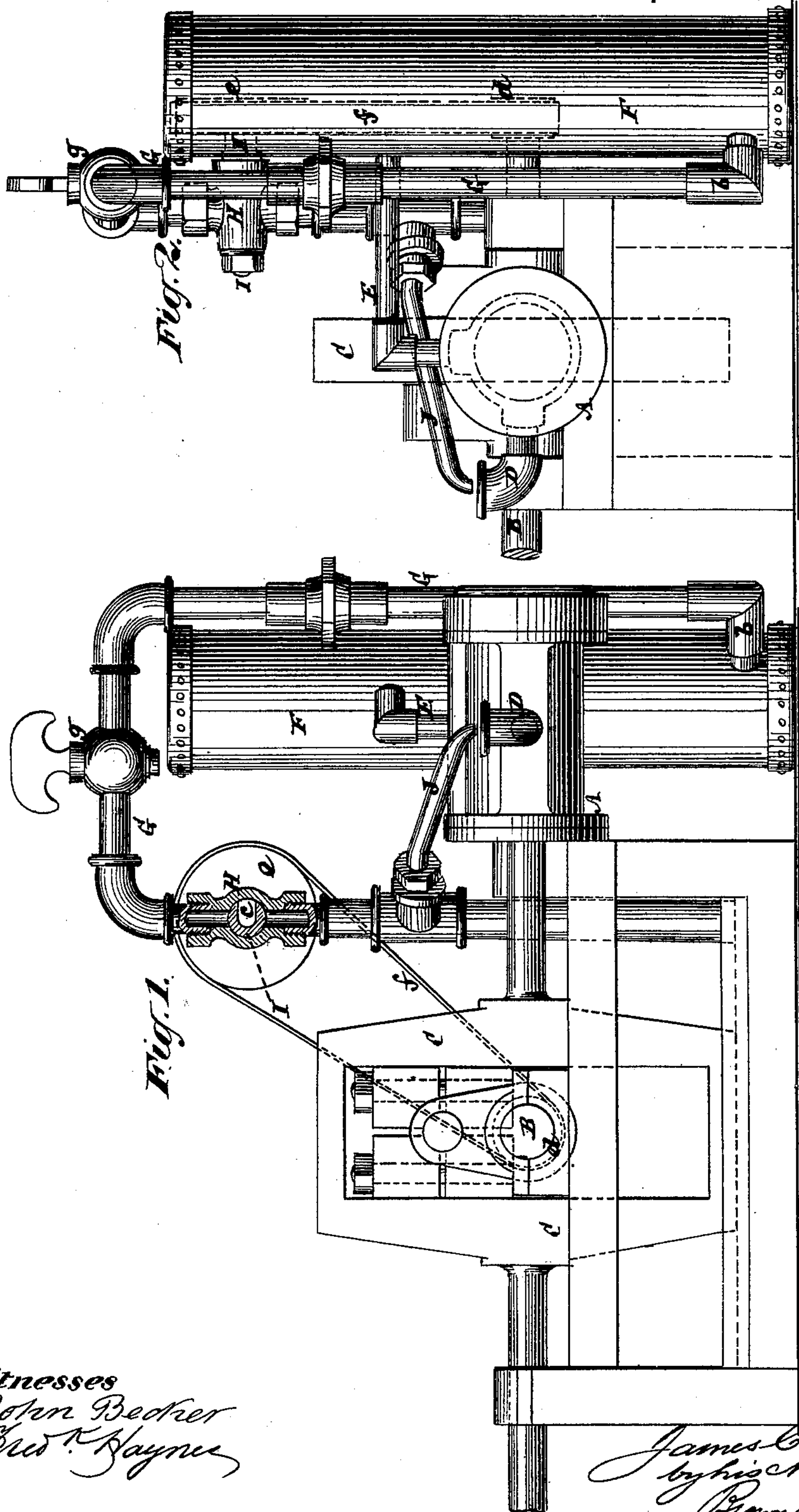


J. CLAYTON.
Device for Supplying Lubricating-Liquids to
Air-Compressors.

No. 220,123.

Patented Sept. 30, 1879.



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UNITED STATES PATENT OFFICE.

JAMES CLAYTON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN DEVICES FOR SUPPLYING LUBRICATING-LIQUIDS TO AIR-COMPRESSORS.

Specification forming part of Letters Patent No. **220,123**, dated September 30, 1879; application filed March 1, 1879.

To all whom it may concern:

Be it known that I, JAMES CLAYTON, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Devices for Supplying Lubricating-Liquids to Air-Compressors, also applicable to steam-engines and for other purposes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention consists in certain novel means for automatically supplying oil, water, or other lubricating-liquid to the cylinders of air or gas compressors, whereby the supply is only kept up when the compressor is at work, and is then fed in measured quantities, and the same oil or lubricating-liquid, which likewise serves to fill the spaces between the piston at the ends of its strokes and heads of the cylinder and to seal the valves, is circulated so as to be used over and over again.

In the accompanying drawings, Figure 1 represents a partly-sectional side elevation of an air-compressor with my invention applied, and Fig. 2 an end elevation of the same.

A is the cylinder of an air-compressor, the piston of which is operated by a crank-shaft, B, and cross-head C. A similar cylinder may be applied to each end of the apparatus, and the pistons thereof be operated by the same crank and cross-head; but it will suffice here to describe the invention as applied to a single air-compressing cylinder. This cylinder A is provided with the usual or any suitable inlet and outlet valves at opposite ends of it, and obtains its supply of air by or through an inlet-pipe, D, which connects by a passage-way with opposite ends of the cylinder.

E is the outlet-pipe for the compressed air from the cylinder to a receiver, F, from whence it is drawn to be utilized as required.

G is a sectionally-constructed pipe, connected at its lower end by an elbow, b, with the compressed-air receiver F, near the bottom of the latter, and, extending upward, is connected above with a lubricating-liquid-supplying cock, H, at an elevation which is above that of the air-inlet D. This cock H is fitted with a rotating plug, I, for the oil or water to

the cylinder A, said plug having within it a receiving or measuring cavity, c, which, when its mouth is uppermost during the rotation of the plug, receives a charge of oil or water from the pipe G, and which, when its mouth is inverted, delivers said charge of oil or water by gravity down to and through a discharge-nozzle, J, from whence it passes to the air-inlet pipe D. This plug I may or may not be packed at its ends by stuffing-boxes applied to the ends of the cock, and it may be rotated at any desired velocity relatively to the piston in the cylinder A, so as to supply the oil or water once in each stroke of the air-compressing piston in either direction, or less frequently. Said plug may be rotated by means of a pulley, d, on the shaft B, a pulley, e, on the plug I, and a connecting-band, f; or it may be otherwise suitably driven either from the crank-shaft B, which may be the main shaft of the engine, or from any other portion of the engine, or from any shaft either directly or indirectly connected with the engine which drives the air-compressor. In any case, however, the plug I only supplies oil or water to the inlet-pipe of the cylinder of the air-compressor when the latter is at work, thus doing away with the waste and inconvenient or objectionable accumulation of said oil or other suitable liquids by keeping up the supply while the compressor is at rest.

The object of supplying said liquids to the air-inlet D of the air-compressor is not only to lubricate the piston and valves of the air-compressor, but to fill up the space between the air-compressing piston at the ends of its stroke and the heads of its cylinder, and to insure a tight closing of the inlet and outlet valves when shut, in which respects the object of the invention does not differ from those arrangements in which a continuous drip of lubricating-liquid into the air-inlet of the air-compressor is kept up both when the compressor is in motion and when it is at rest.

In addition to the advantage hereinbefore stated which this invention possesses of only supplying the oil or water in measured quantities when the compressor is at work, it has the further advantage of being automatic, and of using the same lubricating-liquid over

and over again, which is an important consideration when oil or other expensive lubricating material is used.

To these ends the compressed-air receiver F is first supplied with any given amount of oil, water, or other suitable liquid—as, for instance, with an amount which will fill the lower portion of the receiver F up to the level of the elbow *b*, more or less. When the compressor is at work the pressure of the air in the receiver F will force said liquid up and through the pipe G, and as the cavity *c* in the plug I comes into a receiving position by the rotation of said plug, it is charged with a supply of said liquid, and when, by the motion of said plug, the cavity *c* becomes inverted, said charge of liquid is delivered into the nozzle J, from whence it passes to the air-inlet pipe D, to be distributed through the cylinder A and about its valves, and, by the working of the compressor, to (in due course) be returned along with the compressed air through the outlet-pipe E back to the air-receiver F, in which it is separated from the air and falls to the bottom of said receiver, to be used over again.

The amount of lubricating-liquid supplied by the plug I to the inlet D may be determined by the capacity of the cavity *c*; or it may be adjusted and made variable, as required, by means of a regulating cock or valve, *g*, in the pipe G, between the cock H and the point or place at which said pipe connects with the receiver F.

It is obvious that in lieu of the cock H other means might be employed and actuated by

the air-compressor to supply lubricating material at measured intervals of time.

It is not absolutely necessary that the plug I should be a constantly-rotating one, as it might be only an intermittently-rotating one, or it might have an oscillating motion; but in every case it is geared or driven to move and perform its functions only when the compressor is in motion.

I claim—

1. The combination, with an air-compressor and an air-receiver, which is supplied with compressed air by the compressor, and is adapted to contain a lubricating-liquid, of a pipe leading from the lower portion of said receiver to the air-inlet of the compressor, and means, operated by or in connection with the compressor, to permit the passage of said lubricating-liquid through said pipe at definite intervals, substantially as specified.

2. The combination, with an air-compressor and an air-receiver, which is supplied with compressed air by the compressor, and is adapted to contain a lubricating-liquid, of a pipe leading from the lower portion of said receiver to the air-inlet of the compressor, and a cock, the plug of which is operated by or in connection with the said compressor to permit the passage of said lubricating-liquid through said pipe at definite intervals, substantially as specified.

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