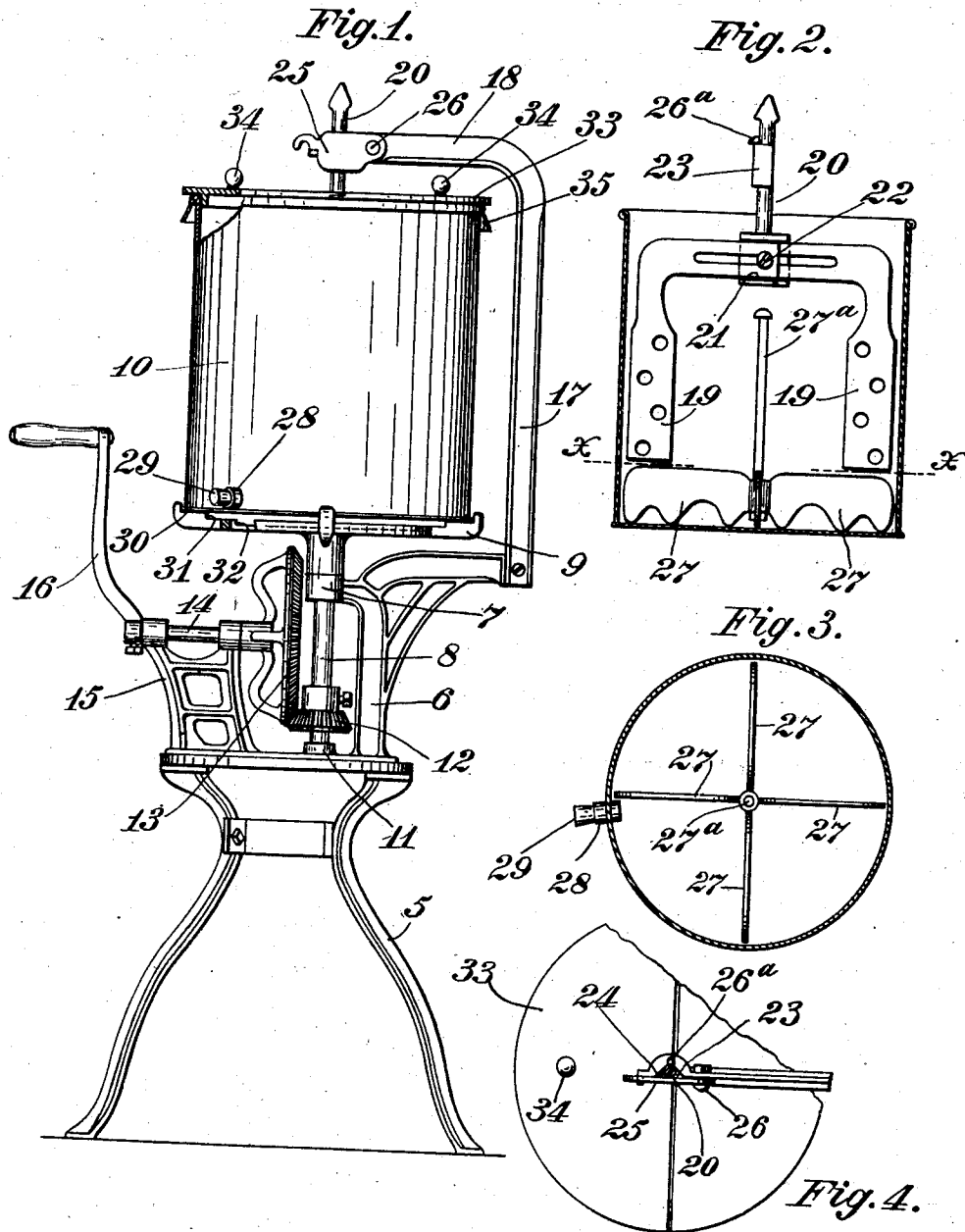


994,469.

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UNITED STATES PATENT OFFICE.

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CHURN.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, VICTOR S. KLICK, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Churns, of which the following is a specification.

This invention relates to the kind of churn in which moving bearings within the churn body or above the vessel are dispensed with, and in which the momentum of the body and devices it carries in conjunction with stationary parts within the body facilitate the agitation of the cream and the production of butter.

The invention is embodied in the example of it set forth in the following specification and in the accompanying drawings in which—

Figure 1 is a view mainly in side elevation with a few parts in section. Fig. 2 is a vertical section of the churn body or receptacle showing in full the parts therein. Fig. 3 is a horizontal section on the lines $x-x$ Fig. 2. Fig. 4 is a plan view of the upper end of Fig. 1.

In the views 5 designates a suitable stand or pedestal from the top member of which is erected a bracket 6 containing a bearing 7 for the spindle 8 of the vessel support 9. The vessel is designated 10 which merely rests on the support, the weight of the vessel and its contents being sufficient to retain it fixed to the support during the operation. The spindle 8 is stepped at its lower end in a bearing 11 on the top of the stand. On the spindle 8 is secured with a set screw a bevel pinion 12 engaged by a master bevel gear wheel 13 having a driving shaft 14 journaled in a standard 15 erected from the top member of the pedestal. The shaft 14 can be operated by a handled crank 16 or other device for applying power to it to rotate the vessel support 9. Extending upward from a branch of the bracket 6 is a post 17 having a horizontal arm portion 18 that reaches through a point at or near the vertical line of the axis of the vessel.

19, 19, designate perforated agitator blades having slotted horizontally extending shanks.

20 designates a stem having a seat 21 for the slotted shanks of the agitator blades, said blades being secured to the said seat by a suitable bolt 22 passed through the slots and the seat. The slotted shanks of

the blades 19 permit an adjustment of those members to fit within vessels of different diameters. The stem 20 has an angular portion 23 to fit in a correspondingly shaped seat 24 in the horizontal arm 18, and when so seated the stem is fixed from rotation therein by latch 25 pivoted at 26 on the arm 18. A stop 26^a on the stem 20 engaging the arm 18 suspends the stem in proper position vertically. The blades 19, 19, do not reach to the bottom of the vessel, but loosely placed on said bottom below said blades is a structure consisting of four flat vertically standing blades typified at 27 all meeting at a central hub. From the central hub rises a rod 27^a of sufficient length to project above the ordinary level of the cream or "churning" so that the device can be inserted or removed without contact of the fingers of the operator with the cream. The blades 27 are deeply scalloped at their lower edges.

28 is a vent at the bottom of the vessel to drain off the butter milk after the butter has been made. This vent can be closed with a stopper 29 of cork, wood or other suitable material. The vent structure 28 projects into the vessel and it there also serves as a stop to engage the winged structure 27 to carry it around when the vessel is rotated. The winged structure will, of course, be formed in different sizes suited to vessels of different diameter.

The vessel support is made with annularly arranged stops 30, 31, and 32 within which vessels of three different sizes can be placed and by which they are properly centered on the rotatable support.

33 designates a cover for the vessel which is conveniently made in two semi-circular halves and each half provided on its straight edge with angular joint members and a semicircular recess to form a circular hole when the halves are matched together to close the vessel about the stem 20. The halves of the cover are provided with knobs 34 for handling them. The vessel is also provided with suitable handles like that shown at 35 for lifting it about.

Assuming that the vessel is supplied with a quantity of "churning" of cream the vessel is closed and then rapidly rotated in the direction indicated by the arrow Fig. 3 by turning the handled crank in the proper direction. Naturally the body of cream in the vessel is inert and the vessel upon rota-

tion would slip around it and if it were not for the devices within the vessel the cream would partake of little of the motion of the vessel. But the winged structure 27 in the 5 bottom of the vessel is impelled by and does partake of that motion, and because the wings of said structure are presented flatwise to the inert mass of the fluid the latter is by these wings given the motion of the 10 vessel. But the agitator blades 19, 19, are stationary hence the fluid is swirled past the said blades and broken into numerous independent streams by the perforations thereof. Centrifugal action on the fluent mass also 15 causes it to pile up at the sides of the vessel where the agitator blades are located. The effect of the blades is, of course, to destroy the effect of centrifugal action and break down the accumulation at the side and agitation is the effect of these two opposing 20 conditions. The openings at the lower edges of the wings 27 permit the agitated fluid to freely pass under the blades thus producing altogether the complex motions which constitute the thorough agitation resulting in 25 the rapid formation of butter. After the churning operation is completed the operating movable parts within the vessel are readily and entirely removed for cleaning and leaving the vessel free to be taken from 30 the support.

An important advantage of this construction is that the momentum of the vessel and its contents renders less laborious the ob-

taining of the churning effect of the contents. Another advantage is that the contents of the vessel are not likely to be contaminated or spoiled by oil and dirt from operating bearings requiring oil such bearings being located entirely below the vessel. 40 For this and other reasons apparent from the construction as described the churn is of a highly sanitary and conveniently operated character.

What I claim is:

1. In a churn, the combination with a 45 body or vessel and means for rotating the same, a stationary agitator blade projecting vertically into the vessel and a winged or bladed structure resting removably on the 50 bottom of the vessel, the wings or blades of the last named structure being scalloped at its lower edges, substantially as described.

2. In a churn, the combination with a 55 body or vessel and means for rotating the same, a stationary agitator blade projecting vertically into the vessel, a winged or bladed structure provided with openings resting removably on the bottom of the vessel, and a vent device projecting into the 60 vessel to engage said winged structure to cause the same to be carried with the vessel when rotated, substantially as described.

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