(No Model.) 2 Sheets—Sheet 1.

H. E. DEPP.

AIR COMPRESSOR.

No. 333,613. Patented Jan. 5, 1886.

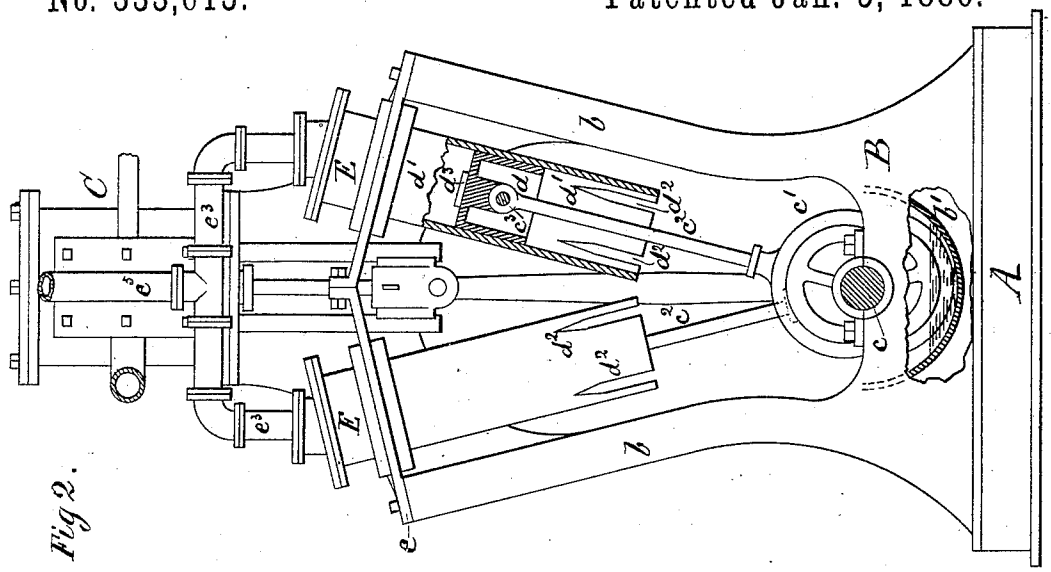


Fig 2.

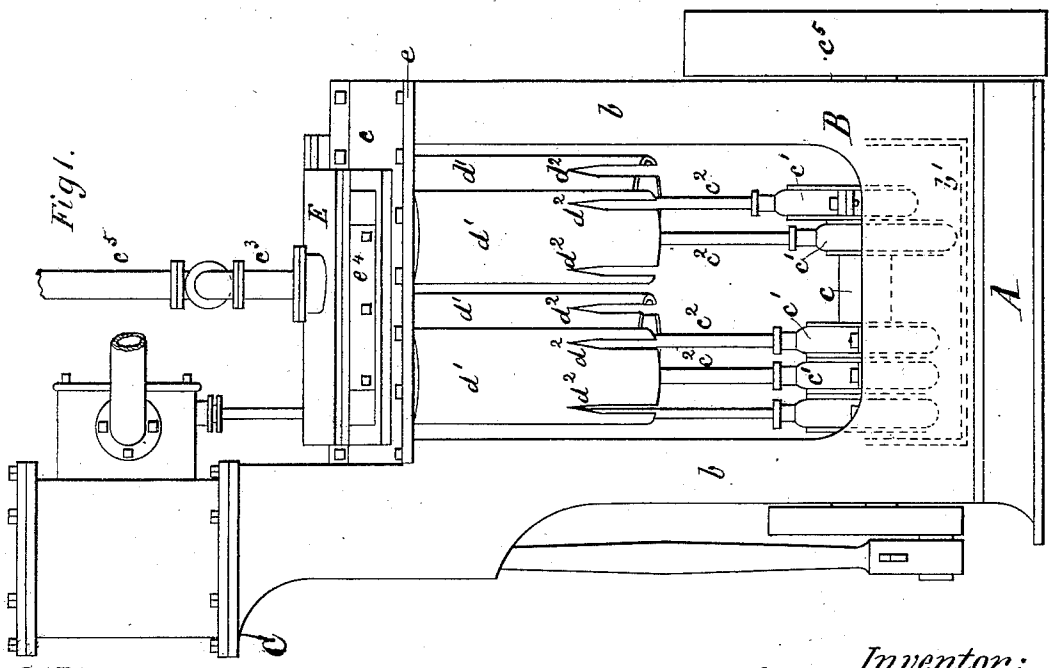


Fig 1.

Witnesses:
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B C Fenwick

Inventor:
Hezekiah E. Depp
by his attys
Mason Fenwick & Lawrence

N. PETERS. Photo-Lithographer. Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig 4.

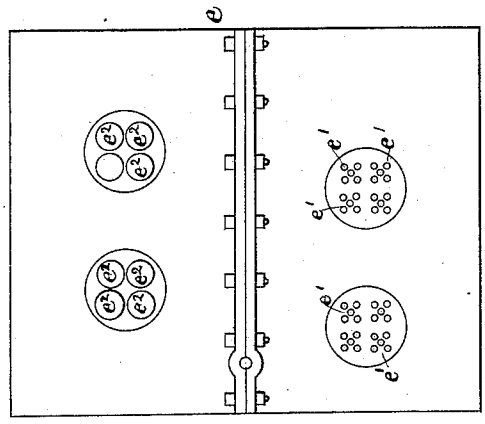
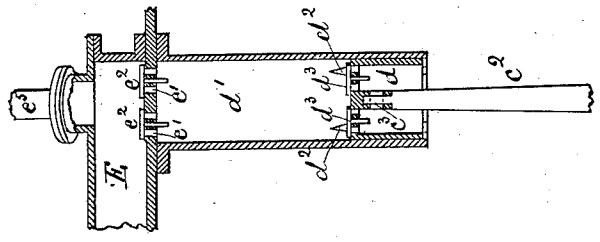


Fig 3.



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UNITED STATES PATENT OFFICE.

HEZEKIAH E. DEPP, OF SEDALIA, MISSOURI.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 333,613, dated January 5, 1886.

Application filed July 10, 1885. Serial No. 171,159. (No model.)

To all whom it may concern:

Be it known that I, HEZEKIAH E. DEPP, a citizen of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, have invented certain new and useful Improvements in Air-Compressors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in the construction of cylinder air-compressors, which will be hereinafter described, and specifically claimed.

In the accompanying drawings, Figure 1 is a side elevation of my invention. Fig. 2 is an end view of the same, showing one cylinder of the air-compressor and its piston in section. Fig. 3 is a detail section of one of the compressing-cylinders and a portion of the air-reservoir above, and Fig. 4 is a top view of the top plate of the compressing-cylinders.

The letter A represents an ordinary base-plate; B, the frame of the compressor; C, a steam-engine; D, an air-compressor, and E an air-reservoir. The frame B, which is suitably fastened to the base-plate A, consists, mainly, of four outwardly-inclined columns, *b*, united below at *b'*, and above by means of a doubly-inclined plate, *e*. This plate *e* is shown composed of two separate plates, which are screwed together at the center or apex of their inclination; but a single plate having inclination from its center in reverse directions will answer in many cases. An ordinary steam-engine, C, is suitably attached to one of the sides of the frame, and thereby a main shaft, *c*, suitably hung to the lower portion, *b'*, of said frame, is rotated in the usual manner. The main shaft *c* is provided with a fly-wheel, c^5, and with a number of eccentrics, *c'*, having eccentric-rods c^2, which latter are coupled by means of knuckle-joints c^3 with suitable pistons, *d*. The pistons *d* move in cylinders *d'*, which are fastened in two rows to the lower side of the plate *e*, are open at their lower ends, and provided with partially-tapered longitudinal slots d^2 in their lower open-end portions, as shown. The plate *e*, whether made of two pieces fastened together by means of flanges and screws or of a single doubly-inclined piece, is of gable or V form, so that the cylinders fastened thereto stand at right angles with the main shaft and in proper radial relation to the center of said shaft. The plate *e* is provided with suitable check-valve ways, *e'*, valves e^2, above each compressing-cylinder, and also with reservoirs E E. Each reservoir receives the compressed air of a row of compressing-cylinders through the valveways *e'*, and as the two reservoirs E are connected by means of pipes e^3 the compressed air of both reservoirs and both rows of cylinders is united by said pipes and conducted by a pipe, e^5, to places of use or storage. Each reservoir is provided with a removable side cover, e^4, and thereby the reservoir may be opened for the purpose of inspecting the valves e^2.

In order to facilitate the lubrication of the eccentrics and eccentric straps, I provide the frame B with a trough, *b'*, below the eccentrics, and this trough contains oil into which the eccentrics dip near the end of their descent.

For more powerful compressors each side of the frame B will be provided with a steam-engine, as C, and their respective cranks and crank-pins will be arranged at a right angle similar to the arrangement in locomotives. Cranks might be substituted for the eccentrics; but they would not answer as well.

With ordinary air-compressors during the descent of the pistons *d* a partial vacuum is created in the cylinder *d'*, and in consequence thereof the air outside of the cylinder is enabled at a certain time to lift the valves d^3 and enter the cylinder, and this goes on until the difference of pressure of the air in and outside the cylinder equals the weight of the valves d^3, whereupon the valves drop to their seats again and prevent the outer air from further entering the cylinder, and the consequent disadvantage is that the cylinder is supplied with air of less pressure than the atmosphere. This disadvantage in the air supply is avoided by my construction—viz., providing the lower portion of the cylinders *d'* with a number of slots, d^2, of such a length vertically that the pistons *d* at their lowest elevation stand below the upper ends of said slots, and an open com-

munication is thereby established between the atmosphere and the interior of the cylinder at the proper time. During the reversal of the stroke of the piston the construction and arrangement of the parts are such that sufficient time is allowed for the atmosphere to equalize the pressure in and outside the cylinder.

The ends of the slots d^2 by being tapered render the operation of the compressing-cylinders more regular and less abrupt than if the slots were rectangular their entire length. Slots of other shapes may be used to good advantage.

What I claim as my invention is—

1. In an air-compressor, the combination, with suitable driving mechanism, of the eccentrics c', cylinders d', having tapering slots d^2, and arranged and sustained in rows radial with the main shaft, and suitable pistons, rods, valves, chambers, and pipes, substantially as and for the purpose described.

2. In an air-compressor, the single-acting cylinder d', having the end slots, d^2, and piston d, having valves d^3, substantially as and for the purpose described.

3. The compressing-cylinders of air-compressors made with open lower ends and provided with slots tapered to a proper extent toward their upper ends, substantially as and for the purpose described.

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

HEZEKIAH E. DEPP.

Witnesses:

LOUIS HOFFMAN,

ALBERT H. THIELE.