

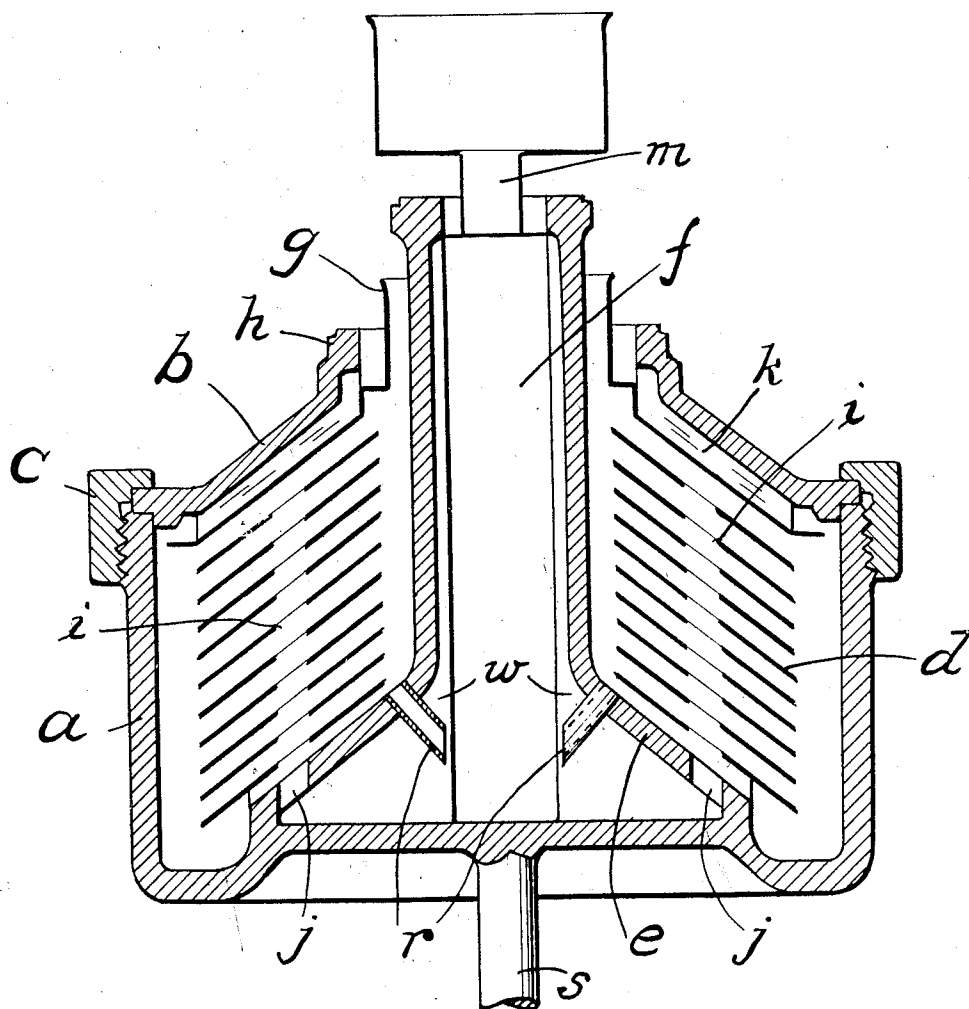
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1,893,005

CENTRIFUGAL SEPARATOR BOWL

Filed Aug. 1, 1930



INVENTOR

WITNESS:

WITNESS: .
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UNITED STATES PATENT OFFICE

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CENTRIFUGAL SEPARATOR BOWL

Application filed August 1, 1930. Serial No. 472,278.

My invention relates to centrifugal separator bowls.

The object of my invention is to increase the efficiency and capacity of said bowls. This is accomplished by taking advantage of the partial separation which takes place in the central tubular shaft or receiving chamber before the liquid enters the main separating chamber of the bowl.

In the ordinary centrifugal bowl, the heavier constituent in its passage through the receiving chamber, is thrown to the outer wall thereof, while the lighter liquid is displaced inwardly toward the axis of rotation. The centrifugal force is relatively weak and therefore there is no clean or complete separation. Nevertheless there are formed an outer annular zone of relatively heavy constituent and an inner core of relatively light constituent. In discharging into the separating chamber those constituents are re-mixed, so that the advantage of this partial or incomplete separation is altogether lost.

In my invention, the components occupying these two zones are separately fed into the main separating chamber.

In the accompanying drawing, which illustrates an embodiment of my invention, the figure is a vertical sectional view of a centrifugal bowl of ordinary construction with the addition of my improvement.

To the bowl shell *a* is secured the bowl top *b* by means of the coupling ring *c* screw threaded on the shell. Inside the bowl a nest of frusto-conical sheet metal members *d*, technically called discs, is clamped between the bowl top *b* and the expanded lower end *e* of a receiving chamber *f*, technically called a tubular shaft, which rests on the bottom of the bowl shell *a*. The top disc of the set is provided with a neck *g* projecting through and above the neck *h* of the bowl top *b*. Through all of the discs *d* except the top disc there are several distributing holes *i* which are in alignment with holes *j* in the expanded lower end of the tubular shaft.

The top disc is held away from the bowl top by ribs *k* and the discs of the nest are held apart, in the customary way, by attached caulks which are not shown on the drawing.

The bowl is supported and rotated by the spindle *s*. *m* is a tube for feeding liquid into the bowl.

The above description applies to a bowl of known construction. In my improved bowl there are added a plurality of tubes *r* extending from the interior of the tubular shaft relatively near the center of the bowl to the main separating chamber at points preferably approximately in line with the inner edges of the discs *d*.

In operation, liquid fed through the tube *m* falls inside the tubular shaft, where, by contact with the inside of the shaft, sometimes provided with wings *w*, it is caused to rotate at high speed, which causes some separation of the lighter from the heavier component. In the ordinary bowl these components, as they are forced through the holes *j*, are remixed before they enter the bowl proper and pass up the distributing holes *i* into the spaces between the discs. In these spaces, under the influence of centrifugal force, the heavier component is forced to the outside of the bowl, passes up outside of the discs and inward between the top disc and the bowl top and escapes through the neck *h*. The lighter component moves toward the center, up inside the discs and escapes through the neck *g* of the top disc. By the aforementioned remixing of the components of the mixture when passing through the holes *j*, the advantage of the partial separation in the receiving chamber *f* is entirely lost and the entire work of separation is performed in the main separating chamber.

In my improved bowl the portion of the lighter component which separates in the tubular shaft flows through the tubes *r* to the zone of lighter component inside the bowl so that the discs are required to separate from the heavier component only that portion of the lighter component which does not separate under the lesser centrifugal force in the tubular shaft. I have found that bowls with my improvement can do equally high grade separation on a substantially greater quantity of liquid than is separable in an ordinary bowl not provided with my improvement.

What I claim is:

1. In a centrifugal separator bowl, the combination with a central hollow feed shaft expanded at its lower end to form a chamber
5 in unobstructed communication with the hollow feed shaft, of a main separating receptacle surrounding the hollow feed shaft, a passage from said chamber opening into the main separating receptacle at a substantial
10 distance from the latter's inner wall, and a separate passage for light liquid extending into the main separating chamber relatively close to the latter's inner wall and from a point within the feed shaft whose distance
15 from the axis of the feed shaft does not exceed the radius of the non-expanded part of said shaft.

2. In a centrifugal separator bowl, the combination with a central hollow feed shaft
20 which is expanded at its lower end, a main separating chamber surrounding the central hollow shaft and extending over, and substantially beyond the periphery of, the expanded lower end of the feed shaft, there be-
25 ing a passage from the peripheral part of the expanded lower end of the feed tube to an intermediate zone of the main separating chamber, and a passage extending from within the non-expanded part of the wall of the
30 hollow feed shaft to the inner zone of the main separating chamber.

In testimony of which invention, I have hereunto set my hand, at Poughkeepsie, N. Y.,
on this 28 day of July, 1930.

35 GEORGE J. STREZYNSKI.

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