

(No Model.)

J. F. ALLEN.
Air Compressor.

No. 237,359.

Patented Feb. 8, 1881.

Fig. 1.

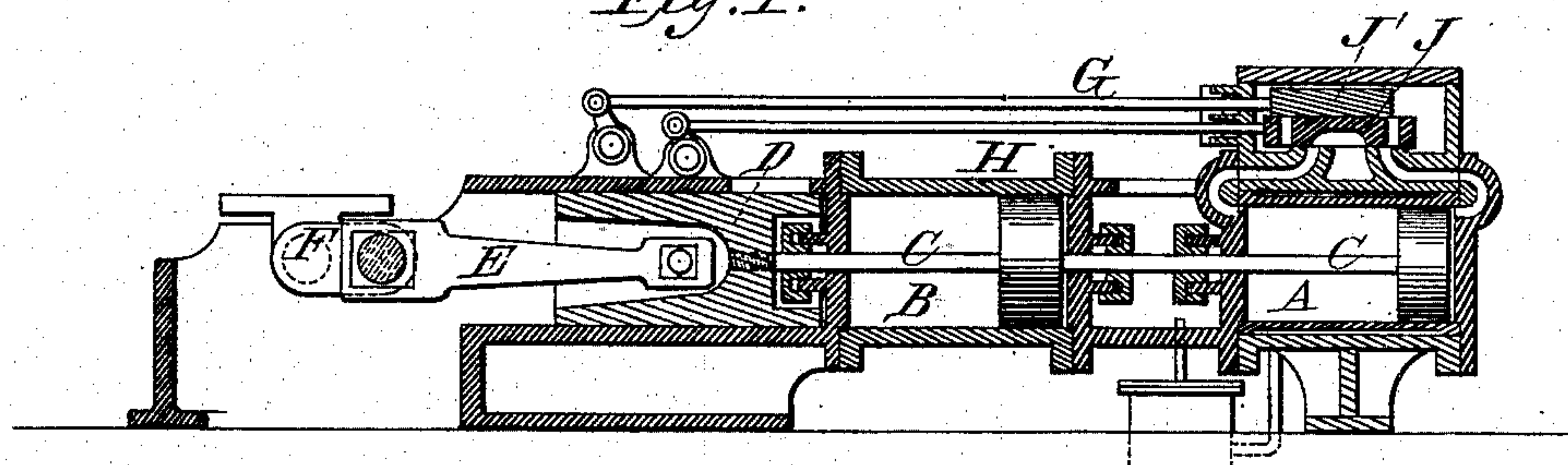


Fig. 2.

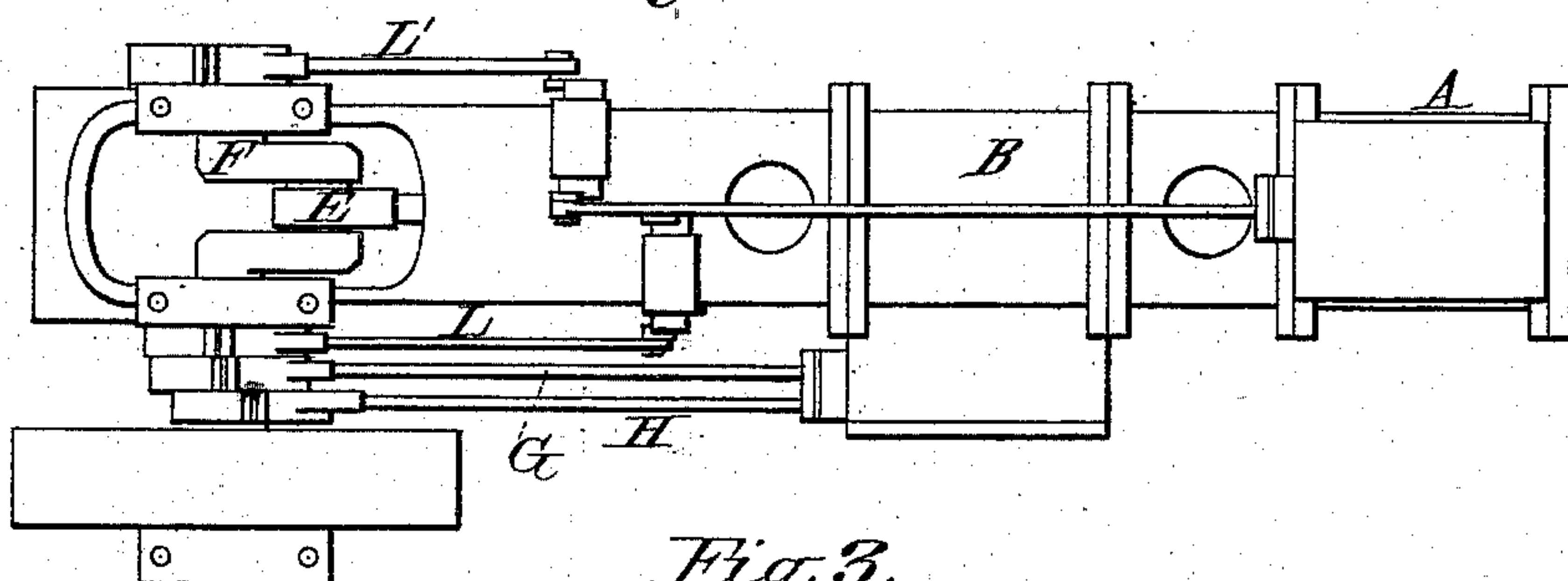
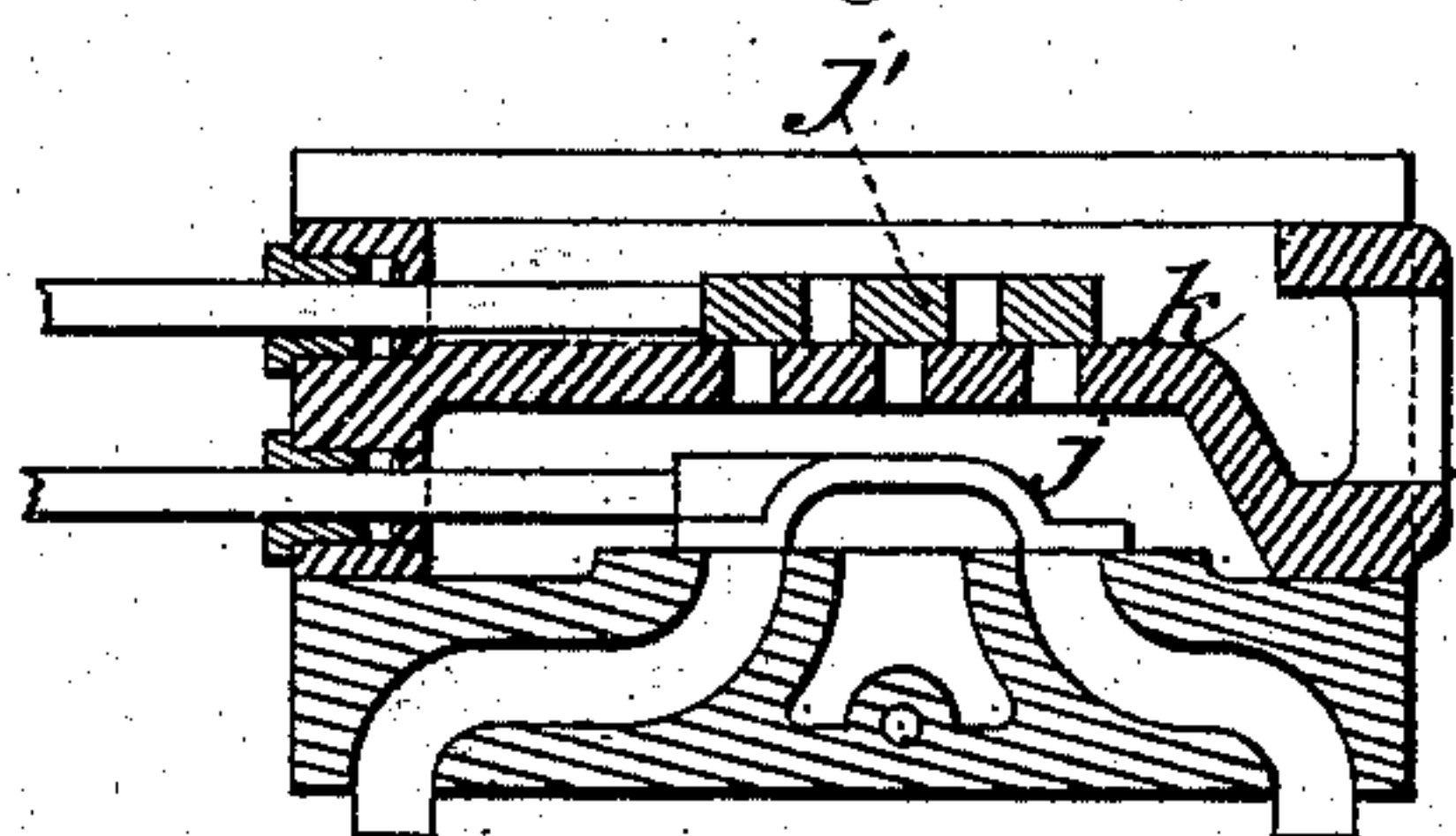


Fig. 3.



Witnesses:

W^m M. Evans.
A. H. Fowler.

Inventor:

John F. Allen,
by J. J. Dodd
his attorney.

UNITED STATES PATENT OFFICE.

JOHN F. ALLEN, OF BROOKLYN, NEW YORK.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 237,359, dated February 8, 1881.

Application filed November 1, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. ALLEN, of Brooklyn, Kings county, and State of New York, have invented new and useful Improvements in Air-Compressors, of which the following is a specification.

The nature of my invention consists in the combination, with an air-compressing apparatus, of induction and eduction valves, each of which is controlled in a positive and uniform manner in every part of the movement of such valve by means of a direct connection with the shaft or a counter-shaft of the prime motor.

In the accompanying drawings, Figure 1 represents a longitudinal section of an air-compressor embodying my invention. Fig. 2 is a top view of the same. Fig. 3 is a modified form of seating the eduction-valve.

A represents the air-compressing cylinder, and B the steam-cylinder for operating the same. These cylinders are placed one before the other, and the pistons of both cylinders are attached to one and the same piston-rod C. At the end of the piston-rod C a heavy weight, D, is attached, to which the connecting-rod E connects, the other end of which being connected to the crank F. To simplify the construction this heavy weight D is arranged to act as the guide for the end of the piston-rod.

The steam-cylinder B of the prime motor is constructed, in the usual manner, with suitable valves operated through the eccentric-rods G and H.

The air-compressing cylinder A is provided with a slide-valve, J, for the induction of the air and suitable ports for the eduction of the same, and having another valve or valves, J', arranged on the back face, or it may be arranged on a separate seat, for regulating the eduction of the air. For simplicity and cheapness I prefer to seat this last-mentioned valve or valves on the back of the valve J. These valves receive positive motion through suitable connecting-rods, L L', which connect the valves directly with the shaft (or it may be a counter-shaft) of the prime motor, the attachment of the rods in this instance to the shaft

or counter-shaft of the prime motor being eccentricities.

In all air-compressing apparatus heretofore devised the valves of the compressing-cylinder for the induction and eduction of the air were either of the self-acting kind operated by the pressure of the air acting underneath them, uncontrolled by any positive motion of the machine itself, or else were at a certain portion of the stroke of the piston operated so as to cause them either to open or shut, as the case might require; but at all other times they were wholly uncontrolled by any positive motion, as was the case of the wholly self-acting valves above described. Consequently, when it was desirable to run the compressing apparatus at a high speed, or any speed above the ordinary, the apparatus lost all, or nearly all, control of the valves, especially the induction-valves, through their inertia while at rest and their momentum while in motion, and the air-cylinder would therefore compress less air at a high rate than it would at a low rate of speed.

By the combination, with the air-compressing cylinder, of a positive-motion induction and eduction valve gear the quantity of air that I am enabled to compress is in direct proportion to the speed of the machine.

The eduction-valve J' may be placed on a separate seat, as shown in Fig. 3. K is the separate seat, and located in this instance just above the induction-valve J.

I claim—

In an air-compressing apparatus, the induction-valve of the compressing-cylinder, connected directly with the prime motor by means of a connecting-rod, so that such valve shall always be moved and controlled in a positive and uniform manner, in combination with a valve moved and controlled in a positive and uniform manner for regulating the discharge of the compressed air, each of which valves is operated by mechanism independent of the other, substantially as described.

JOHN F. ALLEN.

Witnesses:

JAMES H. HUNTER,
E. S. MAILLEY.