No. 823,948. PATENTED JUNE 19, 1906.

F. KAEHL.

CENTRIFUGAL MACHINE.

APPLICATION FILED JULY 9, 1904.

Fig. 1.

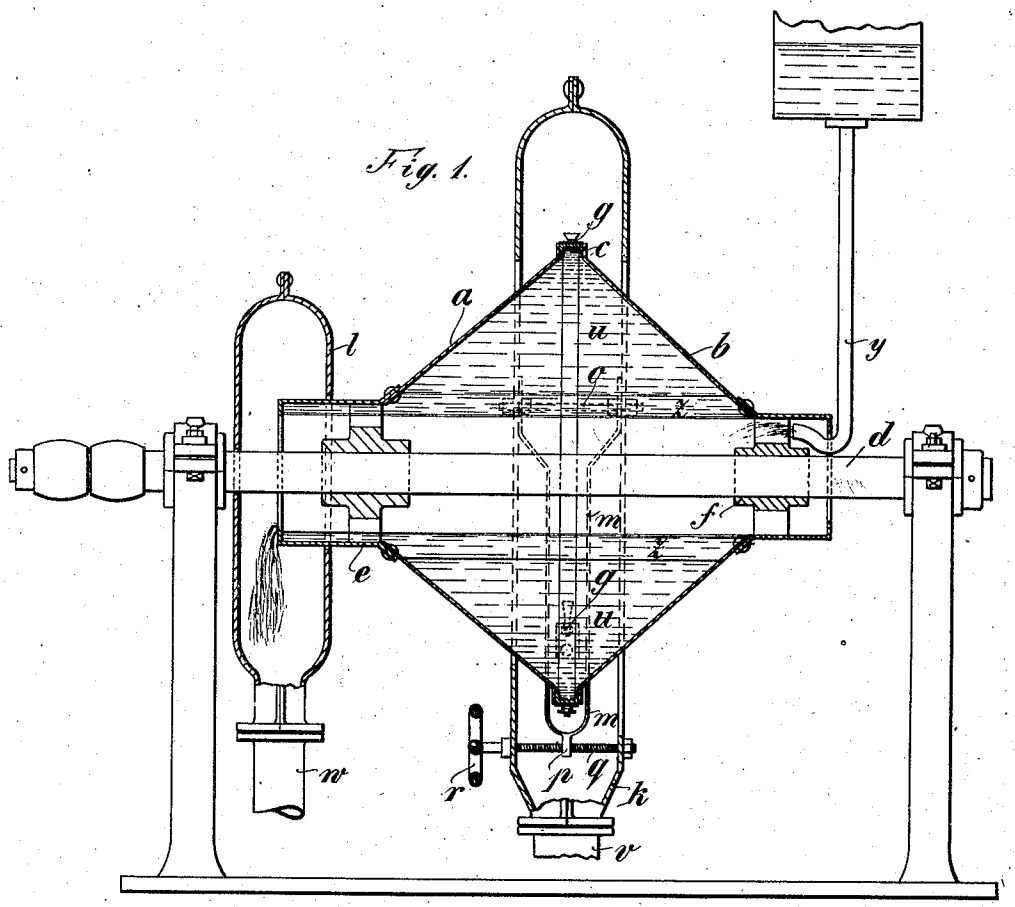


Fig. 2.

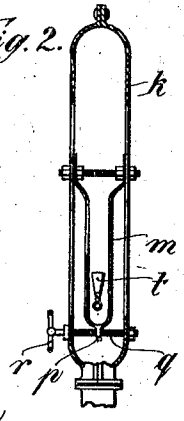


Fig. 3.

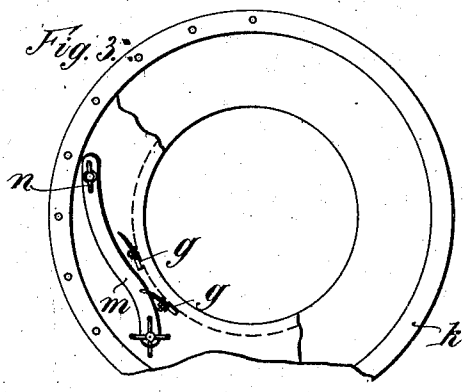
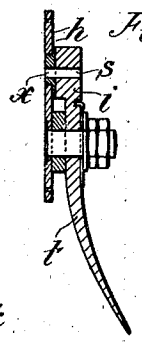


Fig. 4.



Witnesses:
P. F. Nagle.
L. Douville.

Inventor:
Ferdinand Kaehl.
By Wiedersheim & Fairbanks.
Attorneys.

UNITED STATES PATENT OFFICE.

FERDINAND KAEHL, OF BERLIN, GERMANY.

CENTRIFUGAL MACHINE.

No. 823,948. Specification of Letters Patent. Patented June 19, 1906.

Application filed July 9, 1904. Serial No. 215,881.

To all whom it may concern:

Be it known that I, FERDINAND KAEHL, technologist, a subject of the Emperor of Germany, residing at 62 Gitschinerstrasse, Berlin, in the Empire of Germany, have invented certain new and useful Improvements in Centrifugal Separating Apparatus, of which the following is a specification.

This invention has for its object a centrifugal separating-machine, by means of which starch, wheat gluten, and the like may be separated from water and dissolved constituents. For the greater part the drums of known centrifugal machines consist of a shallow cylinder, the periphery of which is conical in form and which is provided with apertures for the discharge of the solid material, while the specifically lighter constituents issue through a perforated hub or through discharge-pipes arranged in proximity to the hollow shaft conveying the material to be treated to the drum. In these arrangements the apertures on the conical periphery of the drum may be opened or closed by appropriate means. This may be effected, for instance, during the operation of the machine by the intermediary of pistons and rods rotating with the drum.

The device which forms the subject of the present invention differs from the known arrangements as regards its construction, owing to the fact that the drum consists of two conical halves joining each other at an oblique angle and provided with two perforated inclosed hubs of different sizes, one of which and also the drum is surrounded by a ring for catching the water and solid material, respectively, and also by the fact that the slides serving to open and close the apertures in the drum may be operated by hand by means of a fork displaceable upon a screw-spindle and not rotating with the drum. The shallow conical formation of the drum permits of speedy settling of the solid constituents and gradual sliding of the same along the inclined walls to the discharge-apertures. By means of the hollow hubs of different diameters an unimpeded supply of the material to be treated and discharge of the separated liquid is able to take place during the operation of the machine, and this while dispensing with a hollow shaft or disks preventing the direct discharge of the material from the other hub.

The invention is illustrated, by way of example, in the accompanying drawings, in which—

Figure 1 shows the machine in vertical section. Figs. 2 and 3 show the catching-ring for the drum with the adjustable fork in section and in side elevation, respectively, upon a smaller scale; and Fig. 4 shows in vertical longitudinal section a slide for the drum.

The centrifugal drum consists of two hollow conical halves *a* and *b*, which are united at an oblique angle by means of an annular U-iron or in any other convenient manner. The drum halves are carried on the horizontal shaft *d* by means of perforated hubs *e f*, the diameter of *e* being greater than that of *f*. Upon the outer periphery of the drum are arranged slides *g*, which may advantageously consist of two-armed flat levers *i*, held by spring-pressure against the screwed-on plate *h*. These slides are dovetailed at one extremity, *t*, while the other end is formed with a bore *s* and these borings register with corresponding borings in the drum-ring *c*. The drum is surrounded at its middle part with a hollow ring *k* of semicircular cross-section, and the outer end of the hub *e* is surrounded by a hollow ring *l*. In the ring *k* a fork *m* is mounted in such a manner as to be laterally displaceable on a bolt *o*, entering longitudinal slots *n n* in the arms of the fork and passing through the hollow casing. The fork carries on its bent portion a lug *p*, provided with a screw-threaded opening, through which a screw-spindle *q* passes. This spindle rests in suitable bearings in the hollow casing. If the spindle is rotated by means of the hand-wheel *r*, the fork is displaced either to the right or left hand, and as the fork is arranged so that it may come into contact with the drum-slides *g* these latter will also be displaced either to the right or left, by which means either the boring *s* of the slide is caused to register with a corresponding boring *x* of the plate *h* and of the drum-ring *c* or to close the boring *x*.

The material to be treated is admitted through the pipe *y* and the hollow hub *f* into the drum, owing to the rotation of which the solid constituents *u* are forced under the influence of centrifugal force into the outer part of the drum in the known manner, thence they pass when the slides *g* have been opened by moving the fork *m* during the operation of the machine onto the inner face of the hollow ring *k*, from which they may be

discharged through the pipe *v*. The specifically lighter constituents *z* collect concentrically around the shaft *d* and are expelled out of the wider hub-casing *e* into the ring *l*, from which they flow through a pipe *w*.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. Centrifugal apparatus mounted upon a horizontal shaft, and more particularly adapted for starch manufacture characterized by two hollow conical halves *a*, *b* fitted together at an oblique angle and fixed on the solid driving-shaft *d* by means of two perforated hubs *e*, *f* of different diameters of which the hub *f* serves for the supply of the material to be treated, while the other hub *e* surrounded by a hollow ring *l* serves for the discharge of the separated water substantially as described.

2. In a centrifugal apparatus, a horizontal shaft, hollow conical shells fitted together at an oblique angle, perforated hubs of different diameters for securing said shells to said shaft, one of said hubs serving for the supply of the material to be treated and the other serving for the discharge, slides for controlling the discharge, automatic means for opening and closing the same and means for receiving the discharged material.

3. In a centrifugal apparatus, the combination of hollow conical shells fitted together at an angle and mounted on a shaft, a discharge-opening from said shaft adjacent said shaft, discharge-openings at the periphery of said shells, slides for controlling said peripheral openings, a casing surrounding said shells and in which the same rotate, a casing surrounding said first-mentioned opening and means for automatically controlling said peripheral openings whereby the same are opened and closed during the rotation of the shells.

In testimony whereof I have hereunto set my hand, in presence of two subscribing witnesses, this 25th day of June, 1904.

FERDINAND KAEHL.

Witnesses:
ALOIS SIEBER,
WOLDEMAR HAUPT.