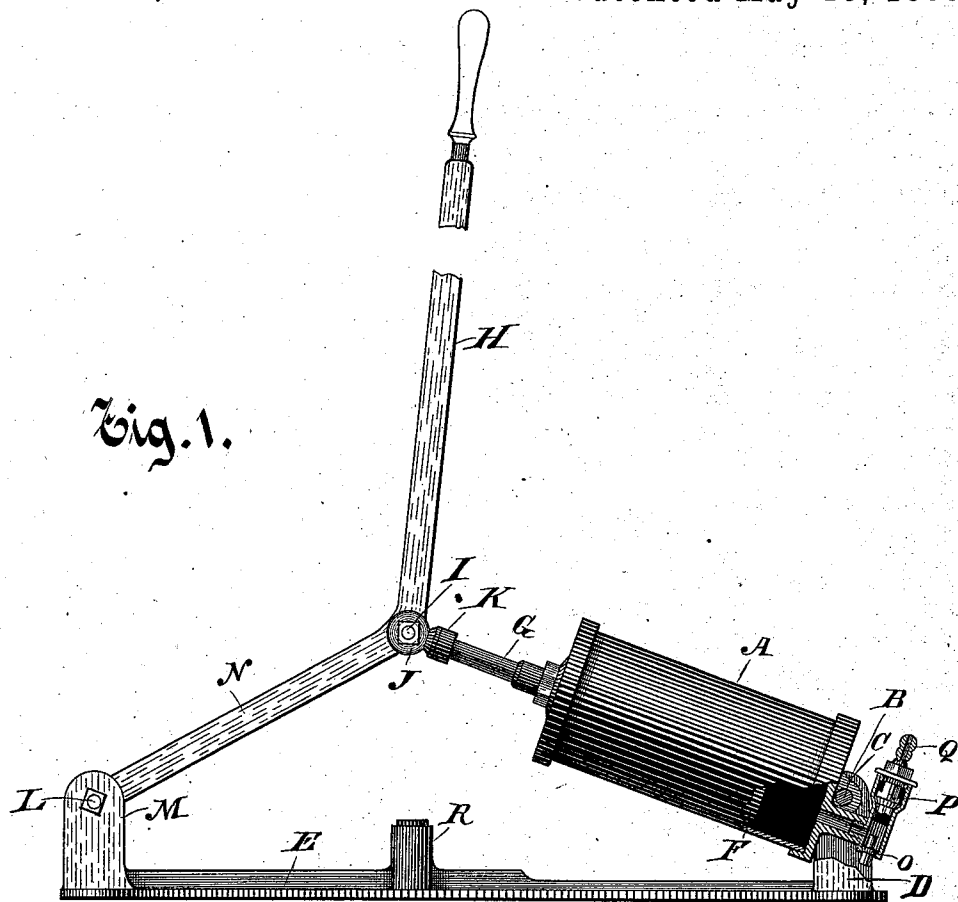
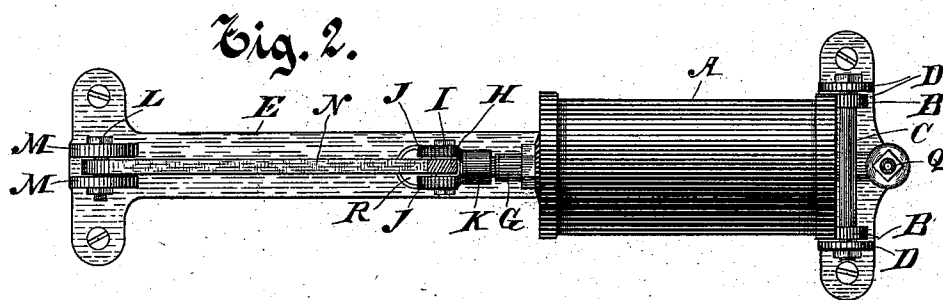


(No Model.)

J. B. ERWIN.
AIR COMPRESSOR.

No. 382,760.

Patented May 15, 1888.



Witnesses.

C. N. Keeney,
Rena Faust.

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UNITED STATES PATENT OFFICE.

JAMES B. ERWIN, OF MILWAUKEE, WISCONSIN.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 382,760, dated May 15, 1888.

Application filed November 1, 1887. Serial No. 253,977. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. ERWIN, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Air-Compressors; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in air-compressors; and it pertains to that class in which the air-compressing piston is operated by a lever.

It is a well-known fact that when forcing air into a receiver at a high pressure the first part of the downward stroke of the piston against the air is comparatively easy, and that the resistance of the compressed air to the piston gradually increases in the same ratio that the density of the air is increased, and it consequently follows that with an air-compressor of the ordinary construction the power required at the last of the stroke is much greater than that required at the first.

The object of my improvement is to provide a device by which the power of the lever is increased as the resistance of the compressed air to the piston is increased, whereby the last of the stroke of the lever is made with as great ease as the first, and the resistance to the lever is nearly uniform throughout the entire stroke.

The construction of my invention is explained by reference to the accompanying drawings, in which—

Figure 1 represents a side view of my air-compressor, part in section; and Fig. 2 represents a top view thereof.

Like parts are represented by the same reference-letters in both views.

A is an oscillating cylinder, which is pivoted at its lower end by lugs B B and pivotal bolt C to the lugs D D of the base or bracket E.

F is a piston of the ordinary construction.

G is the piston-rod. The rod G is pivoted to the operating-lever H by the pivotal bolt I, which bolt I passes through the lugs J J, formed on the sleeve K. Sleeve K is affixed to the end of the piston-rod G. The lower end of the lever H is pivoted to the bracket or base E by

pivotal bolt L, passing through the upward-projecting lugs M M. The upper end of the lever H is inclined at such angle to its short arm N as is most convenient to be operated, or as may be preferred by the operator. By this arrangement it is obvious that when the lever H is moving forward during the first of the stroke from the position above the pivotal bolt L the piston F is moved forward or downward in the cylinder with a more rapid movement corresponding with the forward movement of the lever H, which movement of the piston gradually diminishes as the arm N approaches the horizontal in line with the oscillating cylinder, and at the last of the stroke the piston moves forward but slowly, and consequently the power of the operator over the resistance is increased in the same ratio that the forward movement of the piston is diminished. With the upstroke of the piston air enters the cylinder through the check-valve O, which is raised by the current of air in entering. With the return or downward stroke of the piston the check-valve O closes and the air is forced out above it through the check-valve P, and from thence through the nozzle Q to the air-receiver, with which the nozzle Q is connected by a flexible tube. The downward stroke of the lever H is arrested as the piston reaches the lower end of the cylinder A by contact with the stop R, which stop is affixed to or formed in connection with the base or bracket E. It is obvious that by thus pivoting the cylinder, piston-rod, and operating-lever, as shown, a so-called "toggle-joint lever" is formed, by which, as the short arm of the operating-lever and the piston-rod are brought in line with each other between their respective supporting-pivots at each downward movement of the piston, the piston is thereby caused to move with an accelerating and almost irresistible force at that part of its stroke where the resistance to its movement is greatest and where the greatest force is required.

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

1. In an air-compressor, the combination of an oscillating cylinder pivoted at a fixed point to a supporting-bracket and provided with inlet and outlet air-controlling valves, a pis-

ton and a piston-rod, a two-armed lever pivoted at one end to the cylinder-supporting bracket, and at an intermediate point between its ends to the protruding end of said piston-rod, the pivotal point of said rod and lever being adapted with each downward stroke of the piston to be brought in line with the fixed pivotal points of said lever and cylinder, substantially as and for the purpose specified.

- 10 2. In an air compressor, the combination of the base or bracket E, provided at its respective ends with upward-projecting lugs D D and M M, and at or near its center with a stop, R, air-compressing cylinder A, provided with
15 air-controlling valves O and P, piston F, and

piston-rod G, pivotal lugs B B, affixed to the lower end of said cylinder and pivoted to said lugs D D by pivotal bolt C, pivotal bolt C, and operating-lever H, pivoted at its lower end to said lugs M M and at an intermediate point between its ends to the protruding end of said piston-rod G, all substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES B. ERWIN.

Witnesses:

C. T. BENEDIOT,

C. H. KEENEY.