

(No Model.)

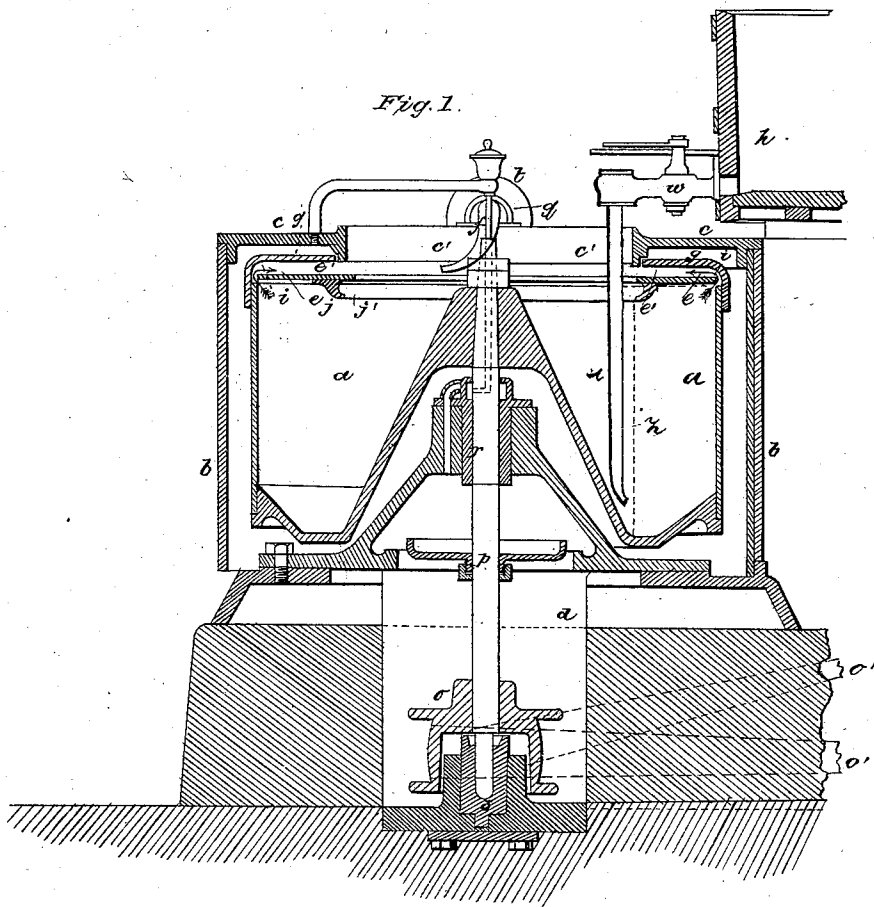
2 Sheets—Sheet 1.

C. PETERSEN & L. C. NIELSEN.

CENTRIFUGAL CREAMER.

No. 256,365.

Patented Apr. 11, 1882.



WITNESSES

Fred. L. Dieterich
John H. Lockett.

Carl Petersen
Lars Christian Nielsen
INVENTORS,
by Louis Bagger & Co.
their Attorneys.

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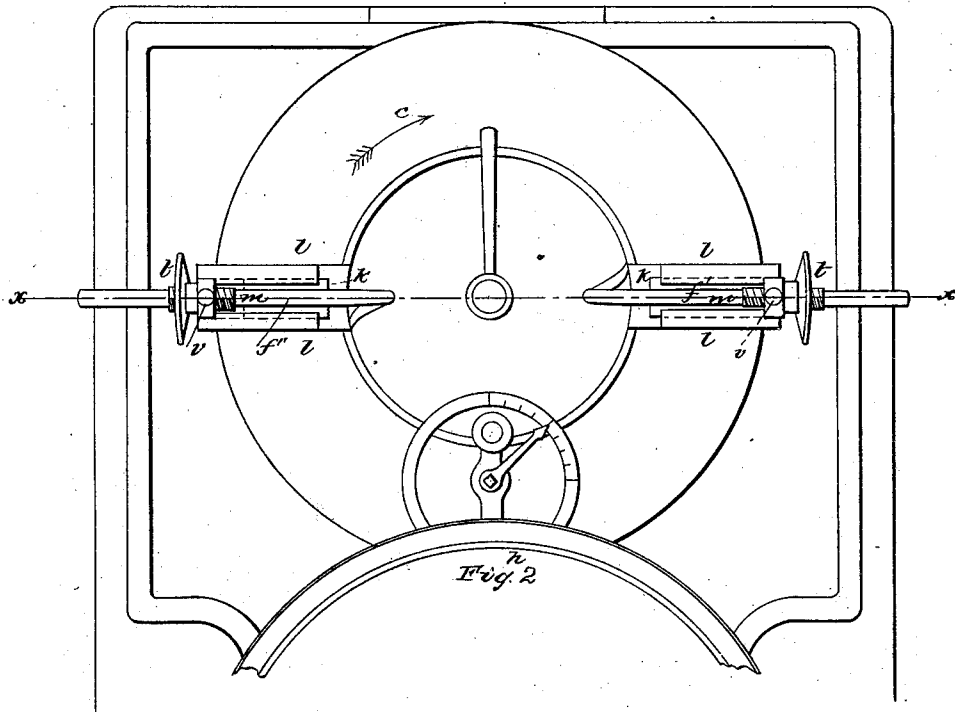
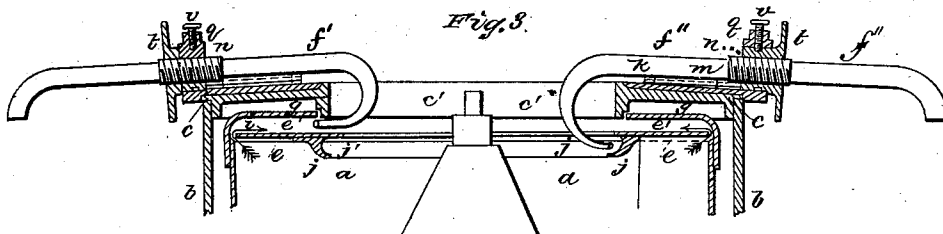
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

CARL PETERSEN AND LARS C. NIELSEN, OF ROESKILDE, ASSIGNORS TO
THE BURMEISTER AND WAIN'S MASKIN AND SKIBSBYGGERI, OF COPEN-
HAGEN, DENMARK.

CENTRIFUGAL CREAMER.

SPECIFICATION forming part of Letters Patent No. 256,365, dated April 11, 1882.

Application filed October 24, 1881. (No model.) Patented in England July 1, 1881.

To all whom it may concern:

Be it known that we, CARL PETERSEN and
LARS CHRISTIAN NIELSEN, both subjects of
His Majesty the King of Denmark, and both
residing in the city of Roeskilde, in the King-
dom of Denmark, have jointly invented certain
new and useful Improvements in Centrifugal
Machines; and we do hereby declare that the
following is a full, clear, and exact description
of the invention, which will enable others skilled
in the art to which it appertains to make and
use the same, reference being had to the ac-
companying two sheets of drawings, which
form a part of this specification, and in which—
Figure 1 is a vertical axial section of our im-
proved centrifugal machine. Fig. 2 is a plan
or top view of the same, and Fig. 3 is a sec-
tional detail view of the machine through line
xx in Fig. 2.

Similar letters of reference indicate corre-
sponding parts in all the figures.

Our invention has relation to that class of
centrifugal machines that are adapted for the
separation of liquids, the component parts of
which are of different specific gravity, such as
the separation of sweet milk into its compo-
nent parts of cream and skim-milk; and it
consists in certain improvements in the con-
struction and arrangement of parts of the same,
whereby, first, the removal of the separated
liquids (for example, the cream and the skim-
milk) from the centrifugal chamber is effected
without undue disturbance of the contents of
the same; and, second, the nature or charac-
ter of the separated liquids may be varied dur-
ing the operation of the machine and without
stopping the same. In other words, our im-
provement has relation to the specific means
whereby these two results are obtained; and
it consists in the detailed construction, ar-
rangement, and combination of parts which
constitute said means.

In the two sheets of drawings hereto an-
nexed, *a* represents the centrifugal chamber,
which is mounted upon a vertical shaft, *p*, with-
in the stationary casing or safety-jacket *b*, which
latter is provided with a removable flanged
cover, *c*, of annular shape—i. e., with a central

circular opening, *c'*. Shaft *p* is, by preference,
mounted in bearings *r* and *s*, and provided
with a flanged pulley, *o*, at its lower end, by
which it may be rotated at great speed by
means of an endless band, *o'*, and any suita-
ble motive power.

To the top part or rim of the centrifugal
chamber or containing-vessel *a* is secured an
annular plate, *e*, in such manner as to leave a
narrow open part or space (denoted by the let-
ter *e'*) between said plate *e* and the ring-formed
or annular cover *g* of chamber *a*. The plate
e has a series of narrow slots or openings, *i*,
at its corner or point of contact with cham-
ber *a*, through which the heaviest part of the
liquid (the skim-milk) will, when the machine
is in operation, be forced into the space or an-
nular horizontal chamber *e'*, as indicated by
the arrows in Figs. 1 and 3. From this cham-
ber the liquid (skim-milk) is drawn by a pipe,
f', which is fastened adjustably upon the cover
c of the safety-jacket, and is provided with a
bent and tapering point or elbow, which ex-
tends into chamber *e'* in a direction opposite
to or pointing against the rotation of the cen-
trifugal chamber. The bent point of pipe *f'*
should project a sufficient distance into the an-
nular space or chamber *e'* to enable the liquid
contained therein to be forced into the pipe
and out through it in a steady stream by the
velocity imparted to it (the fluid) by the rota-
tion of chamber *a*. Any disturbance caused
by pipe *f'* in the liquid contained in chamber
e' is prevented by plate *e* from being commu-
nicated to or affecting the contents of chamber
a below plate *e*.

By reference to Figs. 1 and 3 it will be seen
that plate *e* has on its under side a downward-
projecting curved flange or collar, *f*, which,
with the projecting inner rim of plate *e*, forms
an annular convex groove or chamber, *j'*, on
the under side of plate *e*. While the surface
of the contents of chamber *a* is, by the proper
regulation of the feeding and drawing-off de-
vices, so regulated as to be always at a point
or line a little within or back of the edge of
the collar *j*, and while the heaviest part of the
contents of chamber *a* is forced up along the

wall of the same and out through slots *i* into the chamber *e'*, the lightest part of the contents (cream) will enter and collect in the annular groove *j'* on the under side of plate *e*, from which it is drawn by a pipe, *f''*, constructed and attached to the machine in like manner as pipe *f'*. The bent and tapering mouth of pipe *f''* projects into groove *j'*, as will be seen more clearly by reference to Fig. 3 of the drawings, so as to draw off the contents of said groove or chamber *j'* without disturbing the contents of the upper chamber, *e'*, or lower chamber, *a*.

In order to change or vary the nature or character (in so far as this may be effected by varying the degree of density or specific gravity at which the separated liquids are drawn off) of the liquids separated by the machine without stoppage of the same, I make the drawing-off or discharge pipes *f'* and *f''* adjustable in the direction of their length. If, for example, it is not desired to separate the sweet milk into its component parts of cream and skim (blue) milk with any great degree of accuracy or exactness, as may sometimes be the case, according to the purposes for which the cream and the skim-milk are to be used, then the tube or pipe *f'* for drawing off the skim-milk is so adjusted as to project with its bent and tapering mouth farther into the annular chamber *e'* than otherwise, while at the same time pipe *f''* is adjusted with its mouth at a little greater distance from the inner end of groove *j'* than otherwise. This is because the velocity with which the fluids contained in the chambers *e'* and *j'* will enter their respective discharge-pipes *f'* and *f''* depends upon the distance between the mouths or inner openings of said pipes, respectively, and the central axis of the machine. In order to effect this adjustment of the discharge-pipes they are each provided with a flanged bed-plate, *k*, (see Figs. 2 and 3,) which slides in a grooved plate or bed-piece, *l*, affixed upon cover *c*. Each pipe has a screw-threaded section, *m*, which passes through and engages with a correspondingly-threaded nut, *n*, having a milled thumb-disk, *t*, for rotating it to either side—right or left. The nut *n* works in a box or bearing, *q*, and has an annular groove or channel, into which projects the inner end of a stop-screw, *v*, inserted through box *q*. Thus it follows that by turning disk *t* and nut *n* the pipe which is inserted with its screw-threaded section through the nut may be adjusted for-

ward or back to regulate the distances which pipes *f'* and *f''* are to extend respectively into the discharge-chambers *e'* and *j'*.

The centrifugal chamber or receiver *a* is fed while in operation continuously from the reservoir *h* through the feed-pipe *u*, which is provided with a faucet, *w*, for regulating the supply, and extends down to near the bottom of chamber *a*, as shown in Fig. 1. During the operation of the machine the contents of chamber *a* will form a hollow cylinder, as shown by the dotted line marked *z* in Fig. 1, so that the feed-pipe *v* will not operate to disturb the contents of the centrifugal chamber or receiver.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States of America—

1. In a centrifugal machine of the described class, the annular plate *e*, located a short distance below the annular top plate or cover, *g*, of the centrifugal vessel or receiver *a*, and provided on its under side with the curved flange or collar *j*, whereby two ring-formed chambers, *e'* and *j'*, are formed in the top part of the centrifugal vessel or receiver *a*, concentric with one another and with said receiver, substantially as and for the purpose herein shown and specified.

2. The combination of the centrifugal vessel or receiver *a*, having the horizontal concentric ring-formed chambers *e'* and *j'*, arranged substantially as described, and stationary discharge-pipes *f'* and *f''*, adjustable in the direction of their length, and curved at their inner ends to form tapering mouth-pieces, which project respectively into the ring-formed chambers *e'* and *j'*, substantially as and for the purpose herein shown and set forth.

3. The combination of the discharge-pipe *f'*, having a screw-threaded section, *m*, and flanged bed-plate *k*, grooved nut *n*, having thumb-disk *t*, nut box or bearing *q*, having stop-screw *v*, and fixed bed-piece *l*, provided with parallel grooves for the reception of the adjustable plate *k*, substantially as and for the purpose herein shown and described.

In testimony whereof we have signed our names to the foregoing specification in the presence of two subscribing witnesses.

CARL PETERSEN.
LARS CHRISTIAN NIELSEN.

Witnesses:
VIGGO C. EBERTT,
V. SCHWABER.