



# UNITED STATES PATENT OFFICE.

WILLIAM V. DUBOIS, OF COVINGTON, INDIANA.

## IMPROVEMENT IN STEAM VACUUM-PUMPS.

Specification forming part of Letters Patent No. **181,652**, dated August 29, 1876; application filed July 11, 1876.

*To all whom it may concern :*

Be it known that I, WILLIAM V. DUBOIS, of Covington, in the county of Fountain and State of Indiana, have invented a new and Improved Vacuum-Pump, of which the following is a specification :

My invention relates to the construction and arrangement of the working-chambers, air-chambers, and valves, and particularly to the contrivance of the valve for changing the admission of steam to the working-chamber, and to a vacuum-chamber for relieving the jar at the foot-valve in the end of the pipe in the wall.

Figure 1 is a sectional elevation of improved vacuum-pump, taken on the line *xx* of Figs. 2 and 3. Fig. 2 is a plan of the inverted middle section of the pump. Fig. 3 is a plan of the base-section, and Fig. 4 is a section of the top of the pump.

Similar letters of reference indicate corresponding parts.

A is the base-section of the pump, mounted on legs B of any approved form, and having the suction-inlet C made in the middle of it; also, a discharge-pipe, D, for the water, if desired; or the discharge may be at the top E. On the top of this base-section are clack-valves F, admitting water from the suction into the working chambers G, and from the base of these chambers some of the water is forced by the steam through the clack-valves I into the air-chamber J, while the rest is forced through valves K into the discharge-chamber L, from which it may escape either through the port D or E, one being plugged up when the other is used. Steam enters the working-chambers from the chest M through ports N, being cut off from one and let into the other by the double-rocking clack-valve O. P represents jet-pipes from the air-chamber J into the working-chambers, to condense the

steam and make the vacuums. The vacuum in one chamber holds the valve O down on that side, and admits steam into the other chamber containing water. The steam forces the water out through chamber L, and also passes some of it into the air-chamber J against the air-spring therein. When the water is all forced out, and the steam finds full exit by the valve K, the pressure so diminishes that the air-spring throws a jet into the empty chamber G, condensing the steam and forming a vacuum therein, which reverses the valve O, so that the empty chamber fills, and the full one empties. The valves F and K are in this case pivoted by connection with a rubber disk, R; but, in practice, I propose to arrange them with pivot-studs, one at each side, to be secured by staples fitted in the bed or seat. S is a vacuum-chamber, connected at T with the suction-pipe, to cushion the water and prevent jar at the foot-valve by the changes of the suction from one chamber to another.

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

1. In a vacuum-pump, the combination of the working-chambers G, air-chamber J, discharge-chamber L, jet-pipes P, vacuum-chamber S, valves F I K, and the double-rocking clack-valve O, arranged in chamber M, located at the top of the cylinder, and having ports N, all constructed and arranged as shown and described, to operate as specified.

2. The curved rocking valve O, in combination with the ports N of working-chambers G G, said valve working in a horizontal seat, as shown and described, for the purpose specified.

WILLIAM V. DUBOIS.

Witnesses:

GEORGE W. MERRYMAN,  
THOMAS W. MCCLURE.