No. 724,132. PATENTED MAR. 31, 1903.

E. F. SMITH.

ROTARY PUMP.

APPLICATION FILED DEC. 30, 1901.

NO MODEL.

Fig. 1.

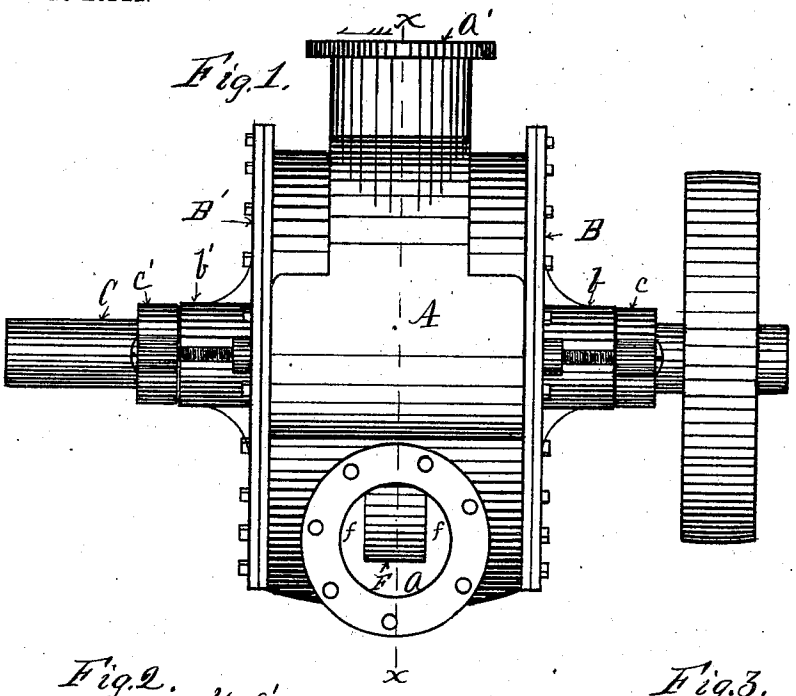


Fig. 2.

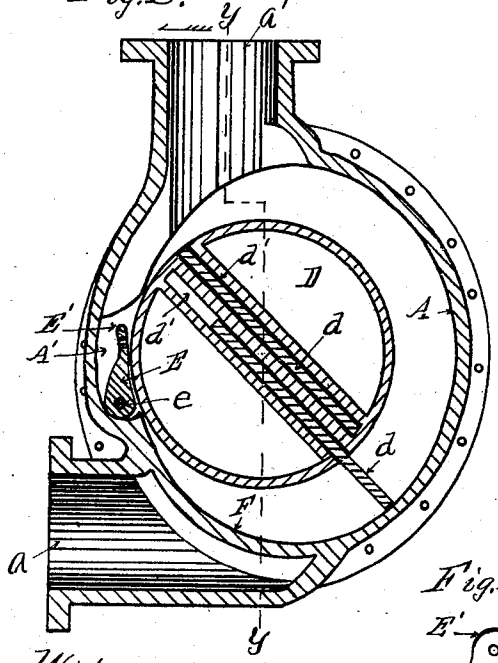


Fig. 3.

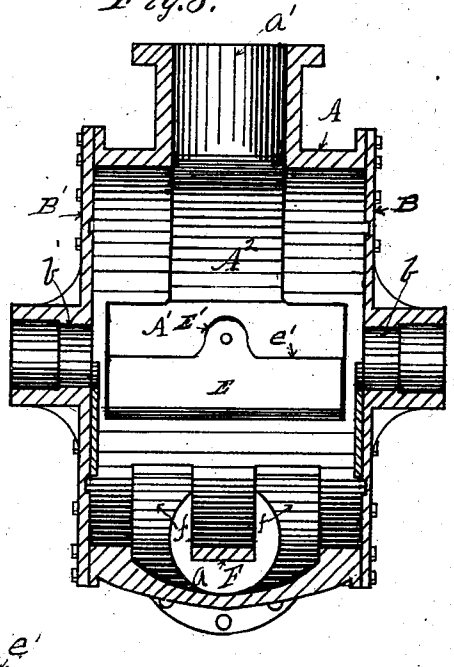
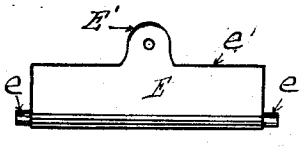


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD F. SMITH, OF BRADFORD, PENNSYLVANIA.

ROTARY PUMP.

SPECIFICATION forming part of Letters Patent No. 724,132, dated March 31, 1903.

Application filed December 30, 1901. Serial No. 87,831. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. SMITH, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to improvements in rotary pumps; and it consists, substantially, in the construction of a rotary pump in such a manner that the point of contact between the periphery of the cylinder and the shell of the pump is provided with a packing-valve mounted in a recess in the shell, which is so held in contact with the periphery of the cylinder by the weight of the fluid being pumped that the leakage therethrough is reduced to a minimum. This and other features of the pump are hereinafter set forth and explained, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation of my improved rotary pump. Fig. 2 is a vertical section of the same on the line x x in Fig. 1. Fig. 3 is a vertical section of the casing with the cylinder removed. Fig. 4 is a view in elevation of the packing-valve of the same detached from the pump.

In the drawings thus illustrating my invention, A is the shell of the pump, a the inlet, and a' the outlet thereof, and B and B′ the heads on the shell A, provided with bearings b b', in which the shaft C, supporting the cylinder D, is mounted, and c c' are glands for packing the bearings b b' around the shaft. The shell A of the pump is elliptical in shape, and the bearings b b' on the heads B B′ thereof are so located that the periphery of the cylinder D contacts with one side of the shell, and the cylinder is provided with radially-moving valves d, which move in and out of slots d' in the cylinder, so as to contact with the inner surface of the shell of the pump throughout the greater portion or all of the revolution of the cylinder D. At the point of contact between the cylinder D and the inside of the shell A there is a recess or depression A′ in the inside of the shell, which extends nearly the entire length of the cylinder D therein, and in this recess or depression A′ a packing-valve E is preferably pivoted by means of bearings e e, near the lower edge thereof. The upper edge e' of the packing-valve E normally contacts with the periphery of the cylinder D, and the weight of the fluid at the outlet a', communicating through the vertical passage A^2 with the recess or depression A′, acts upon the back of the packing-valve E and operates to constantly retain the upper edge e' thereof in close contact with the periphery of the cylinder D, and at the same time any wear on the packing-valve E is automatically taken up, so that the leakage of the fluid between the shell and the cylinder at this point is reduced to a minimum. On the central part of the upper edge e' of the packing-valve E there is a vertical projection E′, adapted to prevent the upper edge of the valve E catching the edges of the cylinder-valves d.

Over the end of the inlet-opening a I make a central bridge F, which bridge is substantially a continuation of the side of the shell A, and at each side of this bridge F there are inlet-openings f f, through which the fluid passes from the inlet a into the shell A, as is clearly shown in Figs. 1 and 3. This construction operates to entirely prevent the undue wear of the outer ends of the cylinder-valves d on account of the inlet-opening so common in pumps of this kind.

Having thus fully described my invention, so as to enable others to construct and use the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination in a rotary pump, of a pump-shell having a recess or depression in one side of its inner surface, a rotary cylinder mounted in said shell so that its periphery practically coincides with the inner boundary of the recess or depression in the pump-shell, and a packing-valve in said depression or recess the upper portion of which contacts with the periphery of the rotary cylinder, substantially as and for the purpose set forth.

2. The combination in a rotary pump of a

pump-shell having a recess or depression inside thereof communicating with the outlet of the pump, a rotary cylinder in said shell, the periphery of which practically coincides with the inner boundary of said recess or depression, a packing-valve pivoted in said recess or chamber so as to contact with the periphery of the cylinder, a bridge over the inlet of the pump, having inlet-openings at each side thereof, and radially-moving valves in said cylinder, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD F. SMITH.

Witnesses:

HAROLD M. STURGEON,

FLORENCE STOCKERT.