

No. 735,524.

PATENTED AUG. 4, 1903.

F. KESSLER.
CENTRIFUGAL APPARATUS.

APPLICATION FILED OCT. 27, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

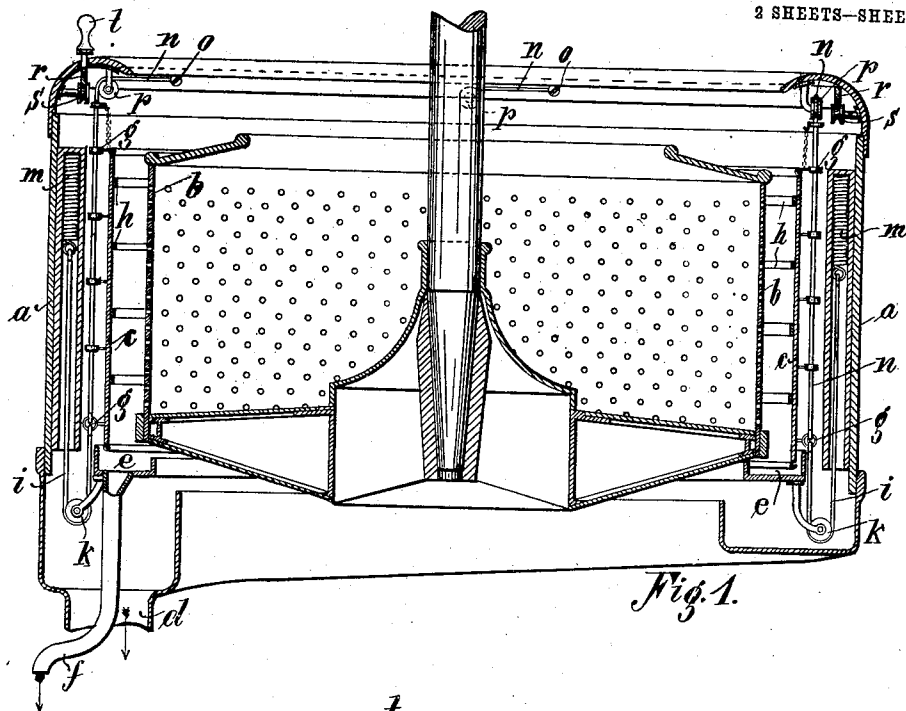


Fig. 1.

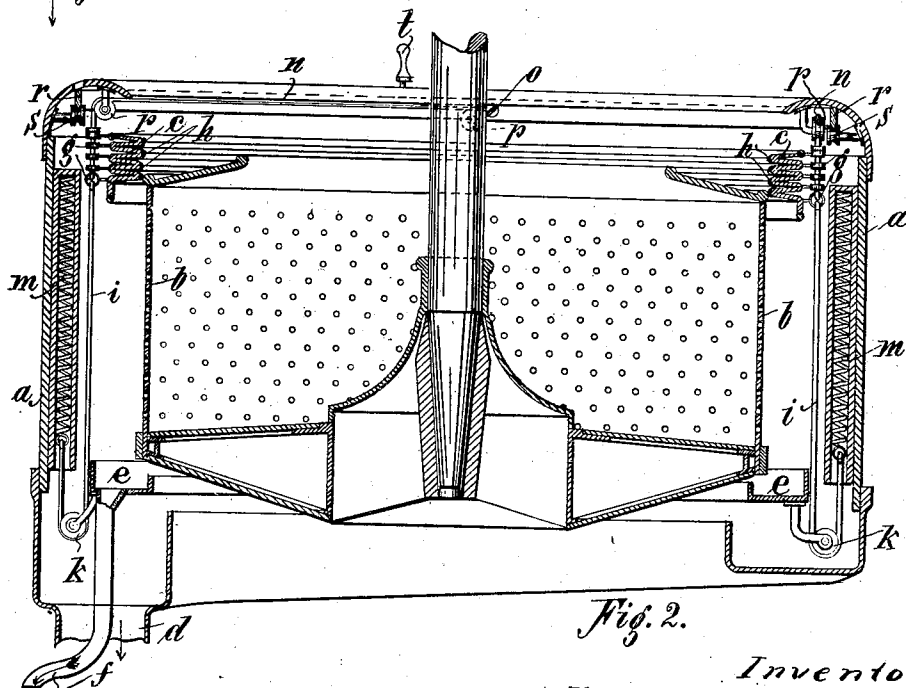


Fig. 2.

Inventor

Ferdinand Kessler

By *Marion Lurich Lawrence*
his Attorneys.

Witnesses
W. B. Williams
Lucy J. Mitchell
L. G. Handy

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2 SHEETS—SHEET 2.

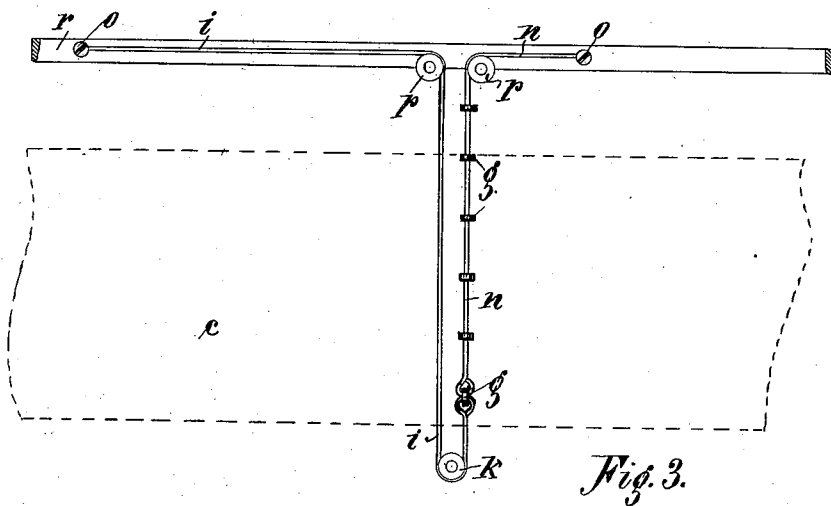


Fig. 3.

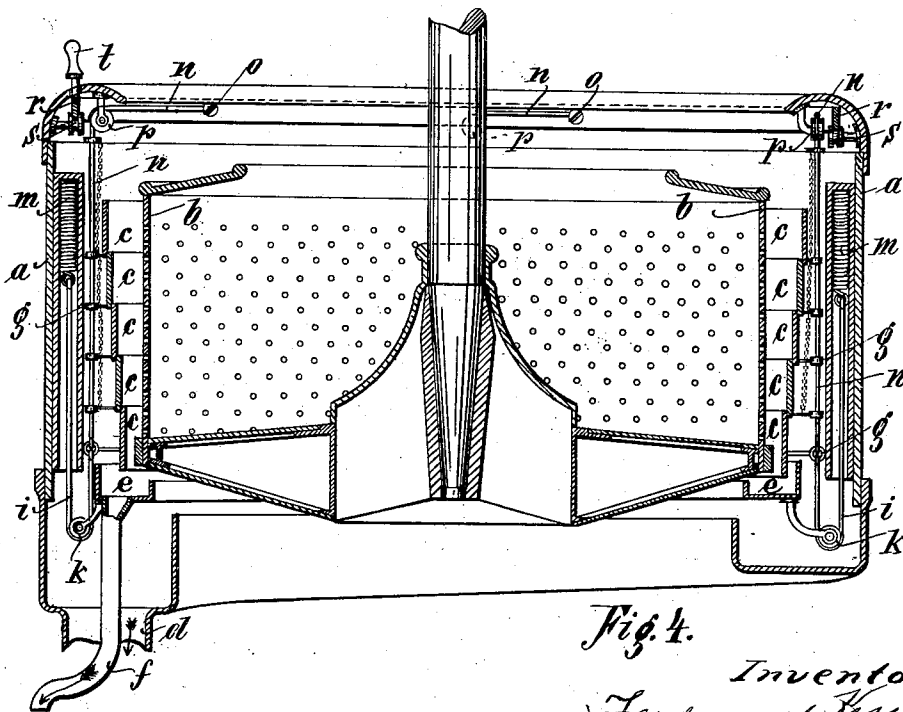


Fig. 4.

Witnesses
J. B. Williams
Ruth J. Mitchell.
L. G. Handy

Inventor
Ferdinand Kessler
By Mason, Lurich & Moore
his Attorneys

UNITED STATES PATENT OFFICE.

FERDINAND KESSLER, OF ROSARIO, ARGENTINA.

CENTRIFUGAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 735,524, dated August 4, 1903.

Application filed October 27, 1902. Serial No. 128,981. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND KESSLER, engineer, a subject of the German Emperor, residing at Rosario, Argentina, at present at 59 a Grolmannstrasse, in the city of Charlottenburg, near Berlin, Germany, have invented new and useful Improvements in or Relating to Centrifugal Apparatus, of which the following is a specification.

10 A perfect separation of outflowings of different degrees of purity in centrifugal apparatus—as, for instance, in those used in the sugar industry—can be obtained only by a combination of separate outlets for the different classes of outflowings with separate jackets or casings for catching the liquid thrown out by the rotating drum and leading the liquid to the respective outlets. The devices hitherto proposed for this purpose have, however, many drawbacks which prevent them from being adopted in practice and are of a very complicated nature and generally require the direction of rotation of the drum to be reversed. A further disadvantage consists in the impossibility of applying the device to existing centrifugal apparatus, the space between drum and outer casing being too small. I am aware that it has been suggested to employ an auxiliary casing suspended between the drum and the outer casing. This arrangement proved impracticable, owing to the insertion and removal of the casing at each charge being found to be very troublesome.

The present invention has for its object to provide new and simple means for effecting the desired object. It is characteristic of the invention that an auxiliary collecting jacket or casing is provided between the drum and the outer casing. This auxiliary collecting jacket or casing can be made of fabric in the form of an open sack which can be drawn up and down or be constructed like a bellows. In some cases where greater stress or durability is required this auxiliary collecting-jacket consists of rings cylindrical or conical and capable of telescopic action one in the other, so that in each event a collapsible casing is formed which catches the liquid thrown out of the rotating drum and conducts the same to a corresponding outlet opening or channel, while when the next class of liquid

is to be drawn off separately the collecting-casing is collapsed or folded together, so as to permit of the liquid passing directly to the outer casing or, if desired, to a second auxiliary casing arranged outside the first one. The outer casing or the second auxiliary casing then collects the liquids and delivers the same to a corresponding outlet or channel. Chains or weighted cords are passed over convenient rollers and are used for opening and closing the auxiliary collapsible casing. The uniform motion of these chains or cords may be assured by the whole of the chains, cords, or drawing members being attached to a common ring. In some cases I may connect the single rings or sections of sheet metal forming the jacket by suitable bands or strips of suitable fabric, so as to insure the tightness of the device.

In the accompanying drawings, Figure 1 is a vertical section through a centrifugal apparatus, showing the collapsible jacket in its open condition. Fig. 2 is a vertical section through the same apparatus, showing the collapsible jacket in its folded condition. Fig. 3 shows a part of a modified manner for acting on the cords. Fig. 4 is a vertical section through a centrifugal apparatus in which the collapsible jacket is formed of telescoping rings.

Referring to Figs. 1 and 2 of the drawings, *a* is the outer casing or vessel, and *b* is the drum. The casing *c* is preferably used to collect the smaller portions of the outflowings and to deliver them into a gutter *e*, from which they are delivered into an outlet *f*, while the other liquid is delivered through the outlet *d* of the vessel *a*.

The casing *c* is constituted by a tubular form of waterproof material or the like, and for the sake of an easier attachment of the rings for supporting and insuring the folding of the same it can be provided with circumferentially-arranged rings *h* of wire or rubber. Near the lower edge of the tube are attached in several places—for instance, four—rings or lugs *g*, connected to operating-cords *i*. These cords are guided over corresponding rollers *k*, and each is connected with a spring *m*, these springs acting through the cords upon the tube in such a manner

that the latter remains constantly in its extended position, in which it serves for intercepting the outflowing products. To the lowermost ring are attached other cords *n*, which freely pass through guide-rings on the outside of the tube. The upper ends of these cords are attached at *o* to a horizontal top ring *r* after having passed over suitable guide-rollers *p*. This top ring *r* is carried upon rollers *s*, mounted on or in the centrifugal drum and is provided with a handle *t*, extending through an annular slot in the top of the drum, so that by means of this handle the ring can be turned about its axis. By so turning the ring the whole of the cords will be equally drawn up against the action of their springs *m*, so that the tube will be pulled up like a blind, as shown in Fig. 2. In this position the auxiliary casing *c* is inactive, so as to permit of the direct passage of the liquid thrown out of the drum to the inner wall of the vessel *b*, down which it flows to the outlet *d*. When the ring is released, the springs return it to its initial position and move the collecting-jacket back into its operative position.

The tube can be constituted by metal sheet-rings engaging with one another, as shown in Fig. 4, or it can be made of a combination of such metal sheet-rings with strips of flexible material, such as waterproof line, rubber, or the like.

Any suitable means can be used for the operation of the top ring, while, particularly in larger centrifugal apparatus, suitable gearing is preferably arranged for the operation of the same. The cords can be so arranged and guided that the springs are situated outside of the outer casing.

If it is desired to avoid the arrangement and use of the springs, the cords can be in the form of a doubled cord or an endless loop attached to the collapsible jacket and to the ring passing over suitable pulleys, and the jacket will be collapsed and opened out in the same manner, as indicated in Fig. 3.

I can modify the constructions in many ways without departing from the spirit of my invention. It is obvious that two or more intermediate telescopic casings may be used, if desired, when—as, for instance, in the sugar industry the sugar is dissolved directly in the centrifugal apparatus—any mixing of the solution with impure outflowings being avoided.

The modification shown in Fig. 3 differs from that shown in Fig. 2 in that the rings in their inoperative position are drawn upward, while in Fig. 2 they are laid on the bottom.

In some cases the collapsible auxiliary jacket may be collapsed toward the bottom of the vessel *a* or even folded down into the gutter *e*.

If the brake of the drum lies within the vessel, means may be arranged which do not allow to act on the brake in such a position

of the auxiliary jacket in which it might interfere with the braking mechanism.

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—

1. In a centrifugal separating apparatus the combination with a casing and a drum therein of a collapsible auxiliary jacket between the said casing and drum substantially as described.

2. In a centrifugal separating apparatus the combination with an outer casing and an inner drum of a collapsible auxiliary jacket between the casing and drum made of flexible material substantially as described.

3. In a centrifugal separating apparatus the combination with an outer casing and an inner drum of a collapsible auxiliary jacket between the outer and inner closures made of telescoping rings substantially as described.

4. In a centrifugal separating apparatus the combination with a casing and a drum therein of a collapsible auxiliary jacket between the casing and drum made of telescoping rings connected by strips of flexible material substantially as described.

5. In a centrifugal separating apparatus the combination with a casing and a drum therein of a collapsible auxiliary jacket between the casing and drum and means for folding and unfolding it substantially as described.

6. In a centrifugal separating apparatus the combination with an outer casing and an inner drum of a collapsible auxiliary jacket between the outer and inner closures and means for folding and unfolding it consisting of cords attached to the jacket and to a ring such as *r* substantially as described.

7. A collecting-casing for the separation of the outflowings of centrifugal apparatus formed of a collapsible jacket which when opened out forms an intermediate wall between the drum and its outer casing down which the liquid driven out of the centrifugal drum passes to a convenient outlet, while when the jacket is collapsed and inoperative the liquid is projected against the inner wall of the outer casing and passes thence to a different outlet substantially as described.

8. In a centrifugal separating apparatus, the combination with a rotating drum, of a casing outside the same for delivering articles into one outlet, and a collapsible jacket inside the casing for delivering articles thrown out by the drum to another outlet, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FERDINAND KESSLER.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.