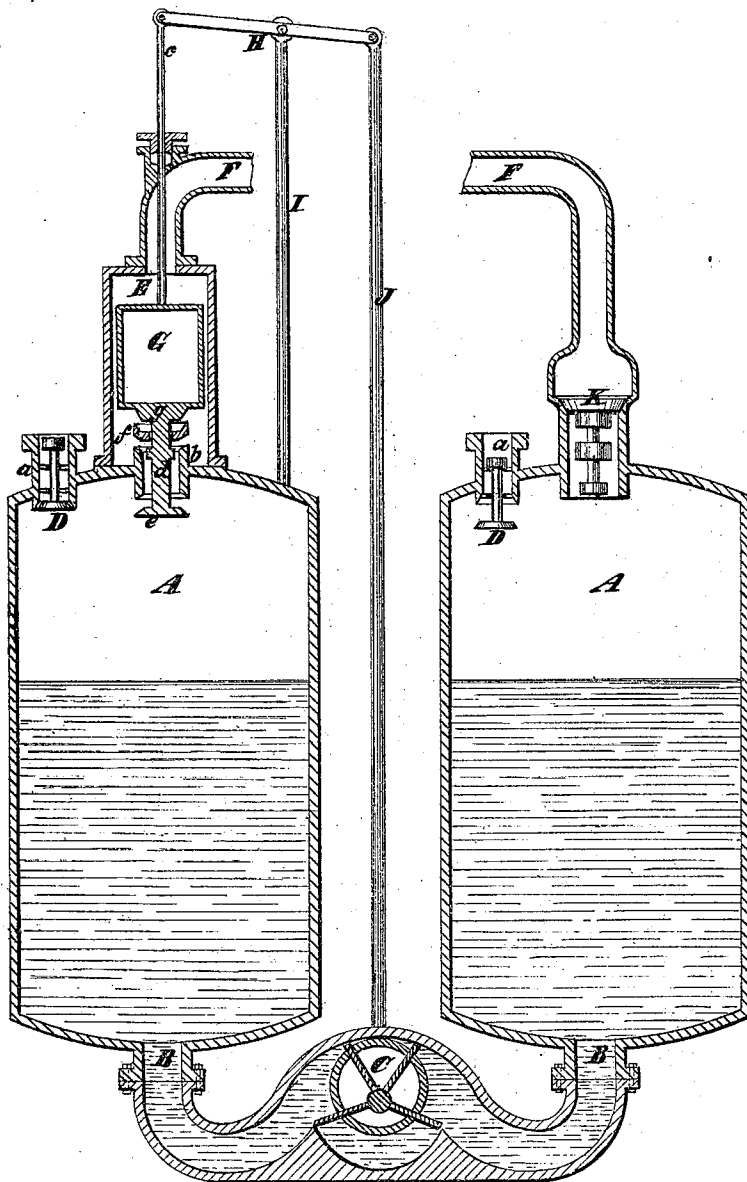


B. T. BABBITT.

Improvement in Air-Compressing Apparatus.

No. 133,004.

Patented Nov. 12, 1872.



Witnesses

Fred Haynes
Herb Lusk

Benjamin T. Babbitt

UNITED STATES PATENT OFFICE.

BENJAMIN T. BABBITT, OF NEW YORK, N. Y.

IMPROVEMENT IN AIR-COMPRESSING APPARATUS.

Specification forming part of Letters Patent No. 133,004, dated November 12, 1872.

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, of the city, county, and State of New York, have invented an Improved Air-Compressing Apparatus, of which the following is a specification:

This invention consists in the combination, with two close vessels provided with inlet-valves for the admission of air, and a pump for pumping water from one to the other, of a float, arranged in a chamber above, and communicating with one vessel, and connected with mechanism for reversing the pump, whereby, when the water pumped into the said vessel reaches and raises the valve, the pump is reversed and pumps back the water into the other vessel. It also consists in the combination, with a stem attached to the aforesaid float and projection on the bottom of the same, of a valve fitting loosely to said stem, having its upper side of suitable shape to receive the projection just mentioned, whereby, as the vessel from which the float is operated discharges, said valve drops on a seat and allows the water supporting the float to escape, and permits the float to drop and reverse the pump, the escape of the water through the valve being so graduated as to occupy the same time as the discharge of the vessel. It further consists in the combination of the two vessels, their inlet and outlet valves, the pump, the float, water-escape valve, and pump-reversing mechanism, whereby a very efficient automatic air-compressing apparatus is produced.

The accompanying drawing represents a central vertical section of an apparatus constructed according to my invention.

A A are two close vessels arranged side by side at a short distance apart, and connected at the bottom by pipes B B, with the cylinder of a rotary pump, C. For the admission of air each is provided with an inlet-valve, D, which is arranged in a neck or passage, *a*, communicating with the atmosphere, and is opened on a reduction of pressure by gravity, and closed by a pressure accumulated in the chamber. On the top of one of the vessels represented in the drawing as the left, there is a chamber, E, communicating with its interior through a neck or passage, *b*, having a valve-seat formed in each end. The chamber has connected with it at the top a pipe, F, leading

to the reservoir containing the compressed air. Within this chamber there fits loosely a float, G, provided at the top with a rod, *c*, which extends up through a stuffing-box in the pipe F, and connects with a lever supported on a fulcrum-post, I. The other end of this lever is connected, by a rod, J, with mechanism for reversing the pumps. The reversing mechanism is not represented in the drawing, but may be of any suitable kind. The float G has on its lower end a stem, *d*, on the lower end of which is an upwardly-closing valve, *e*, and surrounding the upper part of the stem, loosely, is a valve, *f*. The space between this valve and the float-stem constitutes a passage for the escape of water from the chamber E, and, in practice, I shall provide some means of graduating it so as to regulate the time occupied in emptying the chamber. On the bottom of the float is formed a projection, *g*, which is of a size and shape to fit into the upper side of the valve *f*, and which, by so doing, when the float is lowered, closes the escape-passage in the valve *f*. The outlet-valve K of the other chamber works within a passage communicating with a reservoir-pipe, F, and opens by a pressure of air accumulated in the vessel and closes by its own weight on a reduction of that pressure.

The apparatus operates as follows: Water is introduced into one of the vessels by any convenient means. For convenience in description I will suppose this to have been done in the right. The pump is then started and pumps the water from the right vessel into the left, and thereby compresses the air therein. As soon as the pressure accumulates sufficiently the inlet-valve closes and the float and the loose valve *f* rise, and permit the air to pass off through the pipe F into the reservoir. The water continues to flow, and enters the chamber E, and raises the float up till the valve *e* comes in contact with the seat in the adjacent end of the neck or passage *b*. The pump is by this time reversed by the float shifting the lever H. During the filling of this left vessel the right has been taking in air and is full of it. On the reversal of the pump, and pumping of water into it, the air is compressed, and, when of a sufficient pressure, will raise the outlet-valve and escape into the reservoir. While the right vessel is filling

the water in the chamber E escapes through the escape-passage in the valve *f*, and permits the float to lower, and occupies the same time in discharging that the right vessel does in filling, so that by the time the latter operation is perfected and all the air expelled, the pump is reversed and pumps the water back into the left vessel, which is by this time filled with air. Thus the operation continues, each vessel filling with air and having it compressed and discharged by the pumping in of water from the other vessel, and vice versa.

Claims.

1. The combination, with two vessels provided with inlet-valves D D, of the pump C, and the

float G, arranged in the chamber E, and connected with mechanism for reversing the pump, substantially as and for the purpose set forth.

2. The combination, with the stem of the float G and projection *g* thereon, of the loose and independent valve *f*, essentially as and for the purpose specified.

3. The combination of the two vessels, their inlet and outlet valves, the float G, valve *f*, pump C, and reversing mechanism, essentially as described.

BENJAMIN T. BABBITT.

Witnesses:

D. A. POLLARD,
C. R. BECKWITH.