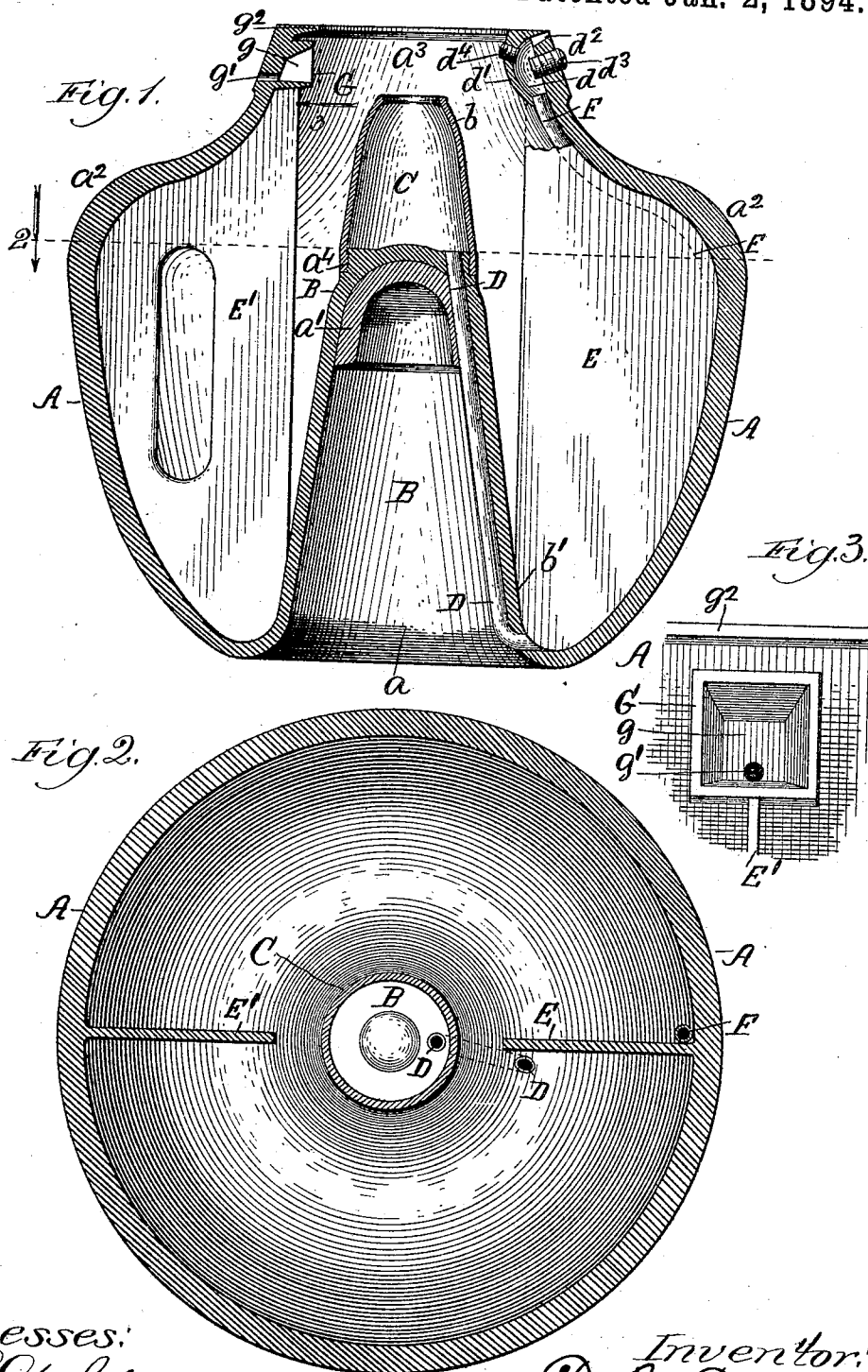


(No Model.)

D. J. DAVIS.
CENTRIFUGAL CREAMER.

No. 511,936.

Patented Jan. 2, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL CREAMER.

SPECIFICATION forming part of Letters Patent No. 511,936, dated January 2, 1894.

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To all whom it may concern:

Be it known that I, DANIEL J. DAVIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Centrifugal Creamers, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical section of an imperforate separator-bowl embodying my improved features; Fig. 2 a horizontal section on line 2, Fig. 1, looking in the direction indicated by the arrow; and Fig. 3 a broken-away sectional detail on line 3 Fig. 1, looking outwardly as indicated by the arrow.

This invention relates to improvements in that class of centrifugal separators more especially used in the process of mechanically creaming milk.

The object of this invention is to increase the working capacity of the separator-bowl without enlarging the dimensions of the same.

In the drawings, A represents a separator-bowl provided with the central cone B.

The chamber *a*, in the conical body, receives the driving-spindle; (not shown) the inserted box or plug, *a'*, providing the necessary bearing therefor; the bowl balancing loosely in a running position. The bowl gradually enlarges from the bottom upwardly on a curved line to about, or a little above, the middle, and from that point the wall turns inwardly with a somewhat sharper curve, forming the rounded shoulder *a*², and terminating in the contracted neck *a*³. The greatest diameter of the bowl is about on a line with the apex of the conical body B. The apex of the cone is screw-threaded, as at *a*⁴, and receives the lower correspondingly threaded end of the milk-receiver, C; thus the top of the cone forms a bottom for said receiver. The upper end of the inlet-tube, D, opens into the receiver through the top of the cone and terminates flush therewith. From this point the inlet-tube extends down along the exterior wall of the chambered cone, and opens through the wall at or near the base and discharges into the contracted bottom of

the bowl; the tube terminating flush with and corresponding to the curvature of the interior surface at this point. By running the inlet-tube down on the outside, it can be more firmly secured in place, and is not in the least liable to be broken away, as is the case when the tube is run down on the inside and is subjected to the force and action of the liquid bodies which very often have the effect of detaching the inlet-tube. Another advantage in having this tube outside is, that it leaves the surface of the cone on the inside of the bowl, perfectly smooth, whereas a pipe inside, along the surface of the cone or projecting therefrom, is an obstruction, creates a ripple, breaks up the cream-wall and retards the process.

The receiver, C, is gradually contracted from the bottom upwardly and slightly curved inwardly just before the top is reached, as at *b*, so that the uncreamed milk, passing into the same, is rather drawn downwardly and forced into the inlet or receiving-tube, and a continuous unbroken supply maintained; thus facilitating the process. When the walls of the receiver are perpendicular or the area of an increasing diameter in the direction of the upper end, the uncreamed milk, fed in, has a tendency to rise up in the receiver instead of pushing downwardly, as is the case with the form of receiver shown herein. The imperforate wing, E, is rigidly secured to and follows the curvature of the inclosing wall. The inner edge of this wing stops short of the cone B excepting near the lower end, as at *b'*. This wing forms a partition between the incoming and outgoing volume. The uncreamed milk enters on the side of the wing and direction in which the bowl is rotating; the skimmed-milk discharge-tube being located on the opposite side, (Fig. 2.) thus the full milk entering makes a full revolution before any skimmed-milk can reach the discharge side. The wing E', located diametrically opposite the wing E, serves to balance the bowl, with reference to the latter wing, and is perforated so that the liquid may pass there-through.

The lower end of the creamed-milk discharge-tube, F, opens under the rounded shoulder of the bowl, (as indicated by a dotted line Fig. 1.) and from that point extends

upwardly, following the curved line of the inclosing wall and ending in the passage d , in the swell d' formed on the inside neck of the bowl. The passage d runs into the orifice d^2 opening out just under the rim, and through which the creamed-milk is discharged. By means of the screw d^3 , the area of the passage in the swell d' may be enlarged or diminished so as to control or regulate the outflow of the milk with reference to increasing the outflow of the cream through another passage. If the screw is turned inwardly, the passage is diminished, the flow of the milk lessened, and the flow of the cream increased.

The curved discharge-tube, F , is secured rigidly in place and may be cleansed by removing the screw-plug d^4 , threaded through the inside wall of the swell d' , and a suitable brush or other cleaning device inserted and passed into the tube.

On the inside of the neck of the bowl, and opposite the point where the skimmed-milk is discharged, is formed the chambered projection, G , as shown in Figs. 1 and 3. The exit-chamber g , in this projection, has sloping walls contracting the area toward the orifice g' , opening outwardly through the inclosing wall. The separated cream escapes or is discharged through the orifice g' ; the contracting walls of the chamber having the effect of drawing the body of cream in the direction of the exit-passage, and facilitating the outward flow. The opening being in the face of the projection, the cream will pass in readily when it rises to that point. The inwardly projecting flange g^2 overhangs the opening into the exit-chamber and prevents the cream from having a tendency to rise above, and assists in concentrating and forcing the same into the exit-chamber. The cream-exit passage opening inwardly at a point away from the inclosing wall of the bowl, prevents the skimmed-milk from reaching and mingling with the cream as the layers of milk adhere to the surface of the wall and follow around and escape through the proper passage. The uncreamed milk entering the bowl close to the bottom with the curved wall extending away from one side of the inlet opening and the inclined surface of

the cone on the other, the process of separation begins at once, the milk passing to the inclosing wall and the cream following the line of the conical surface, thus utilizing the entire surface of the bowl from the bottom upward. By taking the skimmed-milk out above the middle of the bowl the separating capacity is increased as there is less dead space. The abrupt shoulder formed by the incurving wall checks the upward flow of the skimmed milk when it rises to the escape-tube, and tends to concentrate the volume at this point and force the outflow.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a separator-bowl, the combination with the cone part thereof, of a receiver, diminishing in diameter from the lower end upwardly and seated on said cone, the top whereof forms a bottom for said receiver, and an inlet-tube, opening up into said receiver, and extending down along the exterior wall of said cone and discharging into the bottom of the bowl, substantially as set forth.

2. The combination with a separator bowl, contracted at the top and bottom, and the inclosing wall gradually curving outwardly and upwardly from the bottom to a point above the middle and then curving abruptly inwardly, of a discharge tube located on the interior upper part close to and following the curvature of said wall, its lower end opening at the point of the abrupt curve, and the upper end communicating with a passage leading out through the contracted neck under the rim, substantially as set forth.

3. The combination with a separator-bowl, having a swell formed on the interior contracted neck part with a passage there-through, of a screw-plug inserted through the wall of said swell, whereby access may be had to said passage for the purpose of cleaning or clearing the discharge-tube, substantially as set forth.

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