Feb. 17, 1925. 1,526,343

P. JOUANNEAUX

ROTARY PUMP

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Fig. 1.

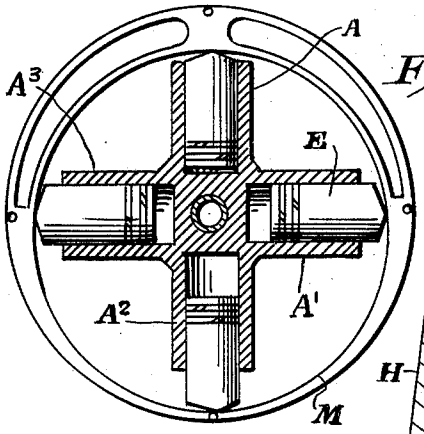


Fig. 2.

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PIERRE JOUANNEAUX, OF PARIS, FRANCE.

ROTARY PUMP.

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To all whom it may concern:

Be it known that I, PIERRE JOUANNEAUX, a citizen of the Republic of France, residing at Paris, France (post-office address 16 Rue fabre d'Eglantine), have invented certain new and useful Improvements in Rotary Pumps, of which the following is a specification.

This invention has for its object to provide an improved rotary apparatus for sucking, compressing and delivering all kinds of fluids.

This improved apparatus has, among other advantages, the further advantages:— of dispensing with the complicated devices existing in similar apparatuses, such as connecting rods, cams, crank-shafts, etc.; of being comparatively cheap to manufacture; and of requiring only low power for driving it. It consists substantially of a series of cylinders arranged in the form of a cross and preferably constructed as a single casting, in each of which cylinders a piston of suitable form is adapted to work under the action of a spring which has a constant tendency to force the said piston outwards. This cross is stationary, being fixed at its centre on a hollow axle which is in communication with the aforesaid cylinders through valved orifices, and which serves for delivery of the compressed fluid.

The parts above referred to are arranged in a movable drum or casing which can be rotated by means of a driving belt passing around its periphery. One of the side members of this drum rotates on the hollow axle aforesaid, the other side member being fixed to a stub shaft mounted, like the said hollow axle, upon a suitable support, or being coupled to the end of a driving shaft.

The drum comprises in its inner periphery a guide track which is eccentric to the centre of the said drum, and against which the spring-pressed pistons constantly bear. The rotation of this drum has the effect of causing the pistons to make successively to-and-fro movements whereby these pistons in succession suck the fluid which enters the cylinders through suitable ducts that are provided:—on one hand in one of the side members of the drum and on the other hand, at the base of each cylinder, and which said pistons deliver the said fluid into the hollow axle whence it is led to its place of use.

In order to facilitate the understanding of the description hereinafter given, the accompanying drawings illustrate by way of example a constructional form of the improved apparatus of this invention.

Figure 1 is a cross section of the improved apparatus taken at right angles to its axis, and

Figure 2 is a vertical section taken along the axis.

A, A^1, A^2, A^3 are the cylinders arranged in the form of a cross, formed near their bases with orifices B in which are fitted suction valves C. D are pistons of suitable form working in these cylinders. L are coiled springs (or other types) bearing against the inner ends of the cylinders, and having a constant tendency to drive the said pistons outward in the direction of the arrow *f*. F is a hollow axle mounted on a support K, and communicating with each of the cylinders A, A^1, A^2, A^3 through suitable orifices fitted with delivery valves G.

The cross of cylinders and the axle F are stationary.

H is a movable drum containing the entire arrangement above described. M is a rolling track formed on the internal periphery of the drum H; it is eccentric to this drum, and the ends of the pistons D are maintained in contact with the said track by the action of the springs L.

A driving belt (not shown) connected to a driving device (also not shown) passes round the said drum.

J is a stub shaft arranged in the continued axis of the hollow axle F, and on it is mounted one side member of the drum H. This stub shaft J is mounted, like the hollow axle F, on a vertical support (not shown). I are orifices formed in the side member of the drum fixed on the shaft J; through them enters the fluid to be treated.

It will be perceived that on the movable drum H being driven at a determined speed, the pistons A, A^1, A^2, A^3 will in succession be either forced outwards by their respective springs (suction period) or forced in the opposite direction indicated by the arrow *f'* by reason of the eccentricity of the rolling track (compression and delivery period).

During the suction period the fluid, entering at I, flows through the valve C and passes into the cylinders through the orifices B.

During the compression period the said fluid is driven through the valves G and enters the hollow axle F whence it is delivered to its place of use.

It is to be clearly understood that the hereinbefore described constructional form is given solely by way of example, and that it may be modified constructionally in any desired manner without thereby departing from the nature of this invention. Thus, for instance, the valves may be replaced by an annular diaphragm or any other device that will serve as a non-return valve for the compressed or delivered fluid.

Likewise, the apparatus may be driven by direct drive from the end of a driving shaft by means of a coupling sleeve or suitable toothed gearing.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

A rotary pump or the like, comprising a rotary casing provided with a fluid inlet; a stationary, hollow shaft whereon said casing is mounted; a cylinder unit within the casing fixed at its center to said shaft and embodying a cruciform set of cylinders, each cylinder having a fluid inlet adjacent its inner end and an outlet at said end, the outlets leading directly into the bore of said shaft; a normally-closed suction valve in each cylinder inlet; a normally-closed delivery valve in each cylinder outlet; a spring-loaded piston in each cylinder adapted to be forced outward thereof by the action of its spring; and an eccentric track on the interior of the circumferential wall of the casing with which the outer ends of the pistons are constantly engaged.

In testimony whereof I affix my signature.

PIERRE JOUANNEAUX.