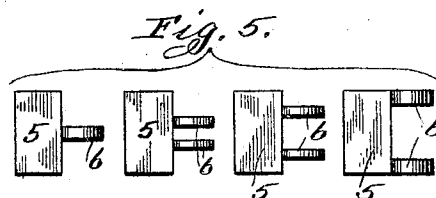
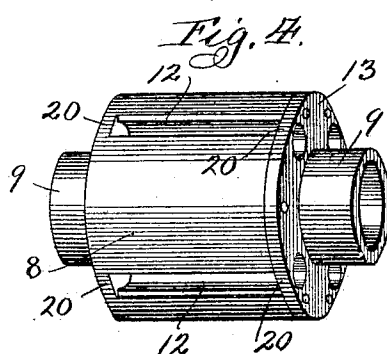
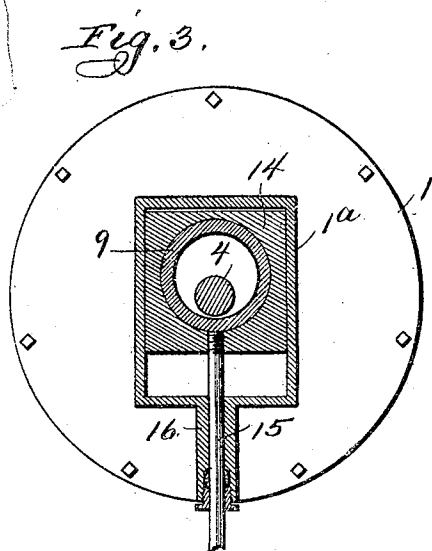
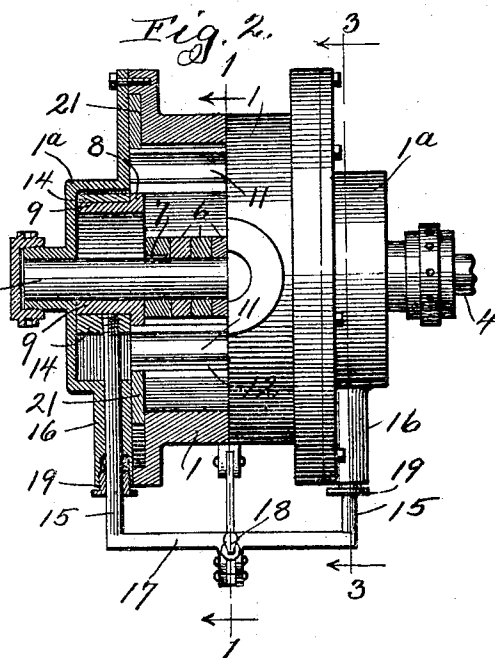
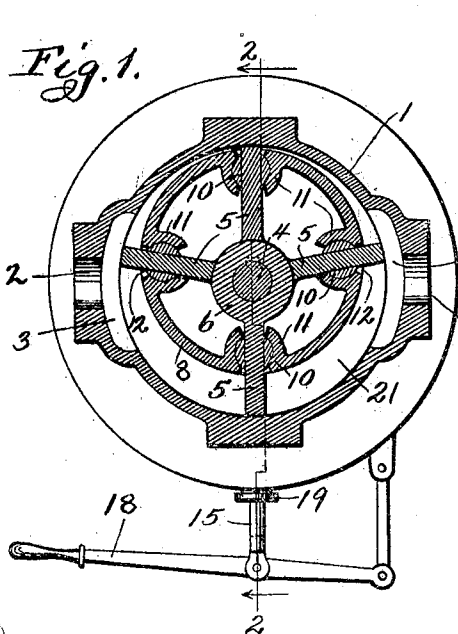


No. 800,023.

PATENTED SEPT. 19, 1905.

W. S. SHARPNECK.
ROTARY PUMP.

APPLICATION FILED NOV. 14, 1904.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM S. SHARPNECK, OF CHICAGO, ILLINOIS, ASSIGNOR OF THREE-FOURTHS TO FRANK A. SHARPNECK, HENRY SCHAEFFER, AND FREDERICK SCHAEFFER, OF CHICAGO, ILLINOIS.

ROTARY PUMP.

No. 800,023.

Specification of Letters Patent.

Patented Sept. 19, 1905.

Application filed November 14, 1904. Serial No. 232,561.

To all whom it may concern:

Be it known that I, WILLIAM S. SHARPNECK, of Chicago, in the State of Illinois, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

The invention relates to rotary pumps comprising a cylindrical casing in which rotary hinged pistons in conjunction with an eccentric slotted drum are employed to propel liquids through the casing at opposite ports arranged in the periphery thereof; and the object of the improvements is to provide means in connection with the drum of such a pump for varying the eccentricity of the drum in operation within the casing or reversing it relatively to the current in order to modify the amount or reverse the direction of the flow through the pump without changing the speed or reversing the direction of rotation of the pistons. I attain this object by the means illustrated in the accompanying drawings, in which—

Figure 1 is a transverse section, taken on the line 1 1 of Fig. 2, of a pump of the class mentioned containing my invention. Fig. 2 is a longitudinal section, partly in elevation of the same, the section taken on the line 2 2 of Fig. 1. Fig. 3 is a transverse section on the line 3 3 of Fig. 2. Fig. 4 is a detail showing a detached part in perspective. Fig. 5 is a detail showing detached parts in plan view.

In the drawings, referring to the parts, the numeral 1 designates the cylindrical casing which is provided with ports 2 at opposite points for liquid ingress and egress, said ports being located in recesses 3 in the casing interior preferably made by external enlargements of the casing at the points of their location, as shown in Fig. 1. A shaft 4, journaled in the casing and having liquid-tight closing therewith, is provided with pistons or radial wings 5, which are adapted to sweep the interior of the casing for forcing liquid through the same when rotated by means of said shaft. Said wings are provided with eyes 6, which are slipped over the shaft and form a hinge connection therewith, one of the eyes being keyed to the shaft as seen at 7, Fig. 2, so as to rotate therewith. A slotted open-ended drum 8, preferably provided with reduced extensions 9, is mounted on the wings 5 by means of slotted cylinders

10, having close-fitting relation with said wings and with segmental bearings 11, Fig. 1, of the drum, whereby the slots 12 of the drum may slide and turn slightly on the wings. The drum is provided with a detachable part 13, Fig. 4, by means of which the slots 12 may be opened at one end for entering the parts 5 and 10.

The casing 1 is preferably provided with reduced extensions 1^a at the ends, and in each of these a block 14 is fitted to slide, said blocks having openings adapted to fit upon the extensions 9 of the drum for supporting it and permitting it to turn slightly within the casing and to be moved therein toward and from the center or axis of the shaft 4, such movement being limited by the stop of the part 1^a on the part 14, so that the interior of the opening of the extension 9 is not allowed to come in contact with the shaft 4 nor the exterior of the drum to come in contact with the interior of the casing at either side. The position of extreme movement of the drum in one direction is illustrated in Figs. 2 and 3, which show the closest approach of the drum to the interior of the casing 1 and to the shaft 4. The blocks 14 are connected with rods 15, extended out through openings at 16 and provided with a bar 17 and lever 18, whereby said blocks may be moved back and forth within the limits of the interior of the parts 1^a. The openings at 16 are extended through sufficient thickness of material to serve as guides to the movement of said rods, and a stuffing-box is provided at 19 to afford a liquid-tight closing about the rods.

The wings 5 project through the slots 12 of the drum, and the spaces 20 at the end of said slots are filled with a pair of rings 21, which fit upon the periphery of the drum and against the ends of the said wings, so as to prevent the liquid from passing them through said spaces. As seen in Fig. 1, two of the wings stand in line, one projecting about half its width from the periphery of the drum and the other projecting but slightly, and two other of the wings stand at a slight angle and project equally from the drum. The connection of the keyed wing with the hinged wings through the drum is such that each of the wings by the simple rotation of the shaft is brought to the position relatively to the drum of the one having the greatest projection there-

from, and this causes the liquid to be drawn in at one port and forced out at the opposite port of the casing. This operation is not new with the drum having a fixed eccentric position relatively to the casing and shaft; but in the present instance the drum, being supported by the sliding blocks connected with the rods projecting out through the casing and having the lever in connection therewith, may have its eccentricity varied or change to a concentric or opposite position. When the drum is moved toward the shaft or axis of rotation without changing the speed of the shaft, the active area of the pistons or wings is reduced and the amount of liquid-throw will be lessened, but will be capable of exerting increased pressure. When the drum-axis is coincident with the axis of rotation, the active area of the several wings is equalized and there will be no throw of liquid, and when the eccentricity of the drum is changed to the opposite side of the casing without changing the direction of the shaft rotation the direction of the liquid-throw will be reversed.

The principle of the invention is embodied by a rotary pump having variable piston areas, whereby the throw may be increased or lessened without changing the speed of the pistons or reversible eccentricity, whereby the active piston areas may be transferred from one side of the liquid-current passing through the pump to the opposite side for reversing the direction of said current without changing the direction of rotation of the pistons.

What is claimed is—

1. In a rotary pump, the combination of an

exterior casing, a shaft rotatable therein, pistons rotatable with said shaft and having their free ends coacting with the interior wall of said exterior casing, and a drum located in said exterior casing around said shaft and having slots therein through which said pistons project, said drum being shiftable in said exterior casing with respect to the shaft and pistons.

2. In a rotary pump, the combination of an exterior casing, a shaft rotatable therein, pistons rotatable with said shaft and having their free ends coacting with the interior walls of said exterior casing, a drum located in said exterior casing around said shaft and having slots therein through which said pistons project, said drum being shiftable in said exterior casing with respect to the shaft and pistons, sliding supports for said drum and lever connections for moving said supports and drum.

3. In a rotary pump, the combination of a casing, a driving-shaft journaled in said casing, a drum also journaled in the casing having reduced extensions and slots in its cylindrical side, pistons rotatable with said shaft and passing through said slots, sliding supports forming bearings for the reduced extensions of said drum, and means for sliding said supports and their drum with respect to said shaft and pistons.

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Witnesses:

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