

No. 717,803.

PATENTED JAN. 6, 1903.

J. J. BERRIGAN.
CENTRIFUGAL MACHINE.
APPLICATION FILED MAY 7, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

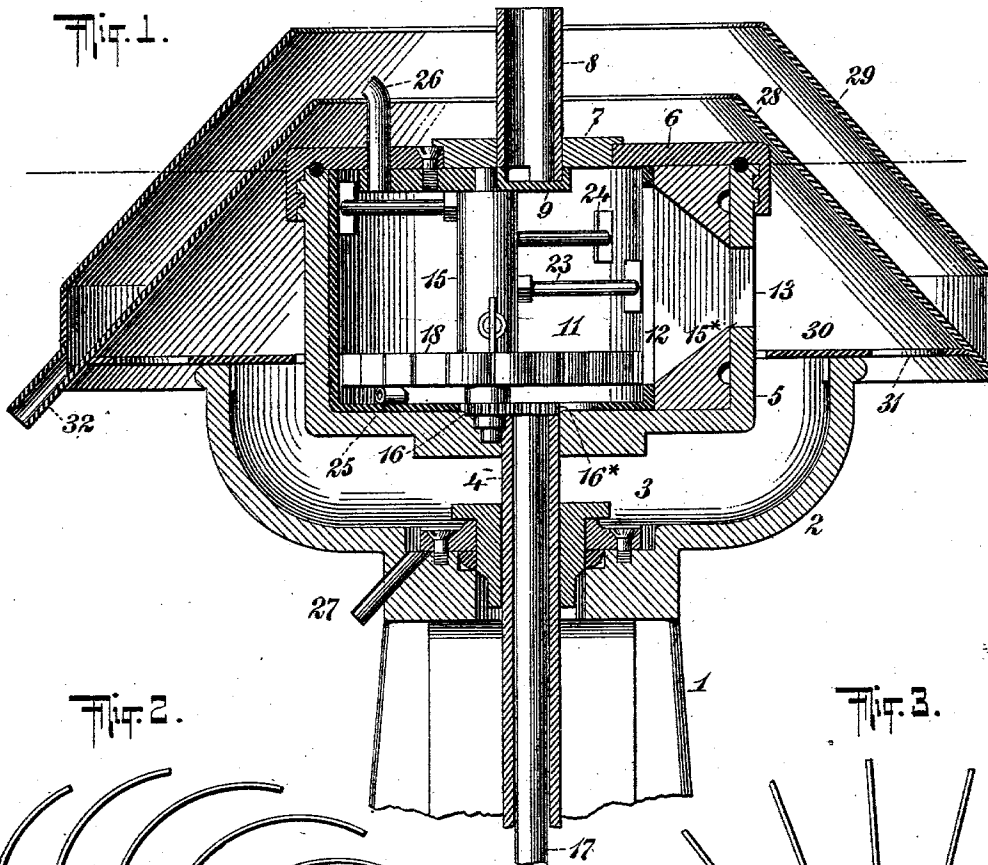
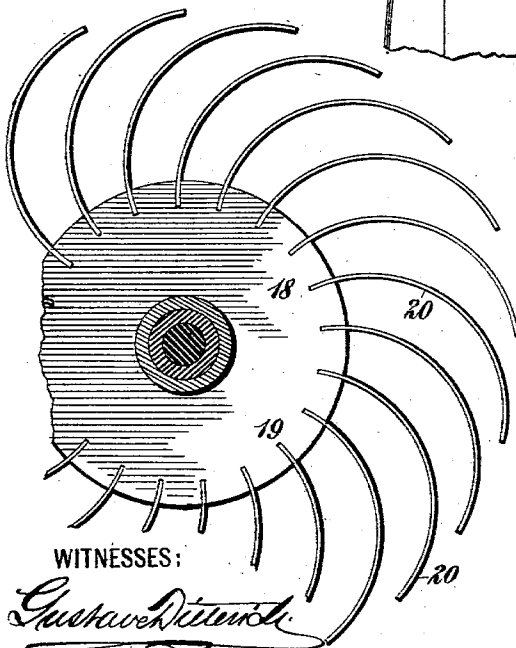


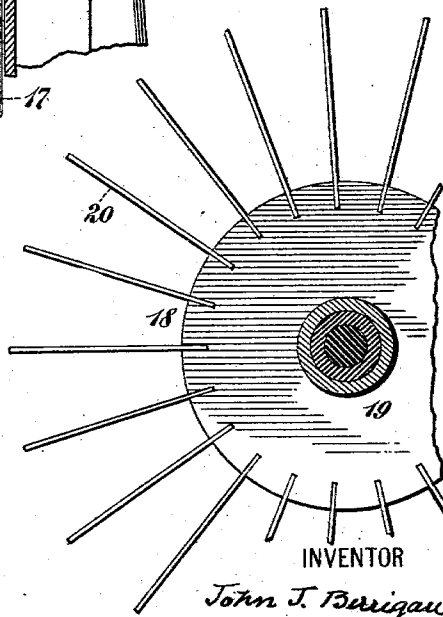
Fig. 2.



WITNESSES:

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John Kehlbeck

Fig. 3.



INVENTOR

John J. Berrigan

BY *Paul Benjamin*
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2 SHEETS—SHEET 2.

Fig. 4.

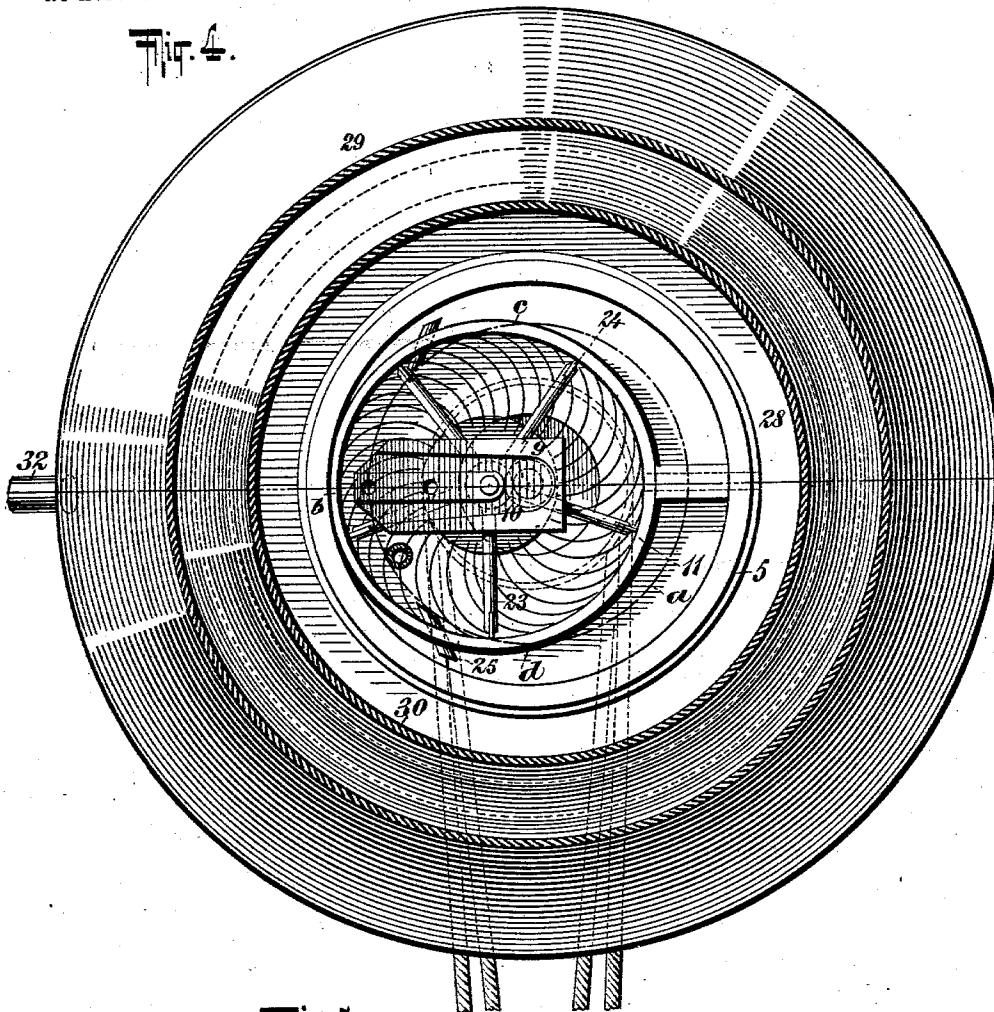
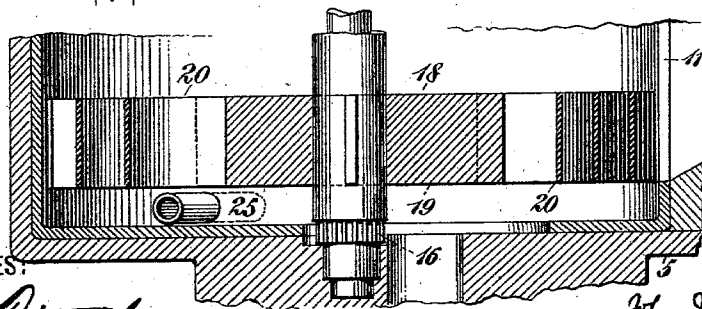


Fig. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN JOSEPH BERRIGAN, OF ORANGE, NEW JERSEY.

CENTRIFUGAL MACHINE.

SPECIFICATION forming part of Letters Patent No. 717,803, dated January 6, 1903.

Application filed May 7, 1902. Serial No. 106,283. (No model.)

To all whom it may concern:

Be it known that I, JOHN JOSEPH BERRIGAN, a citizen of the United States, residing at Orange, Essex county, New Jersey, have invented a new and useful Improvement in Centrifugal Machines, of which the following is a specification.

My invention is an improvement upon the type of machine for separating solids and liquids which is set forth in United States Letters Patent No. 667,926, granted to me July 9, 1901.

The invention relates to means for preventing the access of the solid constituent to the openings in the wall of the receptacle for the material to be separated, the said openings serving to establish liquid communication between said receptacle and the outer drum; and my invention consists in a rotary wheel, preferably rimless, suitably disposed in said receptacle.

In the accompanying drawings, Figure 1 is a vertical section of the machine diametrically, the drum, the lower portion of the standard 1, and driving-pulleys for the shafts 4 and 17 not being shown. Fig. 2 is a partial plan view of the rotary guard-wheel having its arms curved. Fig. 3 is a partial plan view of the same having its arms straight. Fig. 4 is a horizontal section on the line *y y* of Fig. 1. Fig. 5 is an enlarged sectional view of the lower part of the separating-chamber 11 and guard-wheel therein.

Similar characters of reference indicate like parts.

1 is the standard, preferably integrally formed with the cup 2.

Passing through the gland 3 in standard 1 is the hollow shaft 4, which at its upper end carries the drum 5. Said shaft is supported in standard 1 and is rotated by belt and pulley, as indicated in Fig. 4. The upper edge of drum 5 is threaded to receive the flanged cover 6, centrally disposed in which is a plug 7, through which passes the feed-pipe 8. On the under side of cover 6 is secured the plate 9, in which are channels 10, into which channels at their junction the feed falling by gravity through pipe 8 is delivered. The outer ends of said channels are open.

Eccentrically disposed within the drum 5 is a separating vessel 11, having in its wall an

aperture 12. Correspondingly placed in the wall of drum 5 is a smaller aperture 13. Between vessel 11 and drum 5 is a plate 14, having a tapered channel 15*, connecting apertures 12 and 13.

Pivoted centrally in vessel 11 is a shaft 15, having at its lower portion a pinion 16, which engages with a pinion 16* on the upper end of shaft 17. Shaft 17 passes through the hollow shaft 4 and is independently rotated by a belt and pulley. On shaft 17 is a horizontal wheel 18, having a central hub or disk 19 and radial arms 20. Said arms may be straight, as shown in Fig. 3, or curved, as shown in Fig. 2. When the wheel is made rimless, as here shown, the outer extremities of said arms closely approximate the inner periphery of vessel 11. Above the wheel the shaft 17 is of enlarged diameter and has secured to it radial arms 23, each arm carrying a scraping-blade 24. Beneath the wheel 18 short inclined sections of pipe 25, extending through the wall of vessel 11, establish liquid communication between vessel 11 and drum 5. Also communicating with the interior of vessel 11 and passing through the cover 6 is a liquid-delivery pipe 26. The pipe 27 in the bottom of cup 2 is a drain for the escape of any liquid which may drip into said cup.

The operation of the machine is as follows: By means of the rotating shaft 4 the drum 5 is set in rapid revolution, carrying with it the eccentrically-placed separating vessel 11. The combined solid and liquid materials to be separated are fed in through the pipe 8 to the channels 10 and thence ejected by centrifugal force against the inner periphery of vessel 11. The liquid material, as fully explained in my patent aforesaid, then forms a ring within the drum 5 and vessel 11, the inner circumference of which is indicated by a dotted line at *a*, Fig. 4, and the solid material is deposited on the inner surface of vessel 11 over the arc *c b d*, Fig. 4. The liquid rises vertically upward and finally escapes at the pipe 26. The solid material deposited as aforesaid is engaged by the scraper-blades 24, which by reason of the rotation of shaft 17 and of the intermediate gearing 16 and 16* are now moving around the inner periphery of vessel 11. These blades convey the solid

material to the aperture 12 in vessel 11, whence by centrifugal force it is projected through the passage 15 in plate 4 and the opening 13 in the drum-wall, and so out of the machine.

5 The principal feature of my present invention is the wheel 18, disposed in the vessel 11 and above the tube-sections 23. The object is to prevent any solid material from entering said tube-sections, and possibly thus im-
 10 pairing liquid communication between vessel and drum. It will be obvious that any solid material falling upon said wheel, whether on the hub or between the arms, will at once be thrown outward centrifugally against the in-
 15 ner periphery of vessel 11 and not be permitted to pass through the interstices between the arms. When the wheel, as here illustrated, is made rimless, the ends of the latter, moving close to said inner periphery of ves-
 20 sel 11, act as scraping-blades to convey said material around to opening 12.

The liquid from pipe 26 and the solid material from opening 13 may pass into any suitable receptacles placed to receive it. I show
 25 here a hood which has two compartments respectively for the reception of the solid and liquid constituents. Said hood consists of two hollow conical frusta 28 and 29, secured together, open above, and provided with a
 30 horizontal base-plate 30, which rests on the upper edge of cup 2. In said plate are openings 31. The space between the frusta 28 and 29 is closed and is provided with a tube
 32. Into this space the pipe 26 delivers the
 35 separated liquid, which finally escapes at tube

32. The separated solid escaping at opening 13 in drum 5 strikes on the inclined inner surface of the lower frustum 28, and so is diverted downwardly and out at the openings 31.

I claim—

1. In a centrifugal machine, a drum rotary on a vertical axis, a receptacle for combined solid and liquid constituents to be separated disposed therein and having in its wall open-
 45 ings establishing liquid communication with said drum, and a rotary wheel having radial arms disposed within said receptacle above said openings.

2. In a centrifugal machine, a drum rotary on a vertical axis, a receptacle for combined
 50 solid and liquid constituents to be separated disposed therein and having in its wall openings establishing liquid communication with said drum and a rotary wheel having curved
 55 arms within said receptacle and above said openings.

3. In a centrifugal machine, a drum rotary on a vertical axis, a receptacle for the combined constituents to be separated, tubular
 60 conduits in the wall of said receptacle and a rotary rimless wheel in said receptacle above said conduits.

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

JOHN JOSEPH BERRIGAN.

Witnesses:

TH. WAWRINSKY,
 NILS STRANDELL.