No. 742,451. PATENTED OCT. 27, 1903.

W. H. LADLEY.

WATER SUPPLY DEVICE FOR WELL DRILLING.

APPLICATION FILED JULY 7, 1903.

NO MODEL.

Fig. 1.

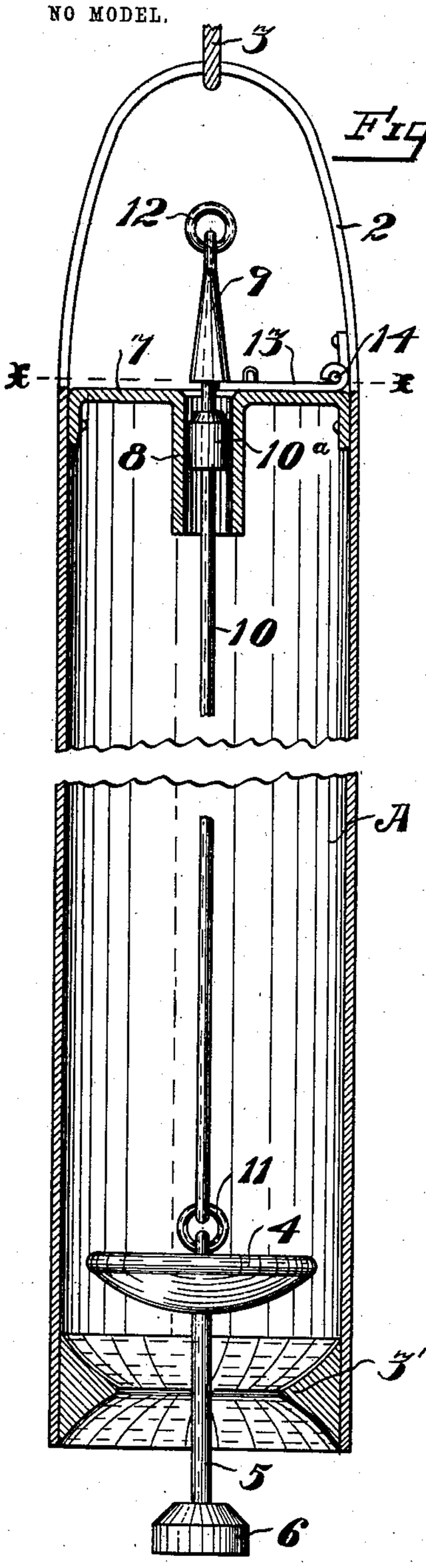


Fig. 3.

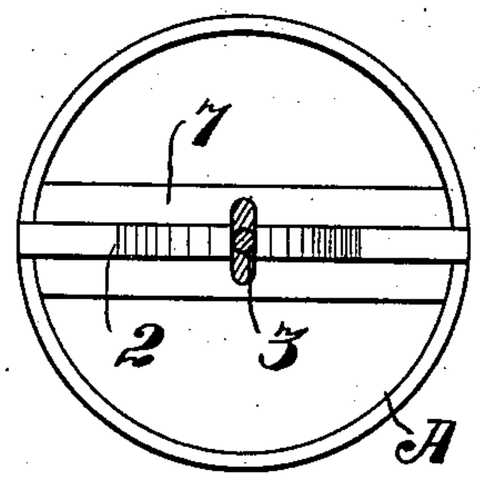


Fig. 4.

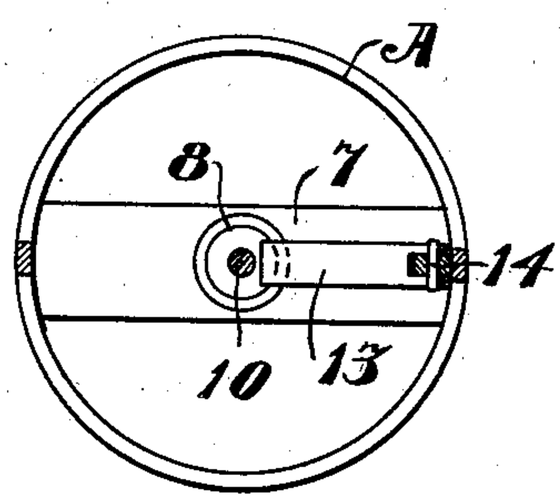
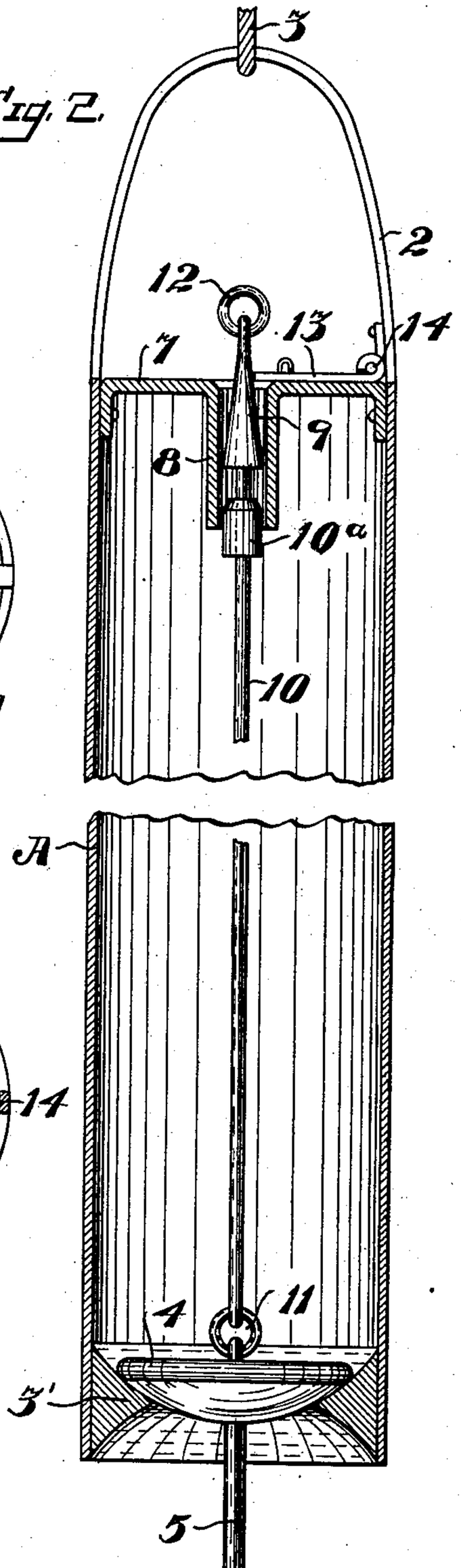


Fig. 2.



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No. 742,451. Patented October 27, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM H. LADLEY, OF MARICOPA, CALIFORNIA, ASSIGNOR OF ONE-HALF TO ROBERT L. PEELER, OF MARICOPA, CALIFORNIA.

WATER-SUPPLY DEVICE FOR WELL-DRILLING.

SPECIFICATION forming part of Letters Patent No. 742,451, dated October 27, 1903.

Application filed July 7, 1903. Serial No. 164,508. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. LADLEY, a citizen of the United States, residing at Maricopa, county of Kern, State of California, have invented an Improvement in Water-Supply Devices for Well-Drilling; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus which is designed for supplying water which is necessary in drilling oil and other similar wells.

It consists of an open-bottomed cylinder provided with a valve by which the bottom may be closed or opened at will, a means for raising and lowering the device within the well, and a means for opening the valve when it reaches the bottom of the well and holding it open until the contents of the apparatus are discharged.

It also comprises details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical central section showing valve open. Fig. 2 is the same showing valve closed. Fig. 3 is a plan view. Fig. 4 is a transverse section on line *x x*, Fig. 1.

In the drilling of wells for oil and the like it is necessary to have a certain amount of water in the material which is being drilled, and this is sometimes supplied by simply pouring it or allowing it to flow into the well. If the ground is at all soft, this process is liable to cause the sides of the well to cave and make trouble.

It is the object of my invention to provide a means for placing the required quantity of water at the bottom of the well and discharging it gently and without motion by simply raising the receptacle after the bottom has been opened to allow the water to flow out.

In carrying out my invention I employ a hollow cylinder A, which is made of such diameter as to move freely within the well-casing and is provided with a bail 2, to which is attached the wire sand-line, as at 3, by which the device may be raised and lowered. At the bottom of this device is formed a seat, as at 3, and upon this seat a correspondingly-shaped valve 4 is adapted to close. Below the valve is an extension 5, and upon the lower end is an enlarged foot 6, technically known as a "dart." Across the upper part of the tube A, which may be made of any suitable or desired length, is a transverse bar, as 7, having a central countersunk opening from the top downward, as at 8.

9 is a cone made of iron or steel and having the lower end extending into the opening 8, within which it is movable. From the lower end of this cone a rod 10 extends downwardly and is connected by links, as at 11, with an eyebolt, which screws into the top or is riveted through bottom of the valve 4, as shown. At the top of the cone is a ring 12, by which it may be lifted at will.

13 is a steel or iron latch hinged to one side of the cylinder at the end of the cross-bar 7, as shown at 14. This catch or latch is of such length that when the cone has been raised above the latch, so as to allow it to drop flat upon the bar 7, the free end of the latch will project sufficiently beneath the cone to hold the latter in an elevated position, and as the cone is connected, as previously stated, with the valve 4 this valve will be held open by the above engagement of the latch with the cone.

When the valve 4 is to be closed, the cone is first raised sufficiently to allow the latch 13 to be tilted up about its hinge, when the cone may be dropped into the tubular portion 8 until the valve is closed. When the latch 13 is then released, it will simply rest against the side of the cone, as shown plainly in Fig. 2.

The device is designed to be operated as follows: When water is to be placed in the bottom of the well, the cylinder A is raised to the top, the latch 13 being turned up, the cone may be dropped, as in Fig. 2, and the valve 4 closed. The cylinder A can then be filled with water and the whole lowered into the bottom of the well until the foot or enlargement 6 strikes the bottom of the well. The weight of the cylinder will cause it to move downward a little, while the foot rises to open the valve 4 and allow the water to escape close to the bottom and with the least possible movement which would tend to wash or cave the walls. When the cylinder is raised, the latch 13 having in the meantime

dropped beneath the cone 9, it will be seen that it will hold the valve open, so that as the cylinder is raised the water will flow out of the cylinder and remain in the bottom of the well, the cylinder thus coming up empty, and it can be again filled and lowered as may be desired. The rod 10 may have an enlargement made in it, as shown at 10^a, which serves as a guide to maintain the cone approximately central in its movements up and down through the opening 8.

If it is desired at any time to remove the cone and rod, it may be done by unscrewing or otherwise disengaging the coupling of the rod 10 from the valve 4, and when this is done or when the cone and connected parts are allowed to move freely the device may be used as a bailer in the usual well-known method for bailing out wells of this class.

If the cone and latch 13 are not removed, the latch may be turned up and tied back or otherwise secured to the bail 2, or the latch itself may be removed by its hinge by means of a bolt, said bolt having a key-seat therein, so that it will not engage with the cone. Then when the apparatus is lowered into the well the contact of the foot 6 with the bottom will open the valve 4 and allow the device to fill with mud and water, and the valve will close as soon as the device is lifted to raise it out of the well. By this construction I am enabled to use a single apparatus either to introduce water into the well when the latter is dry or to bail it out when found necessary without being obliged to change from one apparatus to another.

In the previous description I have designated the part 9 as a cone, which is the form in which it is herewith illustrated; but it will be manifest that the device may be made in various shapes without departing from my invention, the object of which is to provide an automatically-operating latching device by which the valve of the bucket may be either automatically opened to discharge the contents of the tube or so placed as to allow the valve to close, so that the apparatus may be used either to introduce water or remove water, oil, and mud without change in its characteristics.

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

1. The combination with an open tube having a valve and seat in the lower end and a projecting foot by which said valve may be opened, of a centrally-located tubular guide at the top of the tube, a rod connected to the upper side of the valve and extending upwardly through the tube to the upper end thereof, said rod having a catch member adapted to move in unison with the valve, a latch mounted upon the tube and adapted to engage the catch member and retain the same elevated and the valve open.

2. The combination of a tube and means by which it may be raised and lowered within a well, said tube having a centrally-located guide at its upper end, of a valve and valve-seat located at the bottom of the tube, a foot connected with and projecting below the valve whereby the latter may be opened, a vertically-movable catch member movable in said guide and connections between it and the valve whereby the valve and catch member are lifted in unison, and a latch upon the upper end of the tube adapted to engage the catch member and retain the valve in its open position while the apparatus is being raised.

3. The combination with a tube having a valve-seat at the lower end, a foot projecting below the valve, and means by which the tube may be raised or lowered within the well, of a bar fixed across the upper part of the tube having an opening made centrally therethrough, a cone movable through said opening and a rod connecting the cone with the valve, a latch having one end hinged to the outer side of the cross-bar, the other end adapted to rest against the side of the cone, said latch being free to drop and lie beneath the cone when the latter has been raised whereby the return of the cone and closing of the valve are prevented.

4. A bailing-tube having a valve and seat at the lower end and a downwardly-extending rod provided with a projecting foot whereby the valve is opened by contact with the bottom; a rod connected to and extending above the valve to substantially the upper end of the tube, and having its upper portion provided with a cone-shaped catch member; a centrally-located guide at the upper end of the tube and extending in line with the rod; and a latch on the tube and adapted to engage under the catch member to hold said member elevated and the valve open, and means for raising the apparatus from the well.

5. In an apparatus of the character described the combination of a tube having a valve-seat at the bottom; a valve; a rod extending downwardly therefrom and provided with a foot-piece; a second rod projecting from the upper side of the valve through the tube to the upper end thereof; a guide for the second rod; a cone-shaped catch member carried by the second rod; and a pivoted latch having its free end normally to lie in contact with the inclined side of the cone whereby the latch is moved about its pivot when the cone and valve are raised and said free end automatically drops in position below the base of the cone to maintain the cone elevated and the valve open.

In witness whereof I have hereunto set my hand.

WILLIAM H. LADLEY.

Witnesses:
JOS. MCDONNELL,
WALTER SNOOK.