W. H. GUILD, Jr.

Vacuum-Pump.

No. 224,179. Patented Feb. 3, 1880.

Fig 2

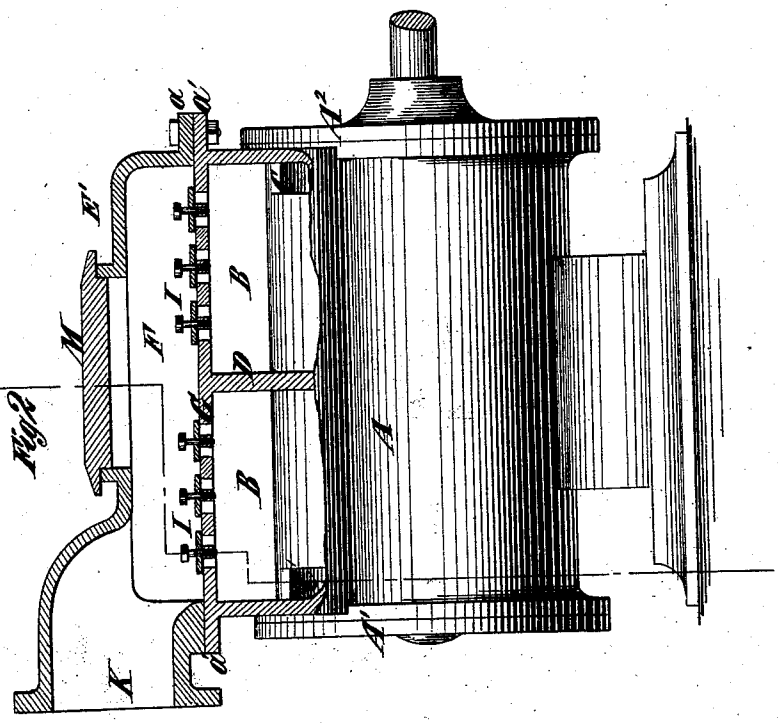
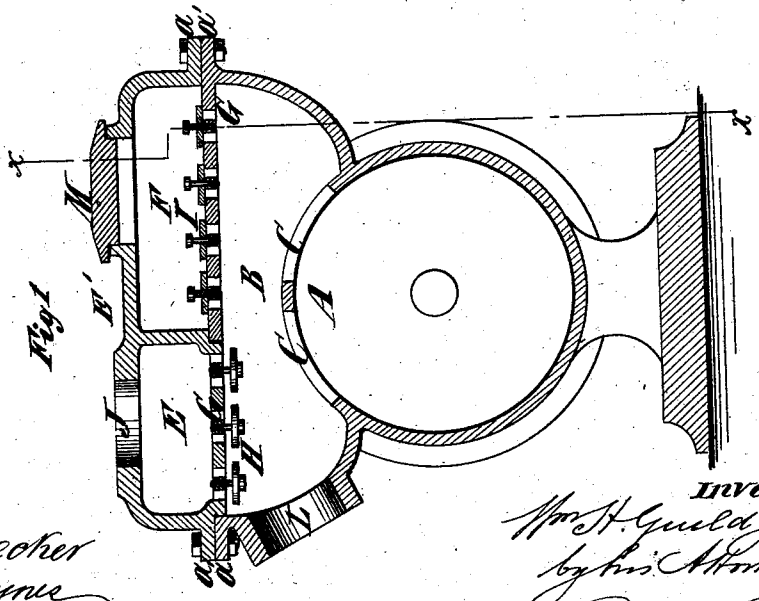


Fig 1



Witnesses

John Becher

Fred K Haynes

Inventor

Wm H. Guild Jr.

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UNITED STATES PATENT OFFICE.

WILLIAM H. GUILD, JR., OF BROOKLYN, NEW YORK, ASSIGNOR TO GUILD & GARRISON, OF SAME PLACE.

VACUUM-PUMP.

SPECIFICATION forming part of Letters Patent No. 224,179, dated February 3, 1880.

Application filed November 14, 1879.

To all whom it may concern:

Be it known that I, WILLIAM H. GUILD, Jr., of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Vacuum-Pumps, of which the following is a specification.

My invention relates to the air-cylinders of vacuum-pumps. In such pumps it is of great importance that all the air contained in the pump-cylinder and valve-chest should be discharged at each stroke of the piston, as any air remaining in the cylinder or valve-chest at the commencement of the return stroke would expand, and such air would be compressed and expand at each stroke of the piston without being discharged, thereby greatly impairing the efficiency of the pump. Such vacuum-pumps are usually worked with a quantity of water in the air-cylinder sufficient to nearly or quite fill the valve-chest when the piston is at the end of its stroke.

The object of my invention is to provide, by a very simple construction, for a complete discharge of air at each stroke of the piston; and to this end my invention consists in the novel and peculiar construction and arrangement of the valves, valve-seats, and valve-chests of the air-cylinder of a vacuum-pump hereinafter described, whereby the discharge of all the air contained in the air-cylinder and valve-chests is effected at each stroke of the piston, and the efficiency of the pump greatly enhanced.

In the accompanying drawings, Figure 1 represents a transverse section through the air-cylinder and valve-chests of a vacuum-pump embodying my improvements; and Fig. 2 represents a side elevation of such air-cylinder and a longitudinal section through the valve-chests on the dotted line *x x*, Fig. 1.

Similar letters of reference designate corresponding parts in both the figures.

A designates the air-cylinder of a vacuum-pump, in which a piston is reciprocated by a steam-cylinder, or by any other suitable mechanism, and A' A^2 designate the heads thereof.

B designates a water and air chest or chamber, here represented as arranged above the cylinder A, and cast in the same piece therewith. The cylinder A communicates with the chest or chamber B by means of ports or passages C at each end of the cylinder, and the said chest or chamber is divided by the transverse partition D into two compartments, one of which is in communication with each end of the cylinder.

E designates a suction-valve box or chest, and F designates a discharge-valve chest, both here represented as formed in a single casting or chamber, E′, arranged above the water and air chest B, and secured thereto by means of bolts passing through the flanges *a a′*.

G designates a partition or diaphragm separating the water and air chest B from the valve-chests E and F. This partition or diaphragm is formed in two pieces, one of which is cast with the chest B, while the other forms part of the suction-valve chest E.

H designates suction-valves controlling the passage of air from the suction-chamber E to the water and air chest B, and I designates discharge-valves through which air passes to the discharge-valve chest F.

The suction-valves should be arranged below the partition or diaphragm G, and the discharge-valves above the same, and, as here represented, the said valves are shown as seated upon opposite sides of said diaphragm.

Air is drawn into the suction-valve chest E through a pipe or opening, J, and is discharged from the discharge-valve chest F through a pipe, K, which is shown as arranged above the partition or diaphragm G, so as to keep the discharge-valves I at all times sealed with water.

L designates a hand-hole by means of which access can be had to the water and air chest B for the purpose of reaching the suction-valves H, and M designates a hand-hole through which access may be had to the discharge-valve chest F for the purpose of reaching the discharge-valve I. The discharge-chest F simply forms a bonnet or cover to the discharge-valves I, while the suction-valve chest E, which has a portion of the partition or diaphragm G cast with it, constitutes a closed chamber, to which the suction-valves H are attached.

The tendency of the air is to ascend; and as

the discharge-valves are situated at the highest part of the water and air chest B, the air accumulating at such point will all be discharged.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The detachable chamber E′, containing the closed chest or chamber E, having the suction-valves H attached thereto, and the chest or chamber F, forming a cover or bonnet for the discharge-valves I, substantially as specified.

2. The combination, with the air-cylinder A and water and air chest B, having the portion of the diaphragm G which forms a seat for the discharge-valves I cast with it, of the detachable chamber E′, containing the closed chest or chamber E, having the suction-valves H attached thereto, and the chest or chamber F, forming a cover or bonnet for the discharge-valves I, substantially as specified.

W. H. GUILD, JR.

Witnesses:
FREDK. HAYNES,
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