(Model.)

C. K. HAMILTON.

Air Pump.

No. 241,002. **Patented May 3, 1881.**

Fig. 1.

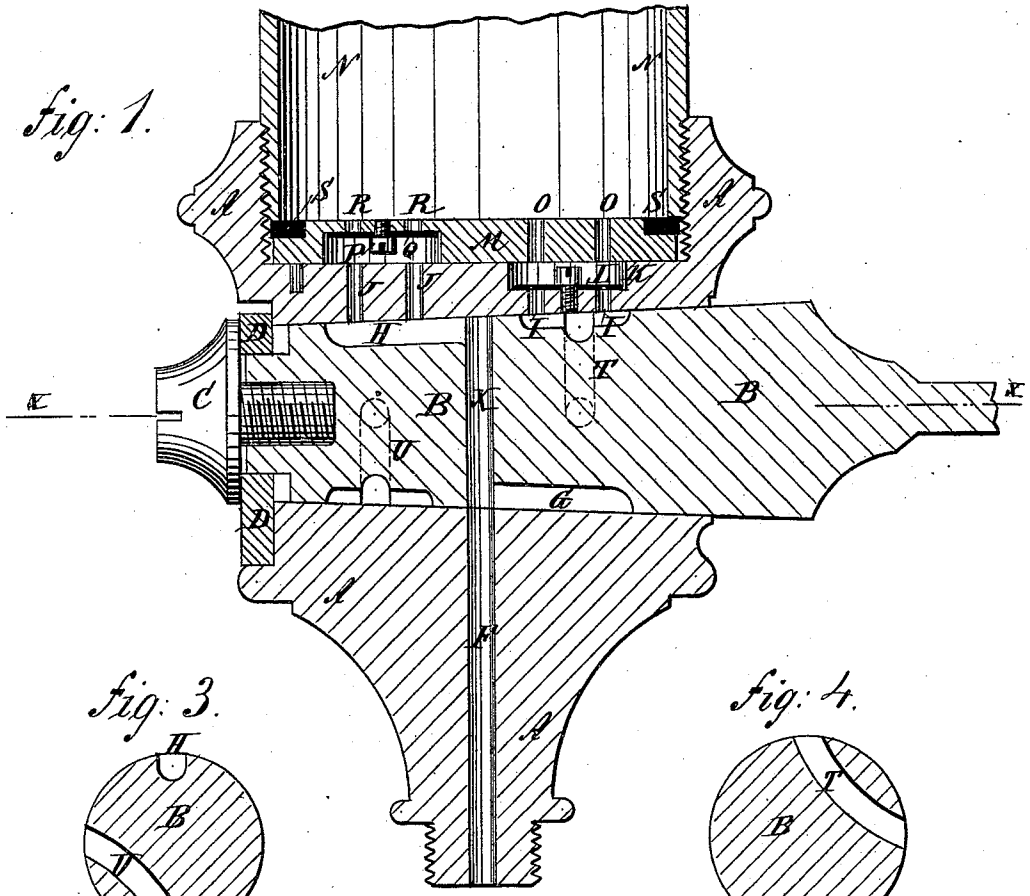
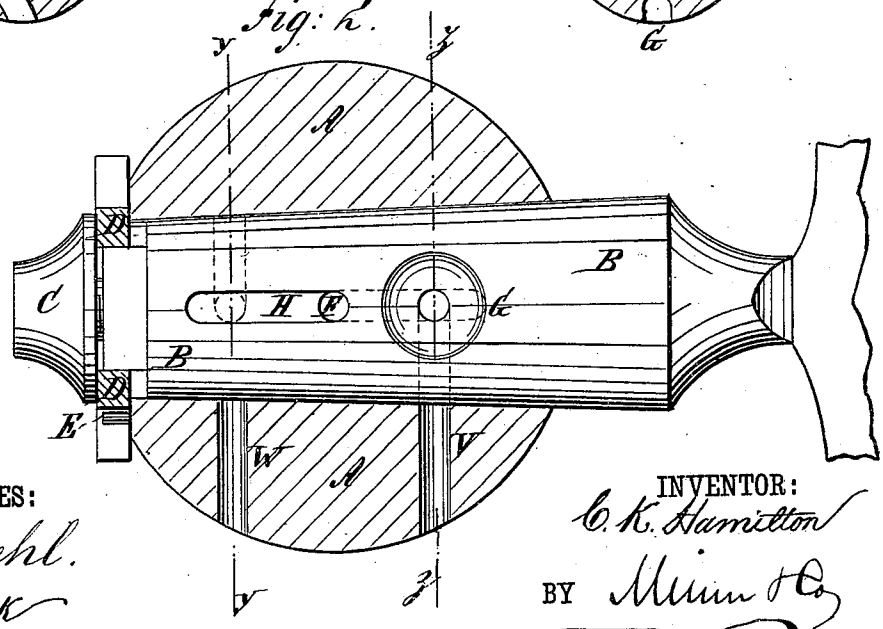


Fig. 3.

Fig. 4.

Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES K. HAMILTON, OF LEBANON, OHIO.

AIR-PUMP.

SPECIFICATION forming part of Letters Patent No. 241,002, dated May 3, 1881.

Application filed February 10, 1881. (Model.)

To all whom it may concern:

Be it known that I, CHARLES KILGOUR HAMILTON, of Lebanon, in the county of Warren and State of Ohio, have invented a new and useful Improvement in Air-Pumps, of which the following is a specification.

Figure 1 is a sectional elevation of the lower part of an air-pump to which my improvement has been applied. Fig. 2 is a sectional plan view of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a cross-section of the stop-cock plug, taken through the line *y y*, Fig. 2. Fig. 4 is a cross-section of the same, taken through the line *z z*, Fig. 2.

Similar letters of reference indicate corresponding parts.

The object of this invention is to construct air-pumps in such a manner that they can be readily changed from exhaust-pumps to condensing-pumps.

The invention consists in constructing an air-pump with a base provided with air-passages, a stop-cock plug provided with air-passages connecting with the air-passages in the base, valves opening upward and downward, and connected with the air-passages of the base, and a plate to contain or cover and protect the valves, and provided with air-passages leading to the valves, whereby the instrument can be adjusted as an exhaust-pump or a condensing-pump by turning the said stop-cock plug, as will be hereinafter fully described.

A represents the base of the air-pump, through which is formed a horizontal tapered perforation to receive the tapered stop-cock plug B. The plug B is kept in place, and the wear is taken up by a screw, C, screwed into the end of the said plug B, and which is kept from working loose by a washer, D, placed upon the end of the plug B. The washer D is kept from turning upon the plug B by a flattened part of its seat in the ordinary manner, and has a part of its edge cut away upon one side to form shoulders to strike against a stop-pin, E, attached to the base A, to limit the movement of the plug B, and stop the said plug when the vents or passages are exactly in line. The lower end of the base A is made cylindrical, and has a screw-thread cut upon it to receive the vessel from which the air is to be exhausted, or into which the air is to be condensed. From the lower end of the base A a passage, F, leads to the plug-aperture to connect with a corresponding passage, X, passing transversely through the plug B.

In the opposite sides of the plug B, at the ends of the passage X, and leading in opposite directions toward the ends of the said plug B, are formed grooves G H, to connect the passage F with the passages I J leading through the upper part of the base A.

In the upper surface of the base A, at the upper end of the passages I, is formed a recess or chamber, K, in the bottom of which is secured a valve, L, opening upward, and which is covered and protected by a plate, M, fitted into the recess in the top of the base A, that receives the pump-cylinder N, and has a screw-thread cut in its inner surface, into which the said pump-cylinder N is screwed. The plate M has passages O formed through it leading into the valve-chamber K, to allow the air to pass from the said valve-chamber K into the pump-cylinder N. The passages J open into a valve-chamber, P, formed in the lower side of the plate M, and in which is secured a valve, Q, opening downward. From the valve Q passages R open into the pump-cylinder N. The edge of the plate M is rabbeted upon its upper side to receive a packing, S, upon which rests the lower edge of the pump-cylinder N, to prevent any air from escaping around the said lower edge, and to hold the plate M air-tight against the base A.

In the plug B, directly opposite the grooves G H, are formed passages T U, leading out through the opposite sides of the said plug B, to connect with passages V W leading from the plug-hole out through the side of the base A.

With this construction, when the plug B is arranged as shown in Figs. 1 and 2, and the pump-piston is drawn upward, air enters through the passages V T I, opens the valve L, and passes through the passages O into the pump-cylinder N, the air-pressure holding the valve Q tightly closed. When the pump-piston is pressed downward the air passes through the passages R, presses the valve Q open, passes through the passages J H X F, and passes into the receiver attached to the lower end of the base A, the air-pressure holding the valve L closed. As thus arranged the instru-

ment is an air-condensing pump. By turning the plug B one-half around the passage of the air is exactly reversed, and the instrument becomes an exhaust-pump.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In an air-pump, the combination, with the base A, of a stop-cock plug, B, provided with air-passages connecting with corresponding air-passage in the said base, substantially as herein shown and described, whereby the air-pump can be adjusted as an exhaust-pump or as a condensing-pump, as set forth.

2. In an air-pump, the combination, with the base A, provided with the valve L opening upward, and the passages I J, of the plate M, provided with the valve Q opening downward, and the passages O R, substantially as herein shown and described.

3. In an air-pump, the combination, with the base A, having air-passages F I J V W, the stop-cock plug B, having passages X G H and T U, the plate M, having passages O R and the valves L Q, substantially as herein shown and described.

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Witnesses:
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