J. BRADY.

GAS-ENGINE.

No. 176,588. Patented April 25, 1876.

Fig. 1.

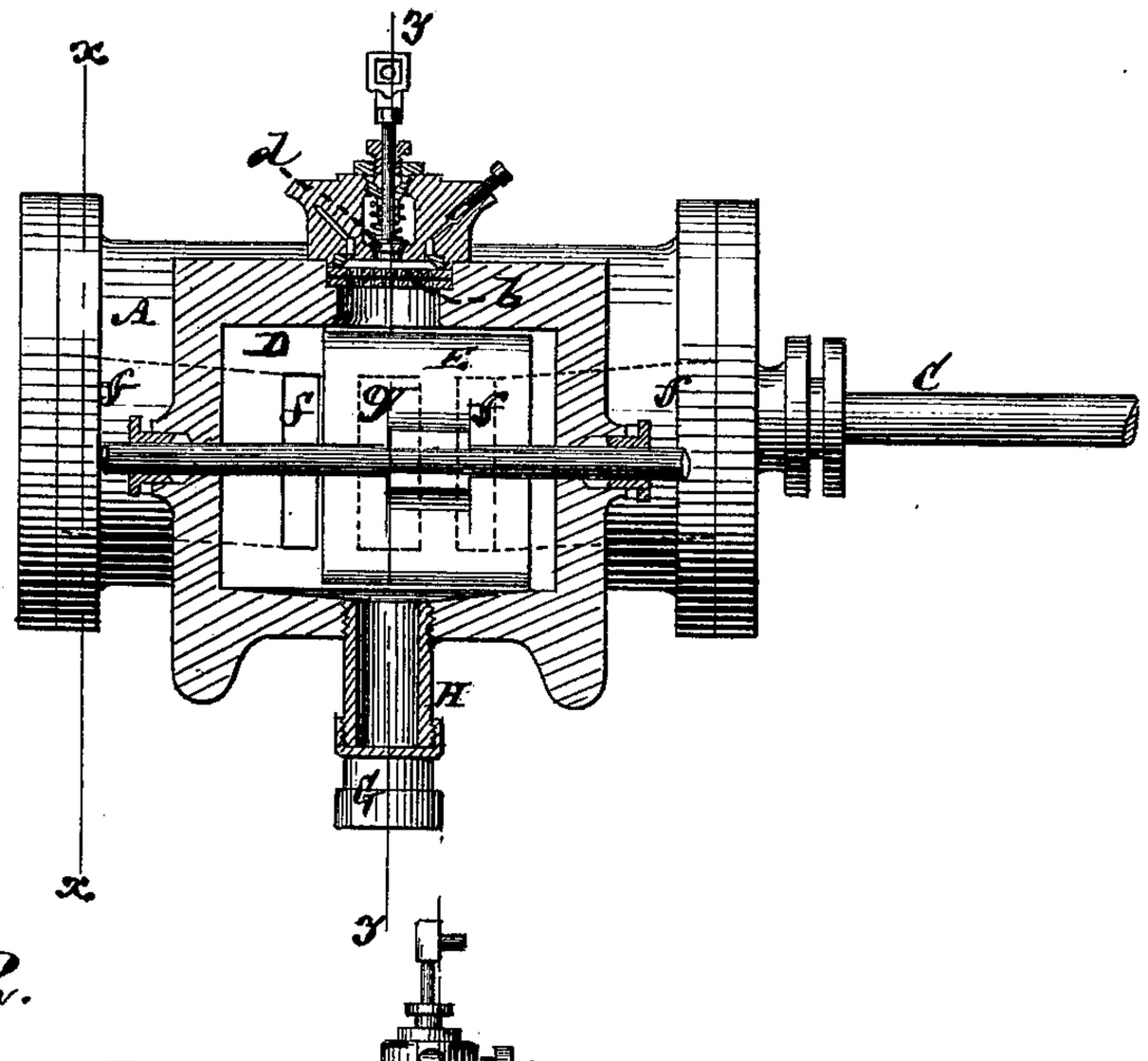
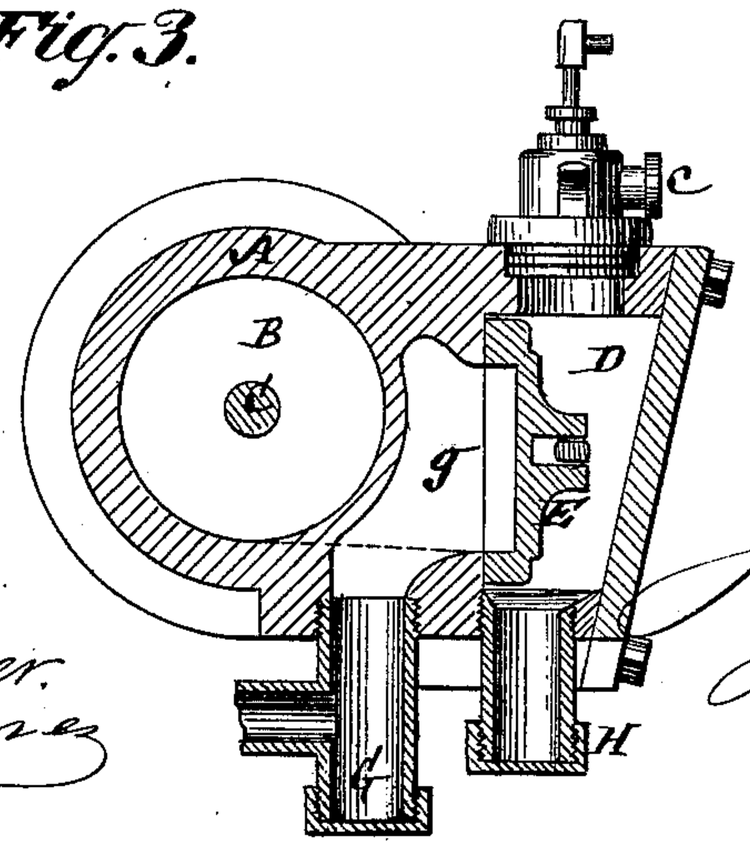


Fig. 2.

Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES BRADY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN GAS-ENGINES.

Specification forming part of Letters Patent No. **176,588**, dated April 25, 1876; application filed March 1, 1876.

To all whom it may concern:

Be it known that I, JAMES BRADY, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Gas Engines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to that description of gas-engines in which compounds derived from the mixture of hydrocarbons with atmospheric air are ignited to produce a motive power or agent, the hydrocarbons being introduced either in a gaseous or liquid state, but preferably in a liquid form, and so that on the introduction of a given quantity of atmospheric air under pressure the latter, as it passes to the combustion-chamber of the engine, is carbonized by being brought into contact with the liquid hydrocarbon, which is thereby vaporized and the air caused to absorb the vapor, thus producing the desired ignitible compound.

Such engines have usually been single-acting, or duplicate cylinders and pistons with pertaining parts have been employed to make them double-acting, and it has generally been deemed necessary to maintain communication between the combustion-chamber and the engine-cylinder at its one end only, whereby the gases resulting from ignition of the compound are only available as an impelling agent on the one side of the piston.

My invention consists in a combination, with the burner, having reticulated safety-intercepters and a combustion-chamber in which the mixture of the hydrocarbon with atmospheric air is ignited below the intercepters, of a single cylinder of a double-acting engine, and a valve interposed between said cylinder and the combustion-chamber, and operating to control the induction and eduction passages to and from both ends of the cylinder of the engine. This constitutes a simple and efficient combination, which obtains a like impelling power by ignition of the compound for the single piston of a double-acting engine in both of its strokes.

Figure 1 represents a partly sectional longitudinal view of a horizontal-cylinder gas-engine, in part, with my invention applied; Fig. 2, a transverse section of the same on the line *x x*, and Fig. 3 a further transverse section thereof on the line *y y*.

A is the cylinder of the engine, B its piston, and C the rod of the latter. D is the combustion-chamber, in which the gaseous compound is ignited after its passage through and beneath a series of reticulated safety-intercepters, *b*, below or on the back of which a constant flame is kept up, as in other gas-engines of the description here referred to. The means shown in the drawing for producing the mixture of hydrocarbon with atmospheric air under pressure is similar to those used in which the hydrocarbon is introduced in a liquid state, and the condensed air, which enters at *c* and has its delivery controlled by a valve, *d*, is carbonized by its absorption of the vapor of the hydrocarbon, and the compound thus produced is forcibly expelled or passes through the intercepters to the combustion-chamber D. Instead, however, of the combustion-chamber D being in constant or free communication with the working-cylinder of the engine at its one end only, it is alternately put in communication with opposite ends of said cylinder, and the gases resulting from ignition of the compound in the combustion-chamber D are alternately admitted to, and exhausted from, opposite sides alternately of the engine-piston by means of a slide-valve, E, interposed between the combustion-chamber D and the engine-cylinder, and operating to control induction and eduction ports or passages *f f* to and from opposite ends of the engine-cylinder and an intermediate exhaust port or passage, *g*. Said valve is operated automatically by any suitable means. In this way or by these means the ignited compound is made available during both strokes of the engine-piston.

Traps G H are represented as provided for drawing off through the exhaust port or passage any residuum that may collect in the engine-cylinder; also, any residuum or surplus liquid that may collect or enter the combustion-chamber; but as I make these the subject of a separate application for Letters Patent, they will not be described here.

I claim—

The combination, with the burner, having one or more reticulated safety-intercepters, *b*, and the combustion-chamber D, of a single cylinder, A, of a double-acting engine, and a valve, E, interposed between said cylinder and the combustion-chamber, and operating to control the induction and eduction passages *f f* to and from opposite ends of the cylinder, for supplying and exhausting the gases produced by ignition in the combustion-chamber to and from opposite sides alternately of the single piston B, substantially as shown and described.

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Witnesses:

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