Jan. 29, 1929. 1,700,261

C. G. HAWLEY

CENTRIFUGAL FIXTURE

Filed May 4, 1925

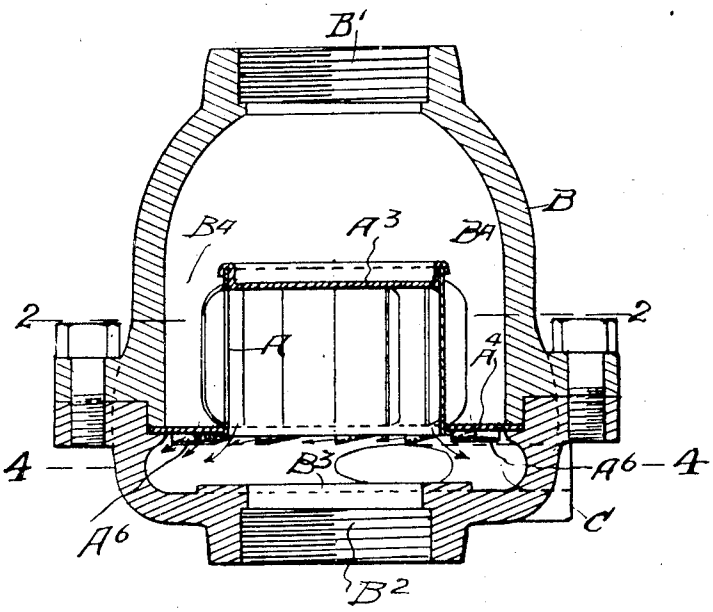


Fig. 1.

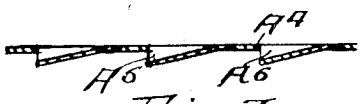
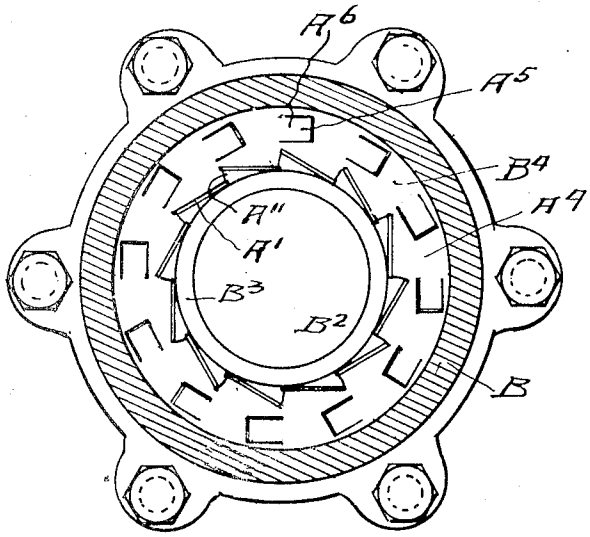


Fig. 3.

Fig. 2.



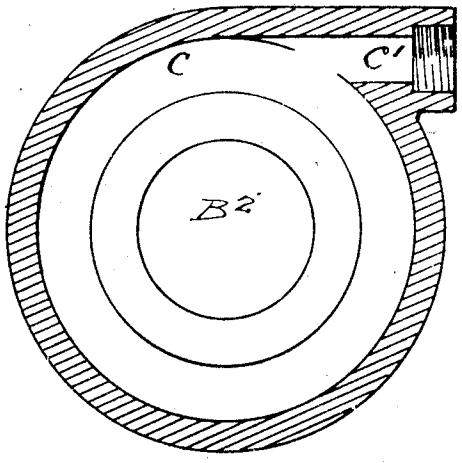


Fig. 4.

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By C. A. Mason Attorney

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UNITED STATES PATENT OFFICE.

CHARLES GILBERT HAWLEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO CENTRIFIX CORPORATION, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

CENTRIFUGAL FIXTURE.

Application filed May 4, 1925. Serial No. 27,866.

My invention relates to certain improvements upon centrifugal fixtures.

Such fixtures are characterized by casings through which the fluid to be centrifugally treated flows and encountering a multiple tangential tuyère ring is set into rapid rotation in a plane transverse to the direction of flow with the result that the heavier substances are peripherally ejected while the purified fluid departs through an axial outlet opening. In handling fluids which are heavily burdened with solids, particularly such as cut or wear the element which causes the whirling motion of the fluid, there is a tendency to overburden those parts of the tangential tuyères nearest the outlet and to wear the metal parts at those points. Chiefly, with a view to overcoming this difficulty, but with attendant advantages, I have devised the hereinafter described method and means of providing two avenues of discharge, or separation, for the heavier substances or components of the flowing stream of fluid.

The invention will be readily understood on reference to the drawings, in which I have exhibited an exemplary form thereof. In said drawings, Fig. 1 is a longitudinal section of the improved centrifugal fixture; Fig. 2 is a transverse section thereof on the line 2—2 of Fig. 1; Fig. 3 is a fragmentary section of the lower part of the tuyère member and Fig. 4 is a transverse section on the line 4—4 of Fig. 1.

The member A represents the before mentioned multiple tuyère, the same preferably comprising a circumferential series of tangential blades A′ which form the many longitudinal slit-like tangential tuyères A″. One end of the ring of tuyères is closed by the disk or plug A^3. The other is equipped with a base ring A^4.

The part B represents a typical casing which has an inlet opening B^1 opposite the part A^3 and an outlet opening B^2 opposite the open end of the tuyère ring A. The openings B′ and B^2, particularly the latter, should be smaller in diameter than the ring A. The tuyère ring is spaced from the end B^3 of the casing and thus, in the present intsance, an expansion race C is formed. The part C′ leading therefrom is a tangential discharge nozzle through which the separated heavier substances are disposed of.

It will be seen that the base ring A^4 is clamped or otherwise held in rigid transverse position in the casing; and that it overhangs the race surface B^3. In the ring A^4, outside the tuyère ring A, I provide a plurality of struck-down portions A^5 which form the gently inclined radial tangential tuyères A^6, having the same operating direction as the tuyères A″ and incidentally, the nozzle C′.

The cavity B^4 within the casing receives the fluid with its burden of solids or other heavier substances and the trend of the stream is such that by reason of their weight the greater part of the solids move forward until they impact the base ring A^4. At that point such solids find a free exit into the race C through the radial tuyères A^6. Meantime, the main volume of the fluid passes through the much more extensive longitudinal tuyères A″ and the whole stream of fluid is set into rapid rotation within the ring A and race C. By this rotation the heavier substances are effectively separated by centrifugal force and collecting at the margin of the bowl or race C are ejected through the nozzle or other peripheral opening and deposited in a collecting pocket or trap (not shown) while the purified main stream of fluid passes out through the central opening B^2.

This invention is adapted for embodiment in centrifugal separators of various construction and is by means limited to the specific structure illustrated in the drawings.

Having thus described my invention I claim as new and desire to secure by Letters Patent:—

1. A centrifugal separator comprising a casing having an inlet opening at one end and an outlet opening at the other, in combination with an interposed longitudinally tuyèred fluid-whirling element, and a radially tuyèred fluid-whirling element, and both having the same operating direction.

2. A centrifugal separator comprising a casing having an inlet opening at one end and an outlet opening at the other, in combination with an interposed longitudinally tuyèred fluid-whirling element, and a radially tuyèred fluid-whirling element partly forming the bottom of the longitudinal fluid-whirling element, and means interposed between the radially tuyèred element and the outlet for discharging the separated substances from the flowing stream.

In testimony whereof I have hereunto set my hand this 30th day of April A. D. 1925.

CHARLES GILBERT HAWLEY.