(No Model.)

E. HILL.

RESERVOIR FOR STORING AND SUPPLYING COMPRESSED AIR.

No. 261,607. Patented July 25, 1882.

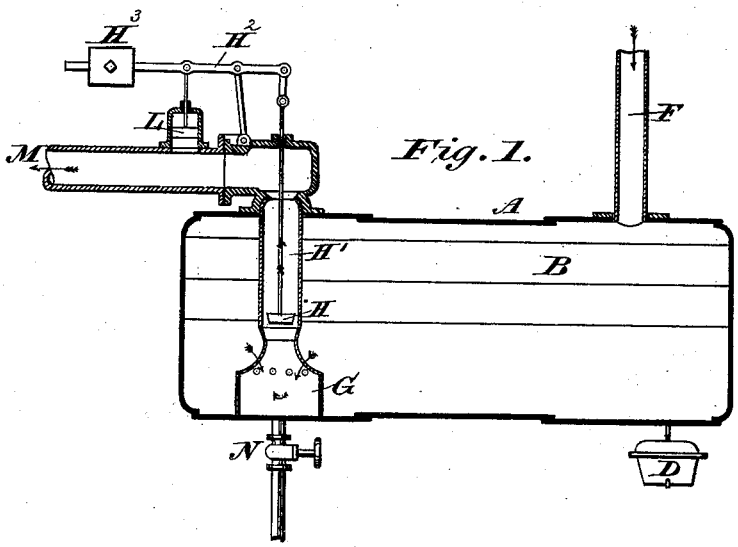

Fig. 1.

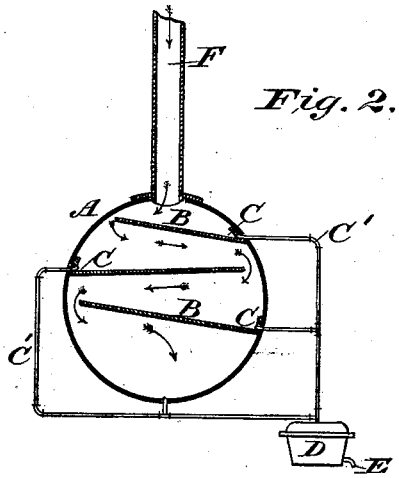

Fig. 2.

WITNESSES:

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RESERVOIR FOR STORING AND SUPPLYING COMPRESSED AIR.

SPECIFICATION forming part of Letters Patent No. 261,607, dated July 25, 1882.

Application filed December 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER HILL, of South Norwalk, in the county of Fairfield and State of Connecticut, have invented new and useful Improvements in Reservoirs for Storing and Supplying Compressed Air, of which the following is a specification.

This invention has for its object the storing, drying, and supplying of air from any of the well-known forms of air-compressors to the machines or apparatus where it is used in such a manner that the highest pressure consistent with the capacity of the compressor and the demands of the machines or apparatus may be uniformly maintained; and the invention consists chiefly in combining a reducing-valve with the reservoir in such a manner as to control, regulate, or govern varying pressures, and to assist in reducing the temperature of the air in the reservoir, so that the moisture will be dropped in its passage to the places for use, as will hereinafter appear.

My invention further consists in providing cooling devices in the reservoir for condensing the moisture, and traps with connections arranged to carry it off, as will hereinafter appear.

In the drawings, Figure 1 represents a side elevation and section of the reservoir and the various devices connected therewith. Fig. 2 is a transverse section and elevation of the same.

At A is represented the reservoir, made sufficiently strong to sustain the maximum pressure required, and it is provided with deflecting-plates B on the inside, which are slightly inclined and formed with a flange or trough, at C, on the lower edge, to collect and conduct the water of condensation to the outlet-pipes at C′, which lead to a trap at D, which is provided with a cock at E, to draw off the water when required. The air from the compressor enters the reservoir at the upper side through a pipe at F, and as it descends strikes the first plate B, and thence over the edge and down over the next plate, and so on, losing more or less water over each plate until it reaches the lower part of the reservoir, where it will be coldest, and will part with all the water due to the reduction of temperature. In this lowest portion of the reservoir is placed the end of the discharge-pipe G, which is perforated with many small holes projecting downward, so that as the air passes out of the reservoir into this pipe it will be forced out around the sharp angles of the holes, and thus tend to "whip out" by the sharp action the last possible mist there may be in the air, and in this condition will pass by the reducing-valve at H in the lower portion of the said pipe. Said reducing-valve is of the well-known form of disk-valve attached to a stem at H′, attached to a lever on the outside at H^2, and balanced by a weight at H^3, and said weight is counterbalanced by a piston at L, the stem of which is attached to a lever, H^2, so that when the pressure on the under side of the piston L is greater than the weight H^3 the reducing-valve H will be closed and will remain so closed until the pressure in the discharge-outlet at M is reduced.

Now, with such a construction and arrangement of devices it must be evident, when a number of machines are connected to the discharge-pipe, and the weight on the valve-lever is adjusted to give the proper supply of air, that if any of the machines are stopped the pressure in the discharge-pipe will be increased and the valve at H will be closed, according to the degree of back-pressure upon the reacting piston at L, and consequently the pressure in the reservoir will increase, according to the action of the compressor, and thus the valve performs the double function of a governing and reducing valve, or, as here applied, takes advantage of every decrease in the air-consumption to increase the pressure in the main discharge-pipe and the reservoir before the air reaches the branches that lead to the various machines. One effect of the pressure on the air is to cause it to part with its moisture precisely as the squeezing of water from a sponge; and, as high pressure and low temperature are the factors for producing dry air, this combination of devices secures both cold and dry air to be supplied to the machines.

A tap-cock at N in the lower portion of the reservoir serves to draw off the water of condensation as it may be collected.

I therefore claim—

1. The combination of a reducing and regulating or governing valve and trap with the

air-reservoir located between the compressor and the machines or apparatus to be operated by the air, as hereinbefore set forth.

2. The combination of the reservoir, the condensing-plates, and a trap, with intermediate connections, as hereinbefore set forth.

3. The combination of the reservoir with air-outlet pipe having openings from the lower portion thereof into the reservoir, as hereinbefore set forth.

4. The combination of the air-inlet pipe and a reservoir having deflecting-plates with a channel on one edge of each, with pipes leading therefrom and a water-trap, as hereinbefore set forth.

In witness whereof I have hereunto set my hand and subscribed my name and affixed my seal in the presence of two subscribing witnesses.

EBENEZER HILL. [L. S.]

Witnesses:
CHARLES BARTRAM,
EUGENE N. ELIOT.