

F. JEBSEN.

MEANS FOR YIELDINGLY SUPPORTING THE BOWLS OF CENTRIFUGAL -
LIQUID SEPARATORS.

APPLICATION FILED DEC. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

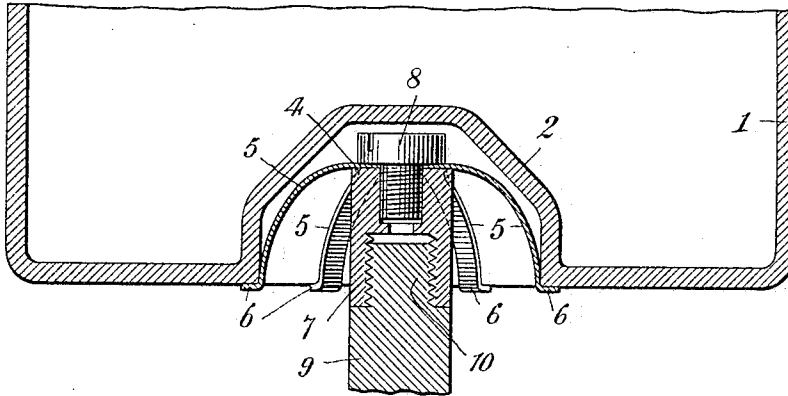


Fig. 2.

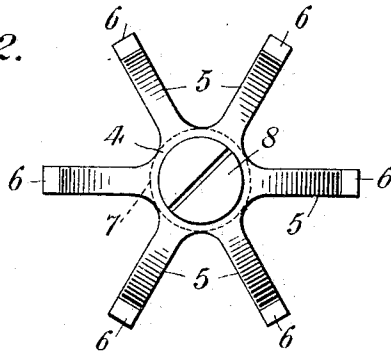
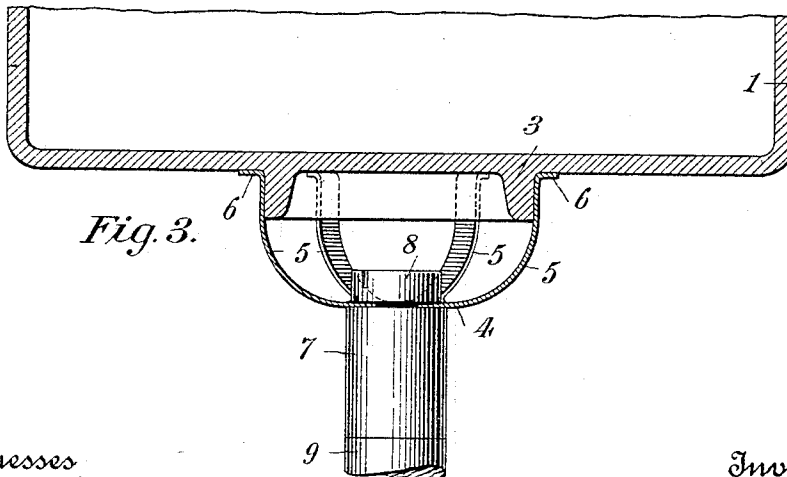


Fig. 3.



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No. 766,261.

PATENTED AUG. 2, 1904.

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2 SHEETS—SHEET 2.

Fig. 4.

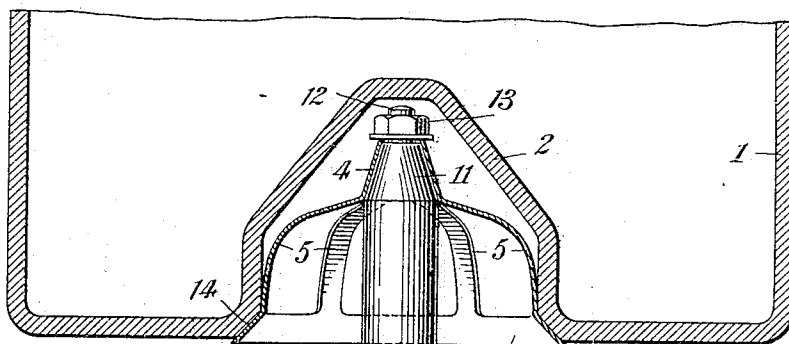


Fig. 5.



Fig. 7.

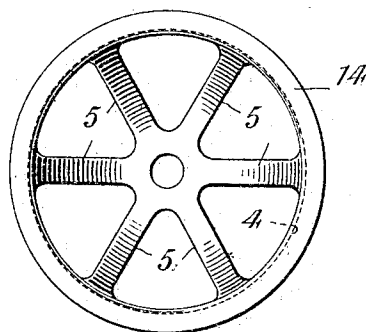
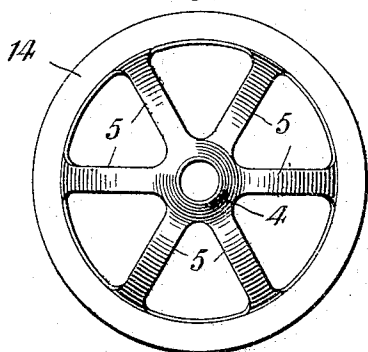
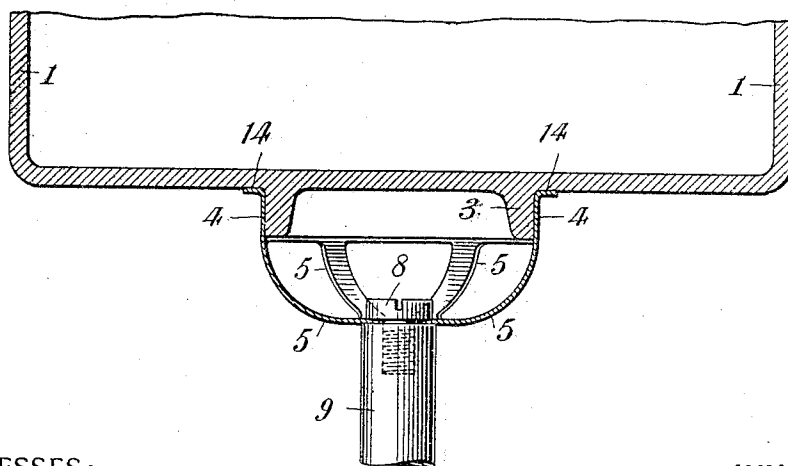


Fig. 6.



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UNITED STATES PATENT OFFICE.

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MEANS FOR YIELDINGLY SUPPORTING THE BOWLS OF CENTRIFUGAL LIQUID-SEPARATORS.

SPECIFICATION forming part of Letters Patent No. 766,261, dated August 2, 1904.

Application filed December 7, 1903. Serial No. 184,008. (No model.)

To all whom it may concern:

Be it known that I, FRIDTJOF JEBSEN, a subject of the King of Sweden and Norway, residing at New York, borough of Manhattan, county and State of New York, have made a new and useful Invention in Means for Yieldingly Supporting the Bowls of Centrifugal Liquid-Separators, of which the following is a specification.

My invention is directed particularly to an improvement upon an invention disclosed in United States Patent to Gustaf Rennerfelt, No. 739,927, granted September 29, 1903; and it has for its object to supply yielding means for wholly supporting the bowls of such separators which can be cheaply constructed and easily applied to the shaft which supports the separator-bowl.

The invention disclosed in the above-named patent is directed to a single spiral spring which is connected directly to one end of the rotating shaft of the separator and wholly supports the bowl. Such springs, however, are difficult and expensive to construct and require special means of attachment between the shaft and the base of the bowl.

My invention contemplates the use of a yielding support composed of radial arms, two or more, of steel or equivalent elastic material, which may be readily stamped out of a single piece of metal and so constructed that it will wholly support the bowl of a centrifugal liquid-separator.

For a full and clear understanding of the invention, such as will enable others skilled in the art to construct and use the same, reference is had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view taken through the base of a centrifugal liquid-separator bowl and the supporting-shaft, illustrating one form of my improvement as applied thereto. Fig. 2 is a plan view of the yielding means of support as seen looking at Fig. 1 from the top toward the bottom of the drawings with the bowl removed. Fig. 3 is a sectional view similar to Fig. 1 of a modified form of the invention, the supporting-shaft and its means of attachment, however,

being shown in side elevational view. Fig. 4 is a sectional view similar to Fig. 1 of the preferred form of my invention, and Fig. 5 is a plan view of the support illustrated in said figure. Fig. 6 is a sectional view similar to Fig. 4 of a still further modified form of the invention, and Fig. 7 is a plan view of the support illustrated in said figure.

Referring now to the drawings in detail and first to Figs. 1 and 2, 1 represents the bowl, which in the present instance is provided with a depression 2 in the bottom thereof. 4 represents yielding supporting means, which is preferably stamped out of sheet metal, such as steel, and has radially-disposed arms 5 5, preferably six, bent downward, as shown, and outward at their lower ends at 6 6, so as to constitute a yielding cup-like support for the base of the bowl, the upper end of the support being provided with an opening or hole through which it may be secured directly to a screw-threaded neck 7 by means of a threaded neck 10 at one end of a rotary shaft 9.

In the modified form shown in Fig. 3 the bowl 1 is provided with a downwardly-extending neck 3, and the yielding support is provided with upwardly-bent arms 5 5 5, having their outward ends 6 6 6 resting directly against the bottom of the bowl. With this modified form of the invention the arms may be strengthened, if preferred, by a detachable collar or ring located just below the outwardly-turned ends 6 6 of the arms 5 5, said adjustable collar being either in the nature of a split band provided with a thumb-screw for regulating the strain thereon or of a strong spiral spring adapted to be slipped into position either before or after the bowl is put in place.

In Fig. 4 I have illustrated the preferred form of my invention in which the means of support is in the nature of radially-disposed arms 5 5, having a cone-shaped top 4 adapted to fit upon a corresponding cone-shaped end 11 of the rotary shaft 9, provided with a screw-neck 12, so arranged that a nut 13 will secure the support in position upon the shaft. This form of the support is cup-shaped and provided with a body part 14 at its lower edge,

having the conformation of the frustum of a cone and the arrangement such that when the bowl 1 is placed in position it will rest loosely thereon.

5 In Fig. 6 I have illustrated a still further modified form of the invention in which the neck 3 of the bowl has the same conformation as is shown in connection with the like part in Fig. 3. In this modified form of the invention the support is also cup-shaped, but so
10 formed that the cup is provided with an outwardly-extending flange 14, adapted to rest directly against the base of the bowl, the radial arms 5 5 extending upward in the same
15 manner as shown in Fig. 3 and adapted to be secured to the shaft 9 by a screw 8 passing through an opening in the base of the cup.

The operation of the several forms of the invention will be understood in view of what has
20 been disclosed in the aforesaid patent to Gustaf Rennerfelt, it being obvious that the yielding arms 5 5 will permit the bowl to assume its proper position when rotated rapidly by the shaft 9.

25 I am aware that it has heretofore been proposed to provide yielding means beneath the bowl of a centrifugal separator in which the body or bowl of the separator is supported by a ball-and-socket joint with radially-disposed
30 yielding means for preventing the body or bowl from tilting over when the machine is not in operation, and I make no claim hereinafter broad enough to include such a structure, my most generic claim being directed to yielding
35 means so constructed as to wholly support the bowl of a centrifugal separator.

I do not limit my invention to the especial forms of the device shown, as the same might be departed from and still come within the
40 scope of my claims hereinafter made. I believe it is broadly new with me to devise a yielding support for the bowl of a centrifugal liquid-separator in which said bowl rests directly upon two or more laterally-arranged
45 yielding arms and is wholly supported thereby, the structure being of cup or spider like form supported at its center directly by the end of the rotary shaft which drives the bowl, and my claims are generic as to the same.

50 While in the several figures of the drawings I have shown the support as having, preferably, six radial arms 5 5, the number of these arms may be varied *ad libitum*. In fact, the support might be wholly of cup-like form if
55 the material of which the cup is made be of a sufficiently-yielding nature, it being obvious that with such a structure it is only necessary to so construct the cup that the desired elasticity is had. I believe it is also new to combine
60 such a support with a bowl having either a depression 2 or a neck 3; nor do I limit the use of my invention to centrifugal liquid-separators, as obviously the same may be used in connection with any rotating mass or body

which it is desired to yieldingly support in 65 such manner as to maintain the center of gravity of the mass when rotated in the axis of the rotary shaft which drives it.

Having thus described my invention, what I claim, and desire to secure by Letters Pat- 70 ent of the United States, is—

1. A support for the bowl of a centrifugal liquid-separator consisting of radially-disposed yielding means adapted to be secured to the rotary shaft of the separator and so
75 constructed as to wholly support the bowl thereof, substantially as described.

2. A support for the bowl of a centrifugal liquid-separator consisting of two or more radially-disposed yielding arms so constructed
80 as to wholly support the bowl thereof at their outer ends; in combination with means for securing said support at its center to one end of the rotary shaft of the separator, substantially as described. 85

3. A support for the bowl of a centrifugal liquid-separator consisting of a spider having yielding arms so constructed as to wholly support the bowl thereof at their outer ends and
90 an opening at the center of the spider for adapting it to be secured to the shaft of the separator, substantially as described.

4. A support for the bowl of a centrifugal liquid-separator consisting of a single piece of metal having radially-disposed arms so
95 constructed at their outer ends as to permit the bowl to rest loosely thereon without danger of displacement by lateral movement, and a central opening for securing it to the shaft of the separator, substantially as described. 100

5. A centrifugal liquid-separator bowl having a depression in its bottom; in combination with a yielding support for the bowl provided with radially-disposed arms and means for securing it to the shaft of the separator, the ar-
105 rangement being such that the weight of the bowl is supported upon the outer ends of the arms with the upper end of the shaft and the body of the support located in the depression, substantially as described. 110

6. A yielding support for the bowl of a centrifugal liquid-separator having radially-disposed arms and means for securing it at its center to the shaft of the separator; in combination with a bowl having a depression in
115 its bottom, the arrangement being such that the center of gravity of the bowl and its contained liquid may assume, when rapidly rotated, the desired relation to the axis of the rotary shaft which drives it. 120

7. A yielding support for the bowl of a centrifugal liquid-separator and so constructed as to wholly support the bowl thereof having radially-disposed yielding means adapted to be secured to the shaft of the separator; in
125 combination with a bowl provided with means for permitting it to rest loosely upon the support and also for allowing it to assume the

desired axial position with relation to the axis of the rotary shaft which drives it, substantially as described.

8. A support for the bowl of a centrifugal
5 liquid-separator consisting of two or more yielding arms so constructed that their outer ends wholly support the bowl loosely and yieldingly thereon, substantially as described.

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

FRIDTJOF JEBSEN.

Witnesses:

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T. H. VLOCKUM, Jr.