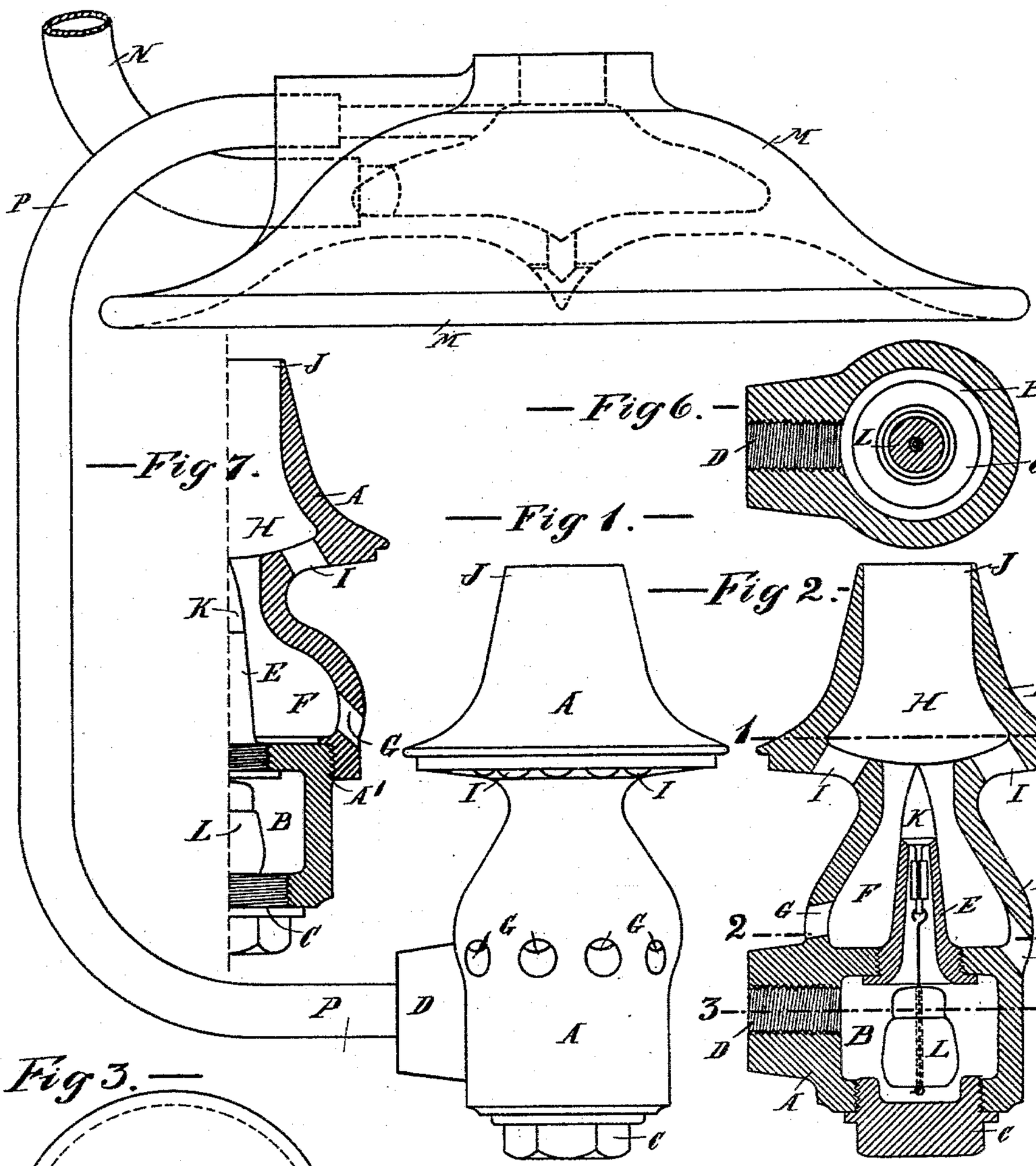
(No Model.)

H. A. HOUSE & H. A. HOUSE, Jr.

GAS OR VAPOR BURNER FOR HEATING PURPOSES.

No. 533,593. Patented Feb. 5, 1895.



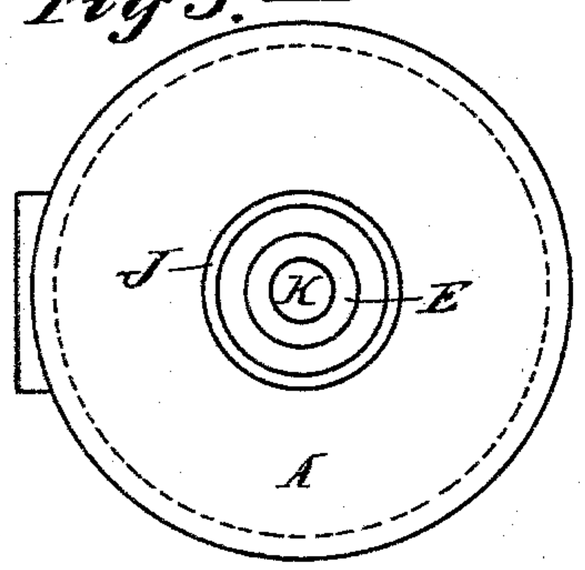
— Fig 7. —

— Fig 6. —

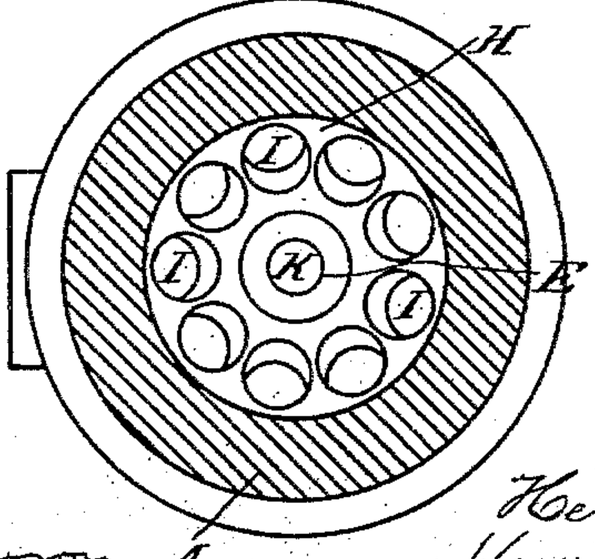
— Fig 1. —

— Fig 2. —

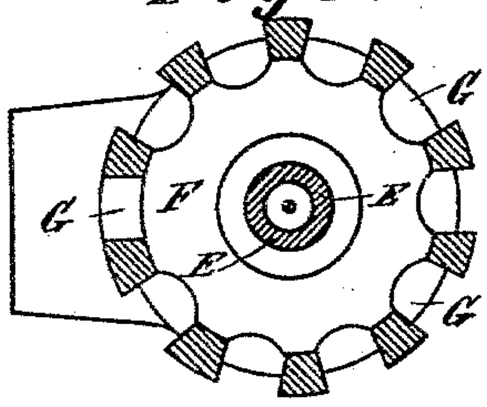
— Fig 3. —



— Fig 4. —



— Fig 5. —



Witnesses.
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UNITED STATES PATENT OFFICE.

HENRY A. HOUSE AND HENRY A. HOUSE, JR., OF BRIDGEPORT, CONNECTICUT, ASSIGNORS OF ONE-HALF TO ROBERT RINTOUL SYMON, OF LONDON, ENGLAND.

GAS OR VAPOR BURNER FOR HEATING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 533,593, dated February 5, 1895.

Application filed July 13, 1893. Serial No. 480,417. (No model.)

To all whom it may concern:

Be it known that we, HENRY ALONZO HOUSE and HENRY ALONZO HOUSE, Jr., mechanical engineers, citizens of the United States of America, temporarily residing at Teddington, county of Surrey, England, but usually of Bridgeport, county of Fairfield, and State of Connecticut, have invented a certain new and useful Improvement in Gas or Vapor Burners for Heating Purposes, of which the following is a specification.

This invention relates to gas or vapor burners for heating purposes such as the generation of steam in steam boilers, for cooking and such like.

In the drawings hereto annexed Figure 1 is an elevation of one of our improved burners; Fig. 2, a corresponding sectional elevation; Fig. 3, a plan; Figs. 4, 5 and 6, sectional plans taken on lines 1—1, 2—2 and 3—3 respectively of Fig. 2, and Fig. 7 a partial sectional elevation showing a slight modification of part of Fig. 2.

A is the metallic body of the burner made in one piece as shown, or, if preferred, in several separate pieces screwed or otherwise connected together.

B is a chamber formed at the lower part of the body A and having an opening closed by a screw plug C or otherwise.

D is an inlet passage for the admission of gas or vapor to the chamber B from any available source of gas or vapor.

E is a nozzle leading the gas or vapor from the chamber B into the gas and air combining chamber F which is provided with a series of holes G round its base for the admission of atmospheric air.

H is a third chamber also provided with holes I around its base for the introduction of a further supply of atmospheric air. This third chamber H terminates in a kind of nozzle or chimney J at the top of which the combustion of the mixed gas or vapor and air takes place. The top of the nozzle E is closed with a valve K the upper part of which is carried upward in a conical shape as shown in order to form the upper part of the chamber F as an annular passage. The valve K is weighted by a weight L, or if preferred by a spring, so that the gas or vapor entering the chamber F can only do so by raising the valve K and weight L and this requires the gas or vapor to be delivered at such a pressure that it escapes around the valve K, when the latter is raised, at such a velocity that it induces an inrush of atmospheric air through the holes G. This air mixes intimately with the gas or vapor and the mixture rushes with considerable velocity into the chamber H and induces a further inrush of air through the holes I. This air mixing with the air and gas or vapor coming from the chamber F produces a mixture which burns with an intense heat at the nozzle or chimney J.

It will be understood that the weighted valve K gives a constant pressure to the gas or vapor whatever quantity may be passing through the nozzle E.

In some cases either or both of the chambers F H may be dispensed with, the lower part of the burner including the chamber B, nozzle E and weighted valve K only being retained; and it is sometimes convenient to arrange for the upper part of the body to be connected to the lower part by a screw thread A′ as shown in Fig. 7 so as to enable the parts to be separated for cleaning and repair.

As above stated the gas or vapor supplied to the burner may be taken from any available source of supply, such as a gas holder suitably weighted to supply the gas or vapor at the required pressure, a vessel containing compressed gas or vapor, or directly from a generator in which gas or vapor is produced from a hydrocarbon liquid, as for example from a gas or vapor generator of the kind for which we have this day applied for a patent under Serial No. 480,415, and which is shown in connection with the above described burner in Fig. 1 of the drawings hereto annexed. In the said Fig. 1, M is the generator placed immediately over the burner, so as to be heated thereby. The hollow space or chamber in the generator may be loosely filled with asbestos or other suitable more or less porous and incombustible material. N is a pipe for conveying hydrocarbon liquid to the hollow space or chamber of the generator, and P is a pipe for convey-

ing the gas or vapor produced in the generator from such hydrocarbon liquid, to the inlet passage D of the burner.

When the gas or vapor is ignited at the nozzle or chimney J the flame impinges upon the under side of the generator M and a part of the heat is expended in vaporizing or gasifying the hydrocarbon liquid supplied thereto in regulated quantity by the pipe N. This vapor or gas then passes to the burner by the pipe P and is there mixed with air in the manner before described, the mixture being heated in the chambers F and H before combustion by the heat communicated to the body of the burner from the burning gas or vapor.

The part of the heat of the flame not required for vaporizing or gasifying the hydrocarbon liquid is available for any heating purpose required, such as that of raising steam in a steam boiler, for cooking and so forth.

We claim—

1. In a gas or vapor burner, the combination with a gas chamber to which gas or vapor subject to varying pressures is introduced, a mixing chamber, into which the gas chamber opens through an orifice, of a weighted valve, normally closing said orifice and adapted to be raised by and in proportion to the pressure of gas within the gas chamber, as set forth.

2. In a gas or vapor burner, the combination of a gas chamber to which gas or vapor subject to varying pressures is introduced, a nozzle extending from said gas chamber, a mixing chamber into which said nozzle projects and provided with a series of openings below the orifice of said nozzle, and a weighted valve seated over and normally closing the orifice of the nozzle and adapted to be raised by and in proportion to the pressure of gas within the gas chamber, as set forth.

In witness whereof we have hereunto set our hands in presence of two witnesses.

HENRY A. HOUSE.
HENRY A. HOUSE, JR.

Witnesses:
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