

May 24, 1938.

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2,118,306

CHURN

Filed May 9, 1934

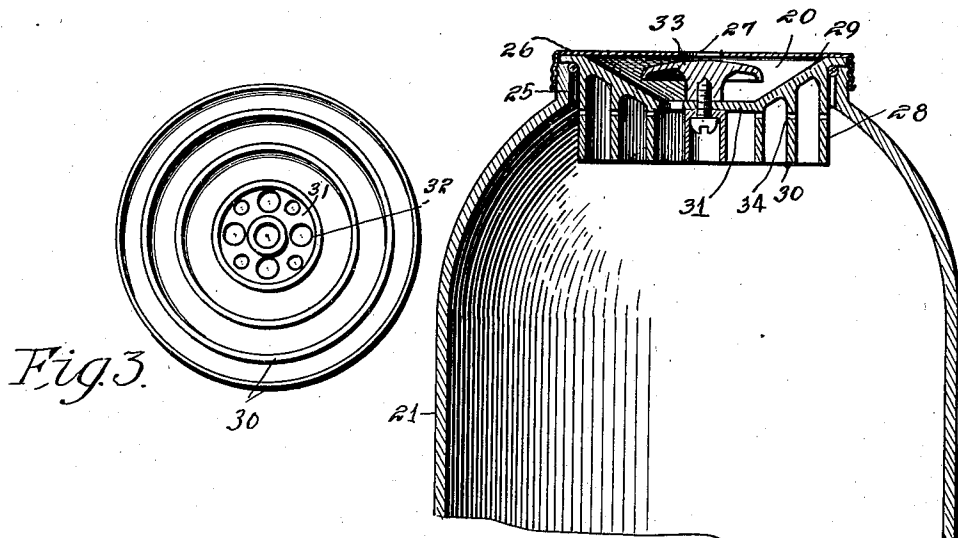


Fig. 3.

Fig 4

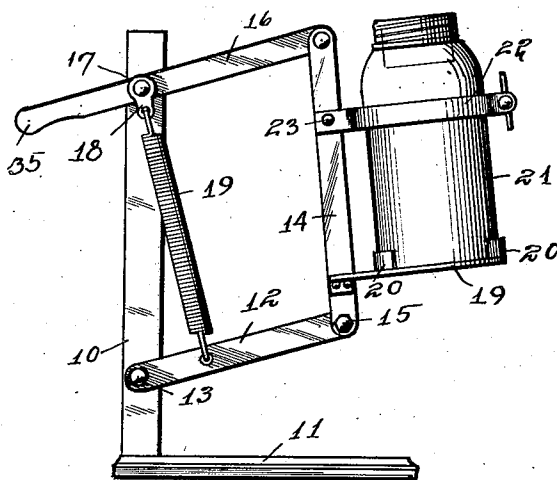
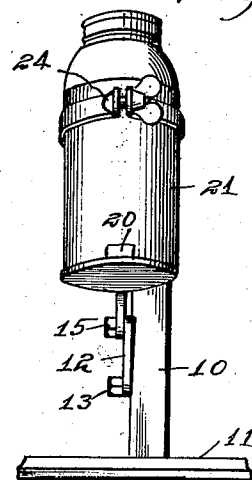


Fig.1.

Fig. 2.

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2,118,306

CHURN

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Application May 9, 1934, Serial No. 724,665

7 Claims. (Cl. 259—76)

This invention relates to improvements in churns, the object of this invention being to provide a churn of simple and cheap construction which is particularly adapted to be used by persons having small quantities of cream to churn at one time, the device being so constructed and arranged that it may be easily taken apart or put together for cleaning and filling, and which may be easily kept in a sanitary condition.

A further object is to provide a churn in which an ordinary jar having a screw-threaded neck portion may be used as a cream container.

A further object is to provide a suitable mechanism for supporting the container and clamping it in position, and for agitating the same.

A further object of my invention is to provide, in connection with a churn of the type above described, an improved type which may be easily and quickly placed in position on the neck of the jar, and having specially constructed baffle plates extending downwardly into the jar wherein the cream may be more effectively agitated and wherein large quantities of air may be introduced into and through the cream as it is agitated.

A further object is to provide, in a churn of the type in which air is introduced into the cream while it is being agitated, improved means for permitting air to be freely moved into and out of the container as the container is agitated, and at the same time preventing the cream from escaping therefrom.

A further object is to provide an improved mechanism for oscillating the jar wherein a maximum amount of agitation of the cream will take place by means of a minimum amount of power as applied to accomplishing said oscillation.

Figure 1 is a side elevation of my improved churn.

Figure 2 is an end elevation of same.

Figure 3 is an inverted plan view of the cover member.

Figure 4 is an enlarged vertical central sectional view of the upper end of the jar and the top member.

I have used the reference numeral 10 to indicate an upright support carried by a suitable base 11. Pivotally secured to the lower end of the support 10 is a link 12, by means of a suitable pivot 13. Pivotally connected to the free end of link 12 is an upright support 14, said members being secured together by a pivot 15. Pivotally connected to the upper end of member 14 is link 16, somewhat shorter than the link 12, said link being pivotally connected to the upper end of the post 10 by means of a pivot 17.

A spring support 18 is secured to the pivot 17 and has connected therewith a spring 19, the lower end of which is pivotally connected to the link 12, all as clearly illustrated in Figure 1.

Fixed to the lower end of the member 14 is a

jar supporting platform 19 having upwardly extending lugs 20 for holding the jar 21 in place. The said jar is further secured in position by means of a split annular band 22, said band being secured to the member 14 by a rivet 23, the ends of said band being secured together by means of a thumb screw 24. This provides means for firmly securing the bar in position.

The neck portion 25 of the bar is screw-threaded and designed to receive a screw-threaded top cover 26, having a central opening 27. The cover 26 is designed to secure a mixing and agitating member 28 in position, the member 28 being designed to permit air to be moved into and out of the jar and mixed with the cream as it is agitated.

The member 28 comprises a body portion 29 having the form of an inverted truncated cone, the upper surface of which is provided with a cavity 30, while the under surface is provided with a series of annular flanges 30 concentrically arranged with each other and with the center of the truncated portion 31 of said body, said flanges being spaced apart a considerable distance, as clearly illustrated in Figures 3 and 4.

The truncated portion 31 is provided with a series of openings 32, through which air may be admitted to the interior of the jar from the outside or may be expelled from the interior to the outer surface.

Supported within the recess 20 and to the truncated portion 31 is a baffle plate 33 which serves to prevent cream from being ejected to the exterior surface of the cover member 26.

The flanges 30 are also provided with a number of radial openings 34 so as to communicate the spaces between the annular members when cream is thrown violently up into said spaces.

The link 12 is made somewhat longer than the link 16 so that the upper and lower ends of the upright 14 will travel in two arcs of a circle of different radii. This provides means whereby lateral movement will be imparted to the upper end of the jar simultaneously with its longitudinal up and down movement.

The operation of my device is as follows:

Referring to Figure 1 it will be seen that the platform 19 is normally supported in an elevated position by means of tension applied by the spring 19.

Assuming that the jar 21 has been partially filled with cream and that the cover 26 and the agitating member 28 have been placed in position, and that the jar 21 is placed on the platform 19a and clamped thereon, then the weight of the jar and cream therein will substantially balance the tension on the spring 19. The operator then grasps the handle member 35, which is an extension of the lever 16, and imparts a quite rapid oscillatory movement thereto which will cause the

jar 21 to be quite violently and rapidly elevated and lowered, causing the cream within the jar to be thrown upwardly against the upper end of the jar and against the mixing member 28 and into the spaces between the annular members 30. Air in the said annular members will be somewhat compressed so that the cream will then be thrown downwardly in advance of the downward movement of the jar and mixing element. In other words, the cream will be bounced back in somewhat the same manner that a ball is bounced back when it strikes a solid wall, so that very violent action is transmitted to the cream.

As the cream moves downwardly air is drawn in through the openings 27 and 32 and mixed with portions of the cream coming from the spaces between the flanges 30.

In this connection it should be borne in mind that the openings 34 are comparatively small, and said openings act more or less as bleeders rather than means for rapidly conducting air from one compartment to the other. I find in actual practice that the amount of air taken into and out of the jar may be controlled to a large extent by the size of these openings.

By this arrangement it will be seen that large volumes of air will be introduced into the cream and expelled therefrom each time the jar is agitated. This introduction of air greatly assists in cutting down the length of time required to churn the butter. Therefore, it will be seen that I have provided a churn of simple, durable, and inexpensive construction which may be easily and quickly cleaned and sterilized, and in which all complicated and moving elements are eliminated from the interior of the cream container, eliminating any possibility of grease and other foreign substances from entering during the time the churning operation takes place, this churn being particularly adapted to be used by people having small compartments and wishing to churn their own butter, and by farmers and dairymen selling the milk or cream and churning only butter for their own use.

I claim as my invention:

1. In a device of the class described, the combination of a cream container having its upper end open, a cover for said open end, means for fastening said cover to said container, a mixing and agitating element adapted to be secured in the open end of said container by means of said cover, said mixing and agitating element having the form of an inverted truncated cone with a recess in its upper end, the under surface of said cone being provided with a series of annular and downwardly extending flanges arranged concentrically with the center of said cone, said flanges having a series of bleeder openings, the truncated portion of said cone having a series of openings communicating the inner and outer surfaces of said truncated portion; a deflector blade in said recess.

2. In a device of the class described, the combination of a cream container having its upper end open, a cover for said open end, means for fastening said cover to said container, a mixing and agitating element adapted to be secured in the open end of said container by means of said cover, said mixing and agitating element having the form of an inverted truncated cone with a recess in its upper end, the under surface of said

cone being provided with a series of annular and downwardly extending flanges arranged concentrically with the center of said cone, the truncated portion of said cone having a series of openings communicating the inner and outer surfaces of said truncated portion; a deflector blade in said recess.

3. In a device of the class described, a cream container, a mixing and agitating element secured in the open end of said cream container, said member having the form of an inverted truncated cone to form a recess in its upper surface, the under surface of the cone and the truncated portion thereof being provided with downwardly extending annular flanges arranged concentrically with each other and with the center of said cone, the truncated portion of said cone having a series of inlet and outlet openings; a baffle plate supported above said openings and within said recess, and means for moving said container to agitate the cream therein to and from said mixing and agitating element.

4. In a device of the class described, a cream container, a mixing and agitating element secured to the open end of said cream container and provided with inlet and outlet openings, said element having its under surface provided with downwardly projecting flanges to form air chambers, said flanges having bleeder openings for connecting one of said air chambers with another, means for preventing the escape of cream from said outlet opening, and means for moving the container to cause cream therein to be agitated to and from the mixing and agitating element.

5. The combination of a cream container having an opening in one end, a mixing and agitating element closing said open end, said element having an inlet and outlet opening and its under surface provided with downwardly projecting flanges to form air chambers, having their tops and sides closed and their under sides open, and means for agitating the container and cream within said container to deliver the cream violently into and out of engagement with said element and the air chambers therein.

6. In a device of the class described, a cream container, a mixing and agitating element secured to the open end of said cream container and provided with an inlet and outlet opening, said element having its under surface provided with air chambers having their under sides open, means for preventing the escape of cream from said container and at the same time permitting communication of the air inside and outside of said container, and means for causing the cream to be moved violently to and from the mixing and agitating element.

7. In a device of the class described, a cream container, a mixing and agitating element secured to the open end of said cream container and provided with inlet and outlet openings to permit free communication of air within the container with the air outside of said container, said element having its under surface provided with downwardly projecting flanges to form independent air chambers, means for preventing the escape of cream from said outlet opening, and means for agitating said container.