

*G. B. Hill,
Air Pump.*

N^o 48,770.

Patented July 11, 1865.

Fig. 1.

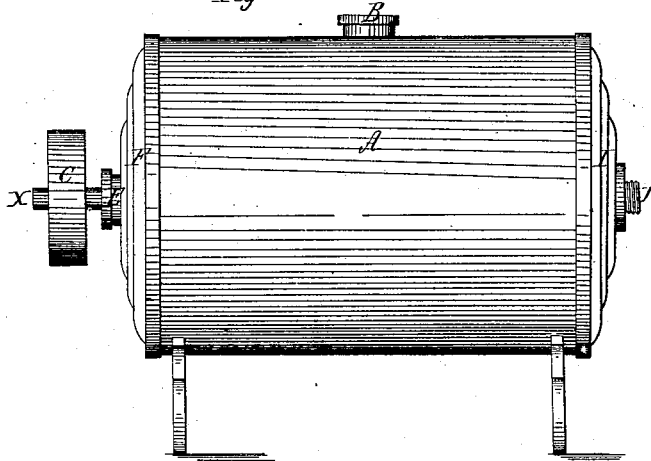


Fig. 2.

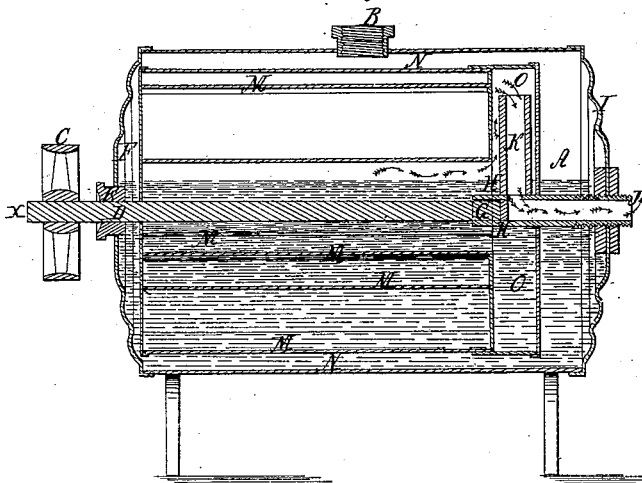
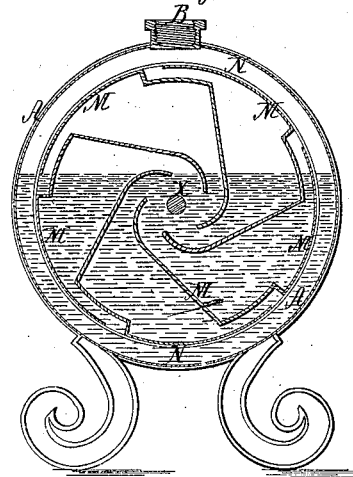


Fig. 3.



Witnesses;

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UNITED STATES PATENT OFFICE.

GEORGE B. HILL, OF NEW YORK, N. Y., ASSIGNOR TO ELLIS S. ARCHER,
OF SAME PLACE.

IMPROVEMENT IN ROTARY AIR-PUMPS.

Specification forming part of Letters Patent No. 48,770, dated July 11, 1865.

To all whom it may concern:

Be it known that I, GEORGE B. HILL, of the city, county, and State of New York, have invented certain Improvements in Air and Gas Pumps, of which the following is a specification.

My invention consists of an air or gas pump provided with a pumping-wheel, having buckets longitudinally parallel to the axis of the wheel, which buckets are so curved or formed that when the surrounding casing is partially filled with water and the wheel is revolved in a certain direction the outer edge or face of the bucket will enter the water before the remaining portion, and while a considerable portion of air or gas is retained between the buckets so entering the water and the bucket below, thereby forcing the air or gas into the center of said wheel, from where it is discharged into a chamber at the end of the wheel, and from thence conducted by appropriate pipes to its destination, as hereinafter more fully set forth, thereby furnishing a sufficient, constant, and steady supply of air or gas for any desired purpose.

In the drawings, Figure 1 is a side view of the apparatus. Fig. 2 is a vertical longitudinal central section of the same. Fig. 3 is a vertical transverse central section of the same.

A is the outer case or cylinder, which contains the revolving wheel and the water in which it revolves.

B is the orifice or pipe through which the air or gas passes to the revolving wheel.

C is a pulley attached to the shaft X of the revolving wheel, by means of which motion may be communicated to the revolving wheel; or motion may be given to it by a weight, or by a crank, or by any other desirable means. The journal D works in bearings E secured to the head F of the case or cylinder A. The journal G works in bearings H secured to the head I of the case or cylinder A. The outer end, J, of the bearings H is made hollow, as represented in Fig. 2, and communicates with a pipe which conducts the air or gas to any desired receptacle.

K is a short pipe communicating with the pipe J, and extending upward vertically above the water-line in the air or gas chamber or space O at the end of the revolving wheel L. The interior revolving wheel, L, which carries or constitutes the buckets M, is constructed,

supported by, and revolves upon the journals D and G in such a way as to leave a space, N, between the outer case or cylinder, A, and the interior wheel, L. The part of the space N which is above the water-line is occupied with the air or gas to be pumped, and the part of said space N which is below the water-line is filled with water.

There is a space or chamber, O, between the ends of the buckets M and the end of the wheel L, which contains the pipe K, the lower part of said space or chamber O being filled with water and the upper part with gas or air to be pumped. The buckets M are so constructed and arranged, as represented in Fig. 3, that at least two of the buckets are always blowing at the same time, thus securing a constant and steady supply of air or gas to the delivery-pipe or receiver.

Operation: A stop-cock in the delivery-pipe J is opened and the power is set in operation. The air or gas received through the orifice or pipe B enters, the upper part of the outer case or cylinder, A, and thence passes into the open mouths of the buckets M; then as the wheel L revolves the mouths of the buckets M, through which the air or gas entered, pass beneath the surface of the water, and as the buckets descend into the water the air or gas is forced out of the buckets into the space in the center of said revolving wheel L, thence it passes along the central space in the interior of said revolving wheel L into the space or chamber O between the ends of the buckets M and the end of the wheel L, as represented by the arrows in Fig. 2. From the space or chamber O it passes into the pipe K, and thence into the delivery-pipe J. By this construction the buckets M may be made of any required length without increasing the diameter of the case or cylinder A, and by this means any required amount of air or gas may be obtained.

I claim—

The combination, in a rotary air or gas pump, of the buckets M, curved as described, so as to gather in the air or gas, with the space or chamber O, substantially as described, and to the effect set forth.

GEO. B. HILL.

Witnesses:

THOS. P. HOW,
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