

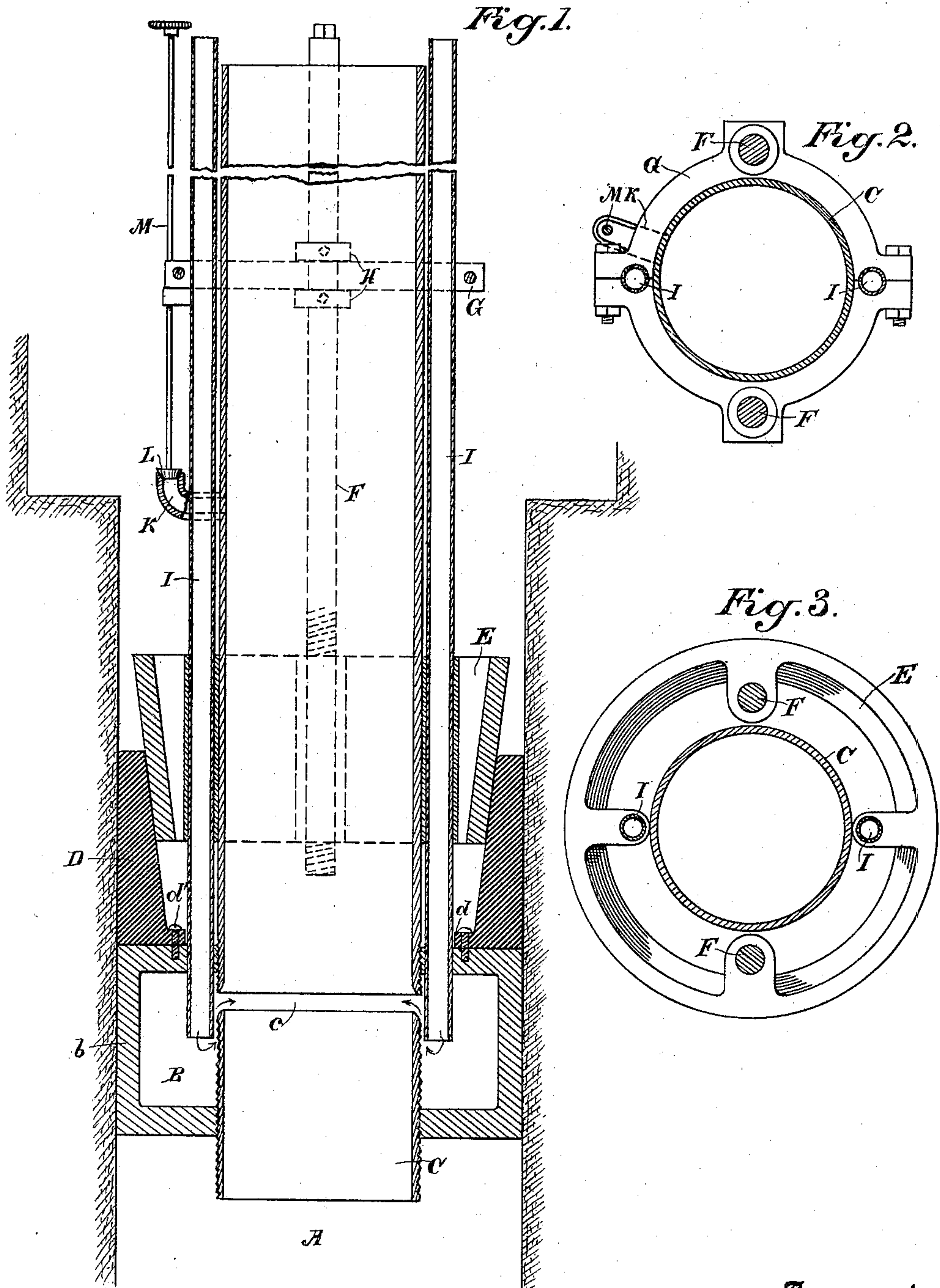
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Patented June 20, 1899.

F. CAVALLARO.
ATTACHMENT FOR ARTESIAN WELLS.

(Application filed Feb. 20, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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ATTACHMENT FOR ARTESIAN WELLS.

SPECIFICATION forming part of Letters Patent No. 627,250, dated June 20, 1899.

Application filed February 20, 1899. Serial No. 706,133. (No model.)

To all whom it may concern:

Be it known that I, FRANCISCO CAVALLARO, a citizen of the United States, residing at San José, county of Santa Clara, State of California, have invented an Improvement in Attachments for Artesian Wells; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an attachment which is especially designed for use in connection with Artesian wells, and particularly that class of wells in which the water either does not or has ceased to rise to the surface. It is especially designed to enable me to attach devices through which I am enabled to apply air under pressure by which the water can be raised within a suction-pipe to a point near to or above the top of the well.

Referring to the accompanying drawings, Figure 1 is a vertical section of my apparatus. Fig. 2 is a top view of the circular guide. Fig. 3 is a top view of the expansion-ring.

The object of my present invention is to provide a means for supplying air under pressure from above into a closed chamber situated at some point in the well-tube below the water-level, and by openings from said chamber into the suction-pipe to discharge a body of air to mingle with the water, and by its expansion and upward lifting tendency to continually raise the water to a point much above its ordinary level.

As here shown, A is the casing of an Artesian-well tube.

B is a chamber fitting the casing loosely enough so that it may be let down into the well. This chamber is an annular one, having an exterior closed wall *b*, and the interior periphery of the top and bottom are screw-threaded, so as to fit and be screwed upon the lower end of the suction-pipe C.

Upon the top of the chamber B is a rubber gasket D, the exterior periphery of which is approximately the same diameter as that of the chamber B. Its interior periphery is made conical, diverging upwardly from the bottom. This gasket is provided with annular interior flanges *d* at the bottom, through which screws *d'* pass to secure it to the top of the chamber B, and thus prevent its being moved from its position.

E is a conical metal ring converging downwardly. This ring has an exterior diameter sufficient to allow it to enter the interior of the gasket D, and when it is forced down it expands the gasket, so as to make a perfectly tight fit within the well-casing.

The expander E has screw-threaded hubs upon opposite sides, which are turnable upon the threaded ends of screw-stems F, which extend up through suitable guides G.

H H are collars fixed to the stems above and below the guides G, and when the stems are turned these collars prevent them from moving up or down.

The guides G are formed upon a ring, which may be clamped by screw-bolts with relation to the suction-pipe and other parts. The screw-threads in the lower ends of the stems will act upon the expanding-cone E to force it down, and thus spread the gasket D to make the joint or release it when the cone is withdrawn to allow the parts to be removed.

I I are air-pipes extending down exterior to the suction-pipe C, the lower end opening into the closed chamber B, as shown, and fixed thereto. These pipes are designed to convey air under pressure and deliver it into this chamber.

Through the sides of the suction-pipe C openings *c* are made into the chamber B, and when air under pressure is admitted into the chamber B it passes through these openings into the pipe C at such a point below the surface of the water that the expansion of the air within the pipe will cause the water to rise by displacement until it will normally stand at a point high enough to be reached by the pump. Practical experiments have shown that the water can be raised as much as two feet above the surface of the ground with a normal level in the pipe of thirty feet below the surface.

It will be understood that the chamber B, with the gasket and other parts, is fixed in the well-tube very near the bottom and at a considerable distance below the normal level of the water within the tube.

In connection with wells of this class there are sometimes springs situated at points considerably above the bottom of the well, the water of which it is desirable to admit into

the interior of the well as it collects. For this purpose I have shown an elbow-pipe K, opening through the side of the suction-pipe C and having its exterior mouth turned upward at right angles, as shown. This mouth is normally closed by a valve L, which is operated by a screw-stem M from the top of the well. Whenever any sufficient body of water has collected around the outside, this valve is opened and the water is allowed to enter through the pipe K into the pipe C.

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

1. In an Artesian well, and in combination with the casing and suction-tube thereof, an annular chamber surrounding the lower end of the suction-tube fitting loosely within the casing, an expansible gasket fixed to the upper surface of the chamber and an expanding-cone with means whereby it may be depressed into the gasket to expand it and make a tight joint within the casing or removed therefrom substantially as described.
2. The combination in an Artesian well, of an annular chamber loosely fitting within the well-casing, a suction-pipe, to the lower end of which the annular chamber is secured, an expansible gasket and means by which it is secured upon the top of the chamber, a movable cone by which the gasket is expanded to make a tight joint between itself and the casing, air-tubes extending down into the interior of the casing and perforations made through the sides of the casing and connect-

ing with the chamber whereby air is admitted into the interior of the suction-tube.

3. In an Artesian well, the casing, the interior suction-tube, an annular chamber fixed to the lower end with openings connecting it with the interior of the suction-tube, pipes through which air under pressure may be forced into the interior of the chamber and discharged thence into the suction-tube, a gasket fixed to the top of the chamber; and an expanding device whereby a tight joint is made between the gasket and the interior of the casing, and a valve-controlled elbow-pipe opening through the side of the suction-pipe to admit water from the outside.

4. In an Artesian well, the casing, an interior concentric suction-tube, an expansible gasket surrounding the tube, an annular chamber loosely fitting within the well-casing and having the gasket mounted upon its upper side, a conical expander fitting within the gasket and mechanism for moving the expander to force it into the gasket or withdraw it therefrom, consisting of screw-threaded rods turnable in screw-threads in the expander, a fixed clamp through which the rod passes and is loosely turnable, and collars fixed to the rod above and below the clamp.

In witness whereof I have hereunto set my hand.

FRANCISCO CAVALLARO.

Witnesses:

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