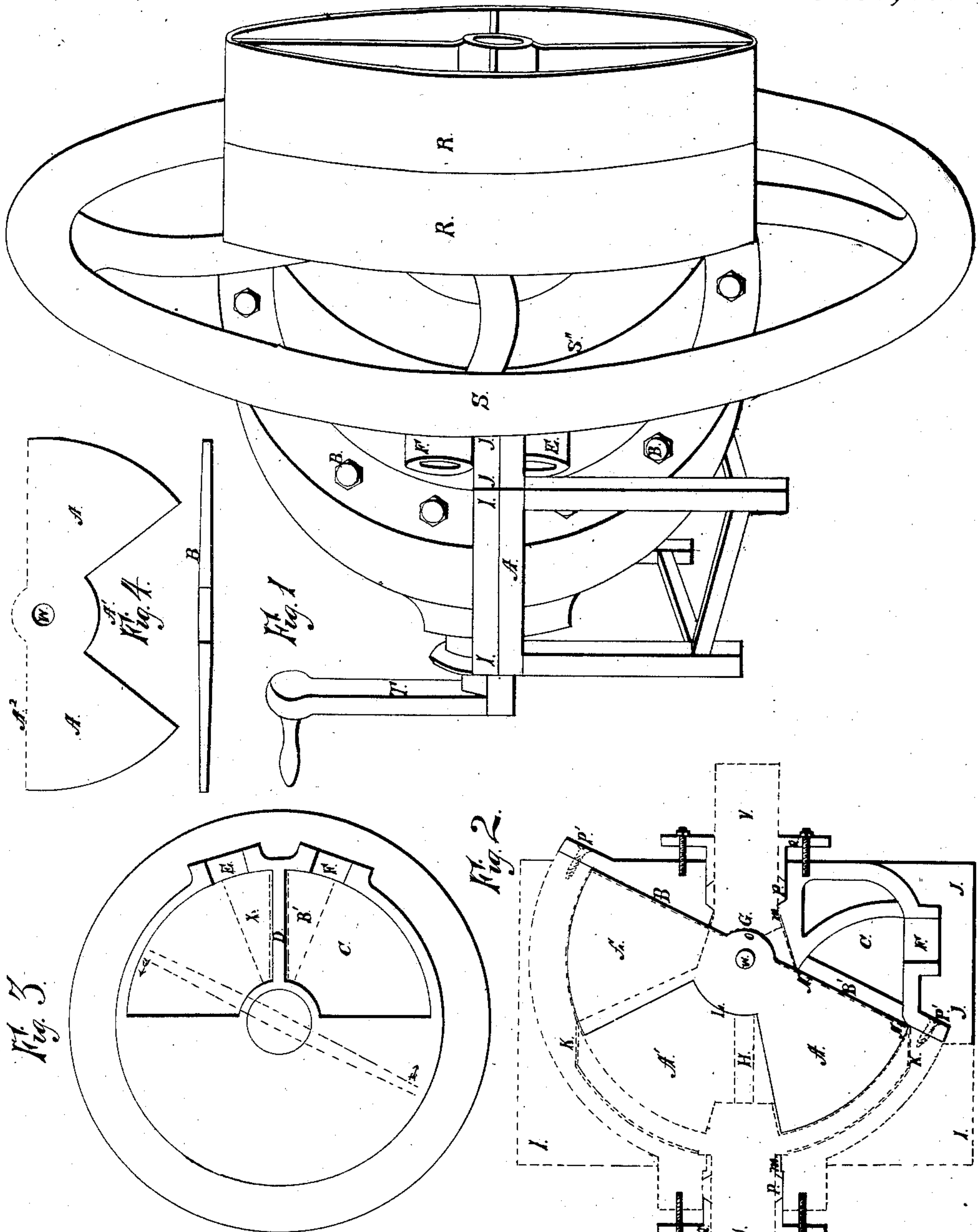


S.D. Carpenter,

Rotary Pump,

No. 11,776,

Patented Oct. 10, 1854.



Attest:

Arthur Adams Jr.
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UNITED STATES PATENT OFFICE.

STEPHEN D. CARPENTER, OF MADISON, WISCONSIN.

ROTARY PUMP.

Specification of Letters Patent No. 11,776, dated October 10, 1854.

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 machine for pumping and forcing air, water, or other fluid, combining both the power of forcing and "suction," which I designate "Carpenter's Universal Rotary Force Pump"; and I do hereby declare that the following is a clear, full, 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 perspective view; Fig. 2 a horizontal section, Fig. 3 a vertical section of cap, and Fig. 4 a detailed view of "propeller."

The nature of my invention consists of a rotary machine for pumping air, water or other fluid combining both the power of forcing and "suction," without the aid or use of the ordinary valves used in pumps, which machine is intended for all purposes for which a pump may be applied, including the forcing of water into steam boilers, air out of air chambers, to be used as a fire-extinguishing agent, &c., and which will be cheaper and more efficacious than any other pump in use, with the same application of power.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation:—I first make a pattern of the required size to suit the volume of water or other fluid I wish to discharge in a given time, to be similar in shape to the diagonally-spherical shell, as described in Fig. 2 by the red lines. I then construct a pattern for the cap, (Fig. 3) which bolts on to, and closes hermetically, the diagonal end of the said shell, as represented by letter "B" (Fig. 2) and by the bolts in Fig. 1. In one section of this cap I construct an air chamber, (to serve the common purpose of such an appendage) as represented by letter "C" (Figs. 2 and 3) by running a partition (letter "D," Fig. 3) directly midway between the orifice of reception (E Fig. 3) and the orifice of discharge (I Figs. 2 and 3), toward the center of said cap, closing it in near said center, so as to leave sufficient room for an air chamber, and so that the same shall have no connection with any opening in the machine, other than with the orifice of discharge (F, Figs. 2 and 3). I then construct

a pattern for a rotary shaft (G, Fig. 2) globular at one end and conical at the other, having journals projecting from both ends, as represented by V V. The peculiar shape of this shaft as represented by the blue lines may be varied to any other convenient shape, answering the same purpose. I next prepare a core-box, for the purpose of casting a "chambered" slot through the conical end of said shaft, in shape as indicated by the red dotted lines (Fig. 2) and also another slot as represented by the blue dots around letter "H" (Fig. 2) to cross the aforesaid slot at right-angles, so that when the fan-shaped bar or "propeller" is inserted in its place through the first named slot, I may drive the bar "H" (Fig. 2) through the last named slot, exactly to fit the same, so as to come in contact with the boss of the "propeller" at "L," (Fig. 2) and thus prevent the passage of any considerable quantity of air, water or other fluid through the body of the shaft. On the outside of the spherical shell and its cap, I attach flanges, as represented by "I I" and "J J" (Figs. 1 and 2) for the purpose of bolting the machine on to a frame, as seen at "A" (Fig. 1).

When my patterns are completed, substantially as set forth in the foregoing, I cause castings to be made from them of iron, brass or other metal as desired for use. I then plane or turn the inside of the caps "B B," (Fig. 2) perfectly smooth, and also turn or bore out the spherical shell, at the point marked by "K K" (Fig. 2) embracing a half inch or more, according to the size of the machine, on a line running parallel with its axis. I then turn and polish the conical end of the shaft, as well as its shanks and journals, and also that portion of its circumference, running parallel with its axis, which comes in contact with the aforesaid finished portion of the shell at "K K" (Fig. 2). I then make a fan-shaped bar of steel, iron or other metal, which I designate a "propeller," similar in shape to that represented in Fig. 4, letters "A A" and "B"—A A showing its flat surface and B the shape of its edge, or thickness. This propeller I fit so as to easily and closely work in the slot (as represented in shape by the red dots in Fig. 2) in a circle radiating from its axis, as seen at "W" (Figs. 2 and 4) without permitting any material quantity of air or fluid to pass into said slot, while

the shaft and propeller are in motion. The propeller vibrates on a pin or pivot, passing through the shaft and the center of the boss on said propeller, at "W" (Fig. 2) so that
 5 its longest edge, as marked by the red line in Fig. 4, the same being rounded and polished smooth, may come in close contact with the contiguous and polished surface of the cap, in every position it may occupy in its orbit,
 10 so as to prevent the escape of any material quantity of air or fluid between the place of contact, while the propeller is revolving with the shaft and vibrating on its own axis.

When the several parts of my machine are
 15 thus finished, so as to fit in their relative positions in said machine, substantially as herein described, I place the shaft within said spherical shell, as represented by the blue lines in Fig. 2—its journals resting on
 20 bearings in said shell and its cap at "M M" (Fig. 2). The polished surface or plane of the cone will be continually in contact with the plane of the cap between the letters "N N" (Fig. 2) and that portion of the pro-
 25 peller which is marked by red lines in Fig. 4, will also keep in close contact with the inside surface or plane of said caps, whose diagonal position causes the revolving "propeller" to vibrate on its axis. The boss of
 30 the propeller whose radius at "O" being less than at "L" (Fig. 2) bears closely in the shank at "O," and on the bar "H" (Fig. 2) to prevent the passage of any considerable quantity of air or fluid through
 35 those points or intermediate places. When the said shaft and propeller are properly arranged and fitted to their places, I bolt on the cap, made perfectly air tight by means of any substance of "packing" usually used
 40 for such purposes. I then apply suitable packing around the journals or shanks of the shaft at "P P," (Fig. 2) when I force up, by screws, the "glands" "Q Q" (Fig. 2) so as to make the whole machine per-
 45 fectly air tight, with the exception of the two points of reception and discharge as seen at "E F" (Figs. 1 and 3), to each of which points or orifices I attach the ordinary "couplings" affixed to hose or other
 50 air or fluid conductors. I then attach tight and loose pulleys (R R—Fig. 1), balance wheel (S, Fig. 1) and crank (T, Fig. 1), if it is designed to run the machine by steam or other power, or only a balance wheel and

crank, if it is to be propelled wholly by 55 hand. My machine is then ready for use.

When the "suction hose" or pipe is attached to the orifice at "E" (Figs. 1, 2 and 3) the machine must be turned in the di-
 60 rection of the arrows in Fig. 3. The motion may be reversed, and the water or other fluid remaining in the forcing hose or pipe, drawn back and forced into the fountain or place from whence it was received.

By making all the movable contiguous 65 portions of my machine perfectly smooth, and to fit each other, it may be used for an air pump, applicable to the "air-chambers" of steam engines, &c., requiring such aid, to which purpose I intend to apply 70 my machine—its operations being similar in all respects to the pumping or forcing of water or other fluid. *Note*—"B" "X" in Fig. 3 shows the opening through the cap for the ingress and egress of air or fluid. 75 "C" in the same figure shows the position and extent of the air-chamber.

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

1. A machine for pumping and forcing 80 air, water or other fluid without the use of the ordinary valves used in pumps, on a plan substantially as herein described.

2. I also claim the peculiar arrangement of the air-chamber substantially as herein 85 described, so as to avoid the trouble and expense of affixing a separate appendage for that purpose.

3. I also claim the peculiar arrangement of the shaft, substantially as herein de- 90 scribed, and also the application of the fan-shaped bar or "propeller" substantially as herein described, and also the manner of constructing the outside shell, substantially as herein described, by which combinations, 95 when operated in the manner herein described, to dispense with the use of the ordinary valves in pumps—and also to lessen the expense, and enhance the durability and efficacy of the pump, and in these respects 100 to render it more available for the uses and purposes herein set forth, than any other pump in use.

STEPHEN D. CARPENTER.

Witnesses:

FREEBORN ADAMS, Jr.,
 WM. B. HERRICK.