

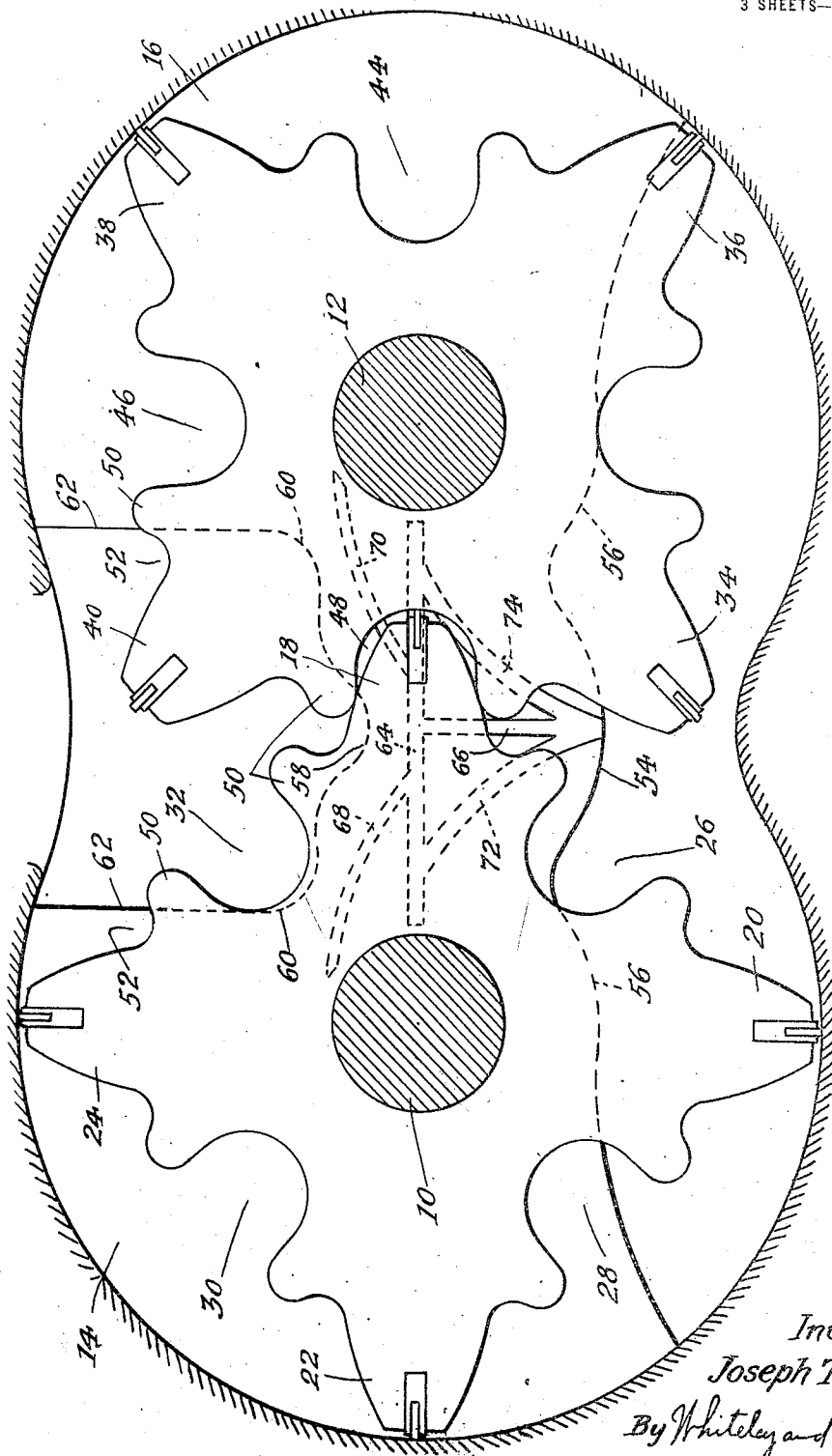


Fig. 1

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1,348,773.

Patented Aug. 3, 1920.
3 SHEETS—SHEET 2.

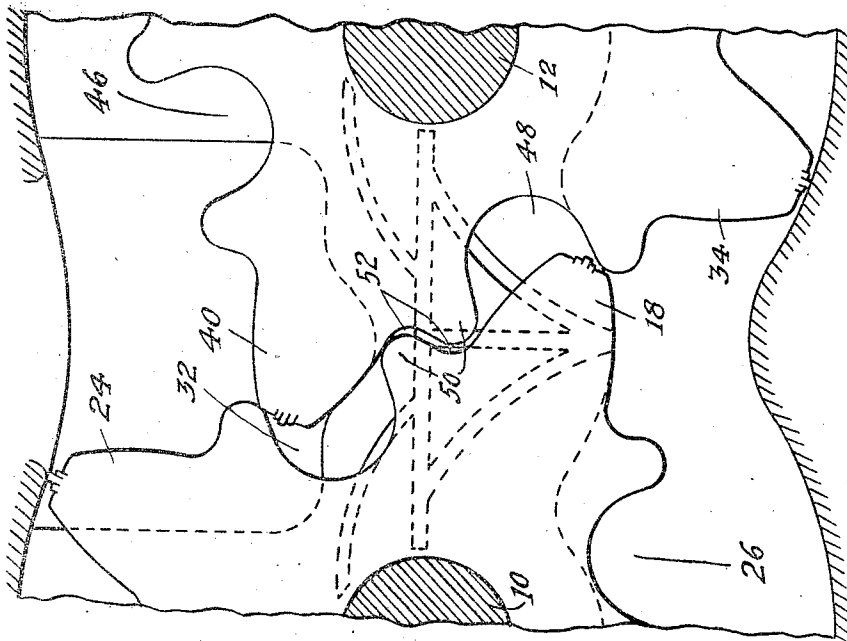


Fig. 3

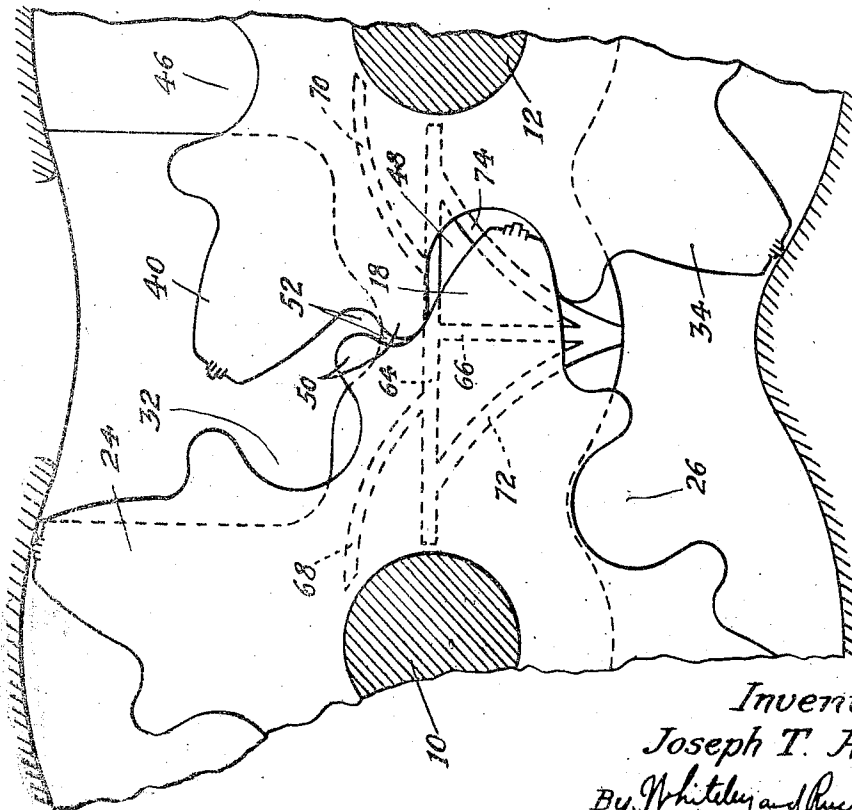


Fig. 2

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ROTARY PUMP.
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Patented Aug. 3, 1920.
3 SHEETS—SHEET 3.

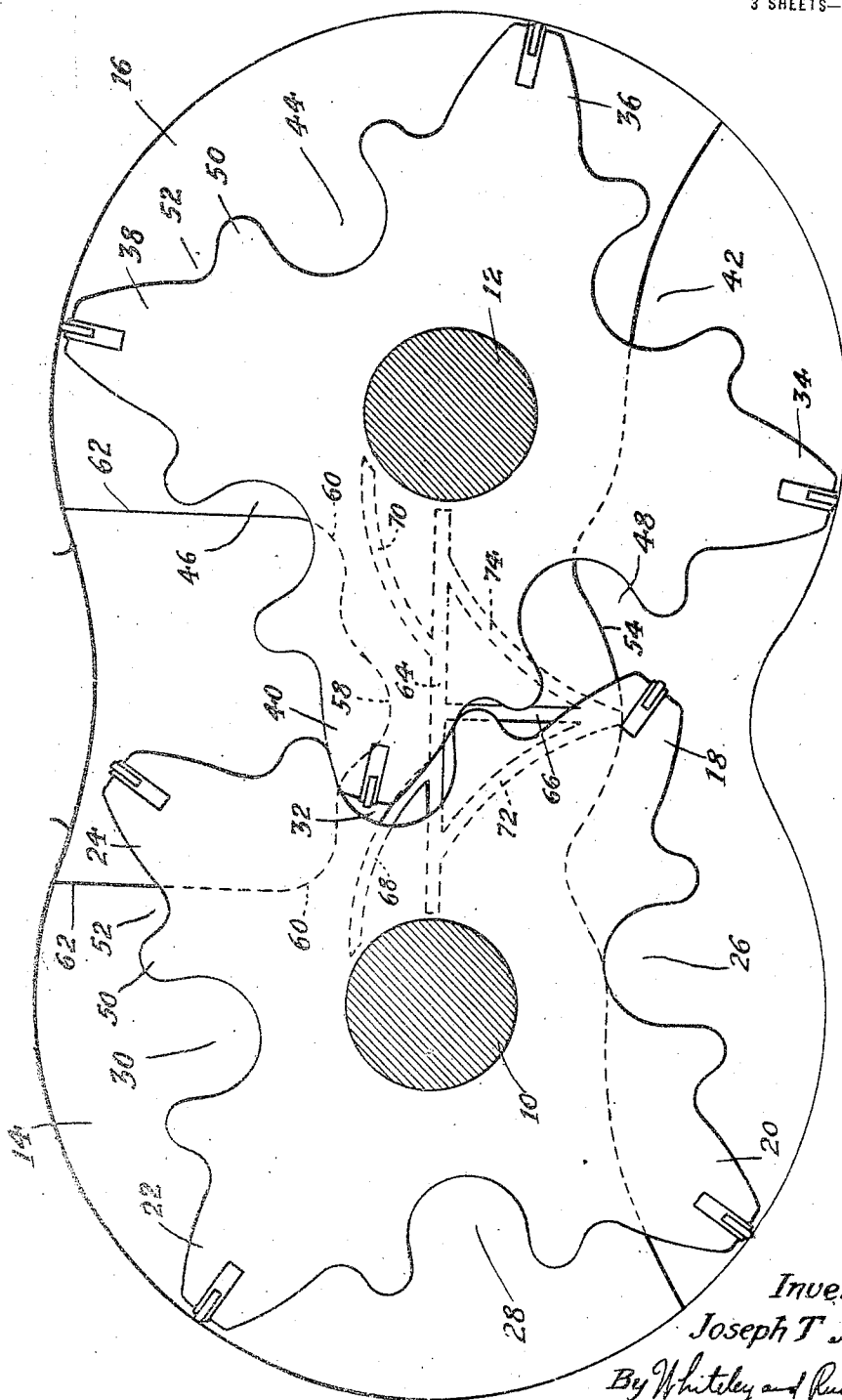


Fig. 4

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UNITED STATES PATENT OFFICE.

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ROTARY PUMP.

1,348,773.

Specification of Letters Patent.

Patented Aug. 3, 1920.

Application filed March 24, 1919. Serial No. 284,562.

To all whom it may concern:

Be it known that I, JOSEPH T. AUGER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

My invention relates to rotary pumps and in particular to pumps of this type for use in connection with fire apparatus. An object is to provide a pump which will have a high degree of efficiency and at the same time occupy only a comparatively small space. Other objects are to provide a pump which will give the greatest opportunity for the escape of water from the piston chambers and which will not be subjected to the cutting action of sand and grit.

The full objects and advantages of my invention will appear in connection with the detailed description, and the novel features embodied in my inventive idea will be particularly pointed out in the claims.

The features disclosed in this application are in the nature of improvements on the pump disclosed in my prior application, Serial Number 275,543, filed February 7, 1919.

Referring to the drawings,—

Figure 1 is a cross sectional view of the rotary pistons showing a piston blade of one piston in intermediate position in the cooperating cavity of the other piston. Fig. 2 is a similar view showing the same piston blade advanced a little farther with relation to the cooperating cavity. Fig. 3 is a similar view showing the same blade just as it is turning out of the cavity, and also showing a piston blade of the second piston as it starts to move into the cooperating cavity of the first piston. Fig. 4 is a similar view showing the first piston blade entirely free from the cavity and showing the second blade well within the cooperating cavity.

Referring to the construction shown in the drawings, 10 and 12 designate the shafts of two rotary pistons which operate in partially overlapping cylindrical piston chambers 14 and 16, respectively. To the shaft 10 is secured a rotary piston having the four piston blades 18, 20, 22 and 24 which are separated by the intervening cavities 26, 28, 30 and 32. To the shaft 12 a similar rotary piston is secured in such manner that its

four piston blades are arranged at forty-five degree relation to the piston blades of the first piston. The four piston blades of the second piston are designated by the characters 34, 36, 38 and 40, and they are separated by the intervening cavities 42, 44, 46 and 48. The walls of the cavities are curved in the form of arcs of a circle and these walls merge by means of reverse curves into lugs designated by the character 50 which applies to the lugs of both pistons, the curves of these lugs being formed as arcs of a circle of less radius than the circle having the walls of the cavities as arcs. The surfaces of the lugs merge by reverse curves into depressions 52, the curves of these depressions being formed as arcs of a circle having substantially the same radius as that of the circle which has the surfaces of the lugs 50 as arcs. The surfaces of the depressions 52 merge into the curved surfaces of the piston blades. By referring to Figs. 2 and 3 it will be seen that on account of the particular construction of the lugs 50 and the depressions 52 that the lugs move into and out of the depressions with a free and easy movement without any binding action.

The bridge members are formed with a downward curvature 54 on the central portion of their lower surfaces, this curvature on each side merging into reverse curvatures 56 extending to the sides of the bridge members. The upper surfaces of the bridge members are formed with a central curved depression 58, this curvature on each side merging into reverse curves 60, which in turn merge into the straight vertical surfaces 62 of the bridge members, which vertical surfaces constitute walls of the discharge opening at the top of the piston chambers. A horizontal groove 64 in each bridge member extends from one piston shaft to the other, the greater portion of this groove lying above the line extending between the centers of the shafts, and from the middle of this groove a vertical groove 66 extends to the bottom of the bridge so as to lead back to the lower side of the piston chambers. Grooves 68 and 70 lead from near the top of the shafts 10 and 12 into the horizontal groove 64 at a point on each side of the vertical groove 66, while grooves 72 and 74 lead from points near the outer ends of the groove 64 to the bottom of the vertical groove 66.

The operation and advantages of my rotary pump will be readily understood from the foregoing description. The construction of the cooperating piston blades and cavities and the construction of the cooperating lugs and depressions are such that water-lock is avoided and the cooperating parts moved past each other without binding action upon each other. The provision of the upper surfaces of the bridge members with a curved central depression provides for the free and easy escape of water, and at the same time the vertical dimension of the bridge members is not reduced, since the downward curvature on the lower side thereof compensates for the reduction at the top. The various grooves in the bridge members provide for the escape of sand and grit before they have an opportunity to cut out the various parts of the pump.

I claim:

1. A rotary pump comprising a casing containing two overlapping piston chambers provided with lateral intake and discharge openings, bridges separating said intake and discharge openings, and rotary pistons having intermeshing blades in said piston chambers, each of said bridges being formed on its upper surface with a central curved depression and being formed on its lower surface with a central downwardly-extending curved portion.

2. A rotary pump comprising a casing containing two overlapping piston chambers provided with lateral intake and discharge openings, bridges separating said intake and discharge openings, and rotary pistons having intermeshing blades in said piston chambers, each of said bridges being formed on its upper surface with a central curved depression which on each side thereof merges into a reverse curve, said curves in turn merging into straight vertical surfaces constituting walls of the discharge opening.

3. A rotary pump comprising a casing containing two overlapping piston chambers provided with lateral intake and discharge openings, bridges separating said intake and discharge openings, and rotary pistons having intermeshing blades in said piston chambers, each of said bridges being formed on its upper surface with a central curved depression which on each side thereof merges into a reverse curve, said curves in turn merging into straight vertical surfaces constituting walls of the discharge opening, and each of said bridges being formed on its lower surface with a central downwardly-extending curved portion.

4. A rotary pump comprising a casing containing two overlapping piston chambers provided with lateral intake and discharge openings, bridges separating said intake and discharge openings, rotary pistons having intermeshing blades in said piston chambers, each of said bridges being provided with a horizontal groove extending between the shafts of said pistons, a vertical groove extending from said horizontal groove to the intake opening, and grooves leading from near the tops of said shafts to said horizontal groove.

5. A rotary pump comprising a casing containing two overlapping piston chambers provided with lateral intake and discharge openings, bridges separating said intake and discharge openings, rotary pistons having intermeshing blades in said piston chambers, each of said bridges being provided with a horizontal groove extending between the shafts of said pistons with the greater portion of said groove lying above the line extending between the centers of said shafts, and a vertical groove extending from said horizontal groove to the intake opening.

6. A rotary pump comprising a casing containing two overlapping piston chambers provided with lateral intake and discharge openings, bridges separating said intake and discharge openings, rotary pistons having intermeshing blades in said piston chambers, each of said bridges being provided with a horizontal groove extending between the shafts of said pistons, a vertical groove extending from the middle of said horizontal groove to the intake opening, and grooves extending from near the ends of said horizontal groove to the lower portion of said vertical groove.

7. A rotary pump comprising a casing containing two overlapping piston chambers provided with lateral intake and discharge openings, bridges separating said intake and discharge openings, and rotary pistons having intermeshing blades in said piston chambers, each of said bridges being provided with a horizontal groove extending between the shafts of said pistons, a vertical groove extending from the middle of said horizontal groove to the intake opening, grooves extending from near the ends of said horizontal groove to the lower portion of said vertical groove, and grooves leading from near the tops of said shafts to said horizontal groove.

In testimony whereof I hereunto affix my signature.

JOSEPH T. AUGER.