

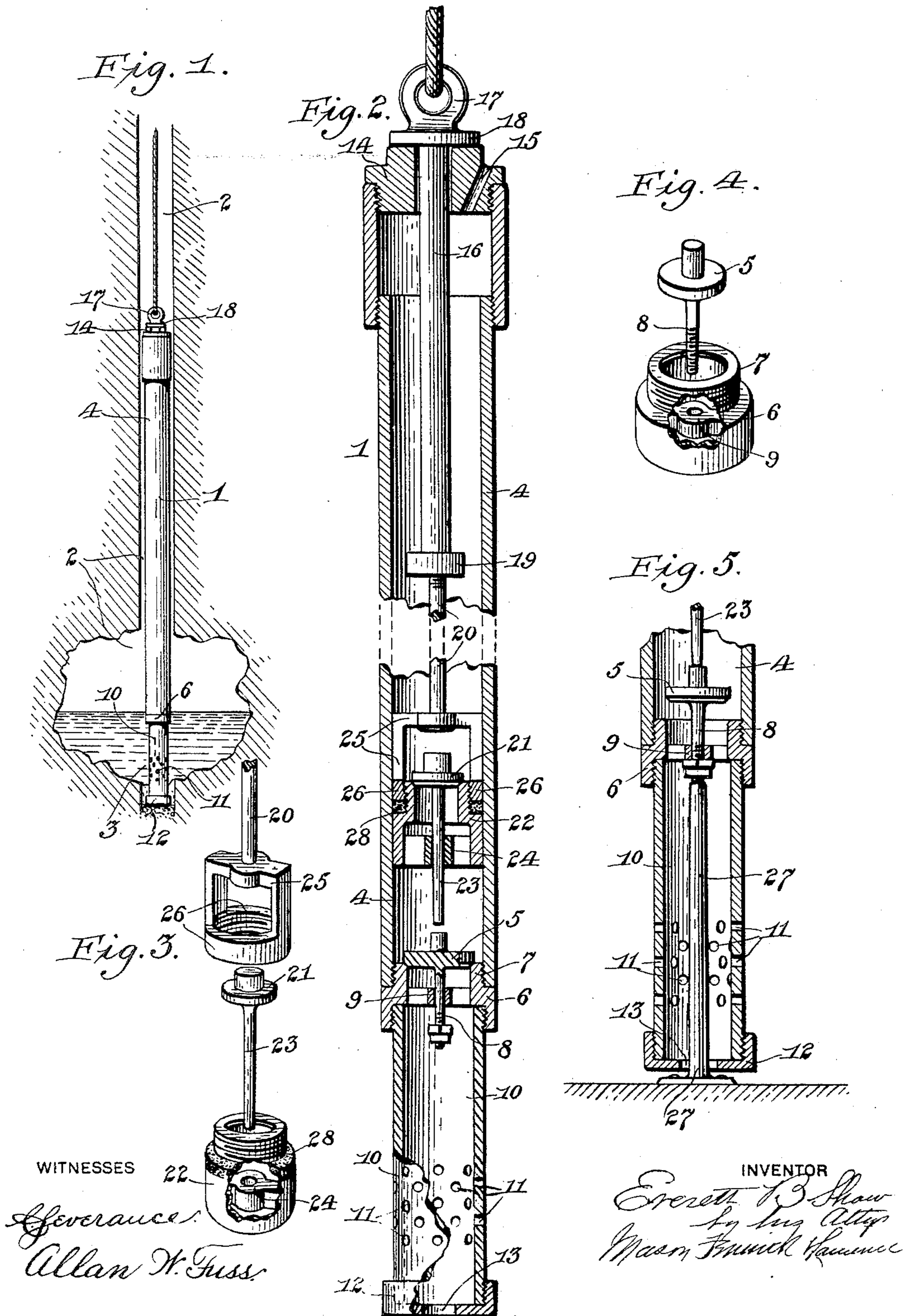
No. 642,012.

Patented Jan. 23, 1900.

E. B. SHAW.
BAILER OR PUMP.

(Application filed Sept. 12, 1899.)

(No Model.)



UNITED STATES PATENT OFFICE.

EVERETT B. SHAW, OF KANE, PENNSYLVANIA.

BAILER OR PUMP.

SPECIFICATION forming part of Letters Patent No. 642,012, dated January 23, 1900.

Application filed September 12, 1899. Serial No. 730,240. (No model.)

To all whom it may concern:

Be it known that I, EVERETT B. SHAW, a citizen of the United States, residing at Kane, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Bailers or Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pumps or bailers, and more particularly to such as are adapted for raising oil or other liquids from openings bored into the earth.

It consists in a bailer comprising a tube or pipe of any desired length, a valve at the lower end of the said pipe for retaining the liquid drawn into the pipe, and a working valve secured to a piston and adapted to be moved up and down in the said tube for pumping the same full of liquid to be raised.

It also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 represents a vertical sectional view through a well bored into the ground, showing a bailer in the lower end thereof and in position to fill the bailer-tube full of oil or other liquid which may be in the bottom of the well. Fig. 2 represents an enlarged vertical sectional view through the said bailer, the central portion of the tube being broken away. Fig. 3 represents a detail view of the moving or working valve, showing the parts slightly separated. Fig. 4 represents a similar view of the lower valve; and Fig. 5 represents a detail sectional view of the lower end of the bailer, illustrating the manner of opening the fixed valve to empty the bailer of its oil or other liquid.

My invention is designed for lifting liquids—such as oil, water, or other like substances—from cavities in the earth which have been reached by boring. The bore or well thus produced may be of any desired depth, the depth not affecting the operation of the bailer.

1 in the drawings represents my improved bailer, which, as shown in Fig. 1 of the drawings, may be lowered into the well or other

bored aperture in the earth, as 2. The lower end of the bailer is adapted to rest in the liquid at the bottom of the well or bore, as at 3, and to be filled with the same before it is raised to the surface again. The bailer 1 is preferably constructed of a tube forming the main body portion thereof, as 4, which may be of any desired length—say from fifty to sixty or seventy feet or more, if desired. The lower end of the tube 4 is closed by means of a valve 5 and a valve-casing 6. The valve-casing is provided with an upwardly-extending screw-threaded reduced portion, as at 7, which engages internal threads in the lower end of the tube 1 for holding it in place. The valve 5 is provided with a valve-stem, as 8, which preferably extends above and below the valve-disk proper, the lower end of the said stem extending through a bearing formed in a spider, as 9, in the valve-casing 6. I preferably place one or more nuts at the lower end of the stem to hold the said valve in place in the casing and to limit its movement. The valve finds its seat upon the upper edge of the valve-casing 6 and is normally held in its seated position by gravity and the weight of the liquids above it. To the lower end of the valve-casing 6 is secured a suction-tube 10, provided with a series of apertures 11 11, preferably arranged at suitable distances around the periphery of the tube. The lower end of the tube 10 is adapted to be partially closed by means of a cap, as 12, the said cap, however, being provided with a central opening, as 13, in the bottom. When the bailer is lowered into the well, the cap 12 rests upon the bottom of the bailer or well and the apertures in the tube 10 permit the liquids in the well to enter the tube, but exclude large particles of other material, such as stones or gravel. The upper end of the tube 1 is preferably closed by means of a screw-cap 14, adapted to be screwed into the upper end of the tube, said cap being provided with an aperture 15, forming a vent for the tube. Passing through the cap 14 is a piston-rod, as 16. The upper end of the piston-rod is provided with an attaching-eye, as 17, which is formed with a shoulder or collar, as 18, which limits the downward movement of the piston-rod 16 in the tube 1. The eye 17 is adapted to be attached to the end of a cable or rope for lowering the bailer into

the well or raising it from the same. The piston is also limited in its upward movement by means of a collar 19, secured to the said piston at a point inside of the tube 1.

5 The distance between the collars 18 and 19 regulates the amount of reciprocation which it is possible for the piston-rod to make. The piston-rod 16 carries an extension-rod, preferably of smaller diameter, as 20, which extends still farther into the tube 1 and carries at its lower end a pumping-valve, as 21.

10 The valve 21 is provided with a valve-seat upon the valve-casing 22, the stem 23 of the said valve extending through the valve-casing and finding a bearing in the bridge or spider 24, formed therein. The said valve-stem 23 projects below the bridge, as illustrated, so that when the piston is in its lowest position the stem 23 will be in close proximity to the

20 upper end of the valve-stem 8. The valve-casing 22 is adapted to be secured to the rod 20 by means of a valve-crown, as 25, secured to the lower end of the said rod, said crown being open at the sides and having a ring portion, as 26, formed at its lower end, which is adapted to be screwed upon the valve-casing 22. The valve-crown limits the up-and-down movement of the valve 21.

It will be evident from the above description that the bailer may be lowered into the well or bore in the earth by means of a cable secured to the eye 17, and when the said bailer has reached the bottom of the well that the piston-rod may be raised and lowered with respect to the tube 1 by moving the cable up and down. The valve 21 is thus raised and lowered in the tube 1, producing the usual pumping action, which will form the necessary suction above the lower valve 5 to draw in

40 the oil or other liquid and which will force the said liquid above itself into the tube upon its downward strokes. The tube 1 of the bailer may thus be completely filled with the liquid in the bottom of the well, after which it may be raised by means of the cable, the shoulder 19 lifting the same and whole mechanism and the liquid which it contains to the surface. The opening 13 in the cap 12 performs a useful purpose. When the bailer has been lifted to

50 the surface full of the liquid which is being pumped, it may be placed over a projection, as 27, secured to the floor or any other suitable place, so that the said projection will extend upwardly through the opening 13 and will engage the lower end of the stem 8 of the valve 5. The movable valve 21 will be at rest at this time and its stem 23 therefore in close proximity to the valve-stem 8. The projection 27 will thus be adapted to raise the

60 valves 5 and 21 from their seats and permit all the oil raised in the bailer to be discharged before returning the bailer again into the well. My improved bailer is especially well adapt-

ed for raising liquids from wells or cavities having a shallow supply of liquid, for it is merely necessary for the lower end of the bailer to extend into the liquid so that the liquid will cover the openings 11 11 in the pipe 10. The bailer may then be operated so as to completely fill the tube, no matter what its length, before raising the same to the surface. This important result, it will be seen, is produced by the novel construction of the bailer using a stationary valve at the lower end and a movable valve above the same in the tube of the bailer.

It will be observed that my device is very simple in construction and not likely to get out of order easily and that it is very effective for the purpose for which it is designed.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A bailer comprising a main tube and a suction-tube a valve-casing joining the two, the said casing having a bearing formed therein, a valve seated on said casing, and having a downwardly-extending guiding-stem engaging said bearing, and an upwardly-extending stem, a piston working in said main tube provided with a bearing, a valve seated on said piston and having a long stem extending through said bearing and sufficiently far below the same to be struck and lifted by the upwardly-extending stem on the lower valve when the piston is in its lowest position and the lower valve is raised from its seat, and means for raising the lower valve whereby both valves are operated to discharge the contents of the bailer, substantially as described.

2. A bailer, comprising a main tube, a suction-tube provided with lateral apertures, a valve-casing joining the two, a valve in said casing having upwardly and downwardly extending stems, a piston working in said main tube, a valve carried by said piston and having a stem extending downwardly below the piston so as to engage the upper stem of the lower valve, a cap closing the lower end of the said suction-tube, the said cap having a central orifice, whereby the bailer when filled with liquid from a well may be placed over a suitable projection, the said projection being permitted to pass through the orifice and engage the lower stem of the lower valve to raise it and through the upper stem of the said lower valve to raise the piston-valve so as to discharge the contents of the bailer, substantially as described.

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

EVERETT B. SHAW.

Witnesses:

NORMAN HOWELLS,
M. W. MOFFITT.