J. & A. PERSOONS.

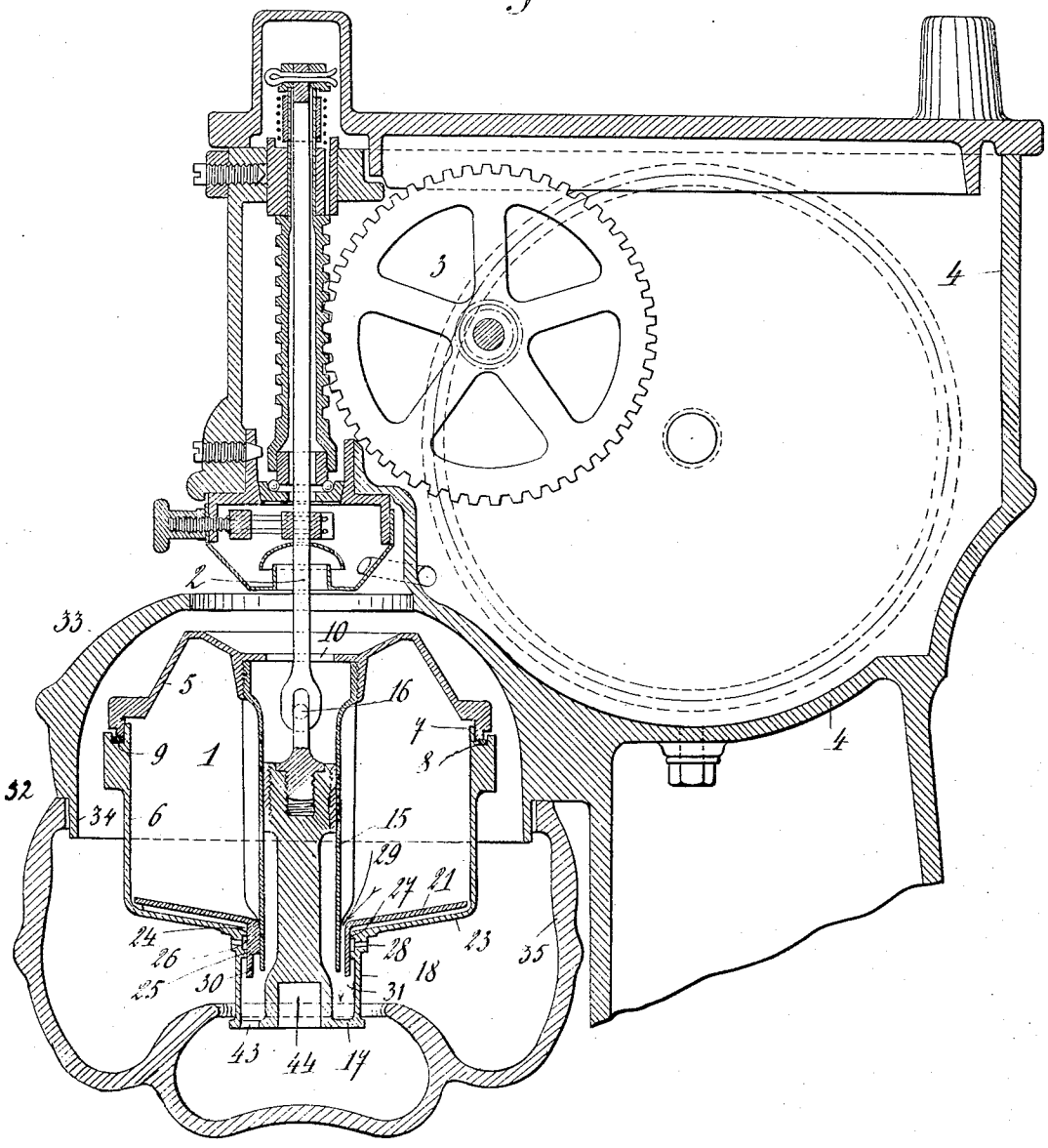
DRUM FOR CENTRIFUGAL CREAM SEPARATORS.

APPLICATION FILED FEB. 6, 1907.

941,809. Patented Nov. 30, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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3 SHEETS—SHEET 2.

Fig. 2.

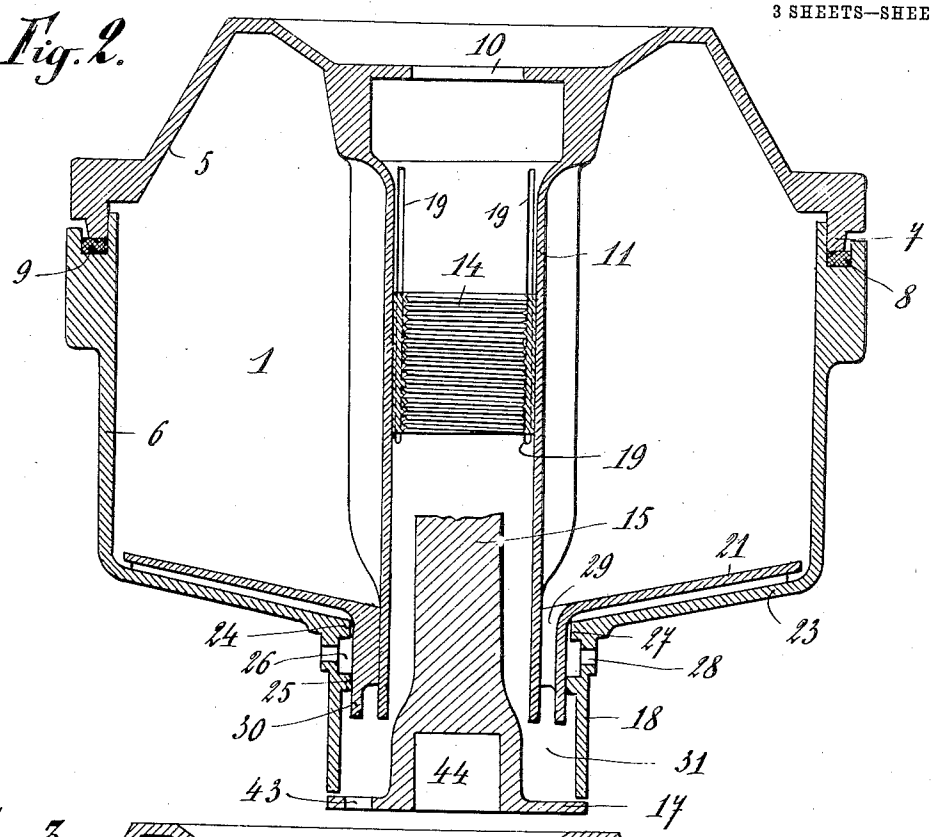

Fig. 3.

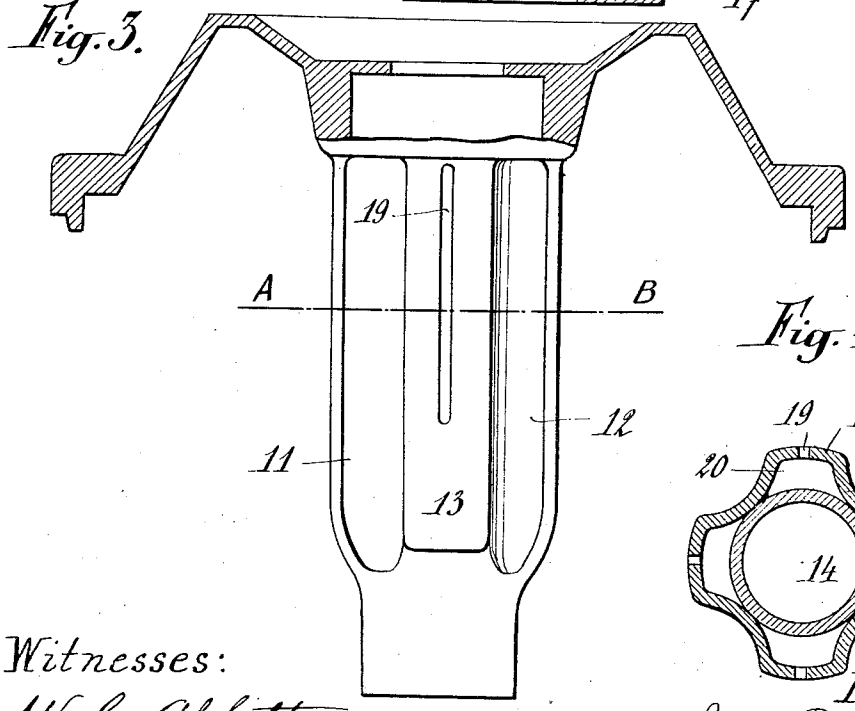

Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 5.

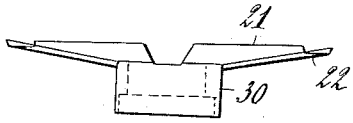


Fig. 6.

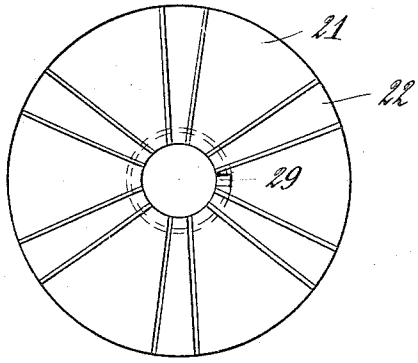
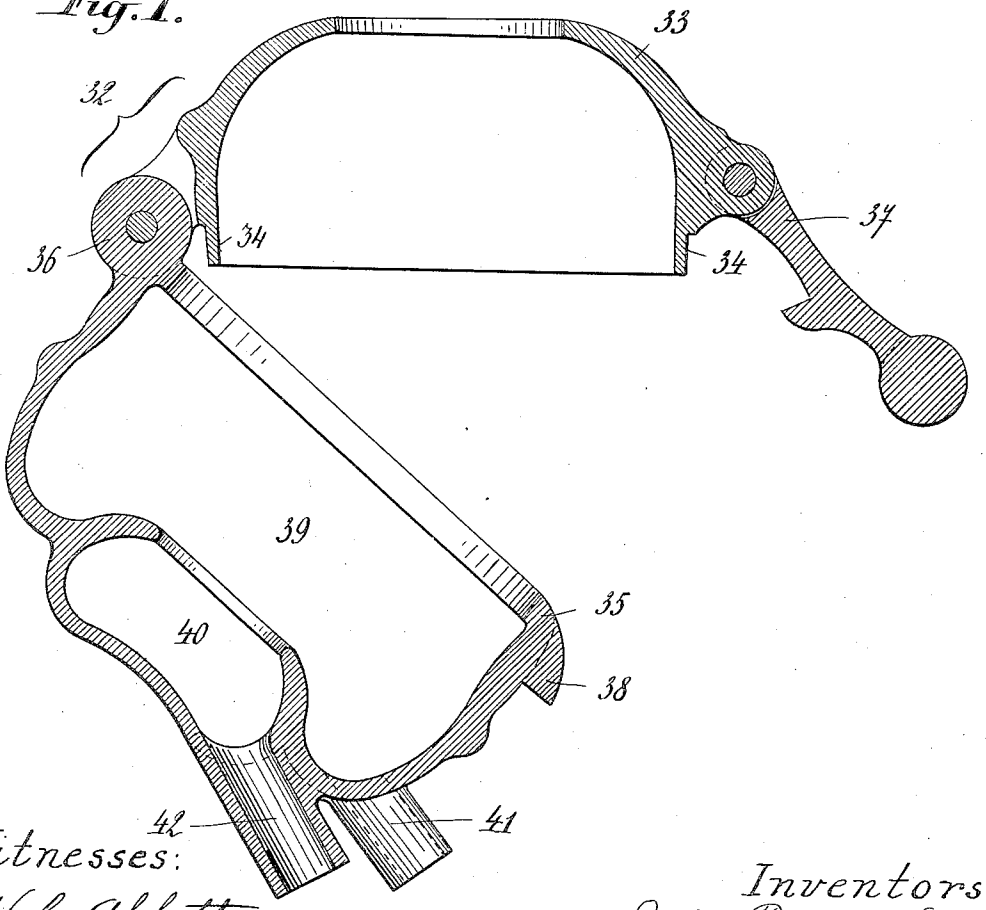


Fig. 7.



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UNITED STATES PATENT OFFICE.

JULES PERSOONS AND ALPHONSE PERSOONS, OF THILDONCK, BELGIUM.

DRUM FOR CENTRIFUGAL CREAM-SEPARATORS.

941,809. Specification of Letters Patent. Patented Nov. 30, 1909.

Original application filed February 16, 1905, Serial No. 287,598. Divided and this application filed February 6, 1907. Serial No. 356,000.

To all whom it may concern:

Be it known that we, JULES PERSOONS and ALPHONSE PERSOONS, both manufacturers and subjects of Belgium, residing at Thildonck, in the Kingdom of Belgium, have invented new and useful Improvements in Drums for Centrifugal Cream-Separators, of which the following is a specification.

This invention relates to the drums of centrifugal cream separators and more particularly to a special construction of said drums and coöperating parts and has for its object to insure an accurate and uniform connection of the several parts of said drums, also to facilitate the mounting of the drums and to provide means for delivering continuously and uniformly the cream and the skimmed milk.

The invention consists more particularly in the special constructions and combinations of parts as hereinafter fully described and pointed out in the appended claims.

Referring to the annexed drawings: Figure 1 is a vertical sectional view of a centrifugal cream separator constructed according to the invention. Fig. 2 is a separate sectional view at an enlarged scale of the drum of the cream separator, parts being broken away. Fig. 3 is a separate view, partly in section of the cover of the drum and of the central tube of said drum used for effecting the connection of said cover with the drum properly so called. Fig. 4 is a horizontal section through the central tube on line A B in Fig. 3. Fig. 5 is an elevation of the false bottom placed in the drum. Fig. 6 is a plan of said false bottom. Fig. 7 is a separate sectional view of the collecting casing of the drum in an open condition.

In the drawings: 1 is the drum of a centrifugal cream separator, said drum being freely suspended as usual at the end of a rod 2 rotated by any suitable driving mechanism 3 located in the upper part of the frame 4 of the cream separator. The drum 1 is formed of two parts: a cover 5 and a drum body 6.

As shown in Figs. 2 and 3 of the drawings, the cover 5 is in the shape of a truncated cone, said cover being provided at its larger base or lower edge with a flange 7, the latter being adapted to fit into a groove 9 in the upper edge of the drum body 6. Within said groove is positioned a compressible ring or packing 8 which is composed of india rubber, or other equivalent material, which is adapted to be compressed by the action of the cover when clamped into position for the purpose of tightly closing the drum. The employment of a cover 5 in the form of a truncated cone is advantageous for the reason that it reduces to a minimum the "dead" or non-operating space within the interior of the drum, said dead space of the drum failing to contribute to the efficiency of the separator in the operation thereof. Said cover 5 is provided with a central feed opening 10 through which the milk to be treated can be introduced into the drum, and, furthermore, the cover 5 is provided with a central tube 11, the latter depending from the small base or upper end of said cover 5, as shown clearly in Figs. 1, 2 and 3 of the drawings. Said central tube 11 is of peculiar cross sectional shape, as shown more clearly in Fig. 4, said tube being provided with longitudinal inwardly extending projections 12 which alternate with the segmental portions 13, said segmental portions 13 being provided with longitudinal slots 19, shown in Figs. 3 and 4, said longitudinal slots alternating with the inwardly extending projections 12. The projections 12 are integral with the central tube 11. Said tube is provided, at a point intermediate its ends, with a female threaded portion 14, into which is adapted to be screwed means for connecting the drum detachably to the driving rod 2, said connecting means being, generally, in the form of a member or bolt 15.

As shown in Fig. 1, member 15 is integral with the tubular part 18 depending from the bottom part of drum 1, and the upper part of said member 15 is provided with an external thread to engage with threaded part 14 of the tube 11, said upper part of the member 15 having a female threaded socket into which is screwed the separate suspending member 16, the latter being adapted for loose connection with the driving rod 2. It is preferred, however, to make the member 15 in the form of a bolt which is separate from the drum, as shown in Fig. 2, and in the construction of this separate bolt or member 15, its lower part is provided with a flange 17 adapted to be engaged firmly with the extended tubular part 18 of the drum, said bolt 15 of Fig. 2 being threaded in

socket as shown in Fig. 1 for the purpose of coupling it to tube 11 and to the suspending member 16, in the manner hereinbefore described in connection with said Fig. 1.

The circular portions 13 of the central tube 11 are provided with longitudinal openings 19 through which the milk introduced through the opening 10 can pass from the interior chamber 20 of the central tube into the drum body 6. The said drum body is adapted to contain a suitable device or milk distributer (not shown) of any well known construction adapted to promote the separation of the cream from the milk introduced into the drum body 6 and is provided at its lower part with a false bottom 21 shown in Figs. 5 and 6. This false bottom serves in the usual manner for providing in the drum conduits or passages for the skimmed milk and cream and it is constructed with stamped ribs 22 resting on the bottom 23 of the drum body 6, the said ribs 22 holding the false bottom at a distance from the bottom 23.

The tubular extension 18 of the bottom 23 of the drum body 6 is provided with edges 24 and 25 forming a circular groove 26 in which the skimmed milk is collected when, after having passed beneath the false bottom 21, it flows through the annular space 27 between the upper edge 24 and the central tubular portion 30 of the false bottom 21. The circular groove 26 is provided with outlet openings 28 for discharging the skimmed milk outside the drum.

The central tubular portion 30 of the false bottom 21 is provided with an opening 29 allowing the passage of the cream, flowing along on the false bottom, into the annular space 31 comprised between the bolt 15 and the tubular extension 18 of the bottom 23 of the drum body 6.

The drum constructed as described is mounted as follows: When the bolt 15 is integral with the drum body, as shown in Fig. 1, the operator proceeds to first place false bottom 21 on the bottom 23 of said drum, after which the usual device or liner (not shown) is introduced into the drum body 6, and then the central tube 11 of cover 5 is introduced into said drum body and screwed to the upper threaded end of bolt 15 until flange 7 of the cover engages with and compresses the packing ring 8, the lower end of tube 11 being fitted into tubular portion 30 of said false bottom 21. When the drum is employed in connection with bolt 15 as a separable fixture, as shown in Fig. 2, the procedure is as follows: The false bottom 21 is first positioned on the bottom 23 of the drum, and the usual device or liner (not shown) is introduced into the drum 6, as previously stated. The central tube 11 of cover 5 is then inserted into the drum body, the flange 7 of said cover resting upon the packing ring, while the lower end of said tube 11 is inserted into the tubular portion 30 of the false bottom, and finally bolt 15 is introduced in the central tube and screwed into the threaded portion 14 thereof, the flange 17 of said bolt 15 being drawn into engagement with the lower edge of tubular extension 18 depending from the bottom of the drum body. The means heretofore described secure tight engagement of the cover 5 with the drum body, even should the packing ring 8 be defective in its action. The drum is then suspended by the part 16 to the rod 2 and placed into a collecting casing 32 the upper part 33 of which is integral with the frame 4 (Fig. 1) of the cream separator. The said part 33 is provided with a vertical flange 34 against which fits the lower part 35 horizontally pivoted at 36 on the upper part. The latter is further provided with a hook or lever 37 engaging a catch or projection 38 on the lower movable part 35 in such a manner that the collecting casing can be readily opened horizontally. The lower part 35 of the collecting casing forms two chambers 39 and 40 for the skimmed milk and cream respectively, these chambers being provided with discharge openings 41 and 42.

The construction thus described acts as follows: The drum being mounted and placed in the collecting casing 32, as shown in Fig. 1 is rotated as usually and the milk is introduced through the opening 10 of the cover into the central tube 11 in the space or chamber 20 comprised between the screw threaded portion 14 and the circular portions 13 of said tube 11. From the said space or chamber 20 the milk passes into the drum body 6 through the longitudinal openings 19 of the circular portions 13; under the action of the centrifugal force coöperating with the inner usual device (not shown) the cream is separated from the milk and passes through the opening 29 into the annular space 31 from which it is discharged into the chamber 40 through the openings 43 provided in the circular portion or head 17 of the bolt 15. The skimmed milk projected against the wall of the drum body 6 runs beneath the false bottom 21 into the conduits formed by the stamped ribs 22 and flows through the annular space 27 into the groove 26 from which it is discharged through the outlet openings 28 into the chamber 39 of the collecting casing 32, the tightness of which is perfectly secured by means of the vertical flange 34. The skimmed milk and the cream are then discharged through the discharge openings 41 and 42. As it will be readily understood, owing to the construction above described, the drum of the cream separator and its coöperating parts can be easily connected and disconnected for inspection. The said operation can be greatly

facilitated by providing the head 17 of the bolt 15 with a recess 44 of square or any other suitable shape for use in placing the drum or bolt on a point or head of corresponding shape for effecting the connection of the drum to the cover.

This application is a division of a prior application, filed by us entitled Centrifugal cream separators, filed Feb. 16, 1905, Serial No. 287,598.

Having thus described our invention, what we claim is:

1. A drum for cream separators comprising a cover, a drum body, a central tube connected to said cover, the said central tube being provided with circular portions having longitudinal openings and with internal projections, a screw threaded portion connected to the said internal projections, a bolt engaging with said screw threaded portion and providing a connection between the drum body and the cover, and a false bottom provided with stamped ribs holding the false bottom at a distance from the bottom of the drum body.

2. A drum for cream separators comprising a cover, a drum body, a central tube integral with the cover, the said tube being provided with circular portions having longitudinal openings and with internal projections, a screw threaded portion connected with the internal projections of the central tube, a bolt engaging the said screw threaded portion, and a false bottom placed in the drum body, the said false bottom being provided with stamped ribs and with a tubular extension forming an annular passage with the drum body.

3. A drum for cream separators comprising a drum body, a cover, a tube depending from said cover into said drum body, and a locking member separate from the drum body and extending upwardly with respect to the bottom thereof, said locking member engaging tightly with said bottom and having detachable threaded connection with said depending tube.

4. A drum for cream separators comprising a drum body, a cover, a tube depending from said cover and provided with an internal thread, and a locking member separate from the drum body and having a flanged lower end adapted to engage with the bottom thereof, said member being threaded and screwed into the internal thread of said central tube, whereby the flanged end of the locking member is drawn tightly against the bottom by the threaded connection between the locking member and the tube.

5. A drum for cream separators comprising a drum body, a cover therefor, a tube depending from the cover, said tube being provided with longitudinal grooves in its external surface and with longitudinal slots intermediate said grooves, and means cooperating with said tube for locking said cover on the drum body.

6. A drum for cream separators comprising a drum body, a cover therefor, a tube depending from the cover, said tube being provided on its external surface with longitudinal grooves and also provided with longitudinal projections extending outwardly with respect to said tube, said grooves and projections alternating with each other, and means coöperating with the tube and the drum body for locking the cover upon said body.

7. A drum for cream separators provided with a tube depending from the bottom thereof, a cover, a tube depending from the cover, the lower portion of said tube on the cover being fitted in the tube on the drum bottom, and a false bottom having a tube which fits between the aforesaid tubes of the drum bottom and the cover.

8. A drum for cream separators provided with a tube depending from the bottom thereof, a cover, a tube depending from the cover and entering the tube of the drum bottom, and a false bottom having depending ribs resting on the drum bottom, said false bottom being provided, also, with a depending tube which fits between aforesaid tubes of the drum bottom and the cover, said tube of the false bottom forming with the tube of the drum bottom certain passages for the exit of a liquid from the drum, and said tube of the false bottom being provided, also, with a separate liquid passage which leads to a chamber at the bottom of the tube on the drum-body.

9. A drum for cream separators comprising a drum-body, a tube depending from the bottom of said drum-body, radial liquid outlets in said tube, ribs on the inner surface of the tube, respectively, above and below the radial outlets therein, and a false bottom having a tube which fits in the tube of the drum bottom and engages the aforesaid ribs to provide therewith a chamber in communication with said radial outlets.

10. A drum for cream separators comprising a hollow body, a cover having the shape of a truncated cone, a central tube depending from said cover, and a bolt separate from the drum body and coöperating with said tube and the drum body for locking the cover upon the body.

11. A drum for cream separators comprising a hollow body, a cover having two bases of different diameters, the base of greatest diameter of the cover engaging with the drum body, a central tube depending from the cover at the base of smallest diameter thereof, and a bolt coöperating with said tube and the drum body for locking said cover in engagement tightly with said body.

12. A drum for cream separators comprising a hollow body, a cover engaging with

said body, a tube depending from the cover, a tubular extension depending from the bottom of the drum body, a false bottom provided with depending ribs which rest upon the bottom of said drum body, said false bottom being provided, also, with a depending tube adapted to fit into the tubular extension from the drum body, said tube with the false bottom forming intermediate passages with the tubular extension of said bottom, a circular passage in the tubular extension of the drum body, and radial outlets in communication with said circular passage for the exit of a liquid from the drum.

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

JULES PERSOONS.
ALPHONSE PERSOONS.

Witnesses:
GREGORY PHELAN,
PAUL MEYER.