

F. H. MEIER.
PUMP.
APPLICATION FILED MAR. 19, 1915.

1,144,718.

Patented June 29, 1915.

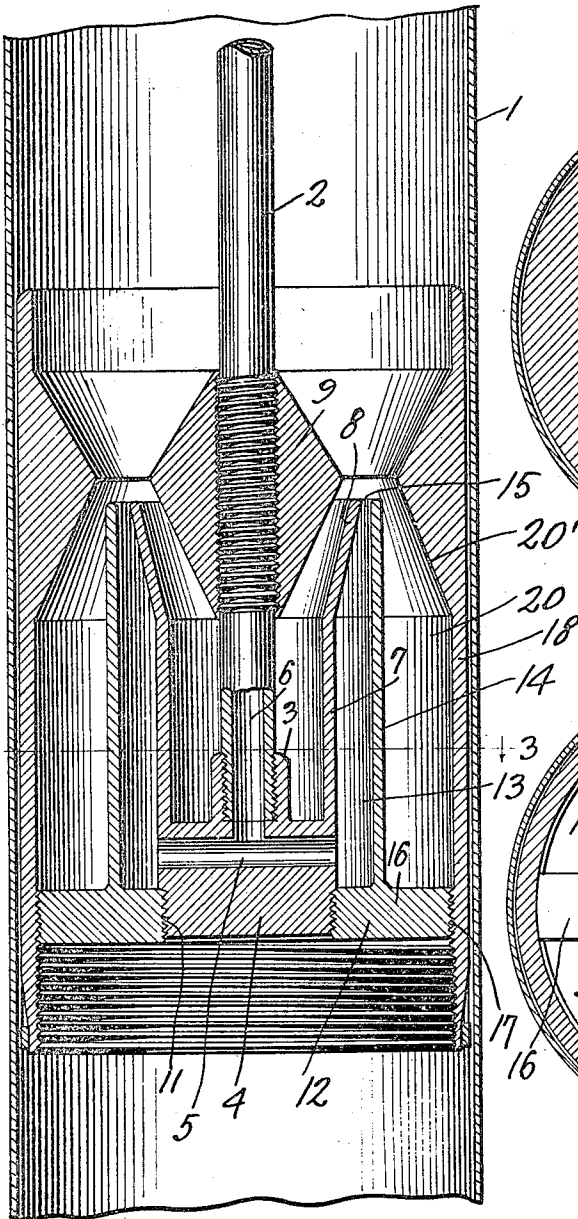


Fig. 1.

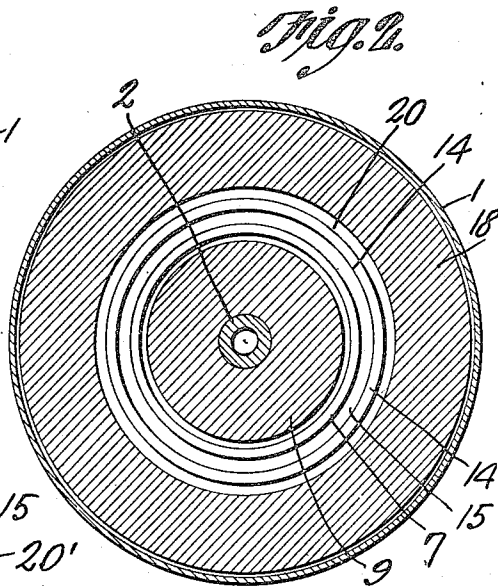


Fig. 2.

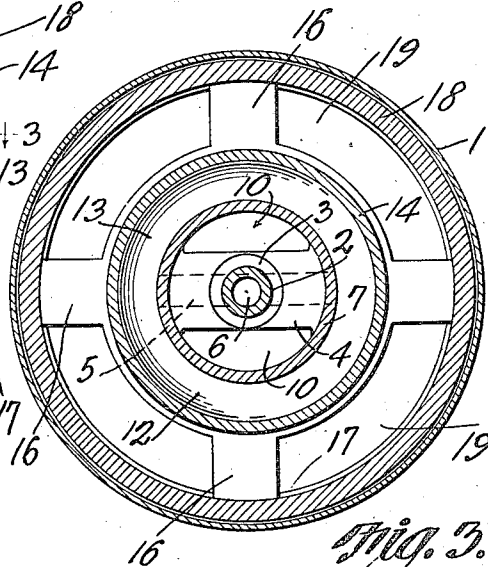


Fig. 3.

Witnesses

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PUMP.

1,144,718.

Specification of Letters Patent. Patented June 29, 1915.

Application filed March 19, 1915. Serial No. 15,556.

To all whom it may concern:

Be it known that I, FRED H. MEIER, a citizen of the United States, residing at Teague, in the county of Freestone and State of Texas, have invented a new and useful Pump, of which the following is a specification.

The present invention relates to improvements in pumps, one object of the invention, being the provision of a novel construction of nozzle, wherein air under pressure is employed to elevate the water, the air being so directed as to move in the direction of water flow and thus not cause any stirring of the sediment at the bottom of the well thus insuring the delivery of a clear water through the casing.

A further object of the present invention, is the provision of a pneumatically actuated nozzle for elevating water, in which the parts are readily assembled and adjusted for both shallow and deep work.

A still further object of the present invention, is the provision of a simple inexpensive and durable construction of a nozzle of this character, which is easily installed and adjusted for shallow or deep wells.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings—Figure 1 is a longitudinal sectional view through the complete nozzle showing the well casing and the air directing pipe. Fig. 2 is a top plan view thereof. Fig. 3 is a section taken on line 3—3 of Fig. 1.

Referring to the drawings, the numeral 1 designates the well casing which is of usual construction, and 2 represents the air induction pipe. The lower end of the pipe 2 is threadedly incased in the socket 3 of the cylindrical member 4 which in turn is provided with the transverse bore 5 which is in communication as at 6 with the lower end of the pipe 2. Thus air directed through the pipe 2 will be conducted in opposite directions through the bore 5 and to the lower end of the tubular member 7 carried by the member 4 and projecting upwardly and con-

centrically of the pipe 2. The member 7 is provided with the flared mouth 8 which fits concentrically of the deflecting member 9 carried adjustably upon the air pipe 2. Thus the outlet for water which enters through the ports 10 of the member 4 at each side of the by-pass 5 is regulated according to the position of the member 9 relatively to the flaring mouth 8 of the water directing member 7.

The member 4 is exteriorly screw threaded as at 11 to fit in the annular member 12, which seals the lower end of the concentric compartment 13 formed by the cylindrical member or sleeve 14 upstanding from the annular member 12, the sleeve or annular member 14 is of substantially the same height as the member 7, so that its upper end coincides therewith and being concentric of the flared mouth 8 provides the nozzle outlet 15 for the air. Thus the passage of the air therethrough produces a vacuum in the member 7 and consequently causes the water to flow through the ports 10 into the member 7 and out of the nozzle formed at the concentric outlet between the member 9 and the flared mouth 8 thereof.

Carried by the member 12, exteriorly of the member 14 are a plurality of radiating lugs 16, which are threadedly engaged as at 17 to the outer casing member 18, the same thus providing a plurality of water passages 19, which conduct water into the annular space 20 formed between the members 14 and 18. The member 18 is provided with the inclined projecting portion 20', which coöperates with the upper end of the member 14 in producing the concentric outlet for the water, so that the outrushing air at 15 causes a vacuum in the space between the members 14 and 18, thus causing the two upward streams of water from the ports 10 and 19 upon opposite sides of the concentric air directing chamber. Thus it will be seen that as the air is directed upwardly at all times and under a steady pressure, that steady streams of water will also pass upwardly within the member 7 and between the members 14 and 18, so that there will be no intermittent action in the delivery of the water through the casing 1.

By providing the adjustment between the parts, the relative position of the outlet or nozzle end of the members 7 and 14 may be changed or adjusted relatively to the projection 20 and the member 9, the same being

so regulated as to properly elevate water in shallow or deep wells.

It will also be noted that through the pipe 1, the member 4 is supported, while through the member 4 the member 12 is supported, which in turn supports the member 18, all of such members being operably connected to the pipe 2 so that the same may be bodily movable therewith.

10 What is claimed is:

1. A pump, including a casing, an air induction pipe, and a nozzle member connected to and supported upon the lower end of said pipe, said nozzle member having 15 three concentric chambers, the intermediate chamber of which is in communication with the air induction pipe while the remaining chambers are open at their lower ends to permit the passage of water therethrough.

2. A pump, including a casing, an air induction pipe, and a nozzle operably connected to and bodily carried by the air induction pipe, and including three concentrically disposed members, the intermediate 25 member of which is sealed at its lower end and is in communication with the air induction pipe, while the remaining ones are provided with ports in their lower ends to permit the passage of water therein and therethrough, said parts being adjustably 30 connected together to adjust the nozzle effect at the point of commingling of the two water streams with the air stream.

3. A pump, including a casing, an air induction pipe, an exteriorly threaded member attached to the lower end thereof and provided with a transverse by-pass in communication with the lower end of the air induction pipe, said member being provided 40 with a plurality of ports leading from both sides thereof, an upstanding cylinder provided with a flared mouth carried by said member, an annular member adjustably engaging the screw threads thereof and having an upstanding cylindrical member disposed concentrically of the upstanding cylindrical member of the exteriorly screw 45 threaded member, the by-pass of the latter member opening in the space between the two upstanding members to conduct the air 50 therinto, and a surrounding cylinder forming with the second upstanding member an outer water conducting chamber.

4. A pump, including a casing, an air in-

duction pipe, an exteriorly threaded member 55 attached to the lower end thereof and provided with a transverse by-pass in communication with the lower end of the air induction pipe, said member being provided with a plurality of ports leading from both 60 sides thereof, an upstanding cylinder provided with a flared mouth carried by said member, an annular member adjustably engaging the screw threads thereof and having an upstanding cylindrical member dis- 65 posed concentrically of the upstanding cylindrical member of the exteriorly screw threaded member, the by-pass of the latter member opening in the space between the 70 two upstanding members to conduct air therinto, a surrounding cylinder forming with the second upstanding member an outer water conducting chamber, means 75 mounted upon the air induction pipe for regulating the size of the concentric nozzle formed by the flared mouth of the first cylindrical member, and means carried upon 80 the inner face of the last cylindrical member for cooperating with the upper end of the second cylindrical member to regulate the area of the nozzle at that point.

5. A pneumatic nozzle, including an outer cylindrical member having a tapered bore, an annular member adjustably mounted 85 therein and provided with a sleeve disposed to provide an annular water directing chamber between it and the inner wall of the water cylinder, a solid cylindrical member adjustably mounted in the annular member and provided with a cylinder projecting 90 thereabove to cooperate with the last cylinder to form a concentric chamber with an outlet adjacent the upper ends of both cylinders, said chamber being in communication 95 with the air induction pipe, a third chamber being formed concentric of the air induction pipe for the passage of water therethrough, and a cone shaped member mounted upon the air induction pipe for effecting 100 the nozzle area of the last chamber.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRED H. MEIER.

Witnesses:

E. B. WILBER,
E. J. HEODEN.