

J. MÉLOTTE & W. REUTHER.
CENTRIFUGAL CREAMER.

No. 521,722.

Patented June 19, 1894.

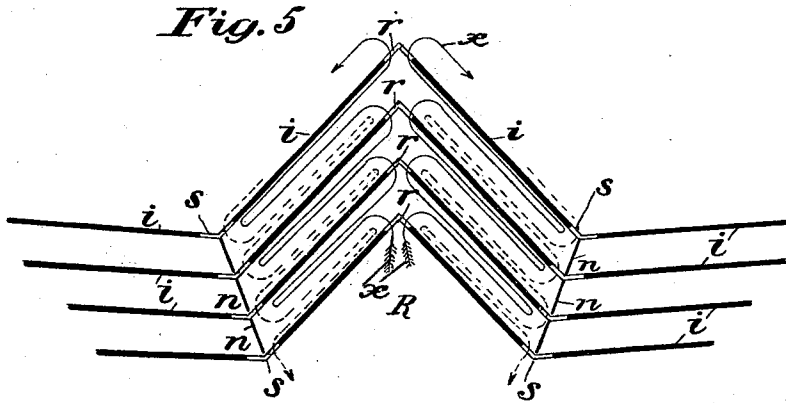


Fig. 3

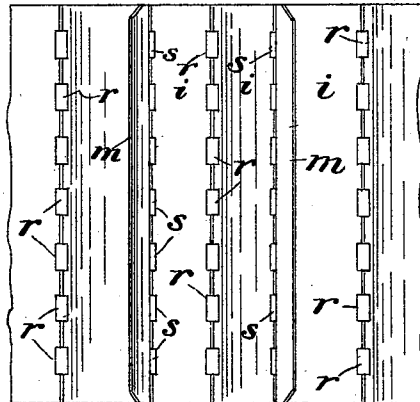
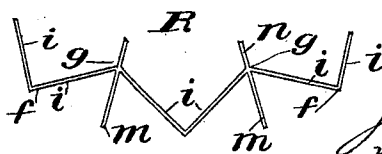


Fig. 4



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Inventors:

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Michael Reuther

By

G. Sittman

Atty.

(No Model.)

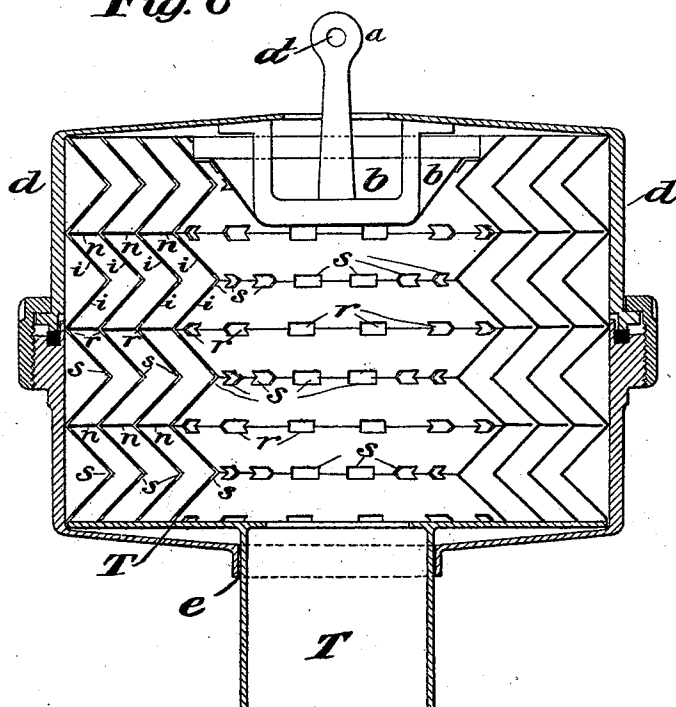
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Fig. 6



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Fig. 7

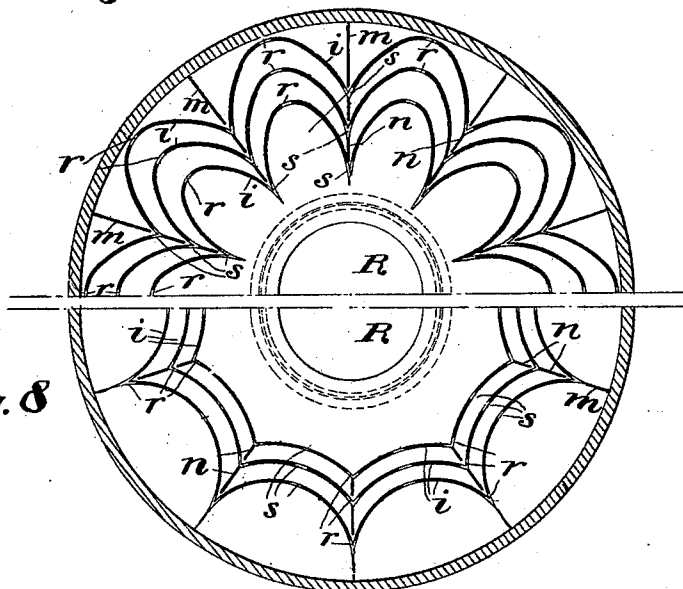


Fig. 8

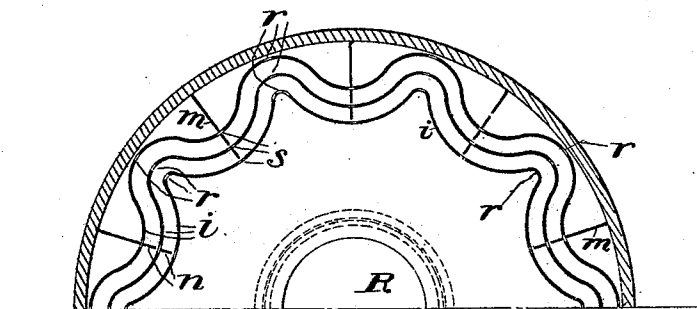


Fig. 9

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Att'y

UNITED STATES PATENT OFFICE.

JULES MÉLOTTE, OF REMICOURT, BELGIUM, AND WILHELM REUTHER, OF
HENNEF-ON-SIEG, GERMANY.

CENTRIFUGAL CREAMER.

SPECIFICATION forming part of Letters Patent No. 521,722, dated June 19, 1894.

Application filed August 24, 1893. Serial No. 483,994. (No model.) Patented in Belgium February 29, 1892, No. 98,564; in Germany March 13, 1892, No. 52,294; in France August 1, 1892, No. 223,395, and in England August 12, 1892, No. 14,575.

To all whom it may concern:

Be it known that we, JULES MÉLOTTE, a subject of the King of Belgium, residing at Remicourt, Belgium, and WILHELM REUTHER, a subject of the King of Prussia, residing in Hennef-on-Sieg, Rhenish Prussia, Germany, have invented certain Improvements in Centrifugal Creamers, (for which patents have been granted in England August 12, 1892, No. 14,575; in Belgium February 29, 1892, No. 98,564; in France August 1, 1892, No. 223,395, and in Germany March 13, 1892, No. 52,294,) of which the following is a specification.

This invention relates to certain improvements in centrifugal cream separators and has for its object to provide an apparatus by which the cream may be separated from the blue milk in a more thorough and uniform manner and with a less expenditure of time and power than is possible with other devices heretofore employed for this purpose, all as will be hereinafter fully set forth.

The novel features of our invention will be carefully defined in the claims.

In order that our invention may be the better understood, we have illustrated in the accompanying drawings an apparatus embodying our improvements, in which drawings—

Figure 1 is a vertical axial section of the separator taken along the line A—C in Fig. 2, and Fig. 2 is a horizontal section taken substantially along the line D—G in Fig. 1. Fig. 3 is a side elevation and Fig. 4 a plan of a portion of the outer member of the series of internal diaphragms or partitions. Fig. 5 is a diagrammatic view illustrating the operation. Fig. 6 is a fragmentary sectional view of a modified arrangement of the internal diaphragms or partitions which will be hereinafter referred to. Figs. 7, 8 and 9 are similar views of other modified arrangements of these parts to be hereinafter referred to.

In these views *d* represents the drum which is suspended from the bearing block *a*, provided with an eye *a'*. In the upper face of the drum *d* is formed a central opening and within the drum beneath and surrounding this opening is arranged a receiver *b* for the milk to be creamed. This milk chamber *b* is provided about its upper end with a series of

outlets *c*, through which the milk is sprayed by centrifugal force into the interior of drum *d*.

Within drum *d* is arranged a series of concentric angular diaphragms or partitions *i*, each having a star shape, the projecting angles *f* as well as the re-entering angles *g* of which (see Fig. 5) are provided at their apices with openings *r*, *s*, respectively, arranged at intervals along the entire height of the partitions and serving for the passage of the blue milk and cream through the apparatus. The outer partition *i* is held in place in the drum *d* and at a proper distance from the internal walls thereof by flanges or stay-plates *m*, projecting laterally from its sides, and the remaining members of the series of partitions *i* are provided with short lateral stays *n*, in the planes of the stays *m*, whereby they are kept suitably spaced as will be readily perceived.

The full milk after its introduction into the chamber *b* is projected under the centrifugal force through the outlets *c* falling partly within the inner clear space *R* of the drum and partly in the compartments comprised between the more central of the several partitions *i*. Under the centrifugal force the milk in the central chamber *R* first fills the projecting angles of the central plate *i* of the drum and escapes through the openings *r* toward the periphery. But when the apparatus has been sufficiently filled with milk, the milk from this central chamber *R* can move very slowly toward the periphery of the drum, being retarded in its outward movement by the milk contained in the several compartments comprised between the partitions *i*. On entering the more central of these compartments it is retarded in its radial movement by the milk already contained therein and can only advance toward the periphery as the creamed milk passes off from said chamber. At this stage, the creaming, represented diagrammatically in Fig. 5, begins. Under the action of the centrifugal force the milk in the more central compartment is separated into cream and blue milk, and the cream being lighter, travels along the outer surface of the partition *i* toward the openings *s*, while the blue milk, being heavier, circu-

lates first between the two plates as will be hereinafter described.

Arrived at the apex g of the re-entering angle of the partition the cream passes by way of the apertures s and enters the central compartment R of the creamer, this operation taking place in each of the several compartments. The cream thus separated still holds a considerable proportion of blue milk and having therefore a high density, circulates first in the middle of the compartment in which it forms and passes toward the openings r . After its density has sufficiently diminished, by the separation of blue milk, the cream returns, following the outer surfaces of the partition i , and passes by way of the apertures s into the more central of the compartments. In this compartment it first circulates in the middle of the compartment as before described, and mixing with the cream separated in this compartment, until its density has sufficiently diminished, it returns along the outer surface of the partition and passes through openings s into a still more central compartment, gradually passing into the central space R, whence it falls through the central tube T. The blue milk, like the cream travels all along one side of each of the compartments, but in a reverse direction. Its course is indicated in Fig. 5 by arrows x . It circulates as above stated, first in the middle of the compartment, passing toward the apertures s , but when by reason of the separation of the cream its density has sufficiently increased, it changes its direction and follows the inner surfaces of the partition i moving toward the apertures r , through which it passes into the next compartment from the center of the drum. It traverses this compartment in a manner similar to the above eventually escaping from the drum by any suitable outlet. As herein shown this outlet is in the nature of an opening e formed centrally in the bottom of drum d and of a diameter somewhat larger than the external diameter of the tube T. This tube T has at its upper end an enlarged flattened annulus T' forming a false bottom for the drum d as clearly seen. The blue milk descends beneath the outer edge of this annulus T' and escapes at the outlet e .

We do not wish to be understood as limiting ourselves to the exact construction and arrangement of the apparatus as above set forth,

since it is evident that many changes and alterations may be made therein without material departure from the principles of our invention. For example, a greater or less number of the partitions i might be employed or even a single partition might in some cases, fulfill the requirement, or the construction illustrated in Fig. 6 might be employed. In this view the several partitions i are represented as divided vertically into several parts, which are placed one against the other and held in their respective positions by plates n and by the centrifugal force. In this view the plates n instead of being arranged in vertical planes are arranged in horizontal planes, or in some cases the devices shown in Figs. 7, 8 and 9 may be employed. In these devices the partitions are formed with curved or arched surfaces instead of with plane surfaces as in the constructions seen in Figs. 1 to 6. These partitions are likewise provided with apertures and the operation is similar to that previously described.

Having thus described our invention, we claim—

1. In a centrifugal creamer the combination with a rotatable drum, having an inlet and outlets for the cream and blue milk, of an angular or polygonal partition having two series of apertures arranged at different distances from the center of rotation said partition being provided on its outer faces with a series of lateral flanges or stay plates, substantially as set forth.

2. In a centrifugal creamer the combination with a rotatable drum having an inlet and outlets for the cream and blue milk, of a series of polygonal partitions arranged in said drum and provided with lateral flanges or stay plates whereby they are centered in said drum and spaced relatively to one another, each of said partitions being provided with two series of apertures arranged at different distances from the axis of rotation, substantially as set forth.

In witness whereof we have hereunto signed our names in the presence of the subscribing witnesses.

JULES MÉLOTTE.
WILHELM REUTHER.

Witnesses:

JULES HAMOAL,
J. GRASS.