

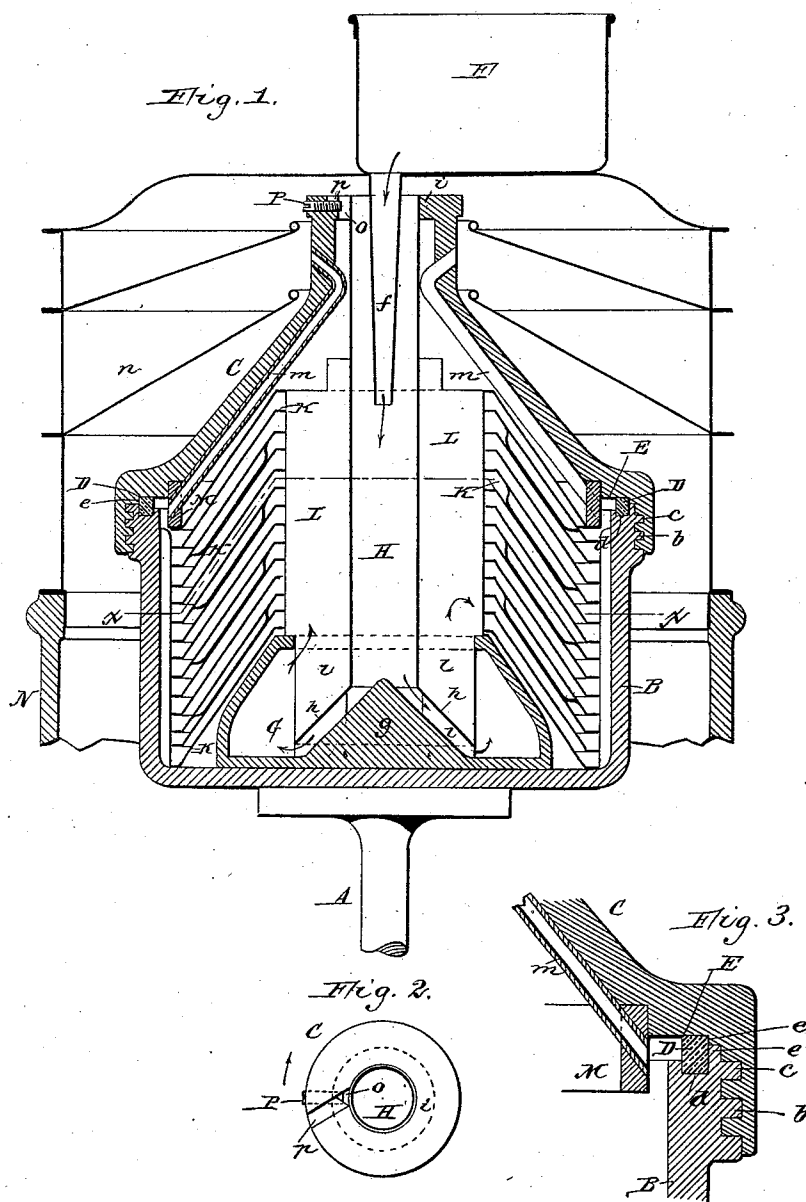
(No Model.)

2 Sheets—Sheet 1.

C. VON BECHTOLSHEIM.
CENTRIFUGAL LIQUID SEPARATOR.

No. 466,484.

Patented Jan. 5, 1892.



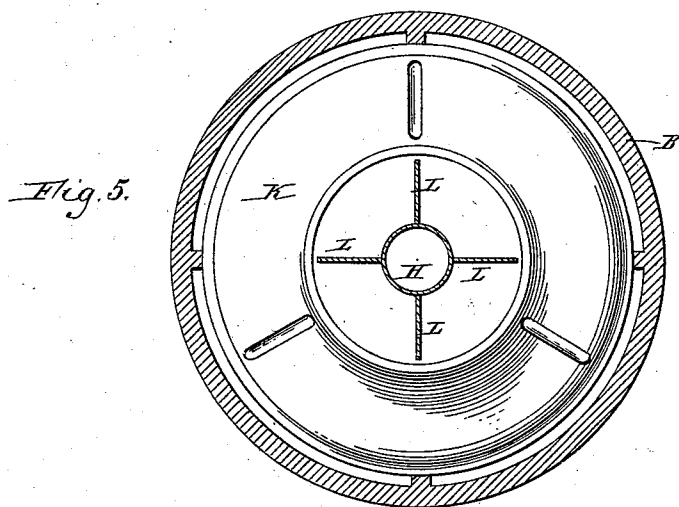
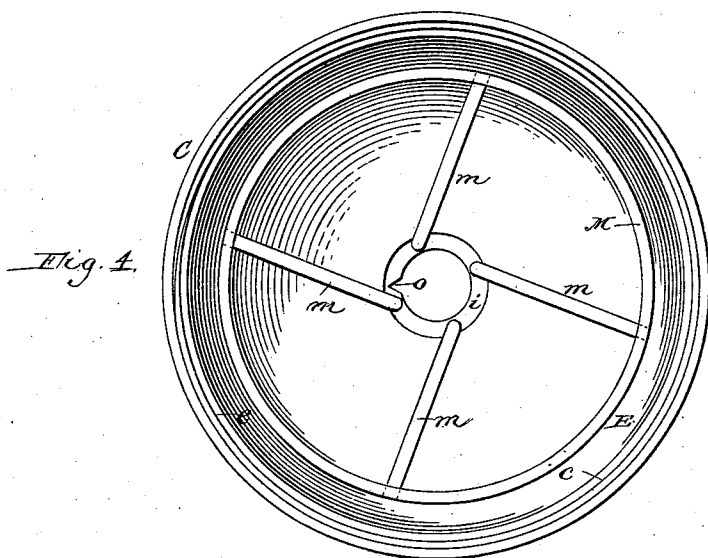
Witnesses:
Thos. L. Popp.
Chester D. Howe.

Clemens von Bechtolsheim,
Inventor.
By Wilhelm Brunnert,
Attorneys

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Attorneys.

UNITED STATES PATENT OFFICE.

CLEMENS VON BECHTOLSHEIM, OF STOCKHOLM, SWEDEN, ASSIGNOR TO THE
AKTIEBOLAGET SEPARATOR, OF SAME PLACE.

CENTRIFUGAL LIQUID-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 466,484, dated January 5, 1892.

Application filed September 29, 1890. Serial No. 366,521. (No model.)

To all whom it may concern:

Be it known that I, CLEMENS VON BECHTOLSHEIM, a subject of the King of Bavaria, and a resident of Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Centrifugal Separators, of which the following is a specification.

This invention relates to that class of centrifugal separators which are provided with imperforate bowls and which are employed for separating compound liquids into liquids of different gravities. As these separators are used principally for creaming milk, I will describe my improvements as embodied in a centrifugal creamer.

The objects of my invention are to produce a tight joint between the bowl and its cover; to effect a separation of solid matter—such as hair, manure, &c.—from the milk before it enters the separating-space of the bowl; to hold the separating disks or cones tightly in place, and to provide means for nicely adjusting the cream-discharge.

In the accompanying drawings, consisting of two sheets, Figure 1 is a sectional elevation of a centrifugal creamer provided with my improvements. Fig. 2 is a top plan view of the neck of the bowl. Fig. 3 is a sectional elevation of the joint between the cover and bowl on an enlarged scale. Fig. 4 is a bottom plan view of the cover of the bowl. Fig. 5 is a horizontal section in line *xx*, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A represents the spindle, and B the body of the bowl, having a closed bottom and an open top, which is provided with an external screw-thread *b*. C is the cover of the bowl, tapering upwardly and provided with a contracted neck in which the discharge-orifices for the cream and skim-milk are formed. The cover is provided with a peripheral flange having an internal screw-thread *c*, which engages with the external thread of the bowl and by which the cover is attached thereto. The annular top surface of the bowl is provided with a groove *d*, in which a projecting rubber ring D is arranged. The cover is provided at the base of its internal screw-thread with a narrow annular shoulder *e*, which bears upon the

raised outer portion *e'* of the top surface of the bowl, as clearly represented in Fig. 3. These two shoulders *ee'* meet about midway of the height of the rubber ring, so that the latter covers the joint and extends upwardly and downwardly from the same. The cover is provided above the shoulder *e* with a wider horizontal shoulder E, which rests upon the rubber ring and extends inwardly beyond the same. The portions of the bowl and the cover between which the rubber ring is seated form together a groove which is open toward the axis of the bowl and which causes the liquid in the bowl to be pressed by centrifugal force outwardly against the inner side of the rubber ring. When the cover is attached to the bowl, the two shoulders *ee'* of the cover and bowl are in contact with each other and the packing-ring is sufficiently loose to be pressed outwardly by the centrifugal force acting upon the liquid in the bowl and upon the rubber ring against the portions of the cover and bowl which extend, respectively, above and below the joint, and as the ring entirely covers the joint a perfectly-tight joint is formed, which is the tighter the faster the bowl rotates. Heretofore it was impossible to produce a tight joint at this point, owing to the excessive pressure which is generated in the outer portion of the liquid at the high speed at which these machines are operated. This difficulty is entirely overcome by the above-described construction, because the pressure of the liquid is utilized for tightening the packing.

F represents the milk-receptacle, provided with a discharge-pipe *f*, which depends into the neck of the bowl.

G represents the feed-cup, arranged centrally on the bottom of the bowl, and H a pipe which extends from the neck of the bowl to the feed-cup and conducts the milk to the latter. The neck of the bowl is provided at its upper end with an inwardly-projecting flange *i*, in which the upper end of the pipe H fits snugly. The feed-cup is provided at its middle with a raised cone *g*, and the lower end of the pipe H is provided above said cone with a flaring mouth *h*, which confines the milk as it spreads over

the cone and conducts it to the bottom of the cup. The latter is constructed with an imperforate peripheral wall, which tapers upwardly and is provided at the top with an inwardly-turned rim, over which the milk escapes from the cup into the separating-space of the bowl.

K represents conical division-rings arranged in the separating-space of the bowl between the bottom and the cover, as described in Letters Patent of the United States No. 432,719, granted to me July 22, 1890.

L represents radial vertical ribs secured to the outer side of the tube H and forming therewith a core around which the rings K are arranged. These ribs rest by offsets upon the top rim of the feed-cup and have bottom portions, which extend into the feed-cup and through the flaring bottom *h* of the pipe H to the cone *g*. These bottom portions of the ribs cause the milk to rotate in the feed-cup, and this rotation drives the solid matter—such as hairs, manure, &c.—against the imperforate peripheral wall of the feed-cup, where it remains, thereby preventing it from reaching and obstructing the numerous division-rings and the bowl.

M represents a curtain or annular flange, which depends from the cover near the inner surface of the bowl and rests upon the top division-ring, thereby holding the rings in place.

m represents the skim-milk pipes, which extend from the flange M to and through the neck of the bowl.

N represents the inclosing casing, and *n* the skim-milk trough, which rests thereon and surrounds the upper portion of the cover so as to receive the skim-milk from the pipes *m*.

O represents the cream-notch formed in the inner surface of the top flange *i* of the neck of the bowl, and made preferably angular with the apex turned outwardly.

p represents a channel or groove formed in the top of the neck of the bowl and extending from the cream-notch to the periphery of the neck, so as to deliver the cream laterally from the cream-notch. This channel is preferably inclined rearwardly; or, in other words, the inner receiving end of the channel is arranged in advance of the outer discharging end in the direction in which the bowl rotates to reduce the force with which the cream is thrown from the neck.

P represents an adjusting-screw, which is arranged radially in the neck and projects with its inner end into the cream-notch below the discharge-channel, so that the cream must flow over this screw in escaping from the notch into the channel. The inner portion of the screw forms, therefore, an adjust-

able dam, which controls the discharge of the cream and which can be adjusted toward and from the axis of the bowl to regulate the discharge.

I do not claim, broadly, a packing-ring interposed between the bowl and the cover, nor, broadly, a packing-ring pressed outward by centrifugal force.

I claim as my invention—

1. The combination, with the bowl and the cover provided with adjacent recessed portions which form a groove which opens inwardly and between the top and bottom of said groove with shoulders which bear against each other, of a packing-ring arranged loosely in said groove and covering the joint between said shoulders, whereby the packing-ring is pressed outwardly against said joint by the centrifugal force acting upon the liquid in the bowl and upon the packing-ring, substantially as set forth.

2. The combination, with the bowl, of a feed-cup having an imperforate bottom and peripheral wall and an open top, and wings or blades arranged within the feed-cup, whereby the liquid is caused to rotate in the feed-cup and the solid matter is deposited in the cup, while the liquid escapes over the top thereof into the bowl, substantially as set forth.

3. The combination, with the bowl, of a feed-cup having an imperforate bottom and peripheral wall and open top, wings or blades arranged within the feed-cup, and division-rings arranged in the separating-space of the bowl, whereby the solid matter is deposited in the feed-cup and separated from the liquid before the latter reaches the division-rings, substantially as set forth.

4. The combination, with the bowl, of a feed-cup having an imperforate bottom and peripheral wall and open top, a core consisting of a central tube and radial wings extending into the feed-cup, and division-rings arranged in the separating-space of the bowl around said core, substantially as set forth.

5. The combination, with the bowl, of superposed division-rings arranged in the separating-space of the bowl, and a cover provided with a depending flange or curtain which bears upon the uppermost division-ring, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of September, 1890.

CLEMENS VON BECHTOLSHEIM.

Witnesses:

E. HAASE,

STEN ERICSSON.