

(No Model.)

A. P. MASSEY.

GAS ENGINE.

No. 260,587.

Patented July 4, 1882.

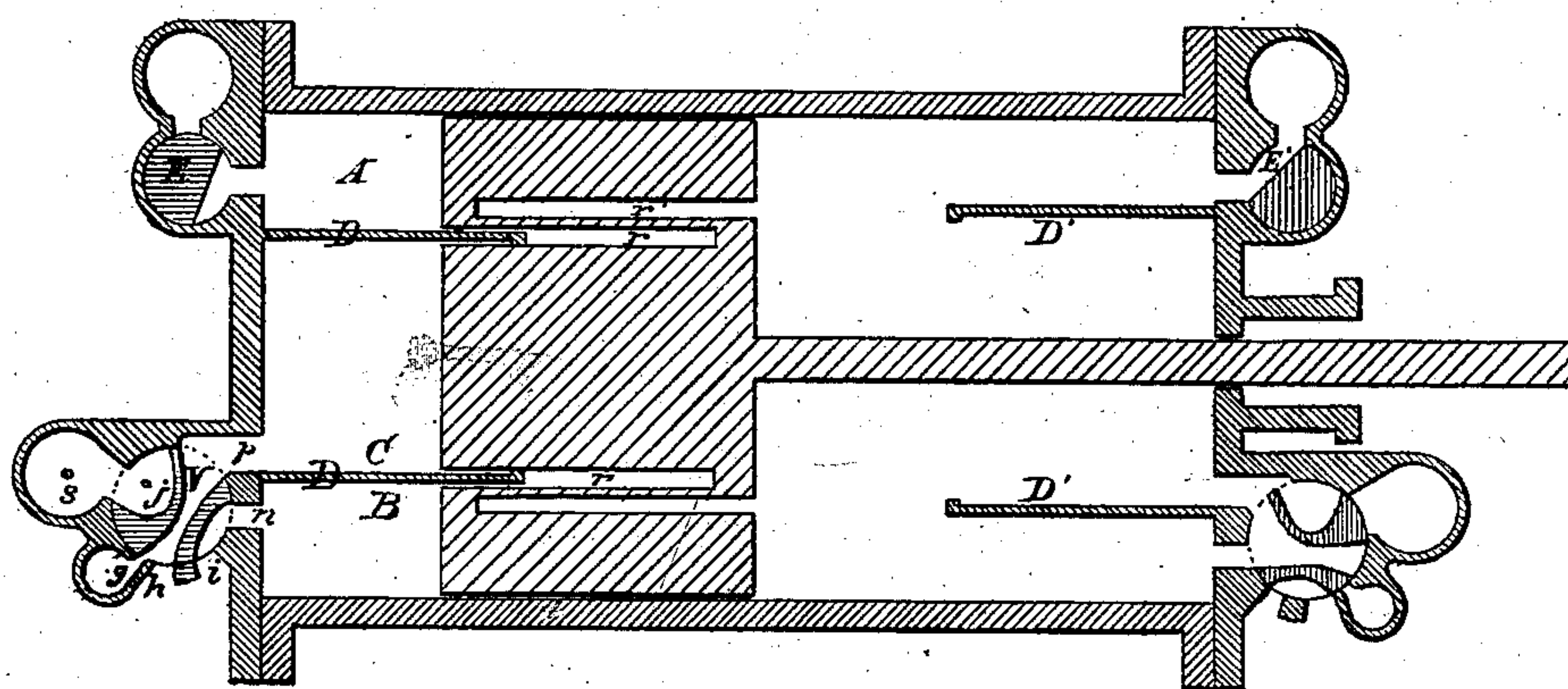


Fig 1.

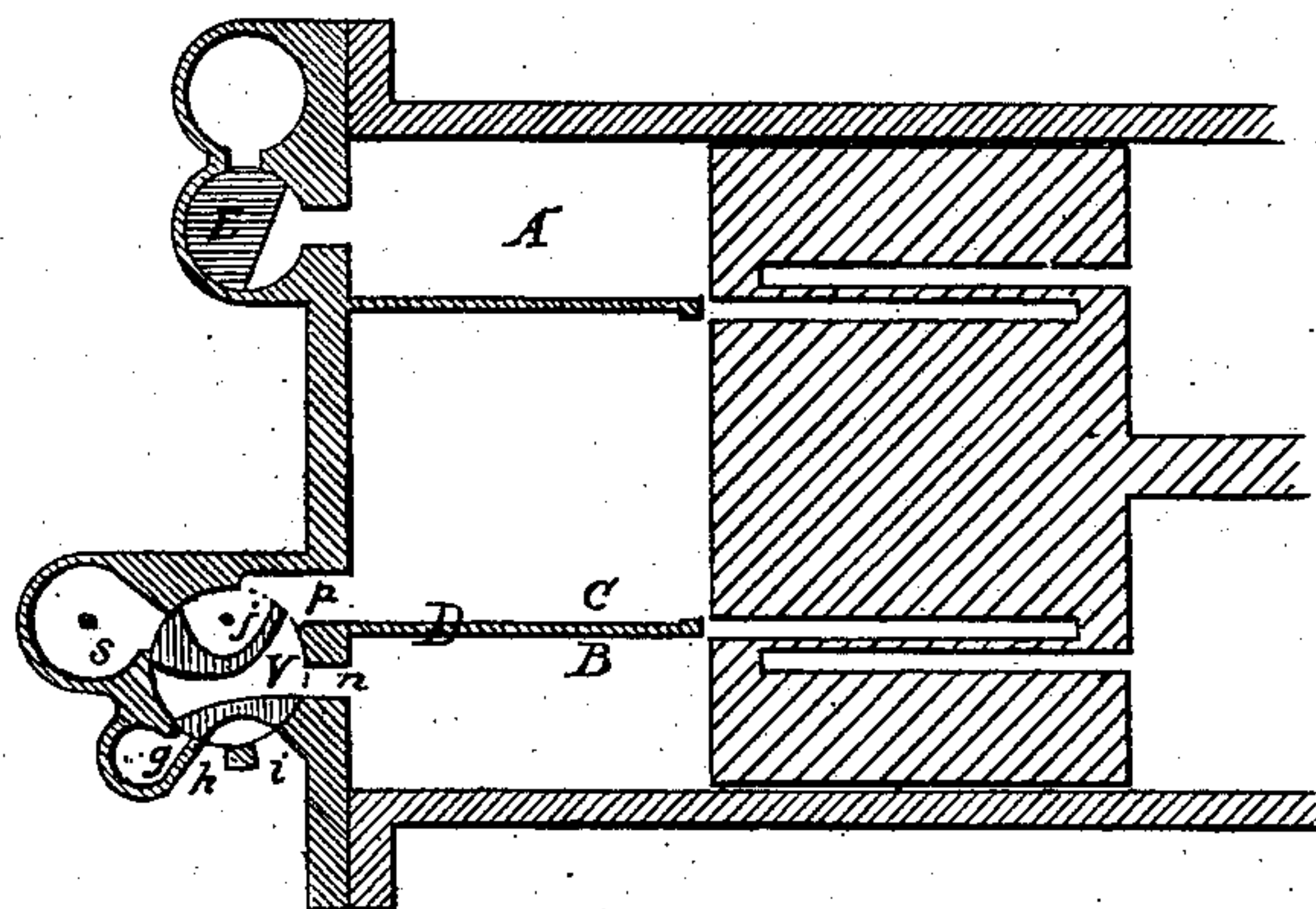


Fig 2.

WITNESSES
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GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 260,587, dated July 4, 1882.

Application filed December 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. MASSEY, of the city of Cleveland, Cuyahoga county, Ohio, have invented certain new and useful Improvements in Gas-Engines, of which the following description, in connection with the accompanying drawings, is a specification.

My invention consists in employing a diaphragm within the cylinder of a gas-engine in order to keep apart separate charges of air and an explosive mixture of gas and air until the moment of ignition.

In gas-engines as at present constructed an exceedingly high temperature is produced by ignition, and a large portion of this heat is quickly dissipated through the metal of the cylinder and the water-jacket that is used to prevent overheating. The object of my invention is to save all this energy by heating a large volume of air within the cylinder to a moderate degree, and thus obtain useful work from the expanded air.

In the accompanying drawings, Figure 1 is a sectional view through the cylinder, showing the arrangement of the diaphragm with relation to the cylinder and piston at an early point in the stroke. Fig. 2 is a sectional view of the same at the moment when ignition takes place.

Within the cylinder A is placed the diaphragm D D', which is attached to the cylinder-head and extends into the cylinder to the point reached by the piston at the moment of ignition. The piston is made with an annular recess, *r r'*, to admit the diaphragm D D' when at the end of the stroke. During the early portion of the stroke the space within the cylinder behind the piston is divided by the diaphragm D D' into exterior and interior chambers, B and C, having no connection with each other. The valve V admits gas from the orifice *g* and air from the opening *h* to mingle and pass into the interior chamber, C, through the passage *p*. It also admits air from the opening *i* to enter the exterior chamber, B, through the passage *n*, and also has a port containing a gas-jet, *j*, which is kept alight by the gas-jet *s*.

Fig. 2 shows the position of the various parts at the moment when ignition takes place. When in this position the gas-jet *j* ignites the mixture of gas and air in the chamber C through the passage *p*, the passages *p* and *n* are in communication, and the piston has passed beyond the diaphragm, thus allowing the heated gases in chamber C to pass at both ends of the diaphragm and expand the air in the exterior chamber, producing a pressure upon the piston. The exhaust-valves are shown at E E'.

What I claim, and desire to secure by Letters Patent, is—

1. A gas or hydrocarbon engine wherein separate chambers are maintained inside the cylinder for separate charges of air and an explosive mixture of gas and air until the moment of ignition, when the chambers are placed in free communication.

2. In a gas or hydrocarbon engine, a diaphragm situated within the cylinder, in combination with a corresponding recess in the piston, so as to maintain separate chambers within the cylinder during a portion of the stroke.

3. In a gas or hydrocarbon engine wherein the cylinder is provided with a diaphragm separating it into two chambers during a portion of the stroke, a valve with separate ports to admit at the same time air to one chamber and an explosive mixture to the other chamber of the cylinder.

4. In a gas or hydrocarbon engine wherein the cylinder is provided with a diaphragm separating it into two chambers during a portion of the stroke, a valve constructed and arranged so as to keep apart separate charges of air and an explosive mixture, while admitting them at the same time into the separate chambers of the cylinder, but at the moment of ignition opening a communication between the two chambers.

ALBERT P. MASSEY.

Witnesses:

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