

No. 725,104.

PATENTED APR. 14, 1903.

A. A. LOW.
IGNITION CHAMBER FOR GAS ENGINES.

APPLICATION FILED JUNE 11, 1901.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

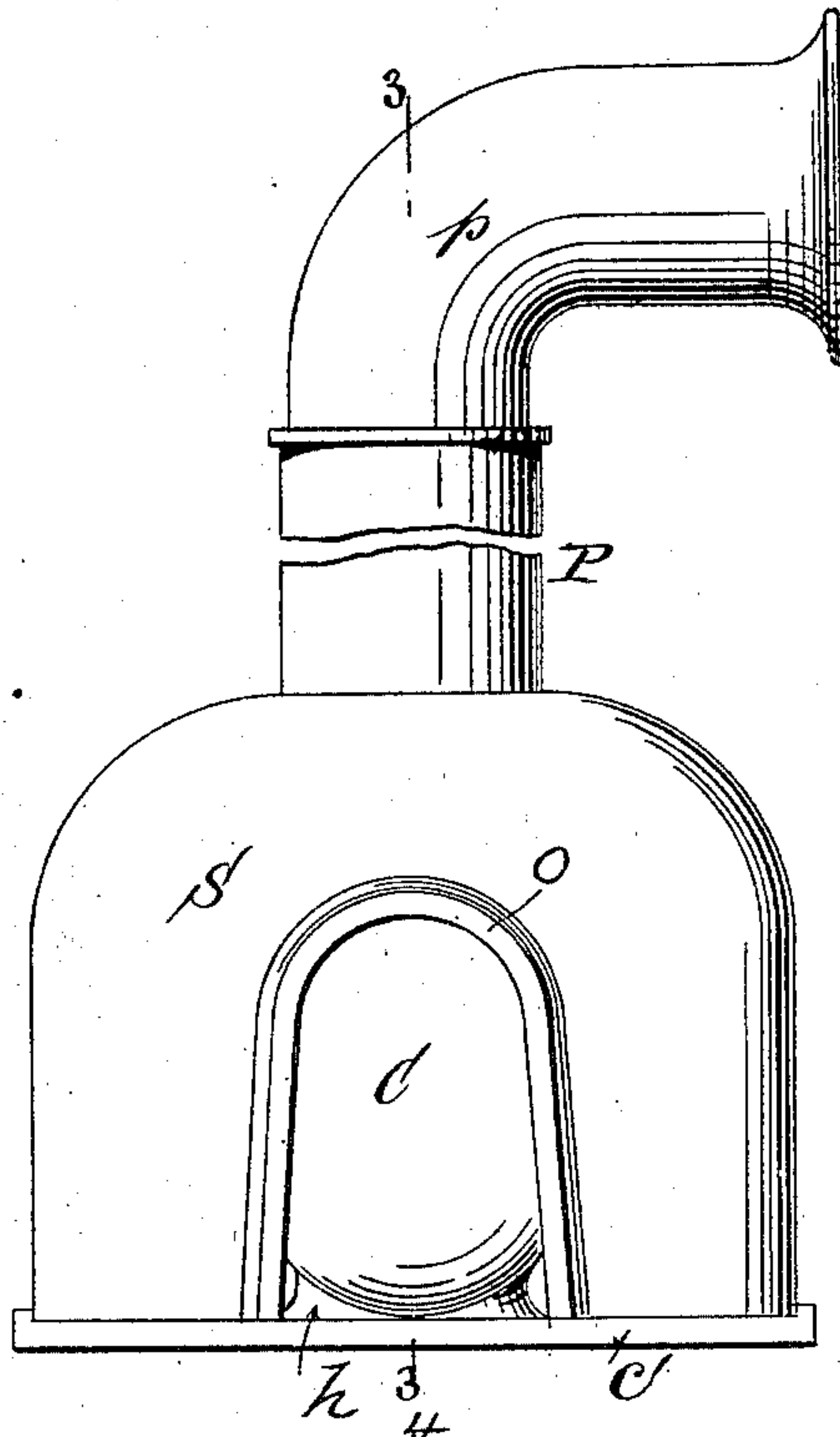
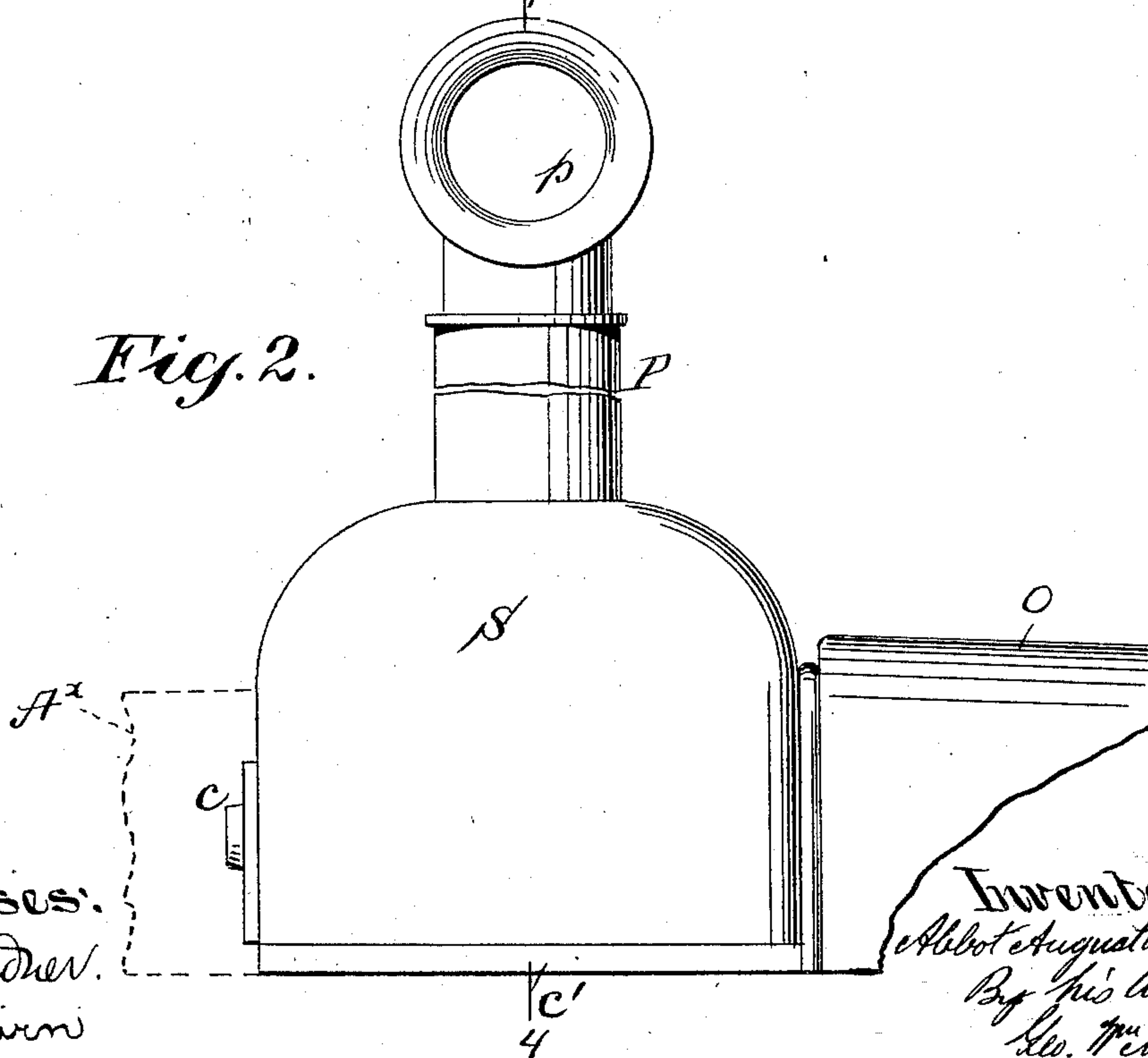


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

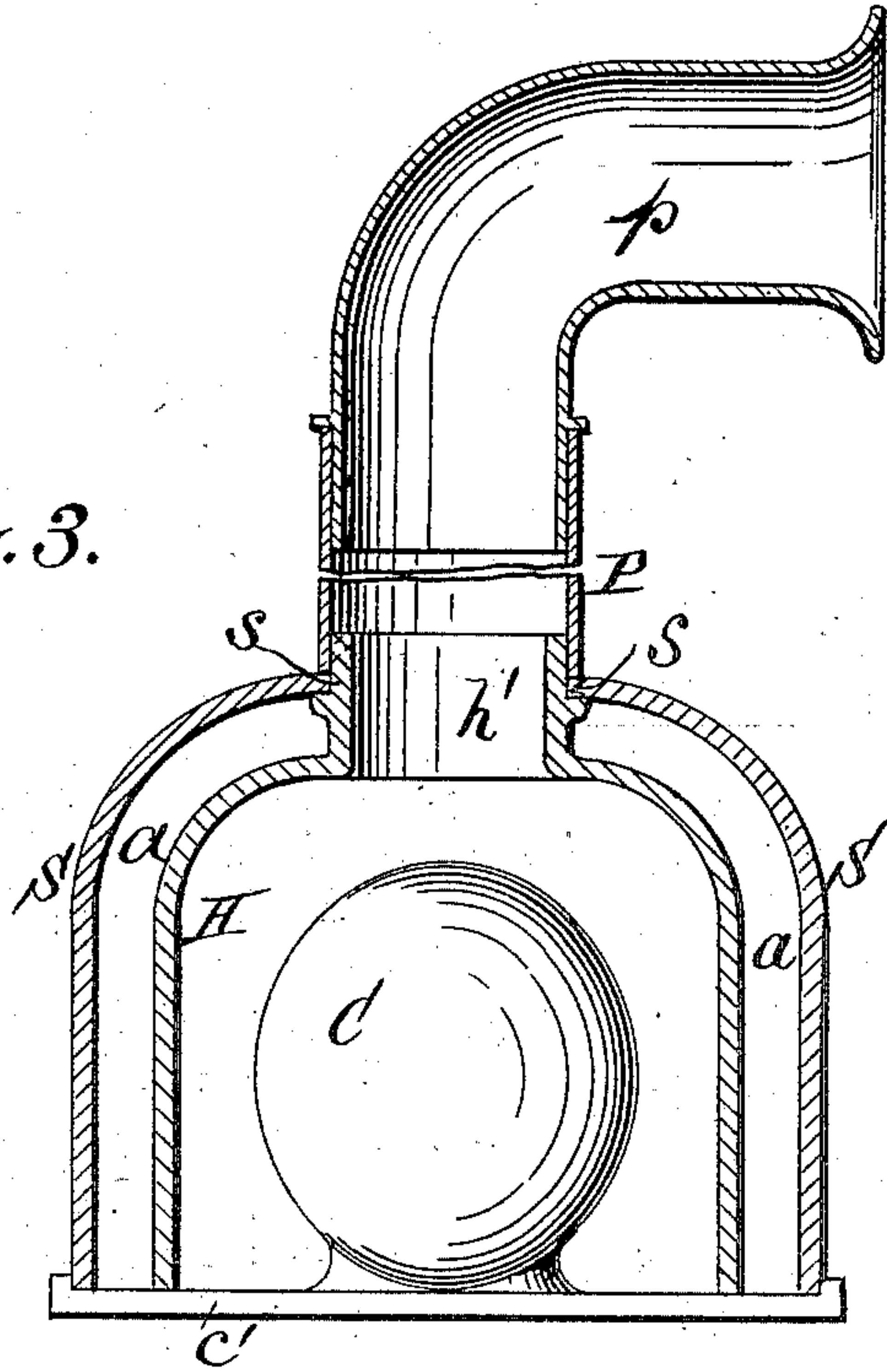
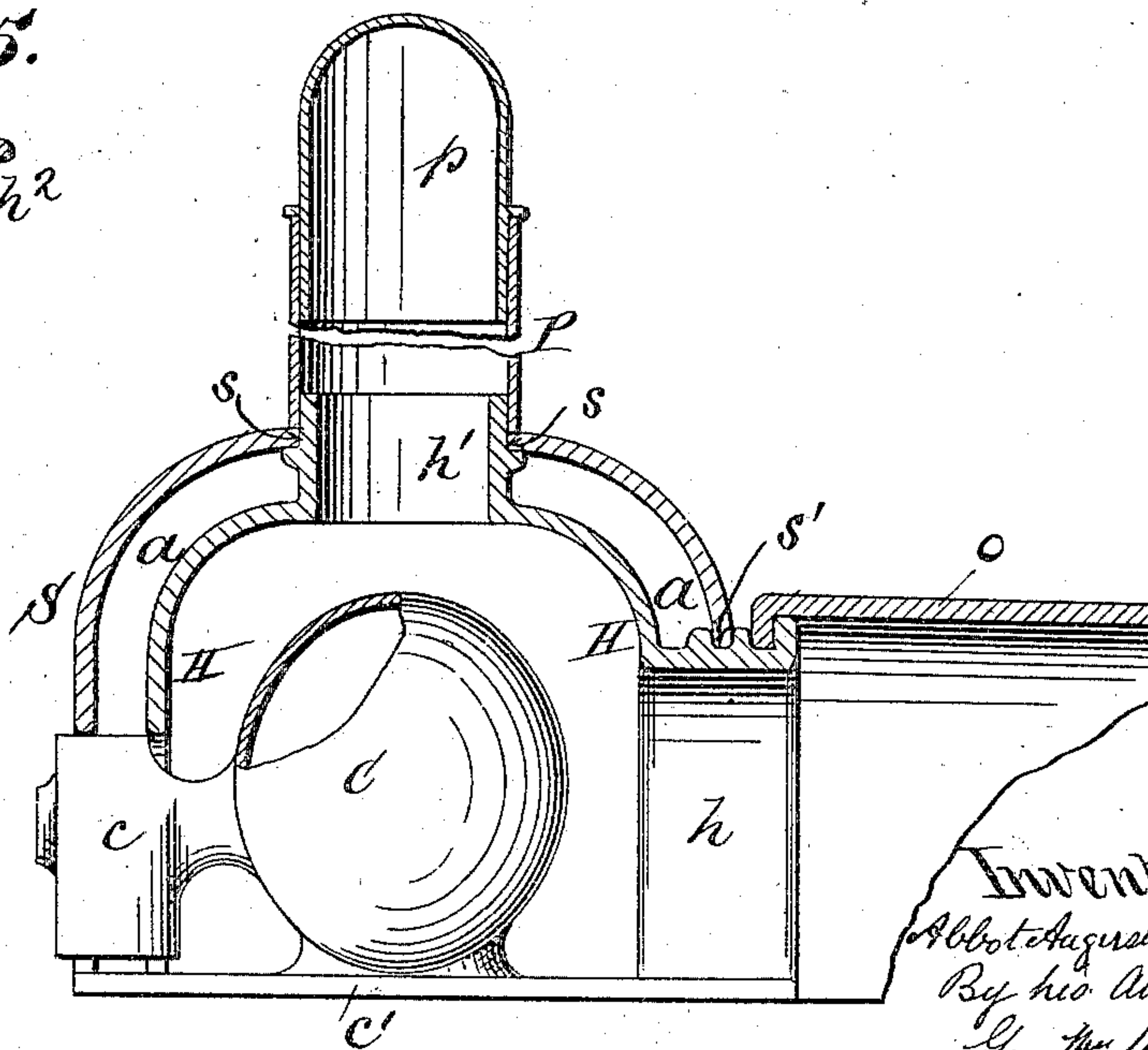
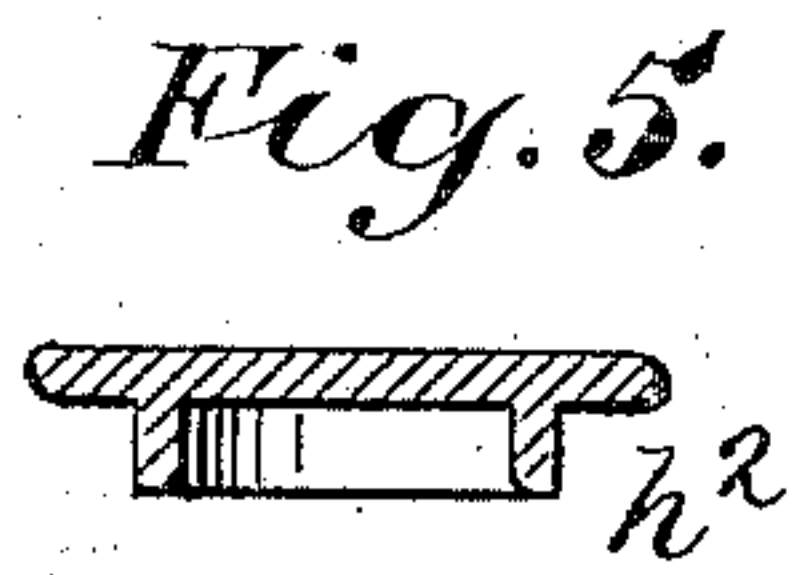


Fig. 4.



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UNITED STATES PATENT OFFICE.

ABBOT AUGUSTUS LOW, OF BROOKLYN, NEW YORK.

IGNITION-CHAMBER FOR GAS-ENGINES.

SPECIFICATION forming part of Letters Patent No. 725,104, dated April 14, 1903.

Application filed June 11, 1901. Serial No. 64,111. (No model.)

To all whom it may concern:

Be it known that I, ABBOT AUGUSTUS LOW, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Ignition-Chambers for Gas-Engines, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to so-called "ignition-chambers" of gas-engines, in which the compressed charge of hydrocarbon vapor and air is fired, as in the Hirsch kerosene-engine described in Letters Patent dated April 4, 1899, No. 622,469. In this class of engine a preliminary heating of the ignition-chamber is essential in starting the engine if the latter has been at rest a considerable length of time, since the temperature of the chamber is gradually lowered by radiation below the ignition-point when the supply of fuel is cut off. Hence it is desirable to retard the escape of heat by radiation when the engine is stopped temporarily only in order to avoid the necessity for reheating the ignition-chamber externally.

Another desideratum is the maintenance of a steady uniform heat in the ignition-chamber while the engine is in operation, so as to attain perfect combustion of the hydrocarbon, which is apt to carbonize and smut the chamber and cylinder if the degree of heat rises too high and to be inefficient and unreliable if the temperature drops too low.

The main object of my invention is to obviate these difficulties and to positively insure a practical uniformity of temperature by retarding changes of temperature by means of an air-jacket arranged and operating as hereinafter more fully set forth, so that the engine may be run at a higher rate of speed with increased economy of fuel and so that it may be maintained at a working temperature for a reasonable length of time even after the supply of fuel is shut off.

Another feature of my invention consists in the means, as described, whereby the preliminary heating of the combustion-chamber may be effected more conveniently and rap-

idly by preventing interference or back pressure by the wind against the flame of the heating-torch, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is an elevation of my improved arrangement of parts; Fig. 2, an elevation taken at right angles to Fig. 1; Fig. 3, a sectional elevation taken upon plane of line 4 4, Fig. 2; Fig. 4, a sectional elevation taken upon plane of line 3 3, Fig. 1; Fig. 5, a view of the cover for the outlet to the hood.

C represents the bulbular ignition-chamber formed with the hydrocarbon-inlet *c* and adapted to be secured to the power-cylinder *A*^x in the usual way. Surrounding and enclosing the ignition-chamber C is the hood H, having the opening *h*, through which the end of the torch is inserted to effect the preliminary heating of the ignition-bulb, said hood H being also formed with the outlet *h'* for the products of combustion escaping from the torch, which latter may be of the form set forth in my concurrent application, Serial No. 37,709, filed November 26, 1900, or of any other suitable form.

As heretofore used the presence of a strong wind has been apt to retard and interfere with the preliminary heating of the ignition-bulb by means of the torch by reason of back pressure exerted through the aperture *h'* against the blast-flame of the torch. This I obviate by providing the exit *h'* with an extension-pipe P and fitting to the end of the extension-pipe a cowl *p*, so that the external pressure of air will be utilized in increasing the draft of flame around the ignition-chamber instead of opposing it, as heretofore. In other words, the wind will turn the cowl *p* with its mouth in the opposite direction to that from which it is blowing, so as to not only prevent the possibility of back pressure, but actually to create a suction or partial vacuum within the cowl *p* and extension P, which facilitates combustion and the discharge of the products thereof.

It is to be understood that the cowl *p* and extension P are only used temporarily during the preliminary heating of the ignition-bulb. At other times the opening *h'* is closed by a cover *h*². (Shown in Fig. 5.) When thus closed by the cover, it will be seen that all

draft through the hood H is prevented. A hood O is provided around the opening *h*, as seen in Figs. 2 and 4.

Surrounding the hood H, I constitute my
5 air-tight jacket by means of a shell S, fitting snugly around the neck of the outlet *h'* at *s*, around the neck of the opening *h* at *s'*, around the inlet *c*, and against the exterior surface of the base-plate *c'*, by which the ignition-chamber C and appendant parts are secured to the engine-cylinder, thus constituting an inclosed air-space *a*, surrounding the hood H and ignition-bulb C. As a result the air confined in the shell S acts to retard the escape of heat
15 by radiation, and to thereby maintain a uniformity of temperature at which the best results can be attained. Thus a higher rate of speed may be maintained at a minimum expenditure of fuel, the carbonizing of the fuel
20 is prevented and perfect combustion attained, and the necessity for reheating the ignition-chamber is decreased, since the degree of heat requisite to effect combustion will be maintained in the combustion-chamber for some
25 time after the supply of fuel is cut off.

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

1. The combination with the ignition-chamber and its hydrocarbon-inlet, of a hood surrounding said chamber and inlet and having 30 an outlet at a point at right angles to said inlet, a hood around said outlet, a shell surrounding said first-mentioned hood, inlet and outlet and forming an air-tight jacket, and a cowl mounted above a vertical outlet from 35 said first-mentioned hood.

2. The combination with the ignition-chamber and its base-plate and the hydrocarbon-inlet to said chamber, of a hood surrounding said chamber and having a vertical extension 40 with outlet and a horizontal extension disposed oppositely to said inlet, a hood secured to said extension, and a shell inclosing the first-mentioned hood and fitted snugly around the vertical extension thereof and around the 45 horizontal extension and the inlet and to said base-plate and forming an inclosed air-space surrounding said hood, all substantially as shown and described.

ABBOT AUGUSTUS LOW.

Witnesses:

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