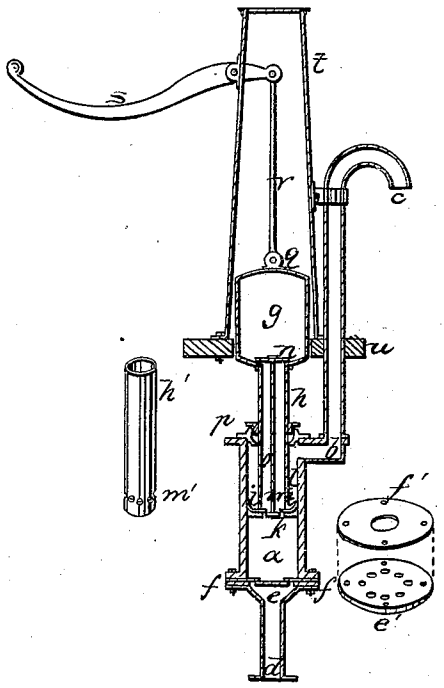
C. Warner,

Pump Lift.

No. 4,619. Patented July 7, 1846.



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UNITED STATES PATENT OFFICE.

CHAPMAN WARNER, OF LOUISVILLE, KENTUCKY.

PUMP FOR RAISING WATER.

Specification of Letters Patent No. 4,619, dated July 7, 1846.

To all whom it may concern:

Be it known that I, CHAPMAN WARNER, of the city of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Suction Lifting and Forcing Pumps; and I hereby declare that the following is a correct description of the construction and operation of the same, reference being had to the annexed drawing, making a part of this specification, in which the principal figure represents a vertical section of the pump together with a platform and case, including a front view or projection of some of the parts for better illustration. The other figures are perspective views of respective parts which require a more particular explanation than the rest.

The letters refer to the same parts in all the figures.

a, is the main pump cylinder—bored smooth in the inside having a flange around each end—underneath the upper flange on one side an outlet *b*, is formed in the casting, but the opening of the outlet is on the upper surface of the flange—around this opening the flange of the eduction pipe *c* is fastened.

d, is the induction pipe the upper part of which is made funnel shaped, with a flange to fasten it to the bottom of the cylinder.

e, *e*, is a circular disk which forms the lower valve seat, having four holes more or less around the circumference of a circle of less diameter than that of the interior of the cylinder through which to admit water into the cylinder.

f, *f*, is a circular piece of leather or other flexible material, which forms the lower valve, having holes near the margin corresponding to those in the valve seat, and a larger hole or opening in the center through which to admit water when the valve is raised.

g, is a hollow air chamber of any convenient form and is designed to produce a more uniform flow of water when the pump is in operation. In the bottom is an opening around which are two flanges at right angles to each other.

h, *h*, is a hollow plunger which also forms an addition to the air chamber but may be made separately in the form of a simple cylinder for the convenience of being smoothed more easily or that it may be made of some other material than the main air chamber. The upper end of the plunger fits into one of the flanges around the opening of the air chamber and rests against the other. Or the air chamber and plunger may be cast or made in one piece—then the bolt which fastens the valve seat to the plunger (as below described) may be short, one end hooking on a pin passing through two of the holes *m*. On the lower end of the plunger a valve and piston united are placed formed of three parts, the upper part *i*, is a ring having the outside slightly beveled or rounding and of less diameter than the interior of the cylinder *a*, so as to admit of a thickness of leather between—around the opening of which there is a flange or shoulder against which the end of the plunger rests—the lower part *k* is the upper valve seat and is similar to the lower valve seat, *e*, *e*, except that it has a beveled flange around on the upper side and one bolt hole through the center and none near the margin. The middle part *l*, is a circular piece of leather or other flexible material similar to that represented at *f*, *f*, which forms both the upper valve or cover to the holes in the valve seat and follower *k*, with a margin left above for the water to press against.

m, *m*, are holes through which the water passes from the interior of the plunger to the outside above the piston.

n is a narrow bar across the opening in the air chamber and *o*, a screw bolt which passes through this bar and the valve seat and follower *k*, and connects together the piston and valve the plunger and air chamber.

p, is a packing box around the plunger, the lower part may either fit tight into the bore of the cylinder or be made tight by interposing a piece of leather between the flanges around it and the cylinder end. This lower part and the upper part or follower are fastened to the flange of the cylinder by means of the same bolts passing through similar ears on each.

q, are two ears on the top of the air chamber to which the lower end of the connecting rod *r*, is attached and *s*, is the handle connected with the upper end of the same rod and working on a fulcrum joint attached to the case *t*.

u, is a platform to which the main cylinder is attached in any convenient way, by means of two or more bolts, either immedi-

ately against the bottom or at some distance below.

In regard to the proportional size of the parts it should be understood that the area of a cross section of the plunger should be about equal to one half that of the interior of the circle of the main cylinder—and that the area of the suction pipe and the united area of the holes in the lower valve seat should be about the same.

The mode of operation is as follows, the piston being at the bottom of the cylinder and the handle raised—the downward stroke of the handle is made, which closes the upper valve—raises the piston—and forces out the water from the space around the plunger and above the piston at the same time producing a partial vacuum below, into which the water from the cistern or well rises through the lower valve, which it opens by pressing against it and slightly stretching the leather—the downward stroke of the handle being completed the upward stroke is made which closes the lower valve and opens the upper one, and forces the water from below the piston up through the upper valve and the holes in the plunger into the space around it whence one half passes out the discharge pipe and the other half remains to be expelled during the next downward stroke of the handle—because the plunger displaces its own bulk of water in its descent as if it were solid—and also because the piston on the end of the plunger brings up the water that surrounds the plunger in the cylinder in its ascent, the pressure being alike in the upward and downward stroke in the air chamber—by placing the pump near the water or making the induction pipe short and the eduction pipe long where the well is deep the labor in the upward and downward stroke of the handle will be about equal—the action of the air chamber in this pump gives just as steady a stream as in a pump of two cylinders.

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

The manner of connecting the air chamber with the plunger emptying the water from the holes *m*, so that the air chamber and plunger will be elevated and depressed together.

CHAPMAN WARNER.

Witnesses:
EDWARD M. ELY,
JAMES B. JOHNSON.