(No Model.)

J. HAAS.

PNEUMATIC WATER ELEVATOR.

No. 588,825. Patented Aug. 24, 1897.

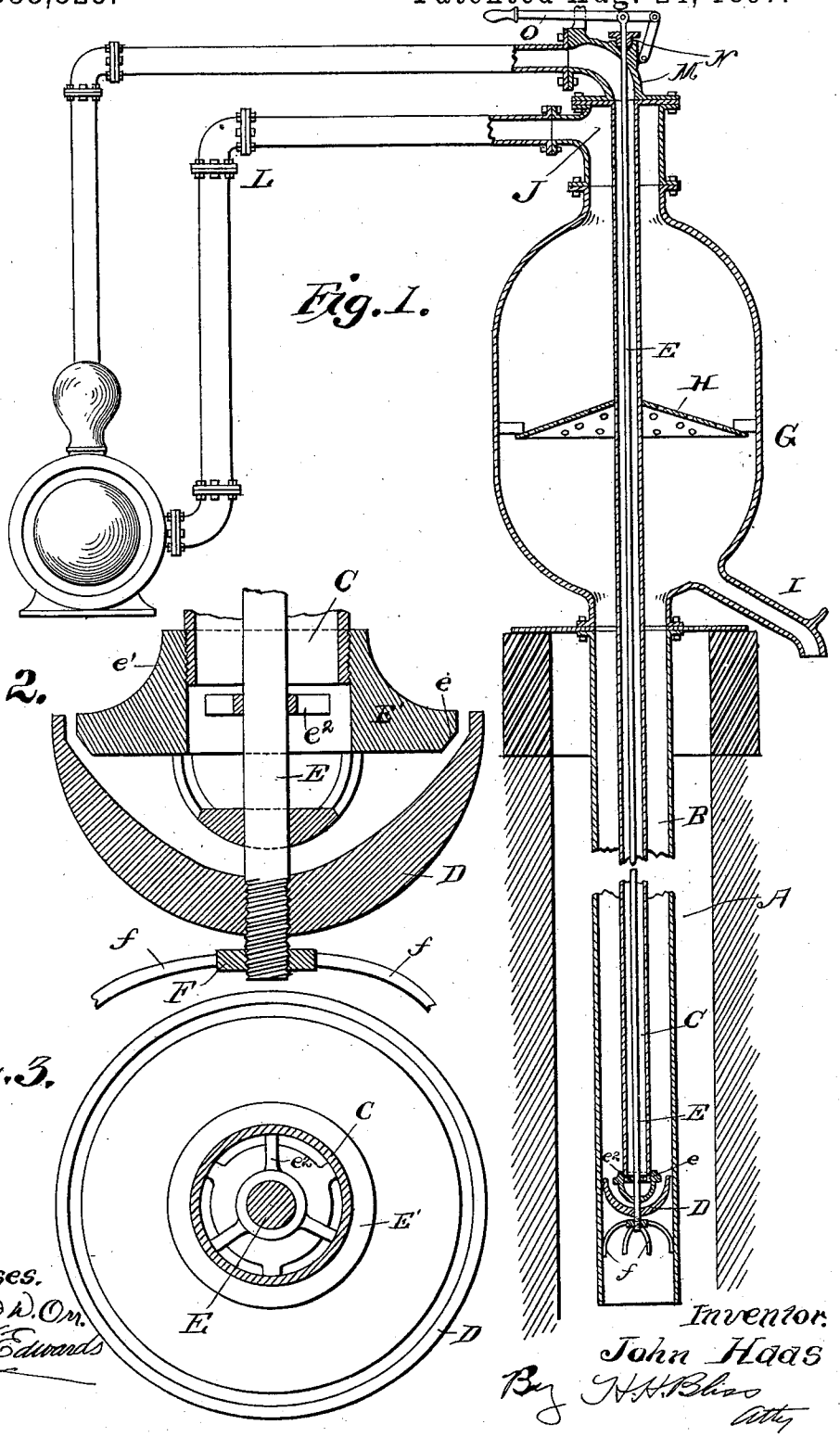


Fig. 1.

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN HAAS, OF CHICAGO, ILLINOIS.

PNEUMATIC WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 588,825, dated August 24, 1897.

Application filed May 8, 1895. Serial No. 548,623. (No model.)

To all whom it may concern:

Be it known that I, JOHN HAAS, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pneumatic Water-Elevators; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to use the same, reference being had to the accompanying drawings.

Figure 1 is a vertical section of a well having my improved devices applied thereto. Fig. 2 is a vertical section of the parts at the bottom of the well detached. Fig. 3 is a cross-section.

In the drawings, A indicates a well-boring which may be of any necessary depth and of suitable diameter.

B indicates a tube or pipe which is inserted into the well and is extended downward as far as is requisite for the best results.

C is an air pipe or tube, also extending from the top of the well downward therein, and at the bottom of the tube B or near thereto there is placed the means by which the air is directed upward properly and also those by which the quantity and force of the air can be regulated.

D is an adjustable valve which can be moved at will by the rod E toward or from its seat at *e*. Preferably the air-pipe C is placed inside of the water-delivery tube B. I have found that the diameter of the well-boring can be to advantage about seven inches and that the water-tube B can be five inches in diameter with good results, while the interior air-pipe C can be in the neighborhood of one inch in diameter. The valve-seat part E′ is formed with a tubular center *e′*, which can be screwed onto the lower end of the air-pipe C and has a guide at e^2 for the adjusting-rod. The valve-seat is formed on the upward and outward flared plate or cone. The valve is formed with a companion seat at E′. The rod E passes through the valve, and below it it is provided with a guide F, having arms *f f*, which bear against the tube B and act to properly guide and center the valve and its rod. At the upper end the pipe B is covered by or lies within the separating-tank G. As shown, this is of a diameter two or three, or thereabout, times that of the pipe B. At a suitable place there is arranged the separating-diaphragm H, preferably being an upwardly-extending cone-shaped plate. As the water and air rise into this the water is checked and the air-bubbles are allowed to separate therefrom. The water is drawn off from the tank by any suitable pipe, as is shown at I. The air that separates from the water rises above the diaphragm and is conducted through ports at J and through the return-pipe at L to the air pump or compressor or other air-forcing mechanism.

The valve-rod E passes upward through coupling at M, which is preferably provided with a gland or stuffing-box at N. The projecting part of the rod is provided with a lever O or other suitable device for moving it up or down, and the valve at the lower end of the rod can be delicately adjusted and fastened as desired after adjustment.

What I claim is—

1. In a pneumatic water-elevator, the combination with a water-pipe, an air-pump, a pipe connected with said pump and having one end communicating with the interior of the water-pipe near the lower end thereof, and a valve for regulating the passage of air from the air-pipe, of a tank or receptacle communicating with the water-pipe and having an outlet or discharge-spout for the water, a perforated plate or diaphragm arranged across the interior of the tank at one side of the discharge-spout thereof, and a pipe connecting the portion of the tank beyond said plate with the air-pump, substantially as set forth.

2. In a pneumatic water-elevator, the combination with a water-pipe, an air-pump, a pipe connected with said pump and having one end communicating with the water-pipe near the lower end thereof, and a valve for regulating the passage of air from the air-pipe, of a tank or receptacle communicating with the water-pipe and surrounding the air-pipe, and a perforated plate or diaphragm extending from the air-pipe to the walls of the tank and dividing the tank into two compartments one of which is provided with a discharge-spout for water and the other is connected with the air-pump, substantially as set forth.

In witness whereof I affix my hand in presence of two witnesses.

JOHN HAAS.

Witnesses:
E. R. BLISS,
H. H. BLISS.