Feb. 20, 1923.

1,445,722

P. T. SHARPLES

CENTRIFUGAL MACHINE

Filed July 30, 1919

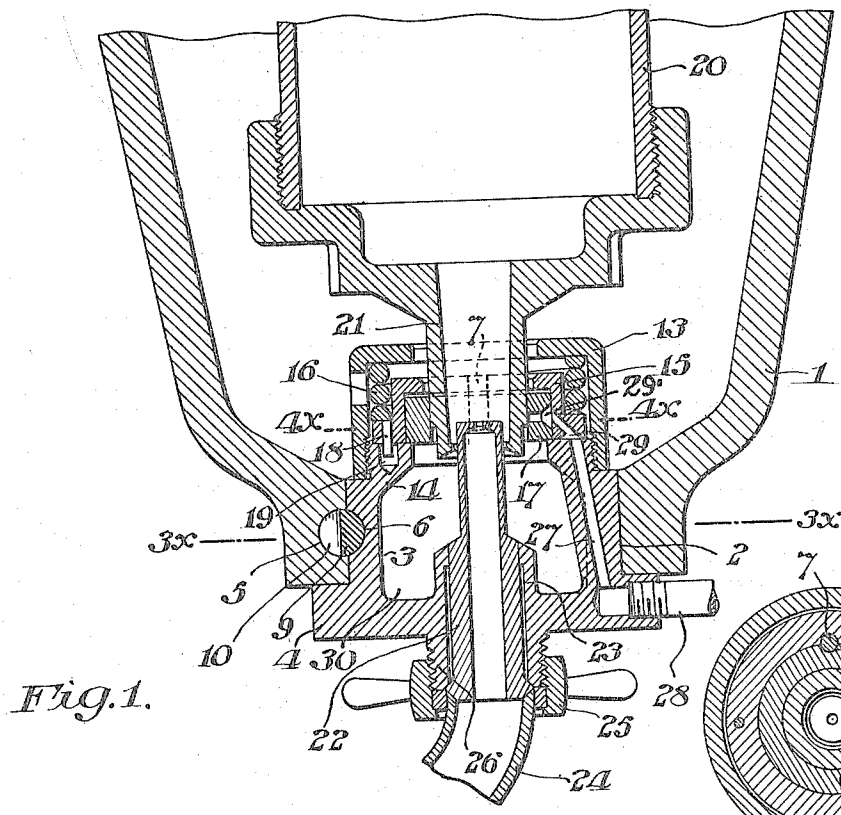


Fig. 1.

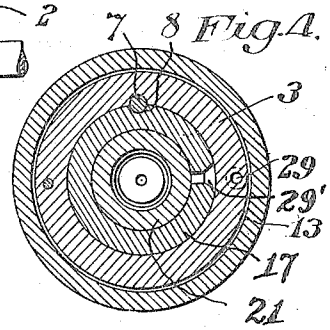


Fig. 4.

Fig. 3.

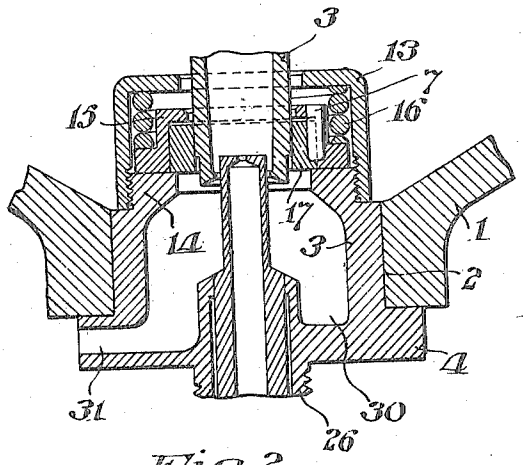
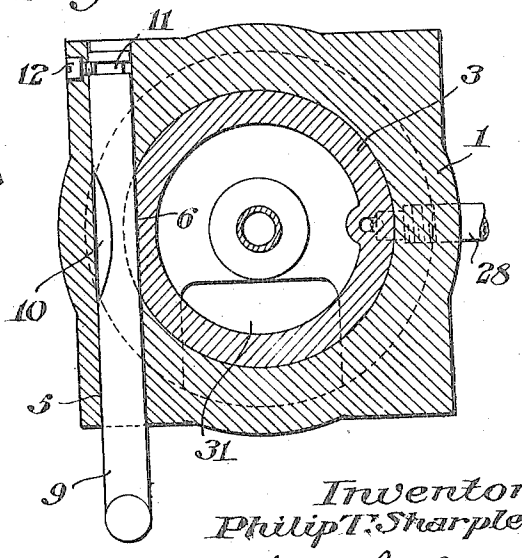


Fig. 2.



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UNITED STATES PATENT OFFICE.

PHILIP T. SHARPLES, OF ST. DAVIDS, PENNSYLVANIA.

CENTRIFUGAL MACHINE.

Application filed July 30, 1919. Serial No. 314,315.

To all whom it may concern:

Be it known that I, PHILIP T. SHARPLES, a citizen of the United States, residing at St. Davids, in the county of Delaware and State of Pennsylvania, have invented certain Improvements in Centrifugal Machines, of which the following is a specification.

This invention has as its primary object the provision of improved means for introducing liquid into a revolving bowl without making contact with the bearing of the part through which it is introduced, for discharging liquid from the bowl at the end of a run without making contact with the bearing, for lubricating the bearing and for securing the ready assembly and dissociation of the parts.

Desiderata attained are the protection of the bearing parts, particularly the bushing and the boss revolving therein, from deterioration and wear, the ready removal and replacement of the "drag" or bearing, and the ready removal and replacement of the feed nozzle independently.

My improvements are designed especially for application to a case and a suspended centrifugal bowl having an axial, tubular bottom boss engaged by a "drag" or bearing permitting it a restrained lateral movement and in the preferred form thereof the "drag" has a skeleton body telescoped in the case with a bushing on the boss above its bottom, the body holding a detachable nozzle extending into the boss.

In the drawings, Fig. 1 is a broken vertical sectional view taken through the bottom of a centrifugal machine embodying a form of the invention; Fig. 2 is a broken vertical central sectional view taken transversely to the position shown in Fig. 1; Fig. 3 is a sectional view taken on the line 3^x—3^x of Fig. 1; and Fig. 4 is a sectional view taken on the line 4^x—4^x of Fig. 1.

The mechanism illustrated in the drawings comprises a case 1 having a bottom aperture 2 in which is telescoped a skeleton plug or "slip drag" body 3 provided with a bottom flange 4 which engages the bottom of the case.

The bottom of the case is provided with a transverse cylindrical bearing 5 and the plug 3 is provided with the cylindrical bearing 6 which is complementary to and adapted to register with the bearing 5. A bolt 9 is journalled in the bearing 5 and is provided with the concave or cylindrical notch 10 adapted to conform with the periphery of the plug 3, to permit the latter to be moved axially with relation to the case and to be locked in place by revolving the bolt so that the body thereof will be engaged in the bearing 6. A segmental slot 11 in the end of the bolt 9 has projected thereinto the point of a screw 12 set in the bottom of the case 1, the engagement preventing the bolt from being withdrawn and the slot being of such length that the bolt can be turned from its locking to its unlocking position.

A shell or housing 13 is screwed on the reduced neck 14 of the plug 3 and holds therein, on the neck 14, a ferrule 15 of Z-shaped cross-section, through the action of coiled spring 16, and a bushing 17 through the action of the ferrule. The ferrule 15 is provided with and limited in movement by a stud 18 which extends into the plug's aperture 19, of such size as to permit the stud to move laterally therein. A stud 7 connects the ferrule 15 and the bushing 17.

A suspended bowl 20 is provided with the axial bottom nipple or tubular boss 21 disposed within the parts 13, 15 and 17, the parts 13 and 15 clearing the boss while the part 17 makes a slip fit therewith. A small lateral movement under frictional restraint is permitted to the bottom of the bowl through the limited play permitted the ferrule 15 subject to the pressure of the spring 16. It will be understood that the boss 21 may be inserted in and removed from the positioned drag by moving the bowl 20 vertically or the drag may be telescoped relatively to the boss and case with the bowl in place.

A nozzle 22 is telescoped and seated removably in the bearing 23, axially disposed in the plug 3, and extends into the boss 21. A feed pipe 24 is clamped to the bottom of the nozzle by a coupling nut 25 which turns on the threaded boss 26 forming part of the bearing for the nozzle, the nozzle being clamped in place by the pipe and coupling and being removable on detaching them. Liquid is introduced by the pipe and nozzle through the boss into the bowl without coming in contact with the exterior of the boss, with the bushing or the coacting parts.

The plug 3 is provided with a duct 27 which leads from a pipe 28 screwed into the flange 4 to a duct 29 extending through the ferrule 15 and thence to a duct 29′ ex-

tending through the bushing 17, whereby a lubricant is introduced to the joints between the parts subject to wear.

The plug 3 has its chamber 30 provided with an outlet 31 for the escape of matter discharged from the bowl through the boss 21 at the end of a run, without coming in contact with the exterior of the boss, the bushing or the coacting parts subject to wear.

Having described my invention, I claim:

1. The combination with a bearing provided with a bushing movable transversely to its axis and means for frictionally restraining the movement of said bushing, of a vertical centrifugal bowl having an axially disposed tubular bottom boss extending through said bushing and a stationary feed nozzle having an outlet which is not lower than the bottom of said boss, said nozzle discharging through said boss into said bowl.

2. The combination with a suspended centrifugal bowl having an axially disposed tubular bottom boss, of bearing means engaging said boss for restraining the movement of said bowl and a nozzle extending into said boss for introducing liquid into said bowl and preventing it from contacting with said bearing means.

3. The combination with a centrifugal bowl having an axially disposed tubular bottom boss, of a "drag" engaging said boss, and a nozzle engaged in detachable relation to said "drag" in line with the axis of said bowl and extending into said boss.

4. The combination with a case and a centrifugal bowl having an axially disposed tubular bottom boss, of a "drag" detachably connected with said case for engaging said boss to restrain the movement of said bowl, said "drag" having a hollow body with an outlet through which said bowl is adapted to discharge, and a feed nozzle held by said body in line with said boss.

5. The combination with a case and a suspended revoluble bowl having a bottom axial inlet boss, of controlling and lubricating means comprising a body telescoped in said case, a housing detachably engaged on said body and surrounding said boss, a ferrule movable on said body within said housing and surrounding said boss, a spring disposed in said housing so as to restrain the action of said ferrule, a bushing on said boss within said ferrule, and a lubricating duct extending through said body.

6. The combination with a case having a vertical bottom inlet and an intersecting transverse cylindrical bearing, of a suspended revoluble bowl having an axial bottom inlet boss, and controlling, feeding and lubricating means set in said case, said means comprising a plug making a slip fit with said case in said aperture and have a transverse bearing adapted to register with the bearing of said case, and a locking bolt journalled in the bearing of said case and adapted to be turned into the bearing of said plug, said bolt having a notch adapted to register with said plug to permit the latter to move longitudinally.

7. The combination with a case and a suspended revoluble bowl having a hollow bottom boss, of controlling, feeding and lubricating means, said means comprising a skeleton plug adapted to telescope with the bottom of said case, a device carried by said plug for engaging said boss, a lubricating duct extending through said plug and a discharge passage from said plug.

8. The combination with a case and a suspended revoluble bowl having a bottom inlet boss, of controlling and feeding means comprising a plug set in said case, a housing detachably connected with said plug and surrounding said boss, a ferrule movable on said plug in said housing with an outwardly extending bearing flange and an inwardly extending flange surrounding said boss, a spring in said housing in bearing relation to said outwardly extending flange and a bushing on said boss within said ferrule.

Signed at West Chester, in the county of Chester and State of Pennsylvania, this 23rd day of July, 1919.

P. T. SHARPLES.