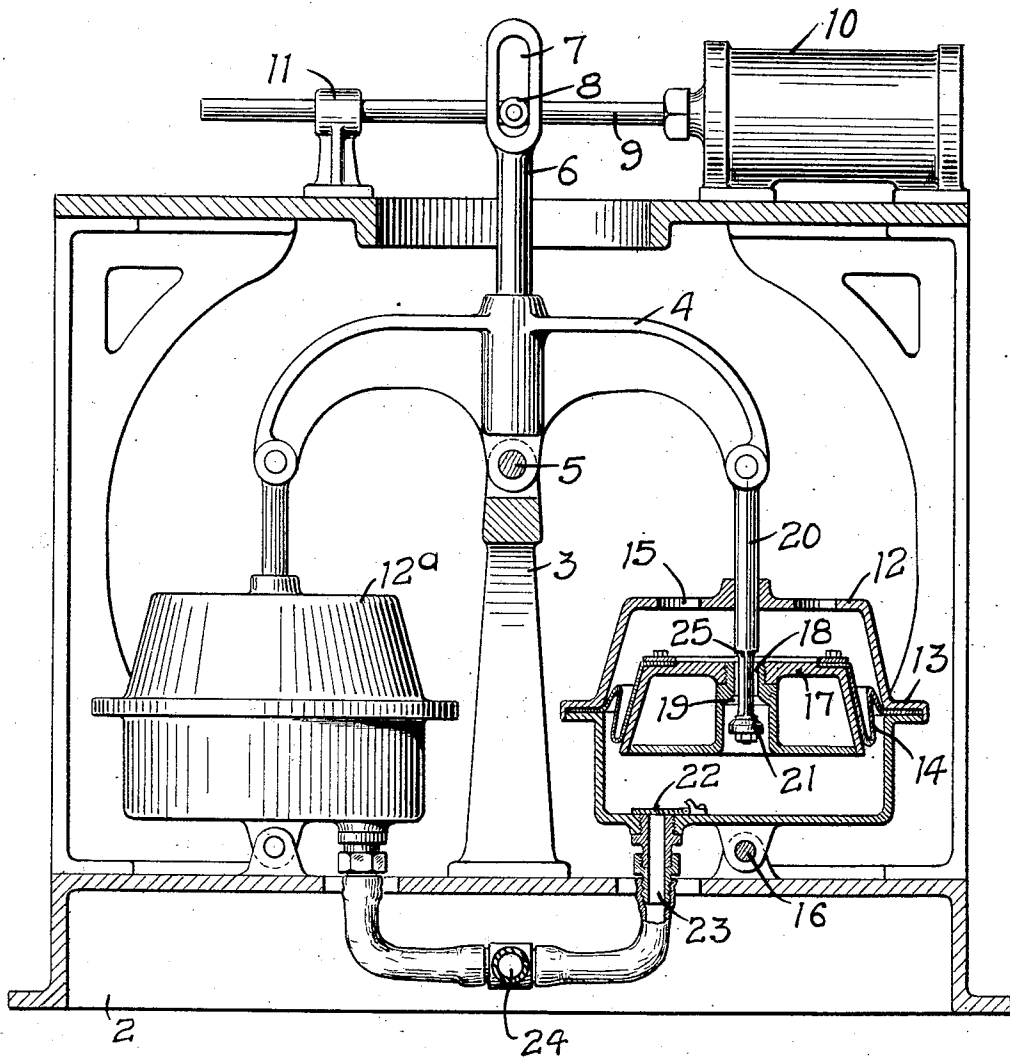


H. B. CORNISH.
PUMP FOR VACUUM SYSTEMS.
APPLICATION FILED FEB. 18, 1909.

1,048,947.

Patented Dec. 31, 1912.



Witnesses:

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HARRY B. CORNISH, OF MINNEAPOLIS, MINNESOTA.

PUMP FOR VACUUM SYSTEMS.

1,048,947.

Specification of Letters Patent.

Patented Dec. 31, 1912.

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To all whom it may concern:

Be it known that I, HARRY B. CORNISH, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful
5 Improvements in Pumps for Vacuum Systems, of which the following is a specification.

The object of my invention is to provide a double acting pump for vacuum systems,
10 which will be of simple and inexpensive construction, very durable and capable of performing effective work for the purpose designed.

My invention consists generally in various
15 constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, the figure is a sectional view, illustrating my invention.

In the drawing:—2 represents a frame, 3 a standard mounted thereon and 4 a rocker pivoted at 5 on the standard 3 and having a stem 6 provided with a slot 7 to receive an
25 anti-friction roller 8 on a piston rod 9 of a cylinder 10. A guide 11 is provided for one end of the piston rod.

12 and 12^a represent cylinders composed of upper and lower sections having flanges
30 13, between which the edges of the flexible diaphragms 14 are gripped and held. The upper walls of the cylinders have air discharge openings 15. The interior of these cylinders is the same in both cases and I
35 have only illustrated one of them in section, it being understood that the other one is of the same general construction.

The cylinder is pivoted at 16 on the frame 2, so that it is capable of rocking back and forth to accommodate itself to the positions
40 assumed by the rocker 4. Within the cylinder is a piston 17 whereto the flexible diaphragm 14 is secured. This piston has a port 18 therein and a valve seat 19.

20 is a valve stem pivoted at one end of the rocker 4 and having a valve 21 at its lower end that is adapted to engage the seat 19 and close the passage 18. A valve 22 in the bottom of the cylinder normally closes the passage to a pipe 23, which engages with an
50 air intake 24. In the operation of the device, the rocker 4 is oscillated by the movement of the piston rod 9 and the pistons are moved up and down in their cylinders, the
55 passage 18 being opened and closed alternately with the movement of the piston.

For instance, when the shoulder 25 on the valve stem, contacts with the piston 17, the latter will be forced down to the bottom of the cylinder. On the upstroke of the piston, the valve 21, contacting with the seat 19,
60 will close the passage 18 and the suction will open the valve 22 and draw the air in through the intake pipe 24 into the space below the cylinder piston and on the down
65 stroke of the piston, the valve 22 will close, the valve 21 will open and the air, so drawn into the cylinder, will be forced into the space above the piston and will pass out into the open air through the ports 15. This
70 action will take place alternately in the cylinders, so that there will be a continuous suction established through the pipe 24 and the pipes 23.

This device may be utilized for various
75 purposes, but is particularly designed for suction cleaning and renovating machines.

I claim as my invention:

1. A pump for vacuum systems comprising a base, cylinders having central pivotal
80 supports on said base, an upright standard between said cylinders and projecting above the same, an intake pipe communicating with said cylinders through the lower walls thereof, valves normally closing the open-
85 ings into said cylinders, diaphragms mounted in said cylinders, pistons having their upper portions secured to said diaphragms, said pistons having centrally arranged ports, and valve seats inclosing the
90 same, valve stems slidably mounted in the tops of said pistons and projecting through the ports in said pistons and having valves at their lower ends adapted to contact with the seats in said cylinders, said stems fitting
95 loosely in said ports and allowing the passage of air around them when said valves are depressed, the tops of said cylinders having discharge openings, a rocker centrally pivoted on said standard and having its
100 ends connected respectively with said stems to operate them alternately and open and close said valves, said valves moving into contact with their seats when raised to close said ports and opening said ports when said
105 valves are depressed, and means for oscillating said rocker whereby a continuous suction will be established through said intake pipe.

2. A pump for vacuum systems comprising an intake pipe, cylinders connected with said intake pipe and having valves normally

closed but adapted to open under suction, pistons arranged in said cylinders, diaphragms connecting said pistons through the walls of said cylinders and permitting vertical movement of said pistons in said cylinders, said pistons having ports extending therethrough and valve stems adapted to slide in said ports, valves mounted on the lower ends of said stems and adapted to contact with valve seats provided around the lower ends of said openings, said stems fitting loosely in said openings and allowing the passage of air therethrough when said valves are opened, an upright standard interposed between said cylinders, a rocker centrally pivoted on said standard and having its ends pivotally connected with said stems, a stem projecting upwardly from the central portion of said rocker and having a slotted upper end, and a reciprocating rod having an anti-friction bearing in said slot, for the purpose specified.

3. A pump for vacuum systems comprising an intake pipe, pivoted cylinders con-

nected with said intake pipe and having valves normally closed and adapted to open under suction, pistons arranged in said cylinders, diaphragms arranged to permit a limited movement of said pistons in said cylinders, said pistons having central openings therein, valve stems having valves adapted to seat themselves on said pistons and close said openings, said stems also having means to engage said pistons to force them downwardly in said cylinders, a centrally pivoted rocker connected with said stems for alternate operation thereof and a horizontal reciprocating rod having a loose connection with said rocker to oscillate the same and move said stems lengthwise alternately to lift and depress said pistons.

In witness whereof I have hereunto set my hand this 6th day of February, 1909.

HARRY B. CORNISH.

Witnesses:

RICHARD PAUL,
C. G. HANSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."