(No Model.)

J. STEVENS.

PUMP.

No. 384,648. Patented June 19, 1888.

Fig. 1.

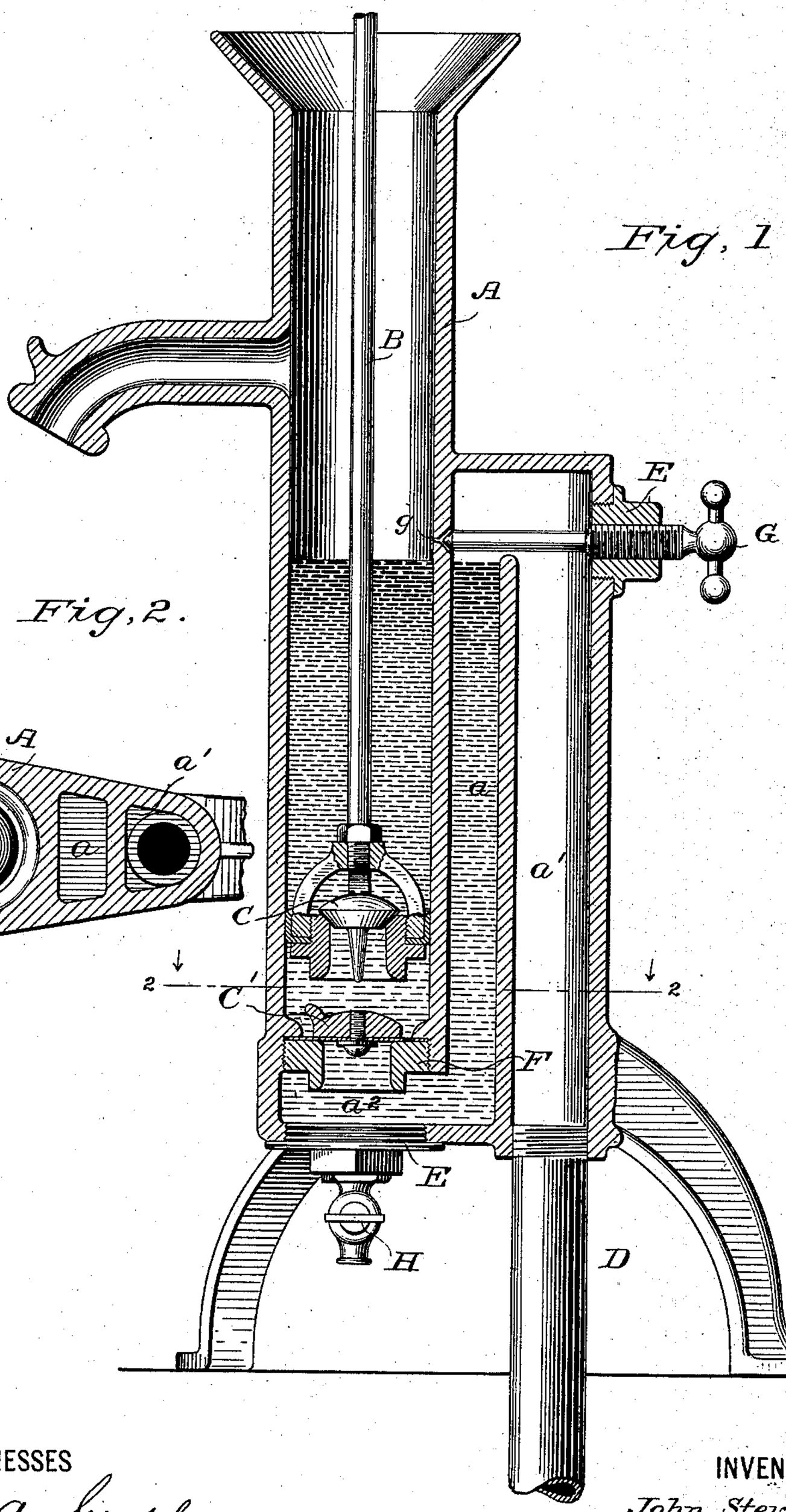

Fig. 2.

WITNESSES

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JOHN STEVENS, OF NEENAH, WISCONSIN.

PUMP.

SPECIFICATION forming part of Letters Patent No. 384,648, dated June 19, 1888.

Application filed February 1, 1883. Serial No. 83,719. (No model.)

To all whom it may concern:

Be it known that I, JOHN STEVENS, of Neenah, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

In my own experience I have found, as doubtless have many others, great difficulty in keeping pumps primed. Whenever left untouched for a time they would run down, and before they could be used again water must be fetched to prime them. The coarser and cheaper kind of pumps, carelessly fitted together, will run down from the outset the very day they are put in. If expensive, and carefully or nicely fitted, they will stay primed until the parts have become somewhat worn, then the trouble will commence, and they will constantly fail the housewife or other person demanding their services. If so constructed as to hold water for any reasonable length of time, they are liable to freeze in cold weather, and are not, as a rule, provided with any means to obviate this risk. Pumps have also been made with siphon-bends alongside the barrel, and a connecting-aperture between barrel and bend, at or near the top of the latter, so that when at rest the siphon might draw off the water down to the level of the aperture, when the air admitted would prevent further suction, leaving always sufficient water above the piston for priming. In these, so far as I am aware, no provision has been made to prevent the aperture becoming clogged, which would result in re-establishing suction and the drawing off of all the priming; nor has any provision been made whereby the aperture can be closed and kept closed while the pump is at rest, so that in cold weather or absence from the premises it may intentionally remain unprimed.

The object of my invention is to so construct the pump that it may, without any attention, be kept constantly primed, during such seasons as this may be safe, and at other times can be readily unprimed or run down to empty it of its contents, so as to avoid freezing; and said invention consists in combining with the pump-barrel and with a suction supply-pipe having a siphon-bend alongside the barrel a diminishing connecting tube or channel between said barrel and bend, near the top of the latter, sealed directly by the water lifted by the piston, whereby air may be admitted between the two as soon as the water falls below the level of said channel and the return-suction of the siphon destroyed, leaving the pump primed; in combining with the pump-barrel and the siphon supply-pipe rising alongside thereof an air-channel or aperture communicating between the two near the upper bend of the siphon, and a pet or other cock to close said aperture at will, whereby the return-suction of the siphon upon the water in the barrel may be cut off to leave said barrel primed, or allowed to take full effect to exhaust the water, and in the various other combinations and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a vertical section through a pump-body embracing my invention, the siphon being cast integrally with said body and the supply-pipe inserted at the bottom; and Fig. 2, a horizontal transverse section.

A is the barrel of the pump, B the piston-rod, and C C′ the upper and lower valves.

In putting the pump upon the market it will probably be cast as in Fig. 1, so that the pipe may be applied as it would to any other pump heretofore used. In said figure the cast-body projects at the rear below the level of the spout, forming an oblong casing, as in Fig. 2, the front or larger part of which is occupied by the barrel, and the rear part divided by a web or partition rising nearly to the top into two conduits, *a a*, the rear of which is perforated at its bottom and screw-threaded to receive the end of the pipe D from the well or cistern. The rear wall of the barrel proper also stops short of the bottom of the casing, so that the inner conduit connects with a space, a^2, beneath the lower valve. The outer conduit and the well-pipe are thus made to form the long leg and the inner conduit the short leg of the siphon, through which, by the action of the piston, water is drawn into the pump.

A screw-plug, E, closes an aperture in the outer wall of the casing at the upper bend of the siphon and above or partially above the top of the dividing web or partition between the two legs, and another screw-plug, E, closes a larger aperture in the bottom of the casing axially in line with the pump-barrel. These apertures, together with that which receives the end of the well-pipe and the opening of the barrel itself, afford points for the support of the core in the operation of casting. The larger

aperture also permits the insertion of the lower valve-seat, F, which in this instance is made as a centrally-perforated plug screwing home into the bottom of the pump-barrel proper.

Since the long end of the siphon is represented by the pipe descending into the well or cistern, there will be a constant suction exerted upon the contents at the bottom of the barrel by said siphon, and when the piston is at rest this suction will tend to drain the barrel, so that should there be the slightest imperfection in the fit of the valves or packing, or even with what would be ordinarily esteemed a perfectly-made pump, the water will be speedily exhausted, thus making it necessary to reprime before the pump can be again used. In order to absolutely prevent this, I drill a hole, *g*, in the wall dividing the pump-barrel from the siphon of sufficient size to allow communication of air between the two compartments, but still so small as to bear no appreciable comparison to the area of either. This hole should be narrowest on the side entering the pump-cylinder and flare from this toward the siphon-conduit, as shown, in order that particles drawn into it from the cylinder or barrel may either pass freely through without clogging, or else, if they stick in the entrance, may be swept out or sheared off by the piston in its stroke as it moves past this aperture.

Now, the pump being in use and primed, there will be a continual flow through the siphon, under the influence of the piston, into the pump-barrel and thence through the spout; but the moment the pump comes to rest the siphon will begin to draw the water therein back to the well, and this action will continue until the water in the barrel falls to the level of the aperture between the barrel and siphon, when air passing from the former into the latter will at once destroy the suction, leaving the water in the barrel and in the shorter leg of the siphon in equilibrium, while the longer leg will be emptied. But, now, supposing the pump to be again started, the first upward stroke of the piston will lift the body of water in the barrel above the aperture, closing it and re-establishing the upward suction in the well-pipe, which will immediately fill and supply a stream as long as the pump is in action. Thus the pump will never be without priming for the next call made upon it, and can never run down. In winter, however, or if the house or other building where the pump is located is to be left untenanted or unused for a long time, it will be necessary to have the pump-barrel empty, either that it may not be injured by freezing or that the water may not be poisoned by long contact with the metallic parts. To do this I propose two ways, either of which may exist in the same structure concurrently with the other, and the action of each be made to supplement that of the other. The first is to close the aperture between the pump-barrel and the siphon, so that the siphon may exhaust the water by its own suction. To this end, in the structure under consideration, a pet-cock or screw-plug, G, is made to take into the flaring seat afforded by said aperture, the plug E, which is directly opposite the aperture, being bored and screw-threaded axially to receive the screw-threaded tang of said cock. Another advantage is gained by the use of this cock, as its conical end being driven into the aperture will force out any little particles that may have lodged therein and expel them into the pump-barrel, so that without regard to its primary purpose it may at any time be used for this object. The second way is to provide the screw-plug at the bottom of the casing with a discharge-cock, H, whereby in extremely cold weather, or when from any other reason thought advisable the slight body of water beneath the lower valve, upon which the siphon will fail to act, may be entirely drawn off.

Ordinarily the pet cock, or whatever cock is made to close the aperture between the barrel and siphon, will be found sufficient, and, as being more convenient to reach, will be most frequently used.

While I have described my invention as applied to common house-pumps, it is to be understood that it may be readily applied to force-pumps or to rotary pumps.

I do not claim as my invention a pump having a siphon-bend in its supply-pipe, nor one wherein the upper bight of the siphon is connected with the barrel by a single air-duct or by an air-duct opened and closed by means of a float-controlled valve, for all of such forms, I am aware, are old; but

I claim—

1. The combination, substantially as hereinbefore set forth, of a pump-barrel, a siphon supply-pipe the shorter leg of which communicates with the bottom of said barrel beneath the lower valve, an air-duct between the chamber of said barrel and the upper part of the siphon, and a stop-cock to positively close said duct against the passage of air, whereby the pump may be unprimed.

2. The combination, substantially as hereinbefore set forth, of a pump-barrel, a siphon supply-pipe the shorter leg of which communicates with the bottom of the barrel, an air-duct between said barrel and the upper bend of the siphon, a stop-cock to positively shut off the communication of air between the two through said duct, and a discharge-cock at the foot of the shorter leg of said siphon.

3. The combination, substantially as hereinbefore set forth, with the pump-barrel and two siphon-conduits cast integrally therewith and having the flaring aperture in the dividing-wall between the barrel and upper bend of the siphon, of the beveled screw-plug or cock for closing said aperture at will.

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Witnesses:
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