

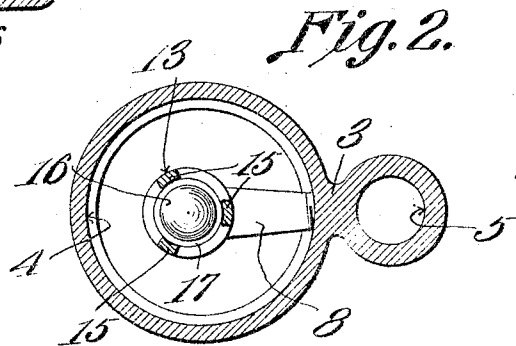
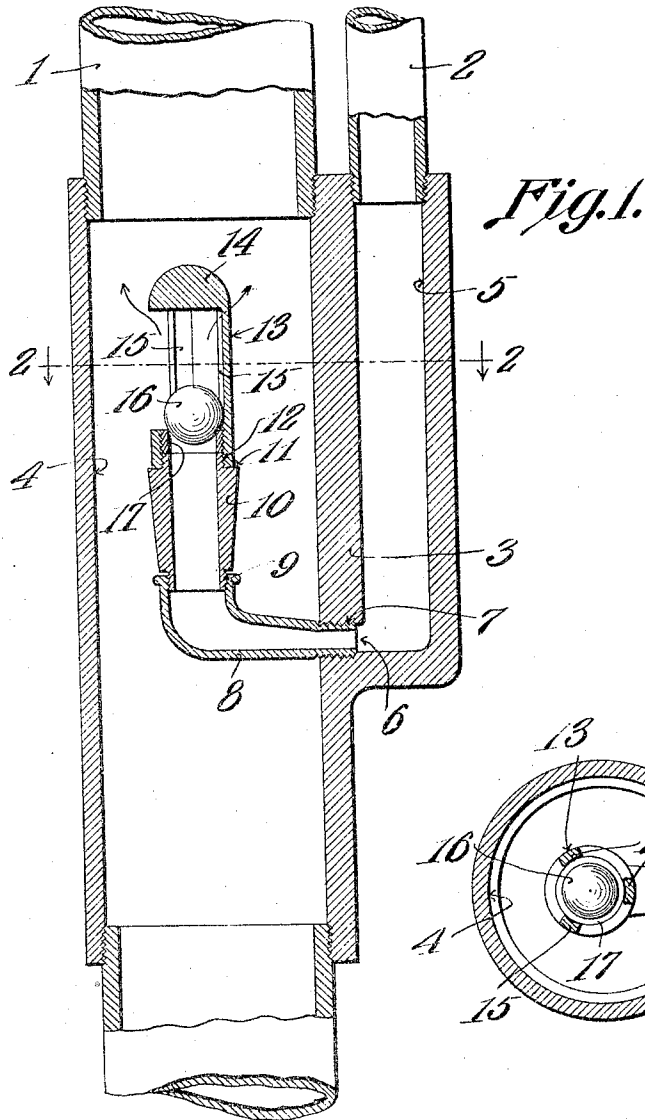
M. F. BISCHOFF & J. W. REYNOLDS.

AIR LIFT.

APPLICATION FILED DEC. 28, 1910

990,830.

Patented May 2, 1911.



Witnesses

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UNITED STATES PATENT OFFICE.

MIKE P. BISCHOFF AND JOHN W. REYNOLDS, OF OILFIELDS, CALIFORNIA.

AIR-LIFT.

990,830.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed December 23, 1910. Serial No. 599,749.

To all whom it may concern:

Be it known that we, MIKE P. BISCHOFF and JOHN W. REYNOLDS, citizens of the United States, residing at Oilfields, in the county of Fresno, State of California, have invented a new and useful Air-Lift, of which the following is a specification.

This invention relates to compressed air water elevators, and more especially to that class thereof employing an aerated column; and the object of the same is to produce an improved air lift for driving the oil or water out of wells by compressed air.

To this end the invention consists in the peculiar form of valve employed at the lower end of the well casing, all as hereinafter more fully described and claimed and as shown in the accompanying drawings wherein—

Figure 1 is a central longitudinal section through this device complete. Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Referring to the drawings, the numeral 1 designates the well tubing, which as usual is run into the ground to quite a considerable depth, and the lower end of which extends into the water if it be an ordinary well or into the oil if it be an oil well. The proposition is to raise this water or oil out of the well and upward through this tubing by means of compressed air admitted to the tubing near its bottom, and the numeral 2 designates the air pipe through which the compressed air is supplied.

At the lower ends of the pipes or tubes 1 and 2 we insert a coupling or casting 3 cored throughout its length as at 4 for the upward passage of the fluid being raised, and cored alongside the said principal coring and as at 5 for a portion of its length from its upper end downward and the lower end of this smaller core 5 is connected transversely as at 6 with the larger core 4. This transverse passage 6 may be threaded as at 7 as shown, and into it is screwed an elbow 8 whose inner end stands upward and is internally threaded as at 9. Into this threaded end of the elbow is screwed an upright valve casing comprising two parts. The lowermost part 10

is reduced and shouldered at its upper end at 11 and screw threaded above the shoulder as at 12, and the uppermost part 13 is a cage of the ordinary type having a rounded upper end 14 and upright side bars 15 as usual. Within this cage is disposed a ball 16 which of course can rise and fall therein and which when it falls rests upon the valve seat which is a ring 17 mounted within the upper member 13 and resting upon the upper extremity of the lower member 10. By this construction it is possible to separate the two members and replace the valve seat when the same becomes worn.

With this construction of parts, the tubing 1 being already in the well as is the compressed air supply pipe 2, the air enters through the elbow 8 and passes upward through the valve casing and raises the ball, diverging under its end 14 as shown by the arrows, and passing thence upward and driving upward the oil or water within the well. We have found by experience that when the ball valve is so protected by the cage and by the upper end 14, the sand which often occurs in wells of this character will not drop into the valve seat and prevent the closure of the ball upon it when the compressed air is shut off. It therefore follows that a device of this character has longer life and is less liable to being accidentally thrown out of use by stoppage of this nature. At the same time the entire casting can be removed when desired to gain access to the interior for repairs.

What is claimed is:

An air lift for wells comprising a casting cored throughout for the passage of the fluid being elevated and cored alongside the main core for the admission of the compressed air, the two cores being connected by a transverse passage at the lower end of the air inlet and said passage being threaded, an elbow screwed into said threads and whose inner end rises within the main core, a two-part valve casing whereof the lower part leads upward from said elbow and is reduced and threaded at its upper end and the upper part has side bars and a rounded

and closed upper end forming a cage while
its lower end screws around the threaded
end of the lower part, a valve seat screwed
into the lower end of the upper part and
5 resting upon the upper end of the lower
part, and a ball valve above said seat and
loose within the cage.

In testimony that we claim the foregoing

as our own, we have hereto affixed our signatures in the presence of two witnesses.

MIKE P. BISCHOFF.
JOHN W. REYNOLDS.

Witnesses:

E. L. ARNOLD,
A. F. ULLER.