(No Model.) 2 Sheets—Sheet 1.

M. HARROLD.

AIR COMPRESSOR.

No. 345,969. Patented July 20, 1886.

Fig. 1.

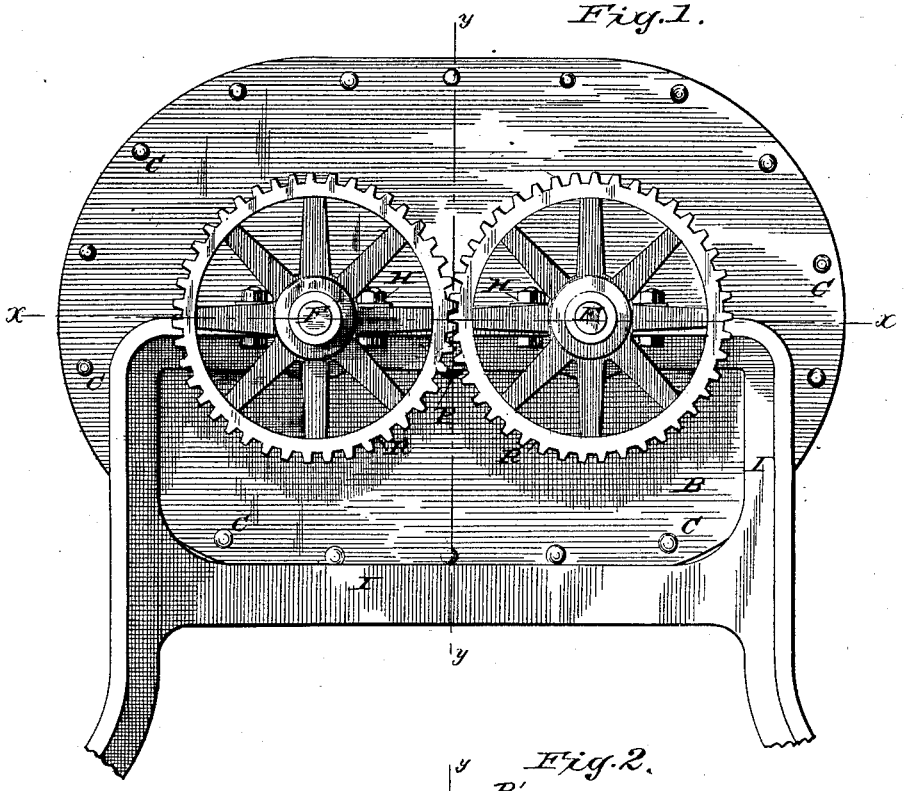
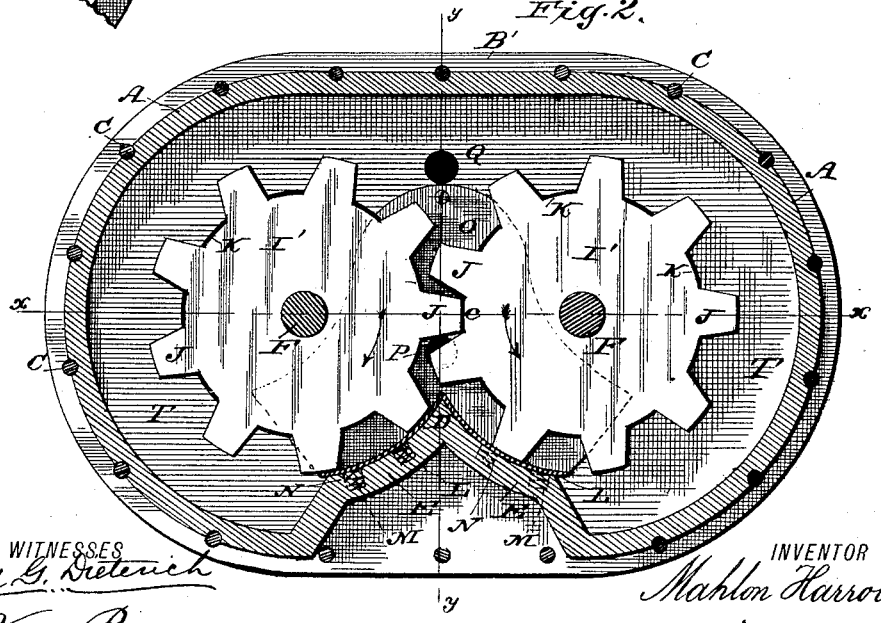


Fig. 2.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

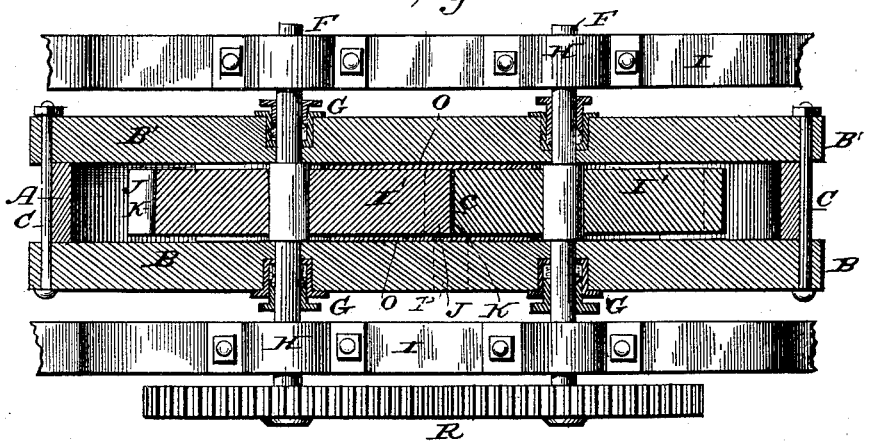


Fig. 4

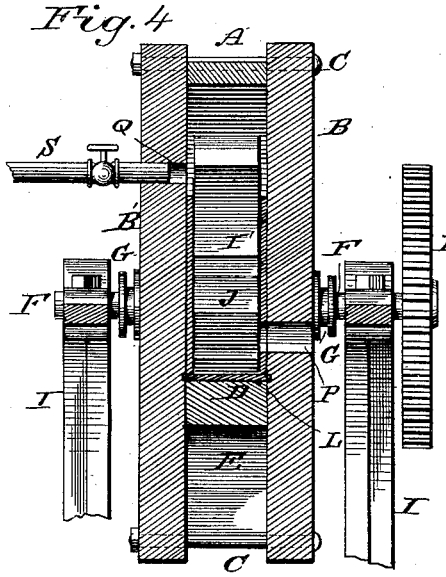
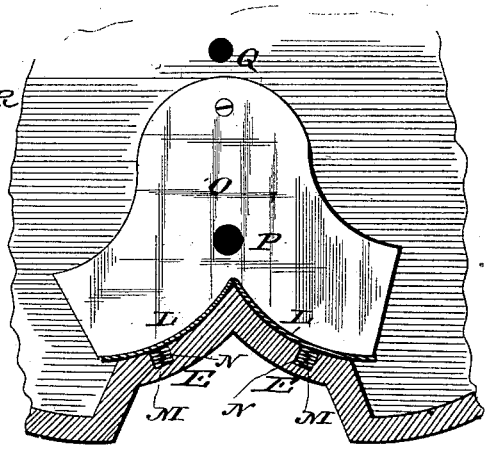


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

MAHLON HARROLD, OF FORT WORTH, TEXAS.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 345,969, dated July 20, 1886.

Application filed May 12, 1885. Serial No. 165,246. (No model.)

To all whom it may concern:

Be it known that I, MAHLON HARROLD, a citizen of the United States, and a resident of Fort Worth, in the county of Tarrant and State of Texas, have invented certain new and useful Improvements in Air-Compressors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of my improved air-compressor. Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is a longitudinal horizontal sectional view taken on the line *x x* in Figs. 1 and 2. Fig. 4 is a vertical transverse sectional view taken on the line *y y* in Figs. 1 and 2; and Fig. 5 is a detail view of the inside of a portion of one of the sides of the casing, showing the packing-plate.

The same letters refer to the same parts in all the figures.

This invention relates to air-compressors or mechanical devices for compressing air; and it has for its object to provide a device of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency, which shall require but little power in running, and by means of which air may be compressed to any desired density.

With these ends in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, A designates the rim, and B B′, respectively, the front and rear sides of a suitable casing, the sides of which are to be connected by transverse bolts C C, packing being interposed, if desired, in order to render the said casing absolutely air-tight. The said casing may be of any suitable shape, with exception of the central portion of the bottom of the rim, which should terminate in a point, D, formed at the intersection of two adjacent segmental curves, E E, concentric with the axes of the shafts F F, which are journaled transversely in the casing, the sides of which are provided with stuffing-boxes G G, in order to render the joints air-tight. It is also to be understood that these segmental curves shall be nearer the axes F F than any other points of the rim of the casing. The ends of the shafts F F are to be journaled in suitable boxes, H H, in a frame, I, which may serve to support the casing.

The shafts F F carry within the casing a pair of spur or cog wheels or toothed cylinders, I′ I′, having intermeshing teeth J J, which are so disposed that the ends of the teeth of the one shall fit tightly against the interdental spaces of the other when the wheels revolve, as will be seen in Fig. 2 of the drawings, where the contact-point, which is denoted by letter *c*, must be absolutely air-tight. In order to increase the certainty of this, packing K may be placed in the interdental spaces of each wheel. The ends of the teeth of each wheel should also fit tightly against the segmentally-curved portions E of the rim of the casing, over which is placed a packing-plate, L, which may either be of itself elastic, so as to be held in constant contact with the ends of the teeth, or suitable springs, M, may be arranged in sockets N in the rim of the casing, for the purpose of forcing the wings of said plate into contact with the ends of the teeth.

The inner sides of the sides of the casing are provided with packing-plates O O, bearing against the sides of the lower portions of the wheels I′ I′, as will be seen in Fig. 4, the configuration of the packing-plates being as is clearly outlined in Fig. 5 of the drawings. By the several packing-plates described air-tight joints are formed that will prevent the passage of air from one part of the casing to another, as will be hereinafter more fully described.

The front side of the casing is provided with an air-inlet port, P, opening into the casing at a point between the converging point of the curved portions E E of the rim of the casing, and below a horizontal line drawn longitudinally through the axes of the shafts F F, the upper part of the casing has a suitably-located exhaust or outlet port, Q.

The front ends of the shafts F F are provided with spur-wheels R R, meshing together, and to one of the shafts power may be applied

from any suitable source, thereby running the said shafts in opposite directions, as indicated by darts in Fig. 2 of the drawings.

The outlet-port Q is to be connected by a pipe, S, with a receiver, in which the air compressed by the apparatus may be stored, and whence it may be removed, whenever desired, and applied to any desired purpose.

The operation of this invention is as follows: The air on entering the casing through the port P enters the spaces between the teeth of the wheels I' I', below the center line, *x x*, and is prevented from passing to the upper part of the casing by the packing between the said teeth and the several packing-plates herein described. As the wheels revolve, they will carry the air past the curved portions E E of the casing, and into the body of the latter, which is denoted by letter T, and whence it passes through the outlet-port to the receiver in which, by continuing the operation, it may be compressed to any desired density. It will be observed that the arrangement of the packing-plates is such that while communication between the inlet and outlet ports is effectually cut off, there shall be but little frictional resistance; hence the operation of compressing the air may be performed with the smallest possible expenditure of power, the importance of which need not be enlarged upon. The general construction is simple and compact, and the device may be run successfully at a high rate of speed.

It is obvious that this device may be used with equal efficiency for the purpose of compressing other fluids than air, or for the purpose of raising water and other liquids from wells and the like.

I am aware that it is not new to construct an air-compressor consisting of two rotating intermeshing rollers within a casing having elastic spring-pressed bearing-plates secured upon the inner sides of the casing and bearing against the peripheries and ends of said rollers, and I do not claim such construction, broadly; but

I claim and desire to secure by Letters Patent of the United States—

1. The combination, with a casing, the sides of which have an inlet and an outlet aperture, and a rim having an inwardly-pointed transverse projection, of a V-shaped elastic plate fitting upon said transverse projection, the sides of which plate are curved so that their outer edges bear against the peripheries of two rotating cylinders, said cylinders intermeshing with each other, as shown and described.

2. The combination, with a casing, the sides of which have an inlet and an outlet aperture, and a rim having an inwardly-pointed transverse projection, of a V-shaped plate fitting upon said transverse projection, a series of springs between each side of the projection and the plate, and two rotating cylinders journaled therein and intermeshing with each other, as shown and described.

3. The combination, with the above-described casing, plate, and rotating cylinders, of a plate secured upon each side of the casing, the lower part of which has a V-shaped notch, which engages with the V-shaped plate upon the transverse projection and holds it in place, one of said plates having an aperture registering with the aperture in the side of the casing, as shown and described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

MAHLON HARROLD.

Witnesses:
AUGUST PETERSON,
WM. BAGGER.