(No Model.)

A. REIS.

PUMP.

No. 317,015. Patented May 5, 1885.

Fig. 1.

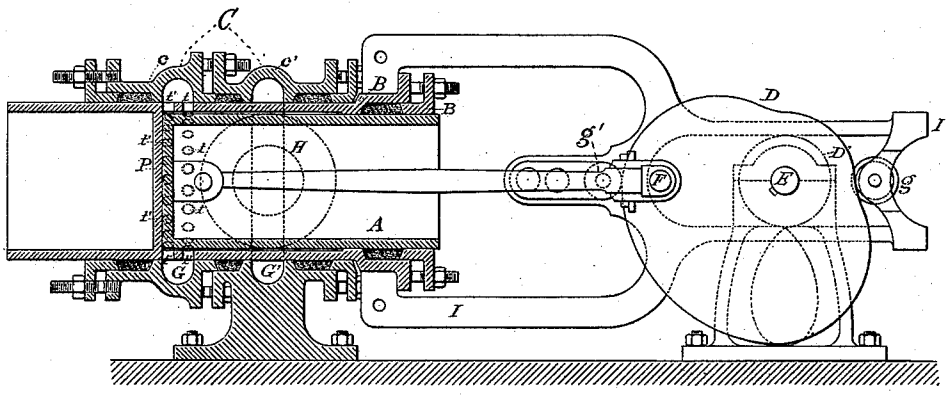
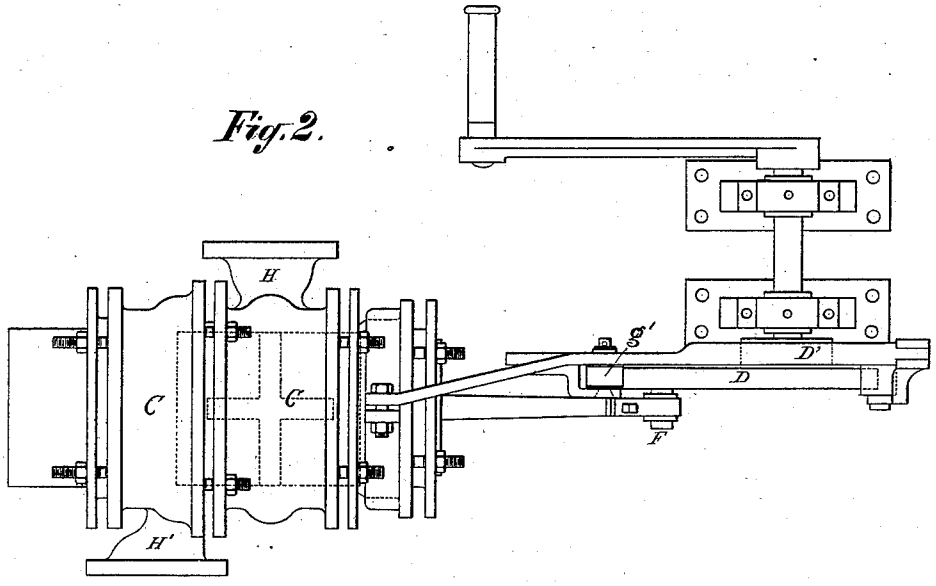


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALPHONSE REIS, OF ANTWERP, BELGIUM.

PUMP.

SPECIFICATION forming part of Letters Patent No. 317,015, dated May 5, 1885.

Application filed January 15, 1885. (No model.) Patented in Belgium September 5, 1883, No. 62,509; in France September 5, 1883, No. 157,395; in England December 10, 1883, No. 5,688; in Germany December 12, 1883, No. 27,746, and in Austria April 27, 1884, No. 2,717.

To all whom it may concern:

Be it known that I, ALPHONSE REIS, of Antwerp, in the Kingdom of Belgium, have invented new and useful Improvements in Pumps, (for which I have obtained a patent in Belgium bearing date 5th of September, 1883, No. 62,509; in France bearing date 5th of September, 1883, No. 157,395; in England bearing date 10th of December, 1883, No. 5,688; in Germany bearing date 12th of December, 1883, No. 27,746, and in Austria bearing date 27th of April, 1884, No. 2,717,) of which the following is a specification.

In describing the invention reference will be made to the annexed drawings, in which Figure 1 is a longitudinal section, and Fig. 2 is a plan view, of a pump embodying my invention.

The pump, which may be placed horizontally or vertically, as desired, comprises a ram-piston working in a cylinder which itself forms the piston of a second cylinder which is fixed; or, what is the same, a fixed cylinder through which passes a piston-cylinder moved to and fro and in the interior of which works a ram-piston. The ram-piston, being equally moved to and fro, produces the suction and discharge of fluid, while the cylinder-piston serves as distributer only, as hereinafter described.

C is the fixed cylinder formed in two parts, *c* and *c'*, for convenience of construction, and carrying the suction and discharge pipes H and H'.

The two parts forming the cylinder C have three stuffing-boxes, as shown in the drawings, and between these stuffing-boxes are situated two annular cavities, G G', one of which serves to admit and the other to discharge the gases or liquids. These stuffing-boxes prevent the cavities G G' from communicating between each other or with the exterior.

A is the ram-piston, and B the cylinder-piston. They are set in motion by a rotating cam, D, keyed on the shaft E. This cam carries a crank-pin, F, and thus serves at the same time as a cam, and as a crank adapted to produce the two different motions necessary for the pistons A and B. The cam D operates the distributing-cylinder B by means of two friction-rollers, *g g'*, mounted on a frame, I, which is fixed to the cylinder and carries a slide into which fits boss D', cast in one piece with the cam. The crank-pin F is connected directly with the cam-cylinder A by means of a connecting-rod, as shown in the drawings. The cylinder-piston B is provided in the interior with a partition, P, situated at the end of the stroke of the piston A, and is perforated over the whole of its circumference with two series of small holes, *t t'*, the aggregate superficial area of which is equal to that of the suction or discharge openings H H'. The cam D has for its object to place the apertures *t t'* alternately opposite the suction and discharge cavities G G'. The shape and dimensions of the cam D are so calculated that the crank F actuates the piston A at the proper moment—that is to say, when the apertures of the piston B and cylinder C are face to face. These two combined motions therefore produce the suction and discharge of the liquids and the gases without the assistance of valves. The principal causes of wear and tear and disturbance are therefore obviated by this system, the friction-surfaces being constantly kept in good order by the stuffing-boxes. The degree of tightness may be controlled by the stuffing-boxes according to the pressure of the discharge to be produced.

The combination of the motions and the shape of the cam permit the imparting to the pump of a reciprocating motion in either direction, and therefore the reversing of the action of the suction and discharge pipes at will. For this purpose it is sufficient to reverse the pump in any suitable way by a set of pulleys and driving-belts or in any other suitable manner.

The packing used for the stuffing-boxes may vary according to the nature or temperature of the liquids or gases to be pumped. The materials preferably used for this purpose are oakum, asbestus, or cotton; but any other packing may be employed to suit special cases, either metallic, vegetable, or animal.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a reversible pump, a fixed cylinder, C, provided with the annular cavities G G′, leading, respectively, to the suction or discharge pipes H H′, a second cylinder, B, adapted to slide in the fixed cylinder and provided with apertures *t t′*, corresponding with the cavities in the fixed cylinder, the ram-piston A, and the cam D, provided with a crank-pin, together with the described intermediate devices whereby both the ram-piston A and the cylindrical piston B are actuated by the movement of said cam D, as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

A. REIS.

Witnesses:
W. WESTLAKE,
H. C. DOWNIE.