J. R. KINNEY.

ROTARY PUMP.

APPLICATION FILED DEC. 21, 1908.

951,762. Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

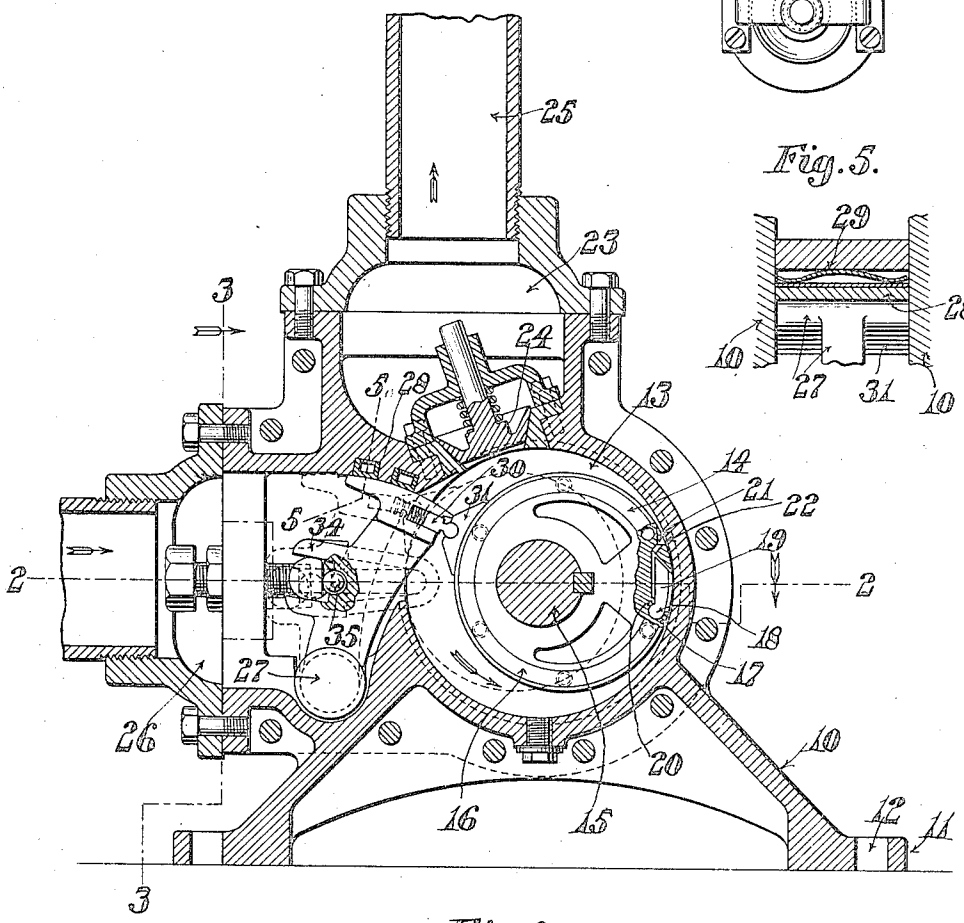


Fig. 4.

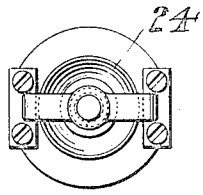


Fig. 5.

Fig. 8.

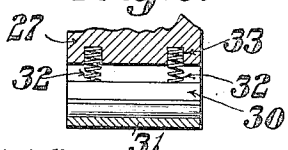


Fig. 6.

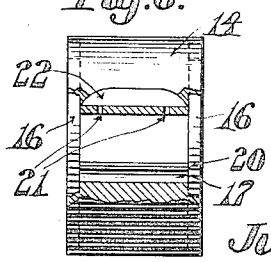
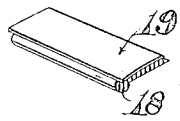


Fig. 7.



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2 SHEETS—SHEET 2.

Fig. 2.

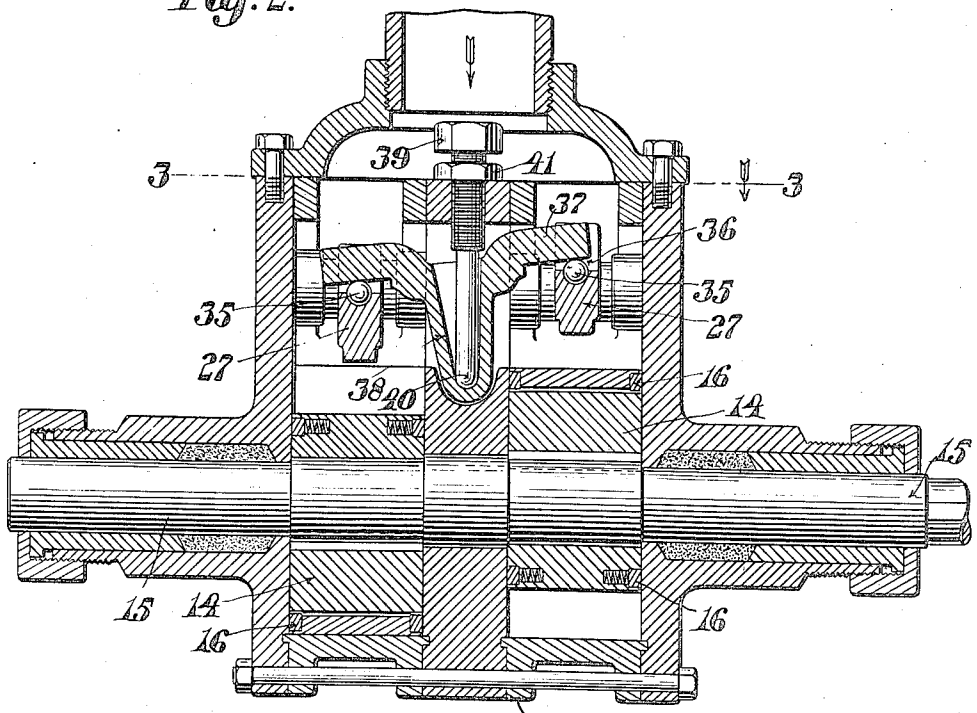
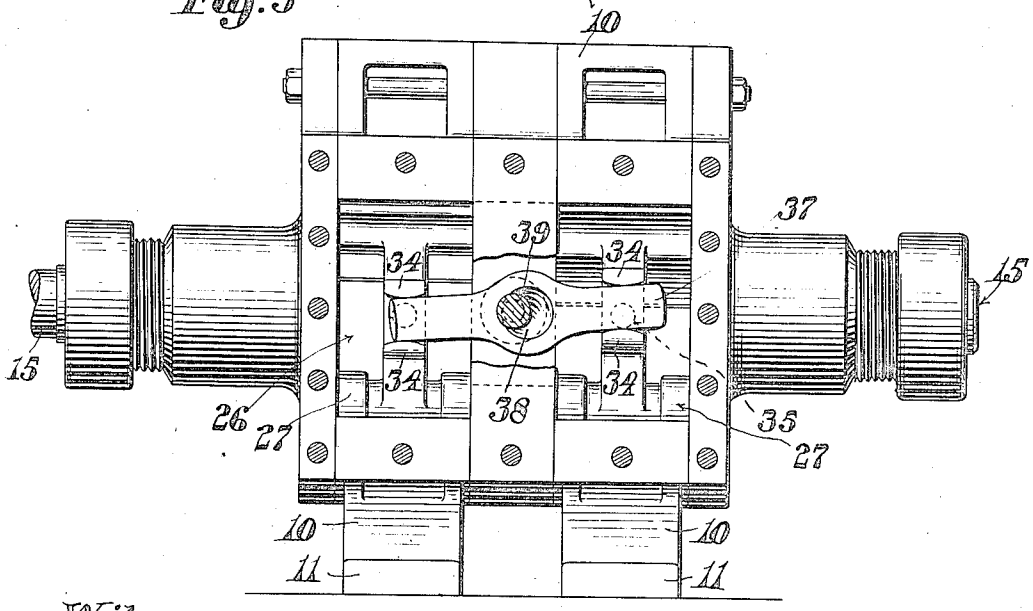


Fig. 3



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UNITED STATES PATENT OFFICE.

JUSTUS R. KINNEY, OF DORCHESTER, MASSACHUSETTS.

ROTARY PUMP.

951,762. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed December 21, 1908. Serial No. 468,657.

To all whom it may concern:

Be it known that I, JUSTUS R. KINNEY, a citizen of the United States of America, and a resident of Dorchester, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

This invention relates to rotary pumps and has for its object the production of a pump of this class in which two eccentric pistons are used connected together by means of a suitable device contained wholly within the pump casing whereby the movement of one piston against a pivoted blade in one direction will positively act upon the pivoted blade co-acting with the other piston to force it into firm contact therewith.

The invention consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings: Figure 1 represents a vertical section of a pump embodying the features of this invention. Fig. 2 represents a horizontal section of the same, the cutting plane being on line 2—2 on Fig. 1. Fig. 3 represents a vertical section of the same, the cutting plane being on line 3—3 on Fig. 1. Fig. 4 represents a plan of the exhaust valve. Fig. 5 represents a section of the devices for preventing leakage at the end of the pivoted blade. Fig. 6 represents an elevation partly in section of the rotary eccentric piston and showing the pivoted packing member therein. Fig. 7 represents a perspective of said packing member, and Fig. 8 represents a section through the contacting shoe of the pivoted blade and the devices for forcing it into contact with the rotary eccentric piston.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 represents a suitable casing provided with supporting feet 11 having openings 12 therein by which the casing may be secured in position. The casing is provided with two interior cylindrical piston chambers 13 in each of which is revolubly mounted an eccentric piston 14 secured to and revoluble with a shaft 15. Each side wall of the pistons 14 is provided with a packing ring 16 forced outwardly by means of a plurality of springs into contact with the side walls of the piston chambers 13. That part of the periphery of the piston 14 farthest removed from the axis of the shaft 15 is provided with a depression extending transversely of said periphery. One end of this recess is provided with a semi-cylindrical seat 17 for the reception of the semi-cylindrical end 18 of a packing member 19, the outer wall of which is made concentric with the periphery of the piston 14. This recess is provided with a rib or stop face 20 which limits the inward movement of the packing member 19 leaving a shallow space behind the packing member with which passages 21 communicate from the channel 22 cut into the periphery of each piston 14. It is obvious that as the piston 14 revolves in the direction of the arrow on Fig. 1, the material being pumped will enter the transverse channel 22 in the periphery of the piston and pass therefrom through the passages 21 into the shallow space in the rear of the pivoted packing member 19 and force this outwardly into firm contact with the inner cylindrical wall of the piston chamber 13. The free end of the packing member 19 is beveled off, as shown in Fig. 1, and the recess in which the member 19 is mounted has one of its walls projecting over this beveled end of the packing member to form a suitable stop to prevent too great an outward movement of the pivoted member when said member is being forced outwardly by the liquid contained within the chamber 13 passing through the passages 21 to the rear of said packing member.

Communicating with each of the chambers 13 is a compartment 23, each of the openings from the chambers 13 to the compartment 23 being closed by a spring-pressed valve 24. The compartment 23 is provided with a suitable exhaust pipe 25. Each of the chambers 13 also communicates with an inlet compartment 26 in which is inserted a pivoted member 27, the free end of which is concentric with said pivot and packed by suitable members 28 forced against said concentric face by means of springs 29. In a recess extending transversely of the free end of the member 27 is mounted a cylindrical member 30 to the outer end of which is pivotally mounted a shoe 31 which is forced into contact with the periphery of the pis-

ton 14 by means of the springs 32 bearing against the cylindrical member 30, the opposite ends being embedded in the sockets 33 in the pivoted member 27.

Each of the pivoted members 27 is provided with lateral extending arms 34 interposed between which is a revoluble ball or anti-friction member 35. This ball is provided to furnish a suitable bearing surface for the flat side of a rocker member 37, the central portion of which is provided with a tapered socket 38, the axis of which is at right angles to the main portion of said rocker member 37, the outer ends of said main portion being substantially semi-cylindrical and bearing upon the opposing faces of the radial arms 34.

Secured to the casing 10 at a point midway between the two pivoted members 27 is a bolt 39, the inner end of which is rounded off as indicated at 40 to form a seat for the inner end of the tapered socket 36 and about which said rocker member 37 is adapted to be moved.

It is obvious that when one of the pistons 14 is in the position shown in full lines in Fig. 1 and the other piston is in the position shown in dotted lines in said figure, the rotation of the piston 14 in the direction indicated by the arrow on said figure will cause the pivoted blade 27 to be moved to the left about its pivot, the ball carried by this pivoted member acting upon the flattened side 36 of one end of the rocker member 37 to cause it to rock about the end of the pin 40. This rocking movement will cause the other end of said rocker member 37 to be forced against the ball 35 of the other pivoted member 27 so that it will be moved to the right of Fig. 1 and its shoe will be obliged to follow in contact with the periphery of the other piston as it rotates about the axis of the shaft 15 in the direction of the arrow indicated on said figure. This makes a positive device interposed between the two opposed pistons adapted to operate in such a manner that the movement of one piston against its pivoted blade will insure the contact of the other pivoted blade against the periphery of the other piston at all times. As the pistons rotate about the axis of the shaft 15 they assume varying positions relative to each other so that in order that the rocker member should accommodate itself to these varying positions it is necessary that the pivot about which said rocker member moves should be at one side of the axis of the points of contact between the ends of the rocker member and the pivoted blades. This is suitably provided for in the construction shown in Fig. 2 and previously described, the location of the pivot 40 at one side of a line drawn through the points of contact between the ends of the rocker member 37 and the pivoted blades 27 providing a variation in the leverage of the rocker member 37 when acting upon the pivoted blades 27 to accommodate itself to the varying position of the two pistons 14.

It is obvious that the threaded bolt carrying the pivot 40 may be adjusted longitudinally and locked in adjusted position by means of the lock nut 41. It is also evident that the device described and shown may be used equally as well as a motor by admitting a motive agent to the piston chamber and causing a rotation of the same, power being taken from the revoluble shaft of said piston.

It is believed that the many advantages and the operation of the invention will be understood from the foregoing description without further explanation.

Having thus described my invention, I claim:

1. In a device of the class described, the combination of two oppositely-disposed rotary eccentric pistons; a pivoted blade for each piston; a ball carried by each of said pivoted blades; and a pivoted member interposed between said blades with the ends resting on said balls.

2. In a device of the class described, the combination of two oppositely-disposed rotary eccentric pistons; a pivoted blade for each piston; a rocker member each end of which bears on one of said blades provided with a lateral socket extending inwardly within the plane of movement of said pistons; and a pin interposed between said blades the end of which forms a pivot for said rocker member.

3. In a device of the class described, the combination of two oppositely-disposed rotary eccentric pistons; a pivoted blade for each piston; a rocker member each end of which bears on one of said blades provided with a lateral socket extending inwardly within the plane of movement of said pistons, said socket being of greater diameter at its outer end than its inner end; and a pin interposed between said blades the end of which forms a pivot for said rocker member.

4. In a device of the class described, the combination of two oppositely-disposed rotary eccentric pistons; a pivoted blade for each piston; a rocker member each end of which bears on one of said blades; an anti-friction member on said pivoted blade at the point of contact with said rocker member; and a pivot for said rocker member interposed between said blades.

5. In a device of the class described, the combination of two oppositely-disposed rotary eccentric pistons; a pivoted blade for each piston; a cylindrical pin with a rounded end interposed between said blades; a rocker member provided with a lateral socket into which said pin projects each end of said

rocker member being substantially cylindrical with a flattened side and bearing against a pivoted blade; and a ball on said pivoted blade co-acting with said flattened side.

6. In a device of the class described, the combination of two oppositely-disposed rotary eccentric pistons; a pivoted blade for each piston having a pair of lateral arms; a cylindrical pin with a rounded end interposed between said blades; and a rocker member provided with a lateral socket into which said pin projects each end of said rocker member being substantially cylindrical and bearing against the lateral arms of said blade.

7. In a device of the class described, the combination of two oppositely-disposed rotary eccentric pistons; a pivoted blade for each piston having a pair of lateral arms; a cylindrical pin with a rounded end interposed between said blades; a rocker member provided with a lateral socket into which said pin projects each end of said rocker member being substantially cylindrical with a flattened side; and a ball on said pivoted blade between said lateral arms co-acting with said flattened side.

8. In a device of the class described, the combination with a cylindrical chamber; of a revoluble shaft centrally positioned therein; a piston eccentrically mounted on said shaft with a transverse recess in that portion of its periphery farthest removed from the axis of said shaft and connected by passages to said periphery; a pivoted blade co-acting with the periphery of said piston; and a packing member in said recess, the front end of which is inclined so that said pivoted blade will ride over the same when it contacts therewith during the rotation of said piston, said packing member being pivoted at the end opposite to said passages and forced outwardly by the contents of said chamber during the rotation of said piston.

Signed by me at 4 Post Office Sq., Boston, Mass., this 14th day of December, 1908.

JUSTUS R. KINNEY.

Witnesses:
EDNA C. CLEVELAND,
WALTER E. LOMBARD.