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Patented Jan. 15, 1901.

I. O. DAY.
PUMP.

(Application filed Mar. 31, 1900.)

(No Model.)

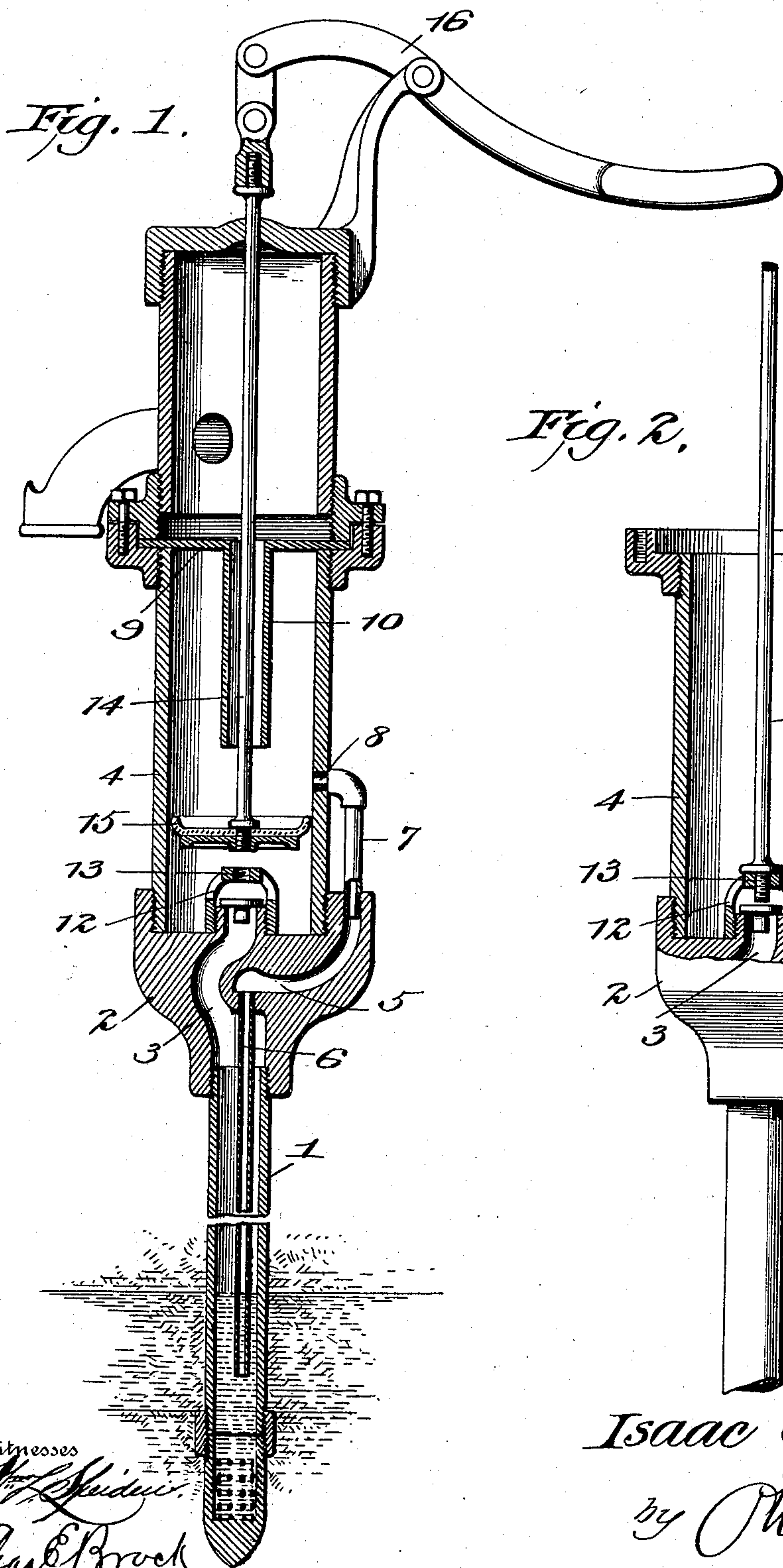
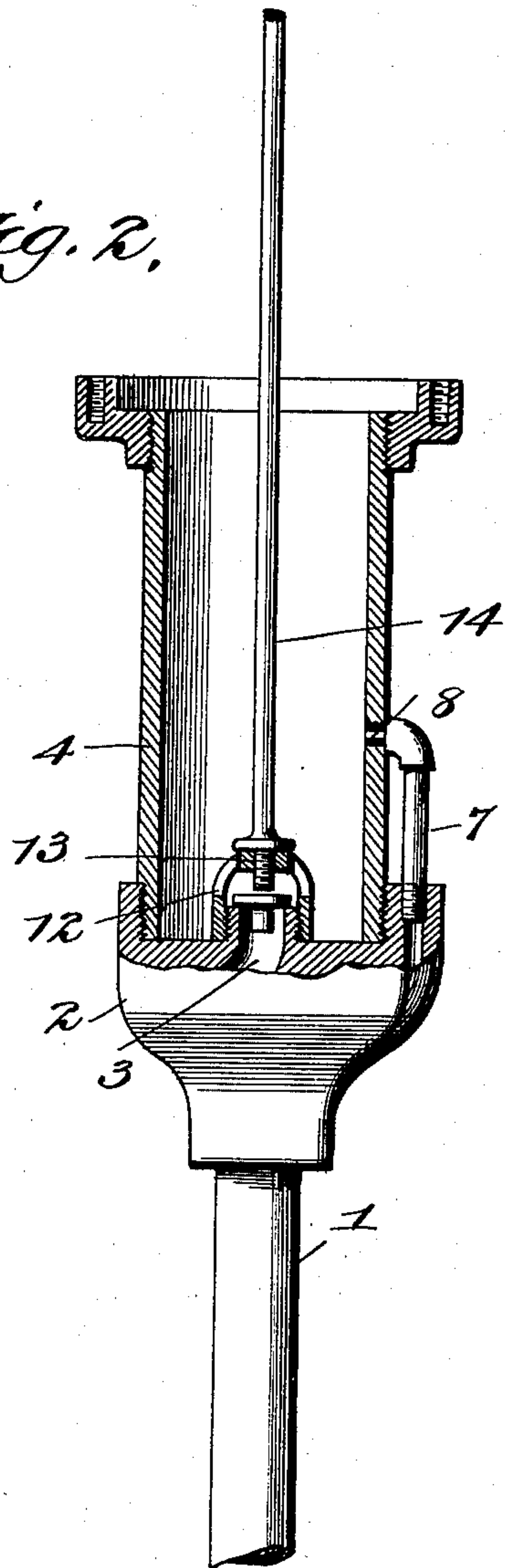


Fig. 2.



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ISAAC O. DAY, OF OTTUMWA, IOWA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 665,999, dated January 15, 1901.

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To all whom it may concern:

Be it known that I, ISAAC O. DAY, a citizen of the United States, residing at Ottumwa, in the county of Wapello and State of Iowa, have
5 invented a new and useful Pump, of which the following is a specification.

My invention relates to pumps, and more particularly to that class of pumps used in what are known as "drive-wells," and has for
10 its object to provide a pump of this class with means whereby the surplus water above the lower valve may be returned to the portion of the pump below the valve to prevent freezing.

It also has for its object to provide a means
15 whereby the lower valve may be removed by means of the sucker-rod.

With these objects in view my invention consists in the improved construction and novel arrangement of parts of a pump, as will
20 be hereinafter more particularly set forth.

In the accompanying drawings, in which the same reference-numerals indicate corresponding parts in each of the views in which they occur, Figure 1 is a longitudinal sectional view of a pump embodying my invention, and Fig. 2 is a detail view showing the
25 manner in which the lower valve is removed by means of the sucker-rod.

In the use of what are known as "drive-wells" it is very desirable that means be employed for permitting the escape of the water which is drawn above the lower valve for the purpose of preventing the same from freezing and bursting the pipe. Heretofore it has
30 been common to provide the pipe above the valve with a small outlet which will permit the water to escape and be absorbed by the surrounding earth, a cavity being sometimes formed at that point to assist in the operation; but this is not desirable for many reasons. In other cases a pipe has been extended downwardly upon the exterior of the main pipe which communicates with the outlet; but this also is objectionable.
40

In practicing my invention I provide the outer end of the pipe 1, forming the driven well, with a casting 2, which is perforated to form a channel 3 from the top of the pipe 1 up into the barrel or cylinder 4 of the upper
50 portion of the pump. The lower end of the pipe is provided with the usual perforated strainer or pointed cap, which is forced down

through the earth in the usual manner until it reaches the usual water-bearing sand strata and through which the water is drawn as the
55 pump is operated. The channel through the casting is preferably curved or extended to one side of the bore of the pipe 1 and is provided with an auxiliary channel 5, which extends into the portion of the casting directly
60 above the bore of the pipe 1 formed by the bend or curve in the channel 3. A screw-threaded opening is formed in the casting below the inner end of the channel 5 for the reception of a small pipe 6, which projects down
65 through the pipe 1 to below the water-level, so that its lower end is always immersed in the water. A branch pipe 7 extends from a small outlet-opening 8 in the side of the barrel down to the upper end of the auxiliary
70 channel, so that any water remaining within the pump above the outlet will gradually find its way through the pipe 7, channel 5, and pipe 6 down into the source of supply at the bottom of the well.
75

The barrel of the pump is secured to the casting 2 in any suitable manner—as, for instance, by means of screw-threads—and is provided intermediate its ends with a washer 9, to which a pipe 10 is secured, so that it will
80 project down toward the casting a suitable distance. Secured to the casting at the upper end of the channel 3—as, for instance, by means of an ordinary screw-threaded nipple—is a valve-cage 12, the upper end of which
85 is provided with a screw-threaded perforation 13, the threads of which are arranged reversely to the threads by means of which the valve is secured to the casting. Extending down through the barrel of the pump and
90 through the pipe 10 is the sucker-rod 14, the lower end of which is provided with the ordinary cupped head or valve 15. The upper end of the rod is secured to the handle 16 by means of screw-threads which correspond
95 with the threads in the upper end of the valve-cage 12.

As above described, it will be seen that after my improved pump has been used the water
100 above the valve will gradually be returned to the source from which it came and all danger from freezing will be avoided. In operating the pump the upward movement of the valve at the lower end of the sucker-rod

will draw the water up through both pipes as soon as it passes above the outlet 8, for the reason that the lower end of the pipe communicating with said outlet is constantly beneath the surface of the water. In this manner the liability of the air entering through the outlet to destroy the efficiency of the pump to that extent is entirely avoided and the objectionable features in connection with the use of a pipe outside of the main pipe are avoided, and at the same time the water is prevented from escaping around the upper portion of the pump and causing waste and damage.

When it is desired to remove the lower valve without removing the lower portion of the barrel, the upper portion of the barrel is removed and the sucker-rod detached from the handle and inverted, and its upper end is screwed into the perforation in the top of the valve-cage. As these screw-threads are arranged reversely to those by means of which the cage is secured in position, the continued rotation of the sucker-rod will unscrew the cage from its position, when it may be withdrawn by the removal of the sucker-rod. It can be replaced by the same process, when the upper portion of the barrel of the pump may be replaced and the sucker-rod secured to the handle, and thereby put the pump in its operative position.

Although I have shown what I consider to be the most desirable form of constructing my improved pump, yet I reserve to myself the right to make such changes and alterations therein as will come within the scope of my invention.

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

1. In a pump, the combination, with a pipe,

of a barrel connected with the upper end thereof and provided with an outlet, and a smaller pipe communicating with said outlet and extending down within the first-mentioned pipe to a point below the water-level, substantially as described.

2. In a pump, the combination, with a pipe, of a casting secured to the upper end thereof, said casting being provided with a main and an auxiliary channel, the main channel communicating with said pipe, a smaller pipe communicating with the auxiliary channel and projecting down through the first-mentioned pipe to a point below the water-level, a barrel secured to said casting and communicating with said main channel, and provided with an outlet in communication with the auxiliary channel, substantially as described.

3. In a pump, the combination, with a pipe, of a casting secured to the upper end thereof provided with a main channel and an auxiliary channel, the main channel communicating with said pipe and having its intermediate portion curved or bent to one side and the inner end of the auxiliary channel extending from the top of the casting into the portion of the casting formed by the bend in the main channel, a smaller pipe communicating with the inner end of the auxiliary channel at a point above the upper end of the first-mentioned pipe and extending down within said pipe to a point below the water-level, a barrel secured to the casting and provided with an outlet, and a branch pipe leading from said outlet to the upper end of the auxiliary channel, substantially as described.

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Witnesses:

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