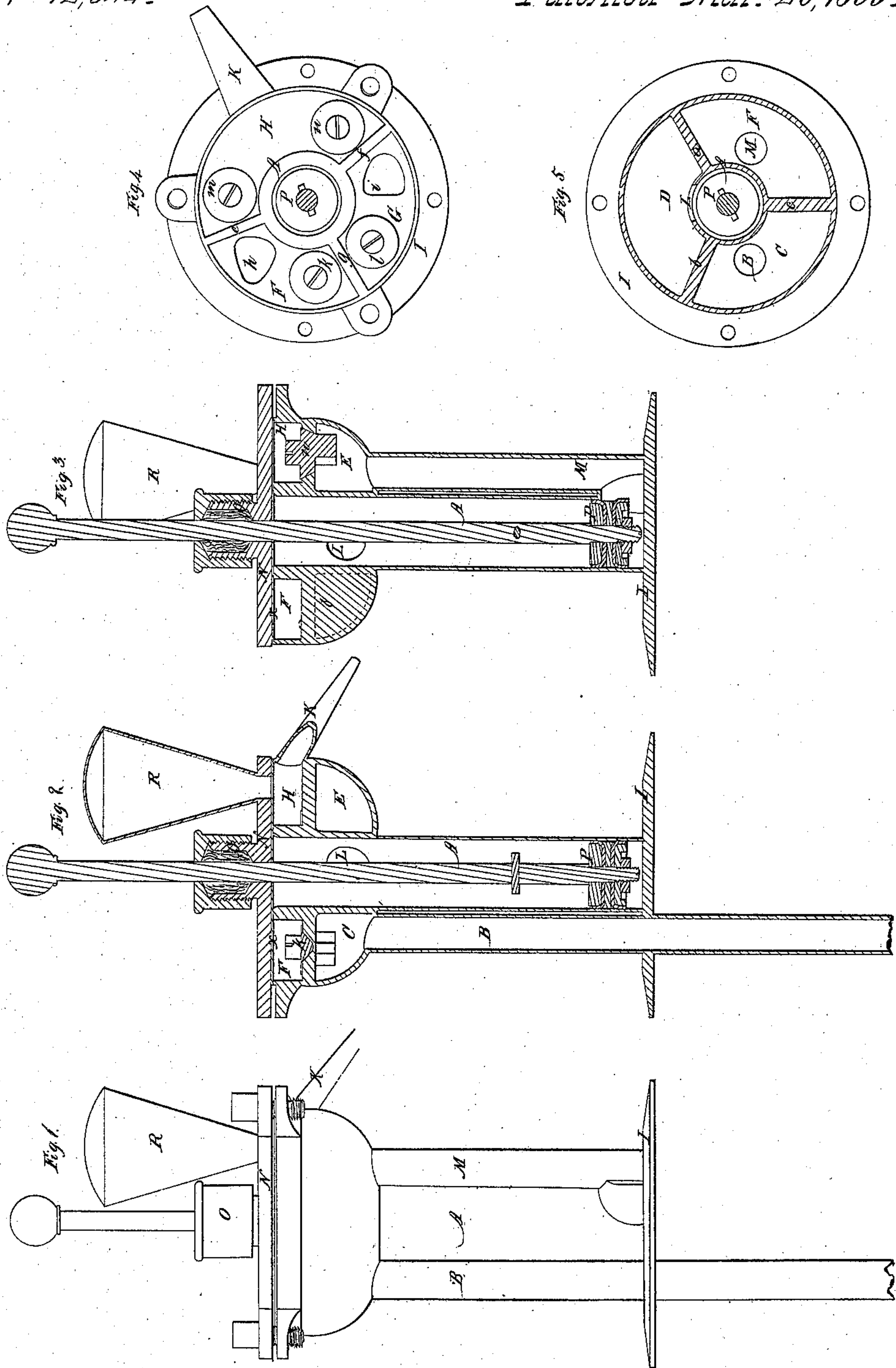


C. G. Curtis,

Double Acting Pump,

N^o 12,544.

Patented Mar. 20, 1855.



UNITED STATES PATENT OFFICE.

CHARLES G. CURTIS, OF SPRINGFIELD, MASSACHUSETTS.

PUMP.

Specification of Letters Patent No. 12,544, dated March 20, 1855.

To all whom it may concern:

Be it known that I, CHARLES G. CURTIS, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in the Double-Action Forcing and Lifting Pump; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1, denotes a side elevation of my improved pump; Fig. 2, is a vertical section of it taken through the induction and eduction pipes; Fig. 3 is a vertical section of it taken through the pipe that leads upward out of the lower end of the pump barrel; Fig. 4, is a top view of the valve chambers, and valves as they appear when the cover plate of the pump is removed from them. Fig. 5 is a horizontal section taken through the induction and leading chambers which are disposed under the valve chambers.

A, in the said drawings exhibits the pump barrel which is closed at its lower end by being fastened to a supporting plate, I. Arranged concentrically around and near to the upper end of the pump barrel is an annular space—which by means of three partitions *a*, *b*, *c*, radiating from the barrel, is divided into three chambers, C, D, and E, the first of them being what may be termed the “induction” chamber while the other two may be called “leading chambers.” Directly over the said annular space and disposed concentrically around the upper end of the pump barrel is another annular space, which by means of three partitions *e*, *f*, *g*, is divided into three valve chambers, F, G, H. I would remark that the partition *g*, is placed over and between the two partitions *b*, and *c*. The partition *e*, is also placed above and between the two partitions *a*, and *b*. In regard to the partition *f*, it is arranged above and between the two partitions *a*, and *c*.

The leading chambers, D, and E, respectively communicate with the valve chambers F, and G, by means of passages as seen at *h*, *i*, formed through the bottoms of said chambers F, and G. The induction chamber, C, communicates with both the chambers F and G, by means of valve passages, to which valves are adapted as seen at *k*, *l*, said valves, being made to open upward. Within the induction chamber, H, there are two

valves, *m*, *n*, whose passages respectively lead into the leading chambers D, E, said valve chamber, H, not only having its valve made to open upward, but having a discharge pipe K, leading out of it. The induction pipe, B, by which water or fluid is introduced to the pump is made to enter the induction chamber, C.

The upper part of the pump barrel is connected with the leading chamber by means of a passage, L, as seen in Figs. 2, 3, and 5, while the lower part of said pump barrel has a pipe M, leading out of it, and made at its upper end to open into the leading chamber E. A single circular cap plate, N, suffices to cover the valve chambers, F, G, and H, and the top of the barrel, A, said cap plate being provided with a stuffing box, O, through which the piston rod of the piston, P, plays. One circular washer (*x*) of leather serves to pack the joints of the cap plate and the partitions directly underneath it. An air vessel, R, may be affixed on the cap plate N, and made to communicate with the valve chamber H. When the lower end of the pipe, B, is in communication with a reservoir of water, if the piston of the pump is raised the water will be made to flow into the induction chamber, C, and from thence through the opening of the valve, *l*, into the valve chamber, G, thence down the passage, *i*, and into the leading chamber, E, thence down through the pipe M, into that part of the pump barrel which is below the piston. When the piston is next forced downward, the valve, *l*, will be closed upon its seat and the water will be forced out of the pump barrel up through the pipe M, into the leading chamber, E, and from thence up through the valve passage *n* into the eduction chamber, H, whose valve, *n*, will be closed in the meantime. During the depression of the piston, the valve *k*, will be raised and the water will pass from the induction chamber, C, through the passage of said valve, *k*, and into the chamber F, from whence it will pass downward through the opening, *h*, and into the leading chamber, D, and thence will flow through the opening, L, into that part of the barrel, A, which is above the piston. Now on the piston being elevated, the water will be drawn out of the upper part of the barrel and will pass through the passage, L, into the chamber D, and will close the valve *k*, and open the valve *m*, and pass into the eduction chamber, H,

the water being driven from such through its induction pipe, K.

I am aware that induction and eduction valve chambers and valves with their case, 5 have been arranged on the side of a horizontal pump barrel and midway between its two ends, the barrel being made to communicate with the valve case by two pipes leading from said case respectively into the two ends 10 of such barrel. I am also aware that valves and their chambers have been placed at the lower end of a vertical pump barrel and a leading pipe used to connect the valve case with the upper part of the pump barrel; the 15 first of these arrangements only requires the removal of a cover plate to obtain access to the valves (such cover plate having no connection with or forming part of the cover plate of the end of the barrel) while the 20 second of these arrangements rendered it necessary to raise from the valve case the whole pump barrel and cap plate of the valve case in order to obtain access to the valves.

I therefore do not claim either of such arrangements, my invention having reference 25 to an upright pump barrel, but

What I do claim is

Arranging the eduction and induction valve chambers concentrically around the upper end of the pump barrel and with re- 30 spect to one another substantially as specified, they being provided with valves, and passages connecting them together and with the two ends of the pump barrel as described the said arrangement admitting one cap 35 plate to be employed both for the valve case and the pump barrel and at the upper end of said pump barrel as hereinbefore explained.

In testimony whereof, I have hereunto set my signature this 16th day of December 40 A. D. 1854.

CHARLES G. CURTIS.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.