(No Model.)

I. W. NUMAN.

PUMP.

No. 303,661. Patented Aug. 19, 1884.

Fig. 1.

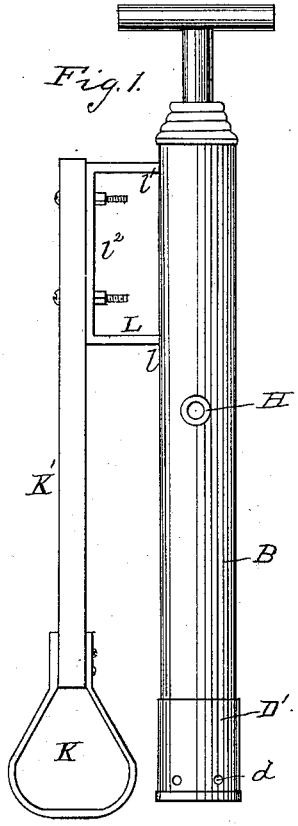


Fig. 2.

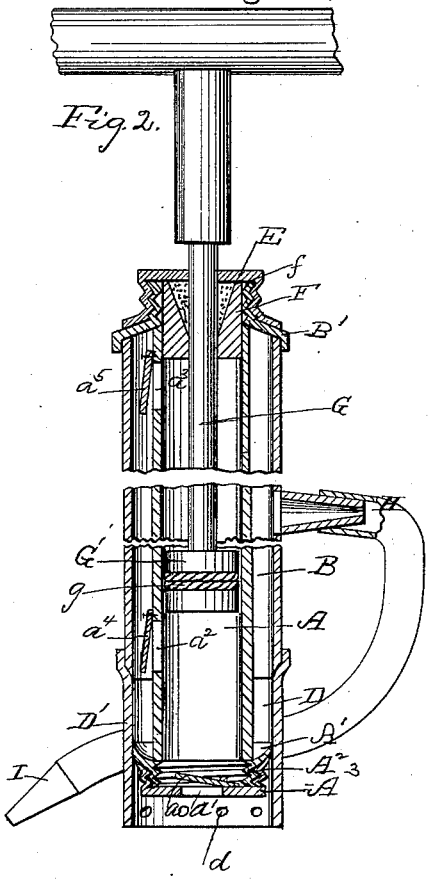


Fig. 3.

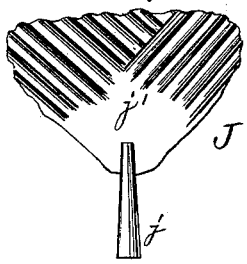
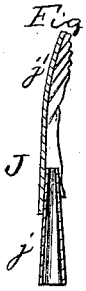


Fig. 4.



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UNITED STATES PATENT OFFICE.

ISAAC W. NUMAN, OF CANTON, OHIO.

PUMP.

SPECIFICATION forming part of Letters Patent No. 303,661, dated August 19, 1884.

Application filed November 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, ISAAC W. NUMAN, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side view of a pump embodying my improvements. Fig. 2 is a vertical section of the same. Fig. 3 is a face view of the spray-former. Fig. 4 is a sectional view of the last said device.

In the drawings, A represents the working barrel or tube. It is preferably formed of tin. At the lower end it is soldered to an outwardly-extending annulus or ring, A′, of similar material. This ring flares upwardly somewhat, and is thereby adapted to receive the flaring mouth of a tin screw-threaded cylinder, A^2. Upon this cylinder there fits a threaded cap, A^3, of tin. By constructing these parts of the pump in this way I am enabled to utilize an article of manufacture which has been heretofore devoted to other purposes, to wit: the screw-threaded cylinder A^2 and its cap A^3, they being of the kind now separately manufactured in large quantities and sold for use in making tin vessels, &c. I form an aperture, *a′*, in the cap A^3, which serves as a port for the admission of water to the barrel A, and upon the inside of the cap A^3, before putting it in place, I secure, in any suitable way, a flexible valve, *a*, it preferably being a small piece of leather or rubber fastened by rivets. Not only can this part of the pump be made more cheaply by using the threaded cylinder and cap A^2 A^3, they being found upon the markets in large quantities at small cost, but, moreover, I permit an immediate and ready access to the lower end of the working-barrel and to the valve *a* when such access is necessary. The water after entering the barrel A escapes therefrom through two apertures, a^2 a^3, having valves a^4 and a^5, respectively. Both of these apertures communicate with a single tube, B, which is situated around and concentric with the barrel A, this tube being at the lower end soldered to the tube D′, so that the chamber within the tube is closed. Below this outer chamber there is a lower chamber, D, preferably formed within the short tube D′, constructed separately from the tube B, but secured thereto by solder, as said. By constructing the part D′ separately from the part B, I can conveniently introduce the necessary instruments before soldering or otherwise fastening the collar or flange A′ at its outer edge either to the part D′ or the part B. After these parts are joined together, the portion D′ serves to protect the lower end of the working-barrel, and the chamber D therein supplies a body of water which can be drawn by a piston, the entrance of the water therein being permitted by a series of apertures, *d*. At the upper end the parts of the pump are joined together in a somewhat similar manner to that described—that is to say, a collar or flange, B′, is secured to the upper end of the tube B, it having an inwardly-converging part, *b*, to which can be readily secured a threaded tin cylinder similar to that at A^2, and upon which fits a perforated cap, E. Before the cylinder B is soldered to the part B′ the latter is soldered to the cylinder A.

F represents a plug, which may be made of wood, rubber, or other suitable material, wood, however, being preferred for most purposes, as it is cheap and can be readily made, shaped, and fitted to its place. At *f* a recess or socket is formed in the top of it around the aperture through which passes the piston-rod. In this aperture there is seated a packing material to keep air-tight the passage through which the piston-rod moves. This rod is represented by G. It passes up through the plug F and the perforated cap E, and is at the top provided with any suitable handle. At the lower end it carries the piston G′, which may be made in any suitable way, though I prefer the form which I have devised, it being cast of metal with a groove in its periphery, in which can be secured a suitable packing material, *g*. The piston, however, is not packed to such an extent as to fit tightly the barrel A; but, on the other hand, its diameter is such that there shall be more or less of a passage-way around it for the water to move from the lower to the upper side of the piston.

H represents a nozzle, which can be of flexible hose or tin, as preferred. When made of rubber, it has a tin nozzle, I, tapering to a comparatively small point, whereby it is adapted to throw a jet of water to a comparatively long distance. When it is desired to form a sheet or spray of the water, it can be done by means of the detachable device J, having a conical socket, *j*, adapted to fit upon the end *i* of the nozzle I, and a fan-shaped blade, *j'*, which has diverging corrugations. The water passes through the socket *j* and strikes against the blade *j'*, which, by means of the corrugations, spreads the stream of water out into the desired sheet or spray, the blade being curved somewhat in longitudinal section.

To hold the pump firmly in position, I provide a stirrup or foot piece, K. In order that this may be supplied cheaply, I have devised a means for attaching the wooden saddle-stirrup commonly in use and obtainable in the market at a low price. I secure it to the pump by means of a bracket, L, the ends of which at *l* and *l'* are soldered to the outer barrel, B. The joining part l^2 is bolted to a bar, K', which at the lower end is fastened to the stirrup K.

The diameter of the piston, the working-barrel A, and the ports a^2 and a^3 are so related to each other that when the piston is being forced downward a portion of the water shall be forced through the port a^2, and another portion thereof shall be forced from the lower side to the upper side of the piston. When the piston is being drawn up, this latter portion of the water is lifted with it and forced through the port a^3, the valves a^4 and a^5 opening and closing to permit these alternate passages of the water from the barrel A to the tube B. In this way a practical continuous stream of water is provided.

I am aware of the fact that this principle of operation has been embodied in pumps heretofore, and I do not therefore claim, broadly, the combination of a piston with a working-barrel having two escape-orifices, and having an interior diameter somewhat larger than that of the piston; but in the pumps heretofore used involving this principle of the operation of the piston the working-barrel A has been situated outside of and at more or less distance from the receiving-barrel. One of the desirable features in a pump of this sort is that it should occupy as little horizontal area as possible, and when two tubes are arranged parallel to each other, and provided with connecting and supporting means, more room is taken up than is convenient.

By arranging the working-barrel concentric within the receiving-tube the device as a whole can be made to occupy less room, is more symmetrical and tasty in appearance, and can have the foot-rest secured thereto in such manner as to hold firmly both of the barrels.

I am aware that a portable force-pump having a working-barrel, a solid piston working tightly therein, and a surrounding air-chamber concentric with the working-barrel has been known, and I disclaim such construction.

What I claim is—

1. In a portable pump, the combination of the inner tube or working-barrel having a valve at the bottom, the outer tube or barrel arranged around the outside of the working-barrel, and communicating with the interior thereof by means of two valves, and the piston smaller in diameter than the working-barrel, and situated between the two valves, whereby each stroke of the piston forces a stream of water into the outer tube, subs antially as set forth.

2. In a portable pump, the combination of the working-barrel A, the outer tube, B, the screw-threaded sheet-metal cylinder A^2 at the lower end of the working-barrel, the perforated sheet-metal threaded cap A^3, secured to the threaded cylinder A^2, and provided with a perforation and a valve for the inlet of water, substantially as set forth.

3. In a portable pump, the combination of the inner working-barrel, A, the outer receiving-barrel, B, the annulus or flange A', secured to the barrel A, and secured to a supporting part at its outer edge, and the lower part, D', constructed separately from the part B and joined thereto, substantially as set forth.

4. In a portable pump, the combination of the inner working-barrel, A, the outer concentric tube, B, the flange or collar B', the threaded cylindrical cap secured to said flange or collar, the piston-rod, and the packing between the cylindrical cap and the piston-rod, constructed and arranged substantially as set forth.

5. In combination with a portable pump, the bracket L, having the arms *l l'* secured to the pump, the stirrup-shaped foot-piece K, and the bar K', connecting the foot-piece with the bracket, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ISAAC W. NUMAN.

Witnesses:

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J. A. WANN.