(No Model.)

H. G. JOHNSON.

PUMPING APPARATUS.

No. 600,425. Patented Mar. 8, 1898.

Fig. 1

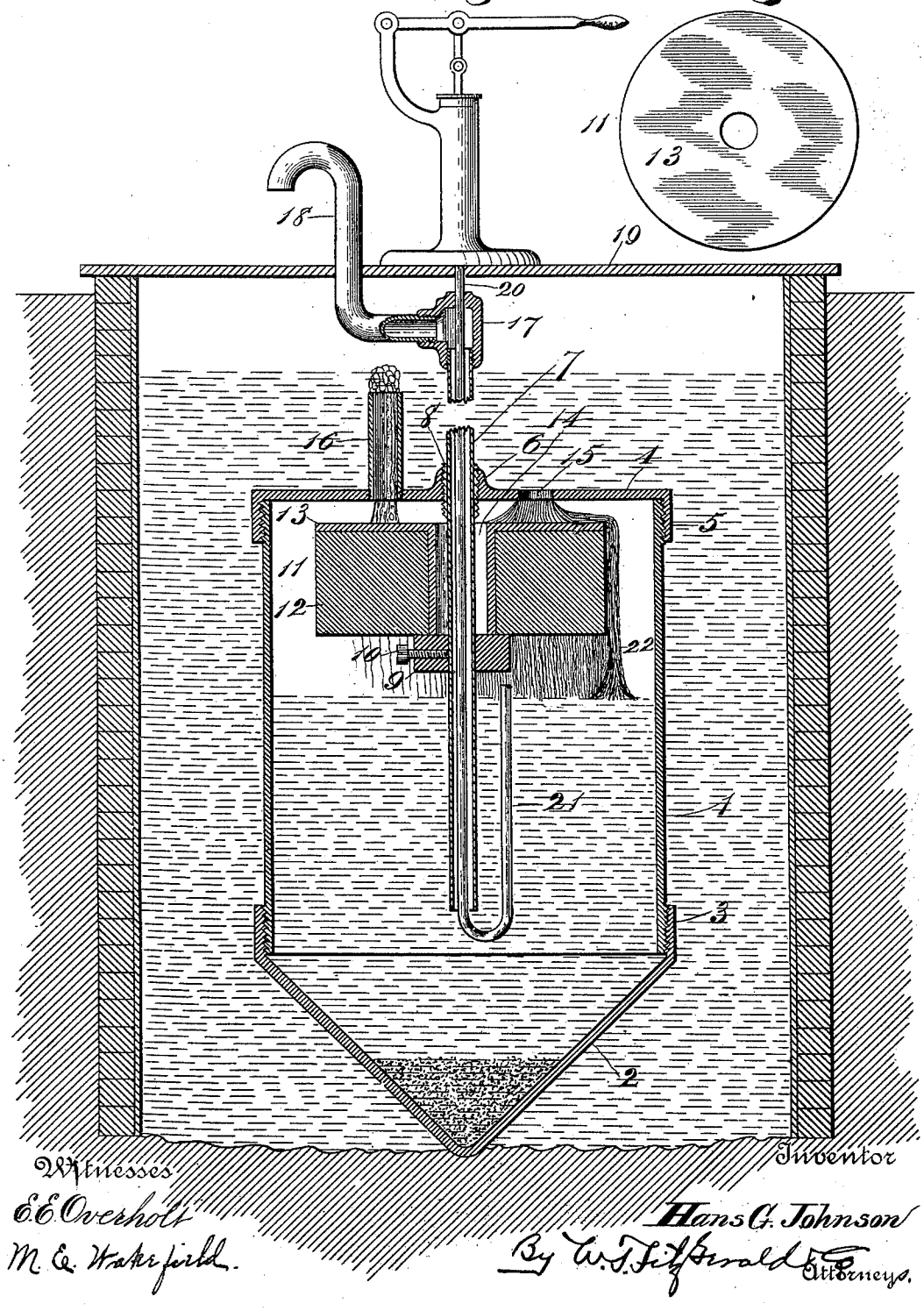


Fig. 2

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UNITED STATES PATENT OFFICE.

HANS G. JOHNSON, OF WAUKON, IOWA.

PUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 600,425, dated March 8, 1898.

Application filed May 27, 1897. Serial No. 638,457. (No model.)

To all whom it may concern:

Be it known that I, HANS G. JOHNSON, a citizen of the United States, residing at Waukon, in the county of Allamakee and State of Iowa, have invented certain new and useful Improvements in Pumping Apparatus; 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, as will be hereinafter fully described, claimed, and illustrated in the accompanying drawings, relates to certain new and useful improvements in the construction and combination of parts necessary to produce a completely operative pumping apparatus which, while applicable to any purpose for which a pump may be used, is especially designed for use where a cheap pumping apparatus is desirable, as it may be located in a stream or pond of water or in a well or cistern, the object being to provide a reliably efficient device of the character specified which will be free from the usual system of washers and valves, which usually cause great trouble by deterioration through wear or other causes.

In the pumping apparatus which will be hereinafter specifically described a smooth or true surface formed upon certain parts and suitable apertures in the casing are all I find necessary to provide in lieu of a valve of the usual construction.

In the accompanying drawings, Figure 1 is a vertical section of my pumping apparatus, showing an air-pump of the usual construction in side elevation. Fig. 2 is a top plan view of the drum on a slightly-reduced scale.

For convenience in referring to the various details of my invention said details will be designated by numerals.

In materializing my invention I provide the receptacle or body 1, which is preferably cylindrical in cross-section, though any preferred outline may be adopted. To the lower end of the body thus provided I secure the conical bottom or base 2, the point thereof being directed downward and serves the twofold purpose of reliably seating the apparatus in the yielding bottom of a pond or like location, while its internal walls direct the sediment which may be precipitated by the water within the chamber into the lower end, enabling the same to be more readily removed therefrom. The body and its conical bottom may be joined together in any suitable manner, as by screw-threads 3, while to the upper end of the body thus or otherwise formed I mount the cap 4, having the threaded depending flange 5. Centrally within the cap thus provided I locate the internally-threaded integrally-formed collar 6, designed to hold in position the discharging-tube 7, which at its point of connection with said collar may be provided with a swell or may have a flange or rib 8 shrunk thereon, which rib being threaded upon its outer face will engage the threads upon the collar 6, and thus hold the discharge-pipe in its operative position. The rib or swelled portion 8 may be of any desired length in order that the receptacle 1 may be adjusted thereon for the purpose of drawing water from any desired height in the well or cistern. After the discharge-pipe has been thus mounted I secure thereto the adjustable collar 9, held into engagement with the discharge-pipe by the set-screw 10, and designed to normally rest upon said collar is the drum 11, which for the purposes of this application is shown to consist of the solid section 12, formed of light porous substance, as wood, cork, or the like, and of the flange or disk 13 for the upper side thereof. Said disk 13 is provided with the centrally-disposed depending sleeve 14, designed to fit loosely around the discharge-pipe 7 and thus permit the float to rise freely into engagement with the inner surface of the cap 4 when the body becomes filled with water. The cap 4 is also provided with the aperture 15, designed primarily to permit the influx of water into the chamber thus provided, while preferably upon the opposite side of the discharge-pipe I locate the air-discharging pipe 16, the purpose of which will be hereinafter more particularly pointed out.

It will be understood that the discharge-pipe may be of any desired length and may extend to the place where it is desired to deliver water, though for the purposes of this application I have illustrated said discharge-pipe as communicating, by means of the el-

bow 17, with the discharging-nozzle 18, located upon the usual platform 19, in case the device is used in connection with a well or cistern.

Within the discharge-pipe 7 I mount the air-delivering pipe 20, which is of sufficient diameter to reach freely through said discharge-pipe, leaving sufficient room around it to practically present no obstruction to the water as it is passing out.

The air-pipe 20 extends downward entirely through the discharge-pipe 7 and is then bent upward to provide the delivery or terminal 21 for delivering the air to the chamber at a point therein preferably contiguous to the collar 9, or near the lower surface of the float or drum when it is resting upon said collar. The entire device thus provided is designed to be entirely submerged in the water of a pond or other preferred location, the discharge-pipe 16 being of sufficient length to leave the upper end thereof also submerged, though preferably near the surface of the water.

The operation of my pumping apparatus may be stated to be as follows: When the device is first submerged or placed in its operative position, the water will flow into the chamber through the aperture 15 and the pipe 16, though in a greater degree through said aperture, and it will be clear that as the chamber becomes filled and the float acted upon by the water said float will rise into close engagement with the lower surface of the cap 4, and as the upper surface of the disk 13 is provided with a washer or cushion of some yielding substance, as rubber or the like, the aperture 15 and the entrance to the pipe 16 will become tightly sealed, thus preventing further entrance of water. Before the sealing process takes place great pressure will have been brought to bear upon the float, forcing it firmly in contact with the lower surface of the cap when air is forced through the pipe 20 and its terminal 21 by an air-pump of any preferred construction, which results in the water becoming displaced by air and incidentally forcing the former out through the discharge-pipe 7 and the nozzle 18, the float remaining, by the pressure thus set up, in close union with the cap 4, thus holding the aperture 15 and the pipe 16 in a sealed condition. As the introduction of air is continued the water will be finally entirely displaced, when the remainder of the water available to the pipe 7 will be carried out by the air as the latter enters the pipe 7 when the pressure is thus removed, permitting the float to drop downward upon the collar 9 and thus in readiness for repeating the operation.

During the process of filling the air within the chamber will be discharged through pipe 16, and as the upper end thereof is below the water-line a bubbling will result, which will indicate to the operator that the device is reliably performing its work.

In the drawings I have illustrated the process of filling during the middle period thereof, the water 22 being indicated as mainly entering through the aperture 15 and flowing in upon the float and thence to the lower part of the chamber.

While I have illustrated the float as being constructed of wood, cork, or similar light porous material and provided with a protecting-flange, it will be understood that it may be so formed as to provide a hollow drum which will float upon the water and be thus brought into engagement with the cap 4.

If a hollow drum is employed, I prefer to reinforce or strengthen the upper surface by some suitable means, in order that the cushion carried thereon will be squarely presented for coöperation with the aperture 15 and the lower end of the pipe 16. It will also be understood that instead of covering the entire surface of the float with a yielding cushion designed to more reliably close the aperture 15 and the pipe 16 means may be provided to hold the drum or float against rotation, in which case it will be necessary to cover only that portion of the drum contiguous to said aperture and pipe.

While I have illustrated the preferred construction and accessories deemed necessary to carry out my invention, it will of course be understood that I desire to comprehend any substantial equivalent thereof and do not wish to be confined strictly to the showing I have made. Believing that the advantages, construction, and use of my invention have been made fully apparent from the foregoing description and the accompanying drawings, I will dispense with further reference.

Further advantages arising from the use of my invention arise from the fact that air is introduced into the water, thus tending to enliven and purify it.

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

In the herein-described pumping apparatus, the combination of the receptacle having a conical bottom; a discharge-pipe extending into the receptacle and reaching into the bottom section thereof; a supporting-collar secured to said pipe; a float mounted upon said pipe and designed to normally rest on said collar; an air-pipe and pump therefor extending downward through said discharge-pipe and thence upward near said collar, and means for enabling said drum to securely seal said apertures as it is forced upward by the influx of water, or air-pressure, substantially as described and for the purpose set forth.

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

HANS G. JOHNSON.

Witnesses:
H. J. BENTLEY,
C. S. STILWELL.