

(No Model.)

E. C. FASOLDT.

COMPOUND AIR COMPRESSING PUMP.

No. 385,853.

Patented July 10, 1888.

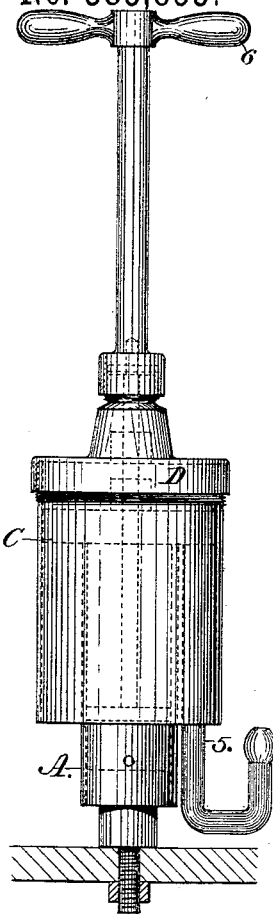


Fig. 1.

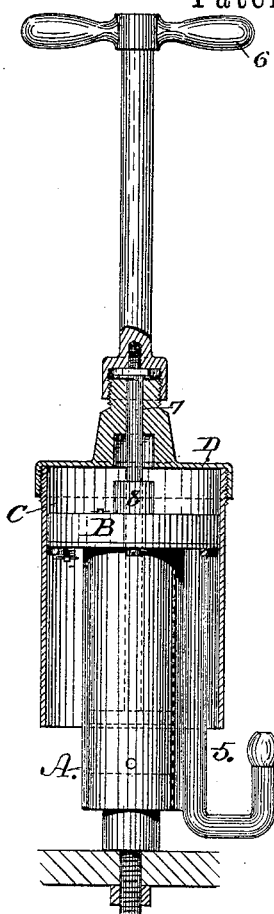


Fig. 2.

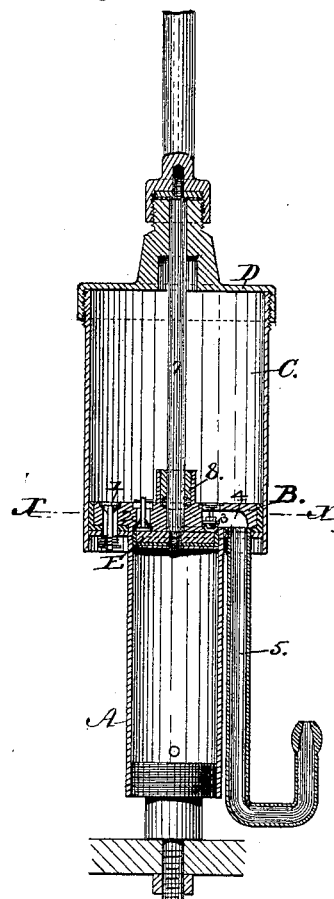


Fig. 3.

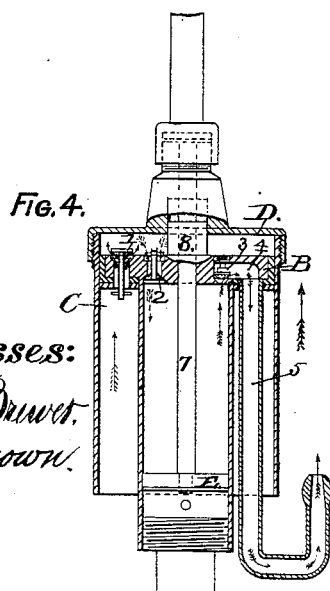
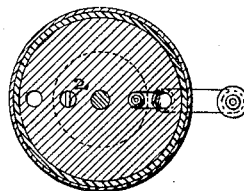


Fig. 4.

Fig. 5.



Witnesses:

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# UNITED STATES PATENT OFFICE.

ERNEST C. FASOLDT, OF ALBANY, NEW YORK, ASSIGNOR OF ONE-HALF  
TO EZRA W. SMITH, OF SAME PLACE.

## COMPOUND AIR-COMPRESSING PUMP.

SPECIFICATION forming part of Letters Patent No. 385,853, dated July 10, 1888.

Application filed April 9, 1888. Serial No. 270,043. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST C. FASOLDT, of the city and county of Albany, in the State of New York, have invented new and useful Improvements in Compound Air-Compressing Pumps, of which the following is a specification.

My invention relates to improvements in air-compressing pumps; and the object of my invention is to provide a simple and effective air-compressing pump wherein the air will be compressed to a high degree by each reciprocation of the movable parts. This object I attain by the mechanism illustrated in the accompanying drawings, which are herein referred to and form part of this specification, and in which—

Figure 1 is a side elevation of my air-pump. Fig. 2 is a vertical section of the movable cylinder of my pump, showing the inner cylinder in elevation. Fig. 3 is a central vertical section of the movable and inner cylinders when the parts are at the highest point of their movement. Fig. 4 is a like section showing the parts in an intermediate position during an upward movement of the movable cylinder, and Fig. 5 is a horizontal section at the line X X of Fig. 3.

As represented in the drawings, A is the inner cylinder, which is held in a stationary position, and is provided at its upper end with a piston, B, which is fitted snugly to the bore of the movable cylinder of my air-pump. Said piston is provided with an upwardly-opening inlet-valve, 1, which closes the opening through which air is admitted into the interior of the movable cylinder, a downwardly-opening valve, 2, which closes the opening through which the air passes from the movable cylinder into the inner cylinder, A, and an upwardly-opening valve, 3, which closes the discharge-opening from said inner cylinder. Said discharge-opening leads into a passage, 4, from which a discharge-pipe, 5, extends to the exterior of the apparatus, so that a flexible or other suitable tube may be attached thereto to convey the compressed air to any desired point of delivery.

C is the movable cylinder, which is provided with a cross-handle, 6, or other means for giving

a reciprocating movement to it. The bore of said cylinder is adapted to form an air-tight joint with the perimeter of the piston B, on which said cylinder is fitted to slide up and down. The upper end of said cylinder is closed by a head, D, from the center of which depends a rod, 7, which passes through a stuffing-box, 8, that is formed on the upper side of the piston B, whereby provision is made to permit said rod to reciprocate through the center of said piston, while an air-tight joint is maintained around the rod. On the lower end of the rod 7 is a smaller piston, E, which fits the bore of the inner cylinder, A, sufficiently close to form an air-tight joint therewith.

The operation of my compound air-compressing pump is as follows: In moving the cylinder C and its attached piston E upwardly, as indicated by the outer arrow on Fig. 4, the air enters said cylinder by the inlet air-opening, that is governed by the valve 1. Simultaneously therewith the air which is contained in the inner cylinder, A, and which has received its primary compression by being forced into said inner cylinder by a downward movement of the cylinder C, is forced out of said inner cylinder through the discharge-opening, that is governed by the valve 3, and from thence is conveyed through the discharge-pipe 5 and its connections to the required point of delivery. On reversing the direction of movement of the cylinder C the air that is contained in said cylinder is compressed and forced to pass through the opening governed by the valve 2 into the cylinder A, the valves 1 and 3 closing instantly on a reversal of the movement of the cylinder C; to prevent the air from escaping through the openings which are governed by said valves. The direction of movement of the air during the upward stroke of the cylinder C is indicated by the full arrows on Fig. 4, and the movement of the air during the downward stroke of said cylinder is indicated by the dotted arrows on the same figure. It will be seen that the primary compression of the air is produced by forcing the volume of air contained in the larger cylinder, C, into the small inner cylinder, A, and a second compression of said air is produced by forcing the air out of the latter cylinder.

I claim as my invention—

A compound air - compressing pump consisting of an inner stationary cylinder and an outer movable cylinder that is arranged concentrically to said stationary cylinder, the  
5 said stationary cylinder having a piston-head which fits the bore of the movable cylinder and is provided with valved inlet and outlet

air-openings, and said movable cylinder being provided with a piston-head which is fitted to the bore of the stationary cylinder, as and for the purpose herein specified.

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Witnesses:

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