

(No Model.)

A. WAHLIN.
CENTRIFUGAL SEPARATING APPARATUS.

No. 447,530.

Patented Mar. 3, 1891.

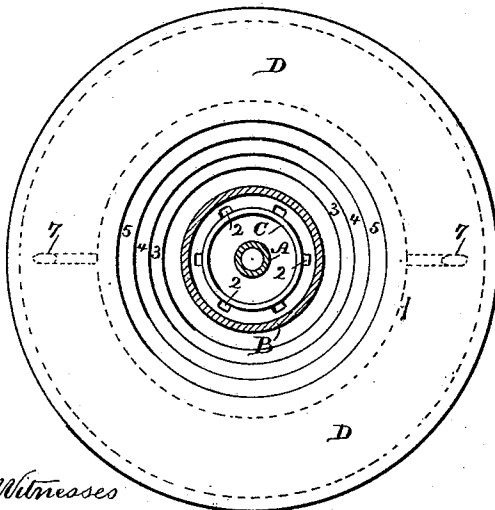
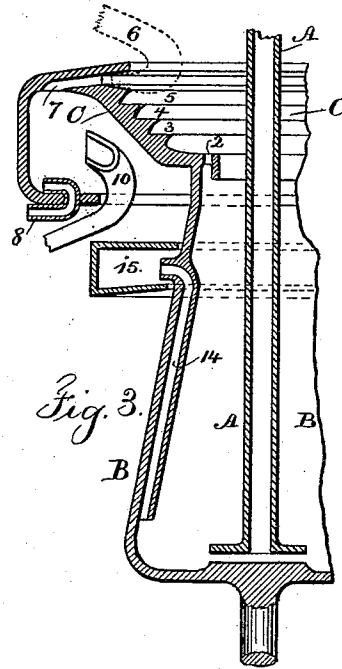
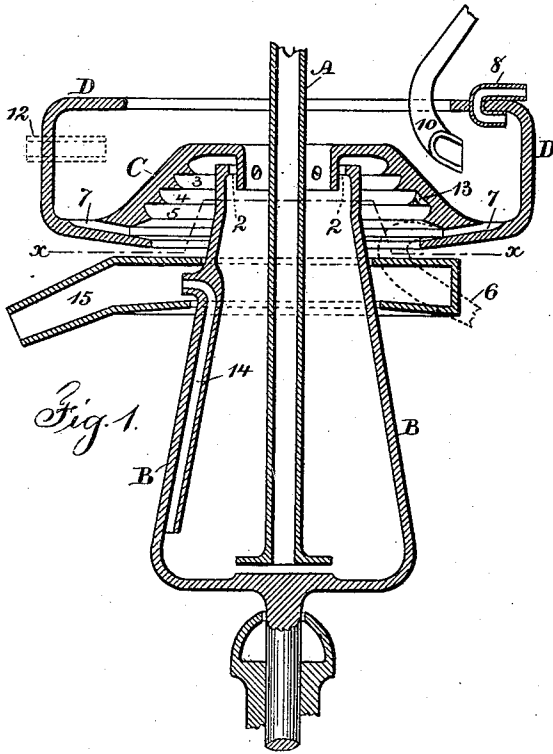


Fig. 2.

Witnesses

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Inventor

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UNITED STATES PATENT OFFICE.

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CENTRIFUGAL SEPARATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 447,530, dated March 3, 1891.

Application filed June 21, 1890. Serial No. 356,272. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH WAHLIN, a subject of the King of Sweden, residing at Stockholm, Sweden, have invented an Improvement in Centrifugal Separating Apparatus, of which the following is a specification.

This invention relates to a device for separating the buttery particles from cream, and it is especially applicable to centrifugal separators already upon the market.

In my present improvements the cream, after it has been separated from the skim-milk, instead of passing into a stationary receptacle, as heretofore usual, passes into a butter-separator connected with the cream-separator and extending out beyond the place where the cream is delivered, and such butter-separator is formed with a range of concentric ledges that arrest the outward movement of the cream and intensify the centrifugal separating action upon such cream, and the buttery particles pass over the edges of the ledges in succession, and in so doing the skim-milk flows away in a thin layer from the buttery particles, and such buttery particles accumulate and form granules or lumps of a sufficient size to be easily separated from the skim-milk by a sieve or similar device after the skim-milk and the buttery particles have been discharged from the centrifugal separator.

There being numerous centrifugal separators now in the market, my present improvements are to be adapted in size, shape, and mode of connection to any one of these separators.

I have represented by a sectional view, Figure 1, the upper end of an ordinary centrifugal separator with my improvements applied thereto; and Fig. 2 is an inverted sectional plan view of the apparatus at the line *x x* of Fig. 1. Fig. 3 is a sectional view of a portion of the apparatus with the cream-separator opening upwardly.

The milk is to be supplied by a pipe A, or in any other convenient manner, into the centrifugal separating-vessel B, and the cream and skim-milk are separated by the centrifugal action in the usual manner. If the cream is delivered over the upper edge of the centrifugal vessel through notches 2, then

my present device is applied around such upper edge. If the cream is delivered at the bottom or at any intermediate place, my improved butter-separator is located at whatever point is the most convenient for the reception of such cream. The skim-milk-delivery pipe is represented at 14 and a receiving-vessel at 15. These are of any usual character.

My butter-separator C is made approximately conical, and it is provided with annular ledges 3 4 5, the same being more or less numerous than those shown. Hence as the cream is delivered from the separator B it accumulates in the first annular channel adjacent to the ledge 3, and finally flows over the ledge 3 into the next annular channel, and so on, there being a pause in the outward movement of the buttery particles in each of the annular channels, and as the supply of cream crowds the particles of butter and skim-milk over each annular ledge in succession the buttery particles, being lighter and slightly adhesive, do not pass away as rapidly as the skim-milk. Hence the skim-milk spreads as a thin film upon the ledge and the buttery particles accumulate and adhere together in increasingly large grains or lumps until delivered. The butter-separator may open upwardly, as indicated in Fig. 3, or it may open downwardly, as shown in Fig. 1, and the buttery particles may be taken off by a scoop, as indicated by dotted lines at 6, or both the buttery particles and the skim-milk may pass through the tube 7 into the annular chamber D, within which the buttery particles and skim-milk are subjected to a more powerful centrifugal action, and the buttery particles accumulate upon the inner surface and the skim-milk is against the inner side of the outer wall of the chamber, and it is preferable to employ a pipe 8 for the discharge of the skim-milk and to remove the buttery particles by a scoop or similar device, as shown at 10, such buttery particles being taken away from the inner surface of the materials in the annular chamber. If, however, the buttery particles and the skim-milk are allowed to pass away together through the tube 7 into any suitable stationary receiving-vessel, the buttery particles may be

retained within a fine sieve and the skim-milk allowed to run away.

In place of the scoop 10, the buttery particles may overflow and pass out through a pipe represented by dotted lines at 12, Fig. 1.

If desired, a portion of the skim-milk may pass from any one or more annular troughs to the next through a small tube, as indicated at 13, Fig. 1.

I claim as my invention—

1. The centrifugal butter-separator having an approximately conical form and a series of annular ledges upon its inner surface, the cream being received at the smaller end of such butter-separator, in combination with an annular chamber revolving with the butter-separator, there being an opening for the discharge of the buttermilk and butter from the butter-separator into the annular chamber, and a discharge-opening for the buttermilk, substantially as set forth.

2. The conical centrifugal butter-separator, over the surface of which the cream is caused to pass outwardly and discharge from the larger end, in combination with a surround-

ing annular chamber connected to and rotating with the butter-separator and receiving the materials therefrom, and provided with a discharge-opening for the skim-milk, substantially as specified.

3. A centrifugal butter-extractor having internal annular ledges, over which the buttery particles are caused to pass in succession as the skim-milk is thrown off from the same, in combination with an annular chamber connected to and revolving with the butter-separator, and into which the buttery particles and skim-milk are received, and a pipe-opening at one end near the inner surface of the wall of the annular chamber and at the other end outside the apparatus for the passage of skim-milk, and means for removing the buttery particles from the inner surface of the annular layer within the annular chamber, substantially as set forth.

Signed by me this 18th day of June, 1890.
ADOLPH WAHLIN.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.