No. 625,067. Patented May 16, 1899.

J. F. SCHROETER.

CREAM SEPARATOR.

(Application filed Dec. 29, 1897.)

(No Model.)

FIG 1

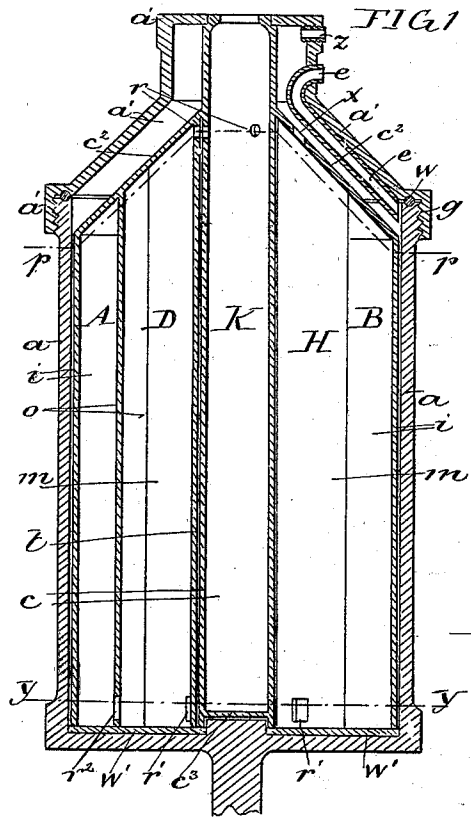


FIG 2

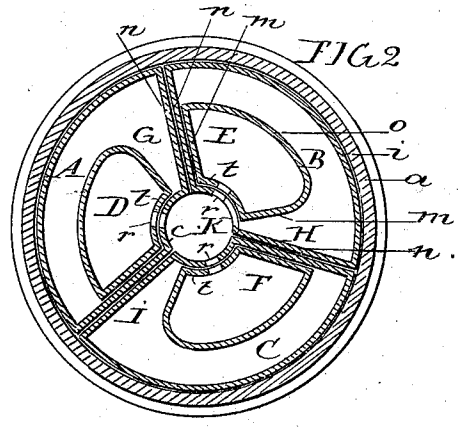


FIG 3

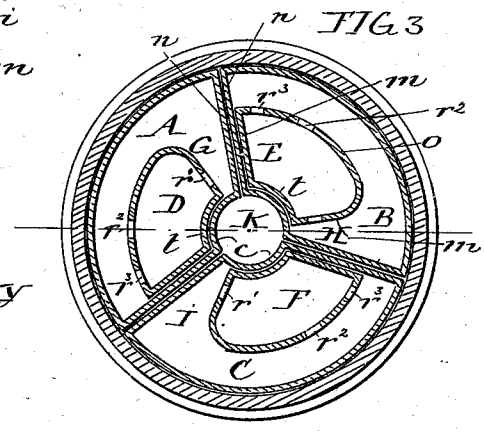


FIG 4

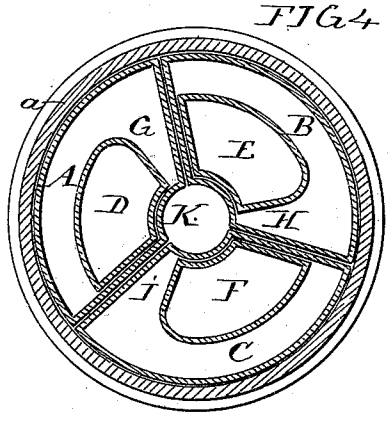
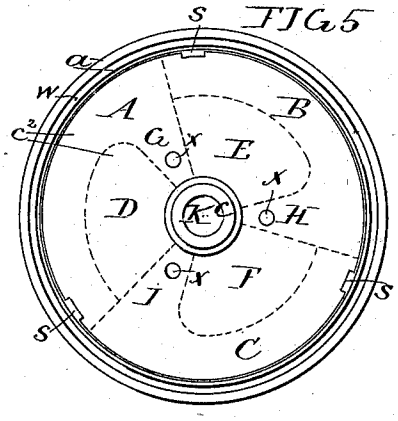


FIG 5



Witnesses

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UNITED STATES PATENT OFFICE.

JOHAN F. SCHROETER, OF COPENHAGEN, DENMARK.

CREAM-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 625,067, dated May 16, 1899.

Application filed December 29, 1897. Serial No. 664,469. (No model.)

To all whom it may concern:

Be it known that I, JOHAN FREDERIK SCHROETER, manufacturer, residing at Vodrofvej 11, Copenhagen, Denmark, have invented certain new and useful Improvements in Separators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention has for its object a centrifugal separator provided with an inner guiding arrangement which forces the fluid to be separated to pass a way that is longer, or even several times longer, than the height of the separator-drum, under which passage the fluid is separated in its particles of different specific weight, which particles are divided into lays of such thickness that they with certainty can be discharged through their respective outlets.

In the accompanying drawings, Figure 1 is a vertical sectional view of a centrifugal separator provided with the new guiding arrangement. Fig. 2 is a horizontal sectional view after the line p, Fig. 1. Fig. 3 is a horizontal sectional view after the line y, Fig. 1. Fig. 4 is a horizontal sectional view after a line between the lines p and y, Fig. 1. Fig. 5 shows the separator seen from above, the cover removed.

The separator-drum a is provided with a cover a', which can be removed when the guiding arrangement has to be taken out for cleaning purposes or the like. The cover is preferably fastened to the drum by screwing it on screw-threads g externally on the top of the drum. Between the cover and the upper edge of the drum is placed a tightening-ring w. The guiding arrangement consists of cells or pipes of a suitable number and shape, which cells or pipes are situated in close proximity to each other and to the inner wall of the drum. In the example shown there are three of such cells or pipes A B C, each of which is formed of the two side walls n n, an outer wall i in close proximity to the inner wall of the drum, and an inner wall c. Within each of these cells or pipes A B C is placed an inner pipe, respectively, D E F, each of which is formed of two side walls m m, an outer wall o, and an inner wall t, which latter is situated in close proximity to the inner wall c of the corresponding cell A, B, or C, while one or both of the side walls m are situated in some distance from the walls n of the outer cells in such a manner that at least one side channel, respectively, G H I, is formed between the inner pipe and its corresponding outer cell or pipe. The inner pipes D E F are closed at the top, or the whole guiding arrangement can be closed by means of a cover c^2, Figs. 1 and 5, in which are inner openings x and outer openings s. At the bottom the pipes can either be open or closed—in the last case by pressing against a disk w', placed at the bottom of the drum. If the pipes are closed below, the inner pipes are near their bottom provided with openings r' for the lighter and r^2 r^3 for the heavier parts of the fluid. (See Figs. 1 and 3.)

The coterminous inner walls c of the outer cells or pipes inclose a tube-shaped central chamber K, closed at the bottom, and from which openings r, situated directly under the cover c^2, lead into the inner pipes D, E, and F.

z and e, Fig. 1, are discharging-pipes, respectively, for the lighter and the heavier parts of the separated fluid.

The fluid that is to be separated is led down to the bottom of the central chamber K in order to ascend along the walls of this central room and, through the openings r, to pass into the inner pipes D, E, and F. The fluid now passes down these inner pipes and is at the same time separated, so that the lighter parts of the fluid, through the openings r', pass into the corresponding side channel G, H, or I, while the heavier parts, through the openings r^2 r^3, pass into that part of the corresponding outer pipe or cell A, B, or C which is nearest to the periphery of the drum. While the separated fluid is passing the outer cells or pipes A B C the separation becomes more intense, as the heavier parts, which through r' have passed out into the side channel, rush toward the periphery, while the lighter parts, which through r^2 and r^3 have followed the heavier parts toward the periphery, are forced toward the inner periphery of the fluid-ring through the side channels. At last the heavier parts pass through the openings s of the cover c^2 and are discharged through the pipe e, while the lighter ones are led away through

the openings x and the pipe z in the outer cover.

The openings r', arranged at the bottom of the inner pipes, might, of course, just as well be arranged in the opposite side. If so, they are to continue through the three adjacent pipe-walls $m\ n\ n$. There may also be openings r' in both sides of the inner pipes.

The lower the height of the openings r', r^2, and r^3 is the longer the way which the fluid has to pass will be, just as the way of the fluid will be shorter when the height of the openings is increased, so that the duration of the separation thus can be regulated.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

A centrifugal creamer comprising a main receptacle adapted to be rotated, a central tubular compartment K located therein and formed by the curved walls A, B and C adapted to receive the fluid to be separated and having outlet-openings r, a plurality of outer compartments each extending from the inner wall of the main receptacle to the outer wall of the compartment K and having radially-extending side walls, an inner compartment within each outer compartment located in proximity to the inner wall thereof and also in proximity to one side wall whereby an outer and a side channel are formed between each inner and outer compartment, said inner compartments having passages leading to said outer and side channels for effecting the separation of the fluid, and separate discharge-openings at the upper end of the main receptacle for the separated fluid, substantially as described.

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

J. F. SCHROETER.

Witnesses:
THEODOR HOLM,
E. HOLST.