

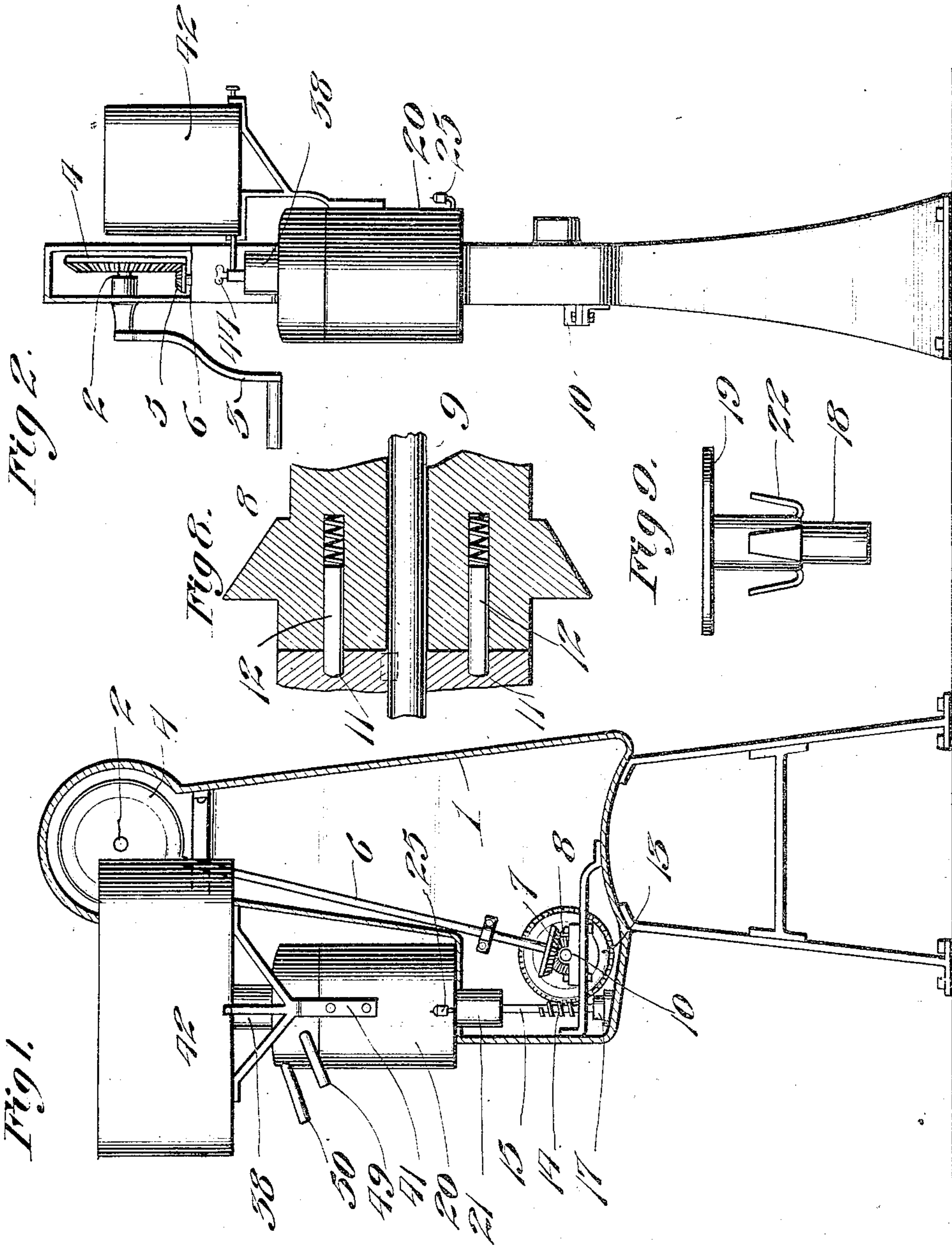
No. 816,199.

PATENTED MAR. 27, 1906.

F. A. WEST.
CENTRIFUGAL CREAM SEPARATOR.

APPLICATION FILED JAN. 20, 1905.

2 SHEETS—SHEET 1.



Witnesses
Phil. C. Barnes.
John F. Byrne.

Inventor
Fred A. West
By Victor J. Evans
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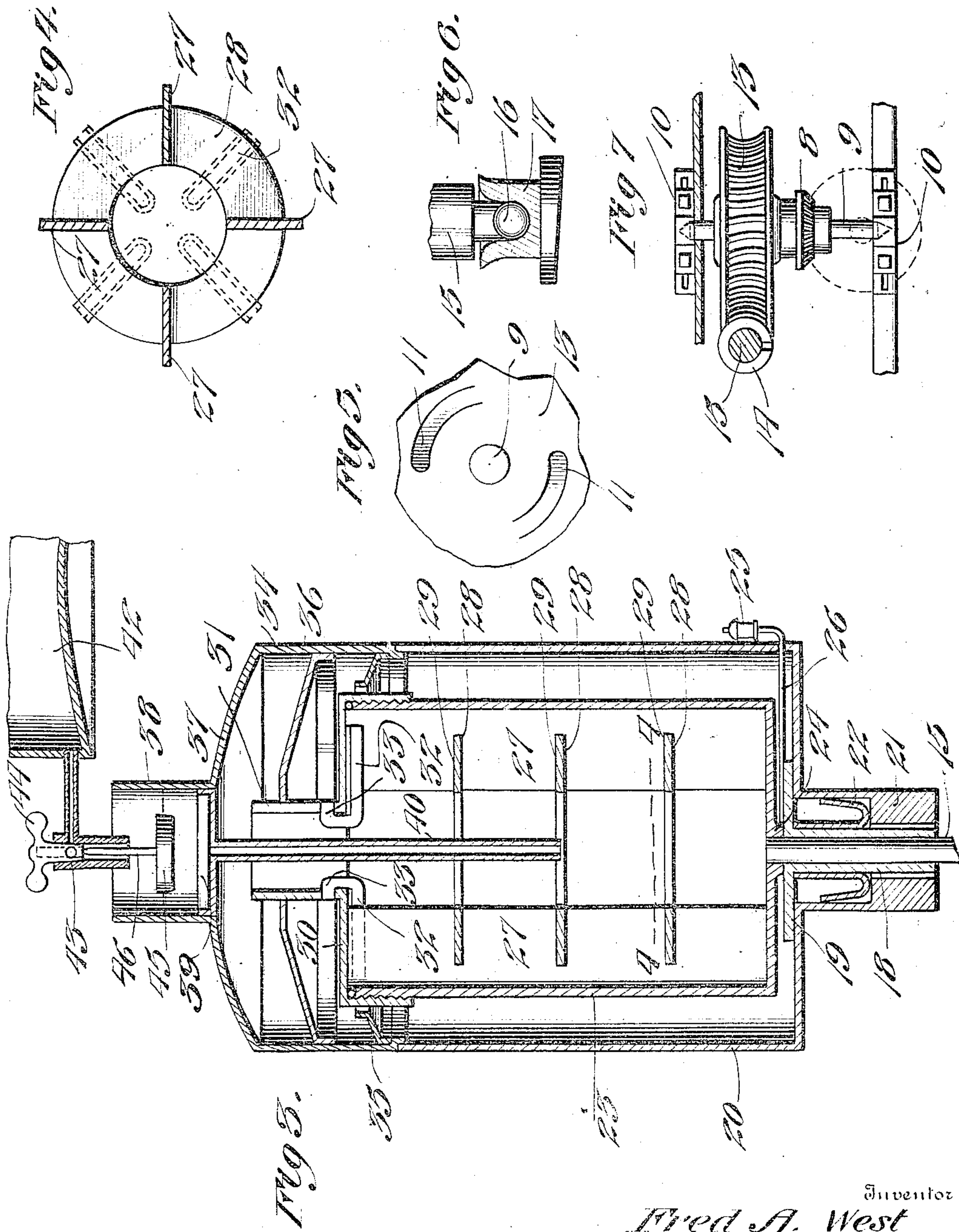
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UNITED STATES PATENT OFFICE.

FRED A. WEST, OF PORTAGE, WISCONSIN.

CENTRIFUGAL CREAM-SEPARATOR.

No. 816,199.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed January 20, 1905. Serial No. 242,014.

To all whom it may concern:

Be it known that I, FRED A. WEST, a citizen of the United States, residing at Portage city, in the county of Columbia and State of Wisconsin, have invented new and useful Improvements in Cream-Separators, of which the following is a specification.

This invention relates to cream-separators.

The objects of the invention are to improve the construction of such devices; furthermore, to increase their efficiency in operation.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed as a practical embodiment thereof.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of a cream-separator constructed in accordance with the invention. Fig. 2 is an end elevation thereof. Fig. 3 is a vertical section. Fig. 4 is a horizontal section on the line 4-4 of Fig. 3. Figs. 5, 6, 7, 8, and 9 are detail views.

Like reference-numerals indicate corresponding parts in the several views.

The reference-numeral 1 indicates a frame which may be of any suitable form and construction. Journaled in the upper portion of the frame 1 is a shaft 2, to which are attached a crank-handle 3 and a bevel gear-wheel 4. Meshing with the bevel-gear 4 is a small bevel-gear 5, mounted on the upper end of a shaft 6, suitably journaled in the frame 1 and having on the lower end thereof a bevel-gear 7, meshing with a bevel-gear 8, mounted loosely upon a shaft 9, which is mounted in adjustable bearings 10. The bevel-gear 8 is provided with spring-pressed pins 12, which are adapted to engage grooves 11 in a worm-wheel 13, fixed upon the shaft 9. As shown in Fig. 5, the grooves 11 in the worm-wheel 13 increase gradually in depth from one end to the other, so that the pins 12 and grooves 11 form a ratchet connection between the bevel-gear 8 and the worm-wheel 13. The worm-wheel 13 meshes with a worm element 14 upon the lower end of a vertical shaft 15, which rests at its lower end upon a ball 16, mounted in a bearing-box 17, having a flared opening therein, as shown in

Fig. 6. The shaft 15 at its upper end extends through the sleeve portion 18 of a bearing-plate 19, disposed inside a casing 20. The sleeve portion 18 extends through a bearing-box 21, secured to the lower end of the casing 20 and having disposed therein a spring-bushing 22. Secured rigidly to the upper end of the shaft 15 is a receptacle 23, which is provided on its under surface with an annular flange 24, resting upon the bearing-plate 19. An oil-receptacle 25, having a supply-pipe 26, serves to lubricate the shaft 15.

The receptacle 23 is provided interiorly with a plurality of vertically-extending blades 27, which are formed in their inner edges with slots 28, into which are fitted collars or rings 29. The blades 27, together with the collars or rings 29, are adapted to be removed bodily from the receptacle 23 when it is necessary to clean the same.

Removably secured in any suitable manner to the upper end of the receptacle 23 is a cap or cover 30, having an upwardly-extending sleeve portion 31. Secured to the under portion of the cap or cover 30 is a plurality of what I shall, for convenience, term "milk-exhaust pipes" 32, the lower end of each of which pipes terminates adjacent to the inner periphery of the receptacle 23 at the upper end thereof. The upper end of each of the pipes 32 extends into a port 33 in the sleeve portion 31 of the cap or cover 30.

Removably fitted upon the upper end of the casing is a trough-supporting member 34, having an annular milk-trough 35 disposed adjacent to the upper end of the receptacle 23 and an annular cream-trough 36 disposed adjacent to the upper end of the sleeve portion 31 of the cap or cover 30.

Removably fitted upon the trough-supporting member 34 is a cover 37, having an upwardly-extending sleeve portion 38. Secured in the lower end of the sleeve portion 38 is a plate or bottom 39, having a depending tube 40, which extends downward into the receptacle 23.

Secured to the casing 20 is a bracket 41, in which is removably supported a milk-reservoir 42, having a faucet 43 arranged to deliver milk into the sleeve portion 38 of the cover 37. The faucet 43 is provided with a handle 44, by means of which it may be man-

ually controlled. Disposed inside the sleeve portion 38 is a float-valve 45, having an upwardly-extending stem 46, which projects into the mouth of the faucet 43.

5 Constructed as above described the operation of the improved apparatus is as follows: The unseparated milk and cream is placed in the reservoir 42 and the faucet 43 is opened. The "whole" milk, as the mixture of milk
10 and cream is called, flows from the faucet 43 into the sleeve portion 38, the float-valve 45 serving automatically to cut off the flow as soon as a sufficient quantity of milk has been supplied. From the cup which is formed by
15 the sleeve portion 38 the milk flows through the tube 40 into the receptacle 23. By rotating the crank-handle 3 the receptacle 23 is caused to rotate at an extremely high rate of speed. The blades 27 in the receptacle 23
20 cause the whole milk therein to rotate at practically the same speed as the receptacle. By centrifugal force the milk is thrown to the periphery of the receptacle, and the cream remains at the central portion thereof. As
25 the whole milk continues to be fed to the receptacle 23 the skimmed milk adjacent to the periphery thereof flows upward through the exhaust-pipes 32 and is delivered through the ports 33 onto the upper surface of the cap
30 or cover 30, after which by centrifugal force said skimmed milk is thrown against the wall of the trough-supporting member 34 and descends into the trough 35, from which it may be drawn by means of a pipe 49. The cream
35 in the central portion of the receptacle ascends through the sleeve portion 31 of the cap or cover 30 and is thrown by centrifugal force against the wall of the trough-supporting member 34, after which it descends into
40 the cream-trough 36, from which it is drawn through the pipe 50.

The rings or collars 29 serve to prevent the whole milk, which is located between the cream in the central portion of the receptacle
45 and the skimmed milk in the outer portion thereof, from rising toward the upper end of

the receptacle until it has been thoroughly separated into milk and cream.

It is found in practice that when the receptacle 23 is rotated at a high rate of speed a
50 considerable amount of vibration is produced. For this reason the milk and cream troughs 35 and 36, respectively, are separated annularly from the upper ends of the receptacle 23 and the sleeve portion 31. The spring-bush-
55 ing 22 serves to take up the vibration and to increase the efficiency of the apparatus in operation.

From the foregoing description it will be apparent that the various parts of the im-
60 proved apparatus are adapted to be readily separated for the purpose of cleaning the same.

Changes in the precise embodiment of invention illustrated and described may be
65 made within the scope of the following claim without departing from the spirit of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new, and desire to secure by Let-
70 ters Patent, is—

A milk-separating apparatus having a rotary receptacle, a plurality of vertical blades arranged adjacent to the periphery of said
75 receptacle and having slots extending outwardly from their inner edges, the outer edges of said blades terminating adjacent to the inner periphery of the receptacle; and a plurality of horizontally-disposed collars fitted
80 into the slots of said blades, the outer edges of said collars terminating short of the outer edges of said blades, the said collars constituting the sole means for holding the blades
85 in assembled position and the central portion of the receptacle being in free communication with the spaces between the collars.

In testimony whereof I affix my signature in presence of two witnesses.

FRED A. WEST.

Witnesses:

W. H. CLARKE,
G. M. BOND.