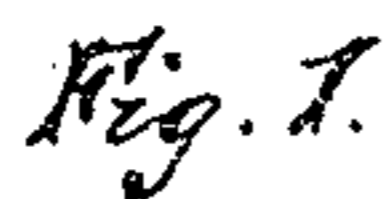


T. Crane,
Rotary Pump,

Patented Dec. 25, 1855.

N^o 13,979.



UNITED STATES PATENT OFFICE.

THOS. CRANE, OF FORT ATKINSON, WISCONSIN.

ROTARY PUMP.

Specification of Letters Patent No. 13,979, dated December 25, 1855.

To all whom it may concern:

Be it known that I, THOMAS CRANE, of Fort Atkinson, in the county of Jefferson and State of Wisconsin, have invented a new and Improved Rotary Pump; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—
Figure 1 is a vertical section of my improvement. Fig. 2, is a horizontal section of ditto (*x*), (*x*), Fig. 1, showing the plane of section.

Similar letters of reference indicate corresponding parts in the two figures.

The nature of my invention consists in the combination of an eccentric hub, annular piston, and reciprocating valve or cut off, working within a cylindrical chamber, and a rectangular offset therefrom arranged as will be presently shown and described.

To enable others skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, represents a cylindrical chamber, which communicates with a rectangular offset chamber, B, the chamber, B, being at the upper part of the chamber, A, as shown in Fig. 1.

C, represents a shaft which passes through the center of the cylindrical chamber A. On the shaft, C, there is placed an eccentric hub, D, said hub being within the chamber and equal to it in length. The hub, D, is encompassed by an annular piston, E, the periphery of which touches the inner side of the chamber, A, at one point only, as the piston is smaller in diameter than the chamber, A, and it is placed around the eccentric hub, D. The piston is equal in length to the hub. In the edge of the annular piston, E, there is a circular slot (*a*) in which a cylindrical projection (*b*) on the end of a valve or cut off, F, is fitted; the said projection (*b*) fitting loosely in the slot (*a*). The valve or cut off, F, is fitted in the rectangular offset chamber, B, and works freely therein. The said valve or cut off has an oblique passage or opening (*c*) made through it and also a recess (*d*) made in one of its sides.

G, is the force pipe attached to the upper end of the offset chamber, B, and, H, is the suction pipe attached to the side of the chamber, B, opposite to the recess or slot (*d*) in the valve or cut off, F.

The chambers, A, and B, may be cast in one piece; the hub, D, piston, E, and valve, F, are also constructed of metal and inclosed within the chambers by a side plate, I, which with the aid of suitable packing, is secured by screw bolts (*e*) to the side of the chambers air tight.

Operation: By rotating the shaft, C, the hub, D, of course rotates with it; and as the hub is placed eccentric on the shaft, C, it will cause the annular piston, E, to move around within the chamber, A—the periphery of the piston touching the inner side of the chamber, A, only at one point as it passes around within the cylinder; and as the valve or cut off, F, is attached to the edge of the annular piston E, as shown, a reciprocating motion is given the valve or cut off.

The piston moves in the direction indicated by the arrow, see Fig. 1, and the edge of the piston that touches the inner side of the chamber A, divides the chamber into two compartments one of which is the force, and the other the suction part. The part (*f*) is the suction portion; as the piston moves in the direction indicated, a vacuum is formed in (*f*), and as the valve or cut off moves downward in the chamber, B, the recess (*d*) projects into the chamber, A, and the water passes up through the suction pipe, H, into the part (*f*) of the chamber, A, and at the same time, the water drawn up previously, is forced out of (*g*), by the movement of the piston—the water being transferred from the suction to the force passage as the outer edge of the piston passes from the point (*h*) to the point (*i*), at the junction of the rectangular and cylindrical chambers, and when the piston touches those points the recess (*d*) is withdrawn from the chamber, A, and the suction pipe is cut off from the chamber, A, so that the piston is not allowed to react or force the water back or down the suction pipe, H; the valve or cut off moving so as to bring the recess (*d*) within the chamber, A, as the suction part (*f*), is formed by the continued movement of the piston.

The above pump operates with but little friction and may be used advantageously for all purposes where pumps are employed. It may readily be kept air tight, is not liable to be injured by wear, and is extremely simple and economical to manufacture.

The arrangement of the respective parts of my improved pump, being such that the

suction pipe H, and the eduction pipe G, can never for an instant be brought into communication with each other, renders it entirely unnecessary to place a valve either
5 in the suction pipe or the eduction pipe.

I do not claim the eccentric hub, D, and annular piston, E, for they have been previously used but

What I claim as new and desire to secure
10 by Letters Patent, is,

The combination of the hinged valve F, with the eccentrically moving round piston E, when said valve is of the shape repre-

sented in the accompanying drawings, and is so arranged, in relation to the pump 15 chamber A, the offset-chamber B, the suction pipe H, and the eduction pipe G, as to render it impossible for said pipes to be for an instant brought into connection with each other during any portion of the 20 revolution of the piston E, substantially as herein set forth.

THOMAS CRANE.

Witnesses:

WM. TUSCH,
A. E. BEACH.