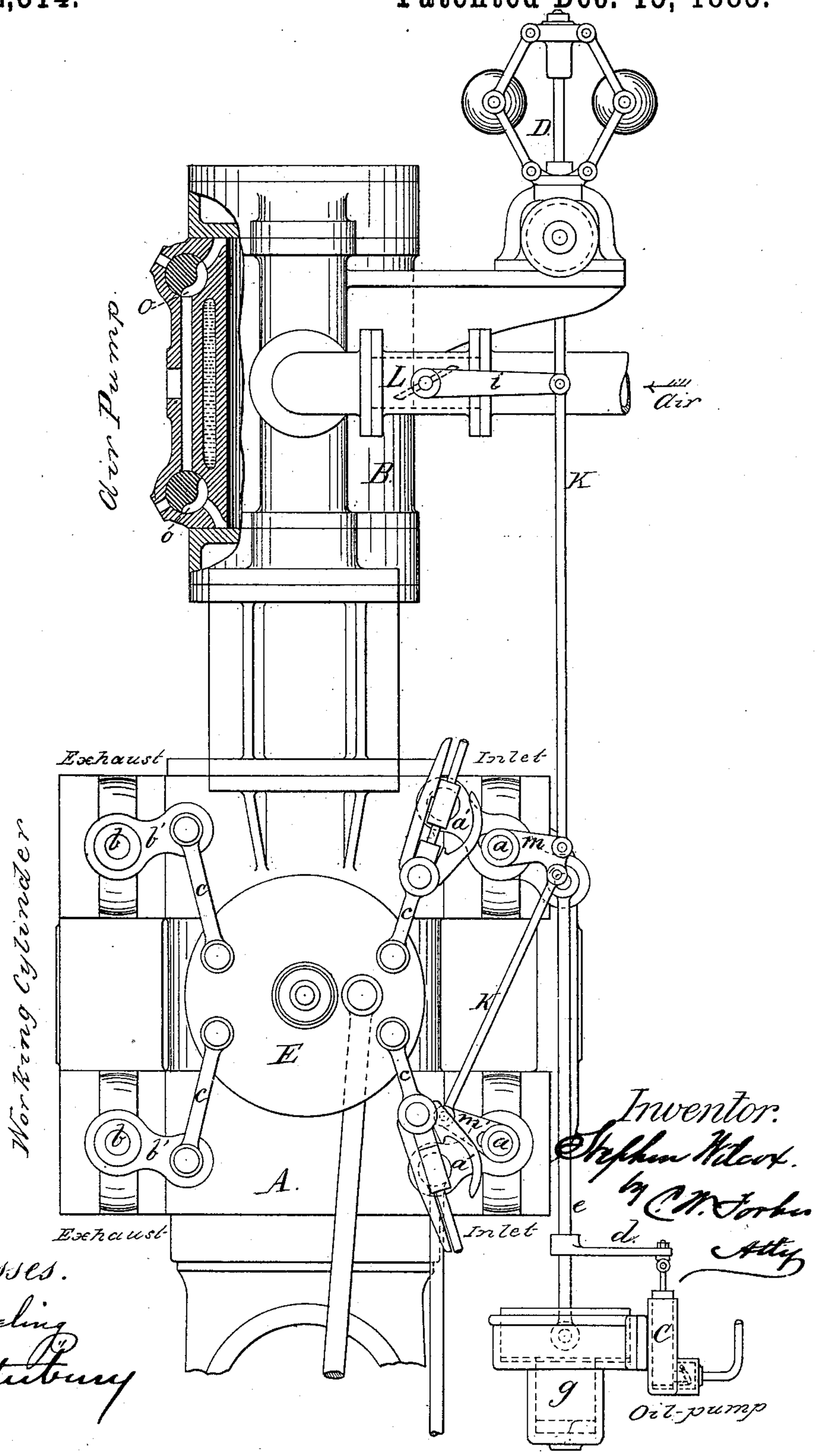
(No Model.)

S. WILCOX.

GAS ENGINE.

No. 332,314. Patented Dec. 15, 1885.



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UNITED STATES PATENT OFFICE.

STEPHEN WILCOX, OF BROOKLYN, NEW YORK.

GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 332,314, dated December 15, 1885.

Application filed September 17, 1885. Serial No. 177,356. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN WILCOX, of Brooklyn, in the county of Kings and State of New York, have made certain new and useful Improvements in Gas-Engines, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof, in which the figure represents an elevation, partly in section, of a gas-engine in which my improvements are embodied.

The object of this invention is to regulate the quantity of air admitted to the air-pump, according to the point of cut-off to suit the varying load, and also, in conjunction therewith, the quantity of oil admitted to the furnace, said objects being effected through mechanism operating coincident with the cut-off mechanism and with a valve attached to the air-pump, the operative parts of the oil-feeding device being connected directly with the arm of the induction-valve stem.

The invention also pertains to a valve arrangement whereby the pressure on either side of the air-pump piston may be exhausted or increased on its opposite side for convenience in starting and handling the engine, all as hereinafter described.

In the drawing, A represents the working-cylinder, fitted with a valve mechanism of the well-known Corliss type; B, the air-pump; C, the oil-feeder, and D the speed-regulator. The induction-valves *a a* and exhaust-valves *b b* are operated by means of the arms *a* and *b* and rods *c* and *c*, connected to the oscillating wrist-plate E in the usual way. The oil-feeding device C is operated through the arm *d*, attached to the connecting-rod *e* of the dash-pot *g*, that closes the induction-valve when the latter is disconnected by the cut-off, the operation of the oil-feeder thereby corresponding to the point of cut-off, and its capacity regulating the quantity of oil injected in its restricted duration of operation.

L represents a valve located, for example, as shown, in the suction-pipe of the air-pump; but the valve may be arranged directly upon the cylinder of the air-pump and operated as to allow the air to escape and thus obtain the same relief. Its vibrating arm *i* is attached to the connecting-rod K of the speed-regulator D. The speed-regulator rods K and K connect with the crank-arms *m m* on the ends of the valve-stems and with the vibrating arm *i*, that operates the valve L, so that when the point of cut-off is shortened the valve L is at the same time partially closed, reducing the amount of air admitted to the air-pump.

For convenience in starting and handling the engine valves *o o* (shown in section) are applied to passages leading to the opposite sides of the air-pump piston and with the air-reservoirs and atmosphere, so that by operating these valves to communicate with the air-reservoir and air-pump piston, or with the latter and the atmosphere, the pressure on either side of the piston may be diminished or increased on the opposite side at the will of the attendant.

In this class of engines, when the air-pump is large enough for the maximum load it is too large for a less load; therefore a variation in its delivery is essential to secure economy.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a gas-engine, an air-pump provided with a valve adjusted to operate coincident with the cut-off mechanism, whereby the effective capacity of the air-compression pump is adapted to the point of cut-off to suit the varying load.

2. In a gas-engine, an air-supply and an oil-feeding device operating coincident with the cut-off mechanism, whereby the quantity of each admitted to the cylinder and the quantity of air delivered by the air-pump is controlled correspondingly with the adjustment of said cut off mechanism.

3. In an air-pump of a gas-engine, an auxiliary air-passage communicating with the source of air-supply and with the opposite sides of the piston, and the latter with the atmosphere, said passage being fitted with suitable valves, whereby the air-pressure upon either side of the piston may be reduced or increased upon the opposite sides of said piston, for the purpose set forth.

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