No. 729,163. PATENTED MAY 26, 1903.

W. C. HARTMANN.

CENTRIFUGAL CREAM SEPARATOR.

APPLICATION FILED SEPT. 4, 1902.

NO MODEL.

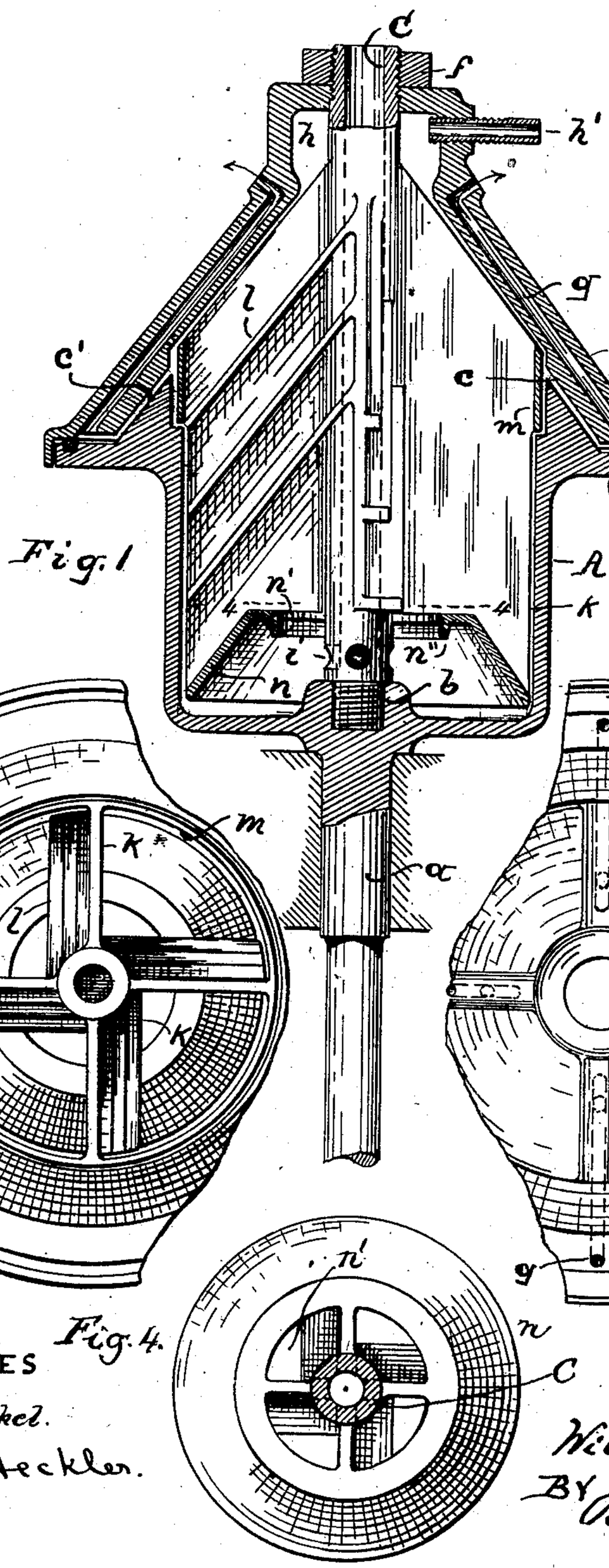

Fig. 1

Fig. 2

Fig. 3.

Fig. 4.

WITNESSES

Wm Reuscher.

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No. 729,163. Patented May 26, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM C. HARTMANN, OF ELYRIA, OHIO, ASSIGNOR TO STANDARD SEPARATOR COMPANY, LTD., OF ELYRIA, OHIO.

CENTRIFUGAL CREAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 729,163, dated May 26, 1903.

Application filed September 4, 1902. Serial No. 122,092. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. HARTMANN, a citizen of the United States of America, and a resident of Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Centrifugal Cream-Separators, of which the following is a specification.

My invention relates to cream-separators; and it consists more particularly in an improvement on that kind of a separator for which I have obtained a patent December 31, 1901.

The object of my improvement is to still further perfect such separators in order to obtain the highest and best possible results. I attain these objects in a machine constructed and arranged substantially as shown in the accompanying drawings, in which—

Figure 1 represents a central vertical sectional view of said machine; Fig. 2, a partial plan view of the lower part of said machine. Fig. 3 is a partial-inverted plan view of the upper part of said machine or cream-separator. Fig. 4 is a sectional view on line 4 4 of Fig. 1.

Like letters of reference denote like parts in the drawings and specification.

Before describing particularly wherein the improvements consist I will give a brief description of the machine generally and quote the following from specification of the above-mentioned patent:

"Substantially the machine consists of a revoluble casing A, a cover B for same, and a removable supply-tube C. (See Figs. 1 and 2.) Cylindrical form is preferred for the casing A proper. The shaft part *a* thereof is guided in a suitable bearing, and below the bearing the shaft is driven by or from any suitable source of power. In such manner or similarly may the rotation of this machine be effected. Inside the casing is a screw-threaded socket *b*, enabling secure connection of the feed-tube C, above referred to. Part way down from the upper terminal *c* is formed a flange *d* around the casing A. The conical cover B extends over the terminal *c* and forms a packed joint with flange *d* by means of ring *e* upon being tightened by means of nut *f*, which nut has a screw-threaded connection with tube C. From the lower portion of said cover to the upper outer portion thereof are leading a series of ports *g*, which afford exit of the skim-milk from said separator, while in the dome *h* there is a pipe *h'* for drainage of the cream. The milk enters the separator by way of the lateral ports *i*, which are located near the bottom of tube C. Formed in alinement with said ports and preferably integral with the tubular column C are the wings *k*. Said wings extend in a radial direction in close proximity to the periphery of the casing, so as to form a series of compartments which more or less divide the contents of the casing, and thereby facilitate the separation of the cream from the skim-milk. Upon each of the wings there are provided a series of slanting blades *l*, which gradually diminish in width from the bottom up. (See Fig. 1.) Said blades are also provided to enhance the separation of the specifically lighter mass (cream) from the heavier liquid, (skim-milk.)"

In this my present improvement I form a belt or annular obstructing device *m* in connection with the wings *k*. The location of said belt is about central in relation to the annular slit or entrance to chamber *c'*, an annular space being formed between the belt and the bowl through which the skim-milk passes. This structure prevents the contents of the bowl, which are in horizontal alinement with the annular slit, from being thrown outward by the centrifugal action to an extent where the upward movement of the skim-milk to its outlet would be checked. At or near the bottom of the wings *k* and tube C is provided a hood *n*, having a central opening *n'* and depending flange *n''*. The object of this hood is to serve in the capacity of an intercepter of impurities or foreign matter which may be carried with the milk into said apparatus.

The milk upon entering the revoluble vessel A by way of ports *i* is first thrown toward the wall of the vessel, owing to the centrifugal force developed by the rotation of said vessel. Gradually the cream is separated therefrom and forced to a more central portion of the vessel, from where it finds exit by way of pipe *h'*. The skim-milk rises up in

the outer portion of the vessel and passes over the terminal *c*, thence downward, and finally up and outward by way of the ports *g*. Outside the cover the cream as well as the skim-milk are collected in suitable pans. (Not shown.) In directing the flow of the skim-milk over the dam adjacent the terminal *c* the separation of the cream therefrom is made complete, as the cream and the lighter fatty substances will be prevented from passing out of the bowl through the annular slit, as might happen by the sudden outward movement of the contents through the annular slit. The belt *m* at the upper portion of the straight part of the wings in a measure obstructs the entrance to chamber *c'*, the flow of the liquid thereto being throttled more or less.

What I claim, and desire to secure by Letters Patent, is—

1. In a centrifugal separator the combination with the rotating bowl of a removable supply-tube, the said tube being provided with wings, slanting blades, a belt and a hood all coöperating with said bowl substantially in the manner as and for the purpose set forth.

2. In a cream-separator the combination with the rotating bowl and its cover of a winged supply-tube provided with a belt, the said belt reaching above and below the annular opening formed by said bowl and cover.

3. In a cream-separator the combination with the rotary bowl and the supply-tube located therein of a flanged intercepter arranged at or near the bottom of said tube for the purpose as set forth.

4. In a centrifugal separator, the combination with the bowl having an annular discharge-opening for the skim-milk, of an annular obstructing device for said discharge-opening, said device preventing direct centrifugal pressure at said opening.

5. In a centrifugal separator, the combination with the bowl having an annular discharge-opening for the skim-milk, of an annular obstructing device for said discharge-opening, said device having a concentric position relative to said opening.

6. In a centrifugal separator, the combination with the bowl having an annular discharge-opening for the skim-milk, of an annular obstructing device for said discharge-opening, said device having a concentric position relative to said opening, the space between said device and the walls of said opening being restricted, whereby the skim-milk will be free from direct centrifugal pressure at the opening.

Signed at Cleveland, Ohio, this 7th day of November, 1901.

WILLIAM C. HARTMANN.

Witnesses:

DORA HECKLER,

B. F. EIBLER.