

1,051,418.

Patented Jan. 28, 1913.

2 SHEETS—SHEET 1.

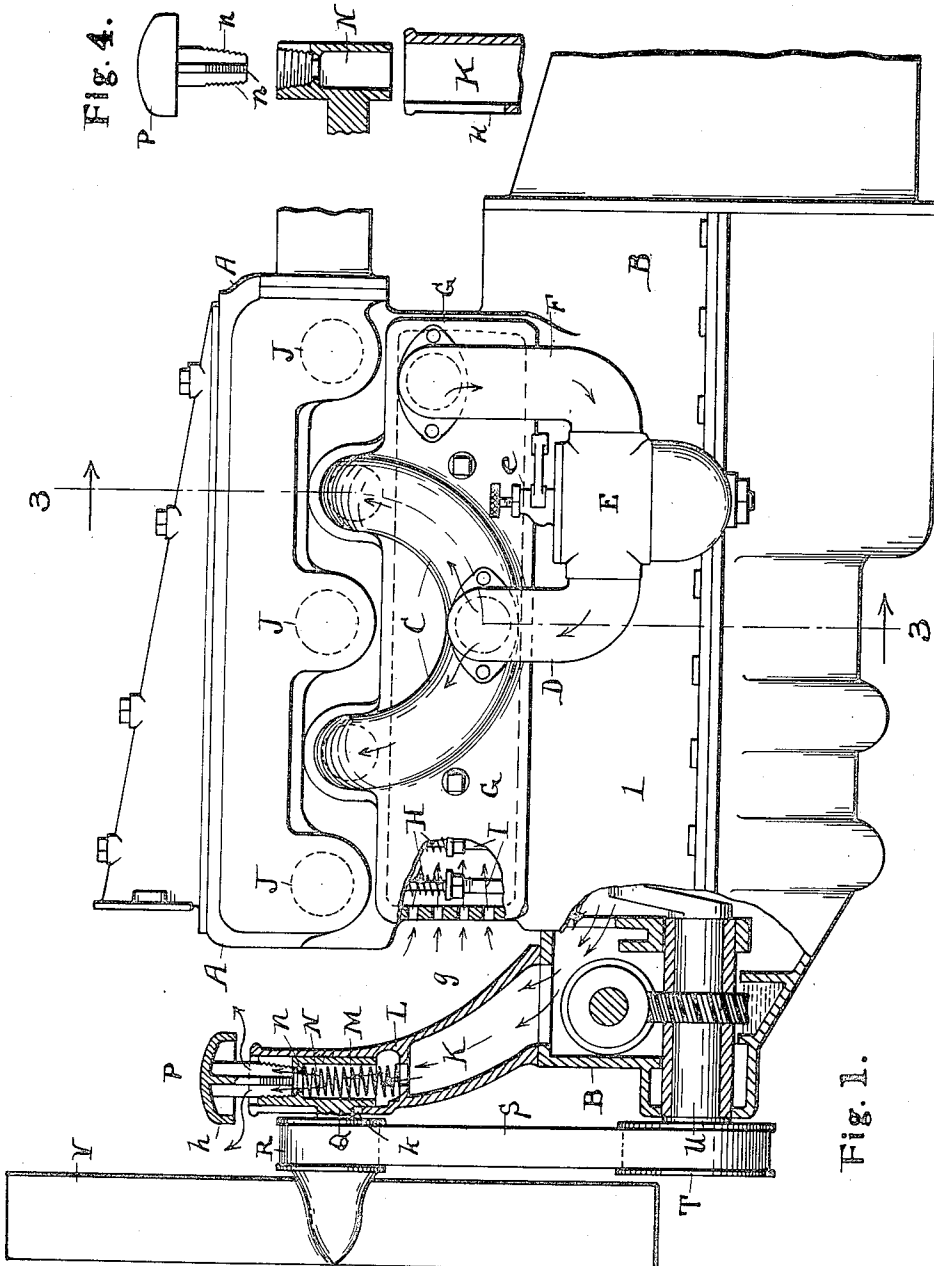


Fig. 1.

Fig. 4.

Witnesses:

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2 SHEETS—SHEET 2.

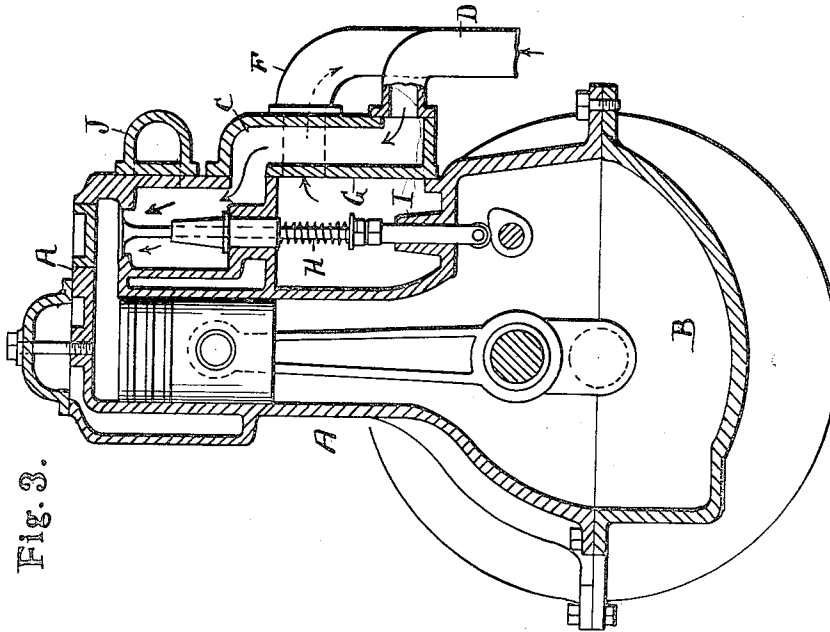


Fig. 3.

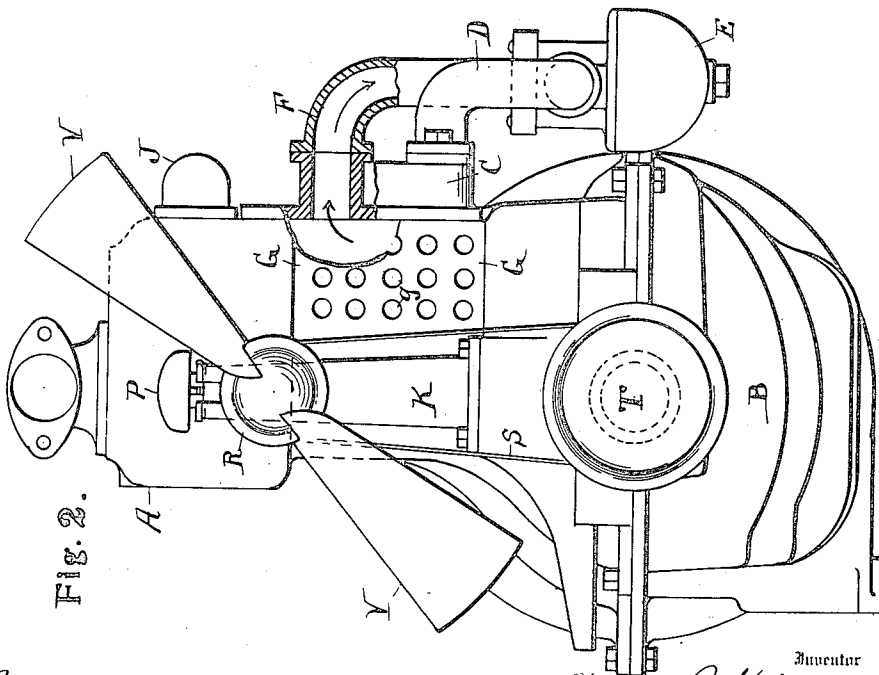


Fig. 2.

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UNITED STATES PATENT OFFICE.

CHARLES B. KING, OF DETROIT, MICHIGAN, ASSIGNOR TO KING MOTOR CAR COMPANY,
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GAS-ENGINE.

1,051,418.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed November 1, 1910. Serial No. 590,142.

To all whom it may concern:

Be it known that I, CHARLES B. KING, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Gas-Engines, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to gas engines and an object of my improvements is to provide an improved gas engine for use upon automobiles. I accomplish this result in the device illustrated in the accompanying drawings, in which—

Figure 1 is a side view, partly broken away, of a gas engine embodying my invention. Fig. 2 is a front view of the same, partly broken away. Fig. 3 is a section on the lines 3—3 of Fig. 1. Fig. 4 is a detail view of parts forming the means of securing the fan in position. These parts are separated in this view, and mostly shown in section.

In the drawings similar letters refer to similar parts.

A, A represent the casting in which are a plurality of vertical cylinders for a gas engine.

B is the common crank case.

G is a casing formed integral with the casting A, A, except the removable front plate forming a cover for the casing.

E is a carbureter.

C is a forked intake pipe.

D is a pipe leading from the pipe C to the carbureter E.

e is a throttle valve.

F is a pipe leading from the carbureter E to the casing G. The valve stems and rods I and springs H therefor are inclosed in the casing G.

g indicates perforations in the forward end of the casing G.

H indicates the springs upon the valve, and I the valve operating rods.

J, J, J, indicate the exhaust valves.

K is a hollow column extending upward and forward from one end of the crank case B, its interior communicating at its lower end with said crank case and at its upper end being open to the outer air.

L is a perforated diaphragm in the column K.

M is a compression spring, one end of which rests upon the diaphragm L.

N is a sliding crosshead adapted to fit and move in the upper end of the column K. From the cross-head N extends laterally a trunnion or arbor Q, which projects through a slot k in the column K. The cross-head N is hollow and is split as indicated at n by a slot extending longitudinally in one wall thereof. The spring M rests upon a perforated diaphragm in the cross-head N and tends to force said cross-head upward. There is a hole having converging walls, which are screw-threaded, in the upper end of the cross-head N.

P is a plug having screw-threaded fins p on its shank which fit into the hole in the upper end of the cross-head N and when screwed up tend to expand said cross-head and cause it to bind in the bore of the column K, while leaving an opening or openings between said fins to the outer air. The plug P is provided with a broad head which extends over the openings from the column K.

Upon the arbor or trunnion Q is pivoted a pulley R, and around this passes a belt S to the pulley T on the main shaft U of the engine.

V, V are fan blades upon the same shaft with the pulley R.

Oil is supplied to the crank case B through the column K, the plug P being removed to afford an opening into which the oil may be poured. The spring M acts to put the required tension on the belt S and when the plug P is restored to position the cross-head N is caused to bind in the column K with the required tension on the belt S. The fins p leave openings between them so that there is never any pressure in the crank case to force out the oil through the joints as the air may move freely out and in through the column K.

The action of the fan blades V, and the effect of the motion of the vehicle, is to force air through the apertures g into the casing G and here it is heated by the heat from the engine imparted to the wall of said casing by conduction and to the springs H and stems I by radiation. The heated air is drawn from the casing G through the pipe F through the carbureter E where,

because of its high temperature, it readily takes up the gasoline vapor, then through the pipe D to the branching pipe C and to the inlets of the engine.

5 Having thus described my invention what I claim is:

1. In a gas engine, a crank case, a hollow column rising from said crank case and open at its upper end to the outer air and opening into said crank case, a cross-head in said column, and a fan carried by said cross-head, said cross-head being so constructed as to permit air to pass by it, substantially as and for the purpose described.

2. In a gas engine, a crank case, a hollow column rising from said crank case and open at its upper end to the outer air and toward its lower end to said crank case, a cross-head in said column, a fan carried by said cross-head, a pulley carried by said cross-head and adapted to drive said fan, a second pulley and a belt passing around said pulleys, a spring acting against said cross-head to tighten said belt, and means for setting said cross-head in an adjusted position.

3. In a gas engine, a crank case, a hollow column rising from said crank case and open at its upper end to the outer air and at its lower end to the crank case, a cross-head in said column, a fan carried by said cross-head, a spring acting against said cross-head, said cross-head having its walls slotted and being provided with a screw-threaded conical hole at its upper ends, and a screw-threaded plug adapted to have its

threads engage in said hole, substantially as and for the purpose described.

4. In a gas engine, a crank case, a hollow column rising from said crank case and open at its upper end to the outer air and at its lower end to the crank case, a cross-head in said column, a fan carried by said cross-head, a spring acting against said cross-head, said cross-head having its walls slotted and being provided with a screw-threaded conical hole at its upper ends, and a screw-threaded plug adapted to have its threads engage in said hole, and cover the opening to said column, substantially as and for the purpose described.

5. In a gas engine, a crank case, a hollow column rising from said crank case adapted to carry the cooling fan, said column being open to the outer air toward the top and opening into said crank case toward its lower end.

6. In a gas engine, a column, a cross-head supported by said column and adjustable longitudinally thereof, a fan and pulley carried by said cross-head, a second pulley, a belt passing around said pulleys, a spring acting against said first mentioned pulley to tighten said belt, and means for securing said cross-head in the position that it takes due to the action of said spring and belt.

In testimony whereof, I sign this specification in the presence of two witnesses.

CHARLES B. KING.

Witnesses:

VERA PILLMAN,
ELLIOTT J. STODDARD.