

N^o 722.



UNITED STATES PATENT OFFICE.

ANDREW BAILEY, OF JEFFERSON, OHIO.

FORCE AND SUCTION PUMP.

Specification of Letters Patent No. 722, dated May 4, 1838.

To all whom it may concern:

Be it known that I, ANDREW BAILEY, of Jefferson, in the county of Ashtabula and State of Ohio, have invented a new and useful Double Semicircular Piston Force and Suction Metallic Pump, and that the following is a full and exact description, reference being had to the annexed drawings of the same, making part of this specification.

10 First, I make a perpendicular metallic cylinder A, about 9 inches in length and 4 in diameter, with a box $3\frac{1}{2}$ inches in diameter, divided by a partition B Figures 3, 4, 5, $\frac{1}{4}$ inch thick, making two bores C C Fig. 15 5 of a semicircular shape $1\frac{1}{2}$ in. by $3\frac{1}{2}$ in. nearly. Two horizontal cylindrical tubes D D 3 in. in diameter project at right angles from the cylinder—one at the bottom the other $\frac{1}{2}$ inch below the upper end of the 20 cylinder. These tubes project in a parallel line with the edge of the partition in the cylinder. These tubes are divided perpendicularly by the extending of the partition B of the cylinder into them. The partition 25 of the cylinder extends outward into these tubes $1\frac{1}{2}$ in. and divides the whole box into two equal semicircular apertures E E Figs. 2, 5. On the opposite side of the cylinder are two other cylindrical tubes F F Figs. 30 1, 4, 5 projecting $2\frac{1}{2}$ in. in a parallel line with the partition in the cylinder and in a line with the first mentioned tubes. The bore of these tubes is the same size as in the others. The partition of the cylinder 35 extends in these tubes only $\frac{1}{4}$ in. and is increased to double its thickness when it enters these tubes as at G Fig. 5. A shoulder H of one fourth of an inch is left on the inside of these tubes even with the end of the partition for the valves I I to shut back against. 40

2nd. The cylinder is capped with a metal cap $\frac{1}{4}$ in. thick and screwed in at the top, or otherwise fastened in. A piece of cork $\frac{1}{2}$ in. thick is attached to the under side of 45 the metal to keep it tight. The bottom of the cylinder is also closed. In the outward end of the first mentioned tube are inserted metallic plates S Fig. 2 $\frac{1}{2}$ in. thick with two semi-circular apertures, of the same shape 50 as the bores in the tubes. The rim of these plates is $\frac{1}{4}$ in. thick and the partition across them is $\frac{1}{2}$ in. thick; they are inserted in such a manner that the partition of the plates stands perpendicularly to and immediately corresponding with the partition in 55

the tubes. The apertures in these plates are the places through which the water enters the pump and are called receiving openings.

3rd. On the partition of these plates are 60 fastened the valves K K K K to the receiving openings. These valves open inward and shut against the plates. The valves are made of leather. A round piece of leather of the size of the bore of the tubes 65 is fastened across its center to the partition of the plates; on the inner side of the leather are attached semi-circular pieces of metal $\frac{1}{4}$ in. thick, and just small enough to prevent their rubbing against the side of the 70 tubes; these pieces are to keep the leather in its proper shape and place. In the apertures of the opposite or stopping tubes are valves I I made in the same manner, but these are fastened to the end G of the 75 partition B of the tube. These open outward from the cylinder and shut back against shoulders on the inside of the tube as mentioned above. These two last valves are called stopping valves for the sake of 80 distinction. The ends of these tubes are closed tight by caps, F.

4th. A metallic pipe L with a bore of 1 inch in diameter connects the two stopping valves standing perpendicularly about 85 $\frac{3}{8}$ of an inch from the cylinder; there are holes in the tubes corresponding with the bore of the pipe. From the top of the upper tube this pipe extends upward as high as the water is designed to be raised. This 90 is the pipe through which the water is raised and is soldered on to the tubes strongly. The top of this pipe branches into two parts; one branch is bent over so that its mouth is downward and is designed for ordinary use. A screw is cut 95 on the outside of the pipe at the end for the purpose of screwing on a cap, hose, or stopper. The upright branch P is designed for throwing water upward; it has 100 a screw cut on the end in the manner similar to the other and designed for the same purposes—it is designed for the purpose of an engine—one branch should be stopped while the other is in use. 105

5th. Two metallic pistons M M $\frac{1}{2}$ in. in diameter are fitted to work in the semicircular bores in the cylinder near the top; on the lower end of each of these pistons is a semi-circular cork stopper 1 inch thick; 110

on each side of the cork is affixed a piece of sheet-iron of the same shape as the cork, but a little smaller, so that it shall not rub on the sides of the cylinder when it passes
5 up and down. When one of these pistons passes down it forces the water through the two lower apertures of the stopping valves and when it rises up it forces the water through the apertures of the upper stop-
10 ping valves and into the pipe, the opposite receiving valves being at the same time closed. The operation of both of the pistons supplies in this way a constant stream of water. The rods of these two pistons
15 are made with a joint in them 2 or three feet below the crank which are to be lengthened according to the depth of the wheel in which they are to be used.

6th. The pump is worked by a double
20 crank, N. The crank shaft is made of a rod of iron $\frac{3}{4}$ of an in. in diameter the elbows of the crank are $2\frac{1}{4}$ in. long describing a circle of $4\frac{1}{2}$ in. in diameter when turned. The crank shaft is constructed in such a
25 manner as when one elbow is perpendicular, the other lies horizontally. The tops of the piston rods are fastened to the cranks, the top of each piston rod should be large enough to split and the forks pass up on
30 each side of the crank. A cap should be fitted on the tops of the forks and secured

by a nut; or a bolt may be passed through the forks over the crank.

7th. The cylinder and pipe must be fastened to wood or iron fixtures of sufficient
35 strength to support them, and which must also be attached to the case, which incloses the pistons, pipe, and crank. This case may be made of plank 1 in. thick and sufficiently large for the crank to turn in.
40

8th. The whole length of the cylinder must be immersed in water to operate well.

The inventor designs this pump to be used as a suction as well as a force pump by affixing to the ends of the receiving valves
45 a pipe of sufficient size to supply the requisite quantity of water; which pipe may be extended perpendicularly, horizontally or in any other required direction.

The improvement claimed by the sub-
50 scriber and desired to be secured by Letters Patent is—

The above construction of the valve boxes in combination with a double pump barrel
55 constructed substantially as above described.

ANDREW BAILEY.

Witnesses:

HARVEY R. GAYLORD,
NOAH HARKINS.