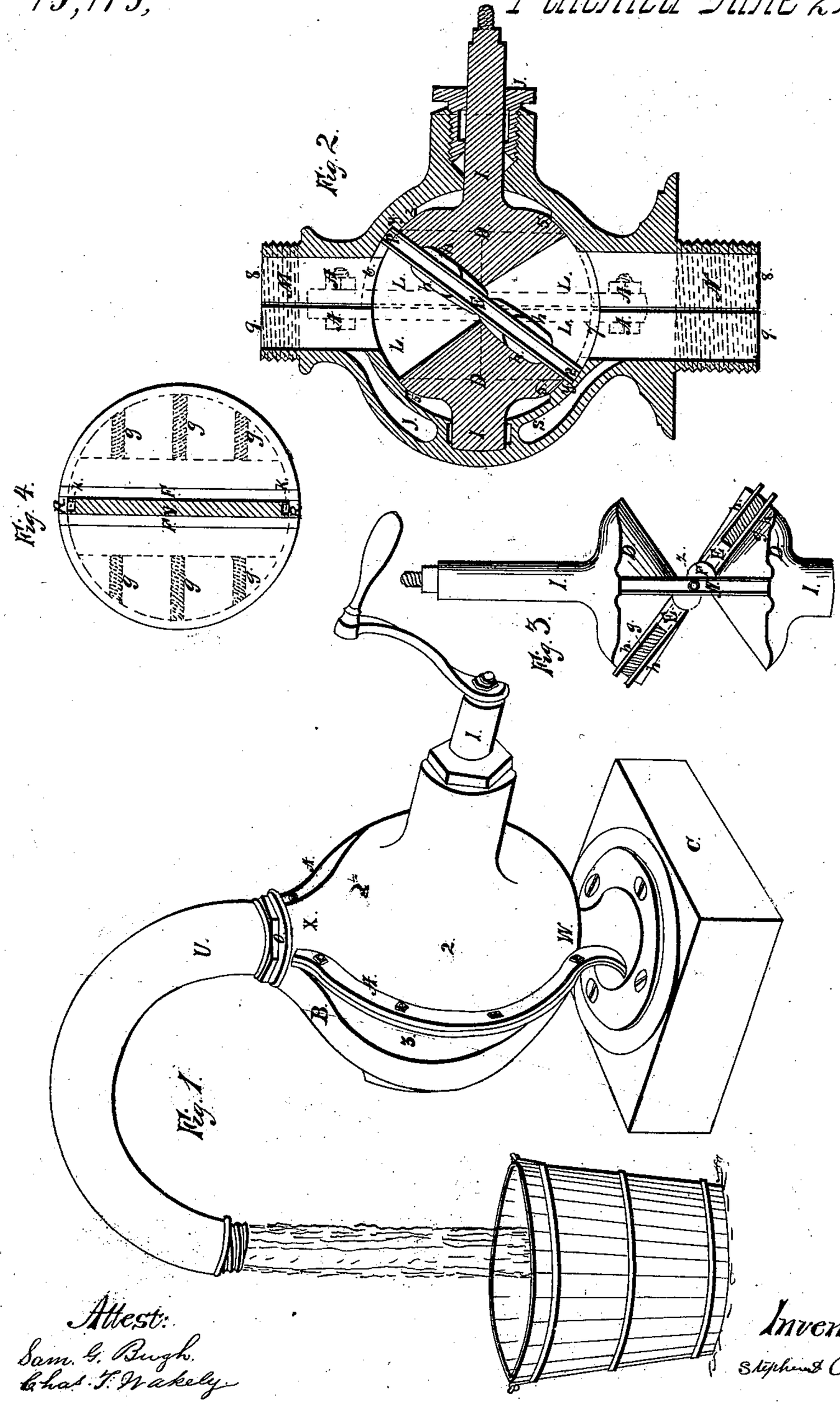
S. D. Carpenter,

Rotary Pump,

No. 15,173, Patented June 24, 1856.



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STEPHEN D. CARPENTER, OF MADISON, WISCONSIN.

ROTARY PUMP.

Specification of Letters Patent No. 15,173, dated June 24, 1856.

To all whom it may concern:

Be it known that I, STEPHEN D. CARPENTER, of Madison, in the county of Dane and State of Wisconsin, have invented a new and useful Improvement in Rotary Pumps; and I do hereby declare that the following is a full and exact description thereof, so far as the nature of the case will admit of, reference being had to the accompanying drawings, making a part of this specification, and the letters of reference marked thereon, in which—

Figure 1 is a perspective view: Fig. 2 is a longitudinal section of the semi-spherical shells, the cones, disk, or diaphragm, and surface of propeller. Fig. 3 is a perspective view of fluted cones, and shaft, and sectional or end view of disk or diaphragm and half round packing. Fig. 4 a ground view of disk or diaphragm and its connection with the half round packing propeller, &c.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

In Fig. 1 numbers 2 and 3 represent the two semi-spherical shells which are bolted together by the flanches A, A, and the inside bored out to form a perfect sphere. C represents the base; I, the shaft; B, one of the outside conducting pipes; O, the coupling which fastens on the discharge pipe, U. The letters W, and X represent the points of induction and eduction, in the spherical shell not provided with outside conducting pipes.

In sectional Fig. 2 L L L L represent the side view, or flat surface of the propeller, and its connection with the cones D, D, said cones being permanently attached to the shaft I, I; E the disk or diaphragm to which are permanently attached the oval or elliptical cogs (*h*, *h*, *h*, *h*,) which work into and match with corresponding cogs on the cones, as seen at D, D, Fig. 3. These cogs are intended to produce a greater bearing surface than could be obtained by the contact of a plain surface revolving on the cones; and hence remove in a great degree, the liability of leakage. The bases of the cones are turned in a globular shape at the points designated by 5 5 5 5, so that the same will exactly fit the inside of the semi-spherical shells when bolted together, so as to prevent the passage of liquids at those points.

In Fig. 3, F, F, show an end view of the half round packing bars. V represents the end view of the propeller, which is grooved so as to admit a segment of a packing ring in both ends, which rings are continually forced out against the inside surface of the shells by means of spiral springs inserted in the center as seen by the small circle at letter L. The disk or diaphragm, E E, is constructed of a larger circle than the cones, and shells, so as to have a bearing in the groove diagonal to the shaft, the said groove serving to keep the said disk in its place. The object of said disk, or diaphragm is to divide the globe, or sphere into two chambers, and its bearing on the surface of the cones serves as a cut-off, or more properly, answers every purpose of the ordinary valve, in pumps, as, by its connection with the propeller, no communication exists between the orifice of induction, and eduction, and whatever fluid enters either chamber must remain there until forced out by a rotary motion. J, represents the gland or stuffing box. I attach the usual coupling by means of screws as seen at M, and N, Fig. 2.

In Fig. 4 *f f*, represent the longitudinal view of the half round packing bars. The object of these bars is to obtain a greater bearing surface than could be had by barely rounding the inside edges of the sections of the disk. *g g* &c., in Fig. 4 represent the spiral springs which are intended to press against the endless packing ring inserted in a groove to the depth of the dotted line; and force the sections of the disk toward the center, so that the said packing bars will keep in close contact with the surface of the propeller in the various positions it occupies in its orbit.

Having thus constructed the various parts of my machine, I put each part in its proper place, as shown by Figs. 3 and 1, when it is ready for use.

When operated, by giving motion to the crank to the right the air is forced out at the top, creating a vacuum, when the water or other fluid is forced in, in the usual way to supply the vacuum so created.

The fluid entering the shell on the right (see Fig. 2 at 8, and Fig. 1 at W) enters

the bottom of the shell, and is carried around the circle by the propeller, and forced out at the top (at 8 Fig. 2), and X, Fig. 1. The fluid entering through the induction at 9 is carried through the outside pipe (3 Fig. 1 and S Fig. 2) to the top of the cone, and enters the shell at that point and is carried around by the propeller, and forced out at the bottom of the shell through the outside pipe (T, Fig. 2) to the place of eduction, where it reunites with the fluid, passing through the other portion of the machine. The disk or diaphragm separates the two chambers so that the fluid on one side of said disk has no connection with that on the other, until exhausted through the orifice of eduction.

O, Fig. 1 represents a coupling to fasten on a waterspout U, Fig. 1, a hose, &c. An air chamber may also be fastened on at the top, and the machine used as a fire engine, &c.

C, Fig. 1 is the fixture on which the machine is bolted.

P, P, in Fig. 2 shows the depth of the groove for the packing ring between the two sections of the disk.

R, R, show the packing in each end of the "propeller" as seen in Fig. 4.

Y, Y, in Fig. 2 show the bearing or opposite portion of the groove for the disk, which is marked by 6, and 1, Fig. 2.

The shell marked 2 in Fig. 1, is separated from the pedestal or standard at W, Fig. 1, to enable the machine to be taken apart without disturbing its couplings, or fastenings below.

I use the ordinary packing which is shaped so as to fit the form of the flanches, and also close up the joint at W Fig. 1, cutting it away so as not to interfere with the inlet at said point.

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

1. The cones D, D, connected by the propellor L L L L, in combination with the diaphram, or disk, E, E, operating in the manner, and for the purpose specified.

2. I also claim the semi-spherical shells (2 and 3 Fig. 1), in combination with the conducting pipes, arranged substantially in the manner, and for the purpose described.

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