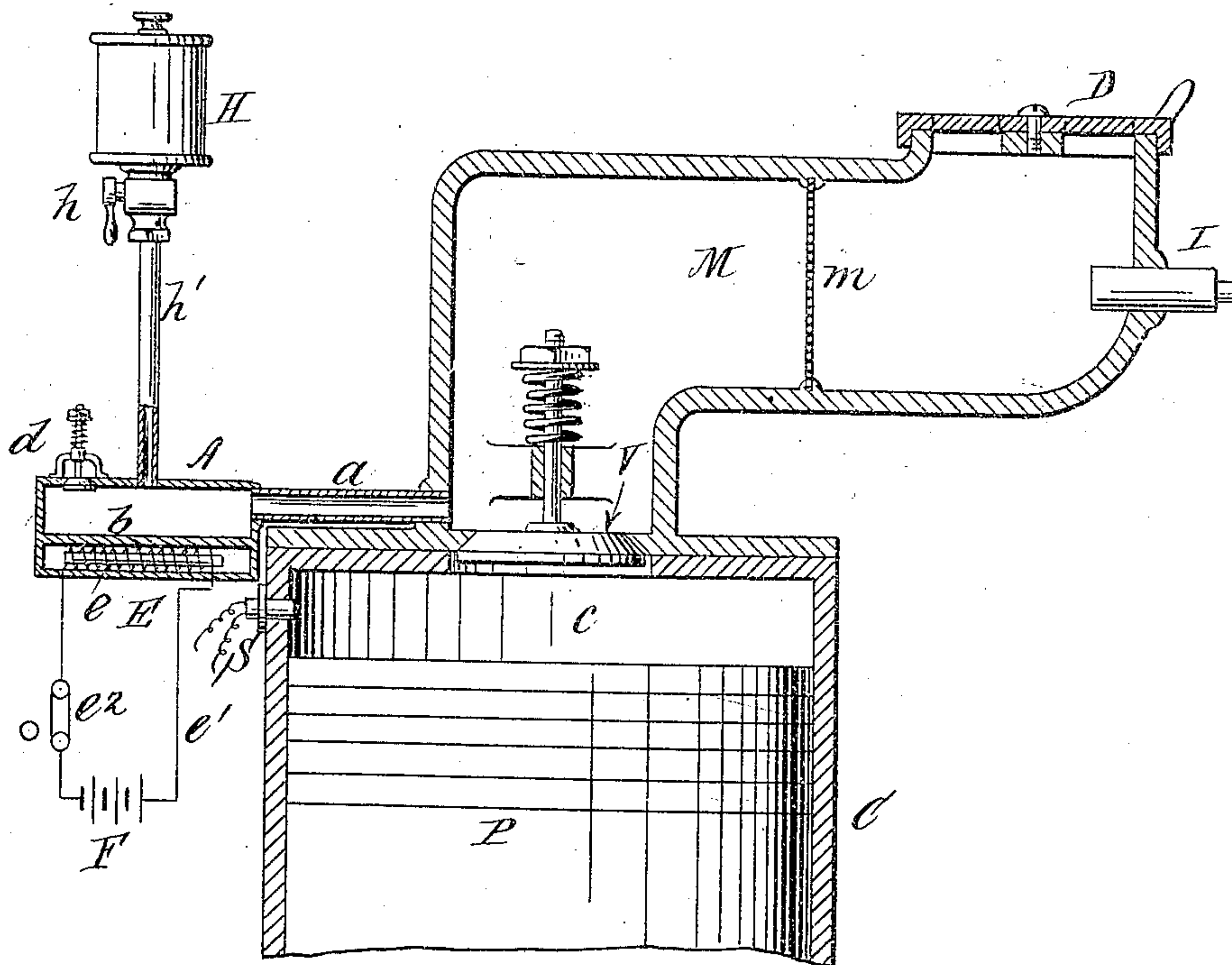


No. 868,608.

PATENTED OCT. 15, 1907

A. A. LOW & A. WASSMANN.
HYDROCARBON MOTOR.

APPLICATION FILED FEB. 8, 1907.



Witnesses:

D. W. Gardner.
W. L. Miller

Inventors:

Abbot Augustus Low
August Wassmann
By their Attorney
Geo. W. Meath

UNITED STATES PATENT OFFICE.

ABBOT AUGUSTUS LOW, OF HORSESHOE, AND AUGUST WASSMANN, OF ASTORIA, NEW YORK,
SAID WASSMANN ASSIGNOR TO SAID LOW.

HYDROCARBON-MOTOR.

No. 868,608.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed February 8, 1907. Serial No. 356,306.

To all whom it may concern:

Be it known that we, ABBOT AUGUSTUS LOW and AUGUST WASSMANN, citizens of the United States, residing, respectively, at Horseshoe, St. Lawrence county, State of New York, and at Halletts Point, Astoria, Queens county, State of New York, have invented certain new and useful Improvements in Hydrocarbon-Motors, of which the following is a specification.

10 Our improvements relate to the class of motors in which liquid hydro-carbon is vaporized and mixed with air to form the charge which is exploded in the combustion chamber, and the present invention relates essentially to the means employed for effecting the preliminary heating and starting of the motor,—the object being to expedite and render more effective said operation.

To this end the invention consists essentially in the provision of means whereby an auxiliary supply of liquid hydro-carbon may be made to impinge upon a vaporizing plate, the temperature of which may be quickly raised to the vaporizing point by an electric heater, which may be switched on or off instantaneously as required. The invention also includes means for admitting air to the vaporized hydro-carbon and introducing the mingled air and vaporized hydro-carbon into the main mixing chamber immediately adjacent to the induction valve between said main mixing chamber and the combustion chamber, so that these preliminary charges used in starting the motor, will be immediately introduced into the combustion chamber with little or no loss of heat by radiation or by absorption by the walls of the main mixing chamber.

35 The accompanying drawing represents diagrammatically and in sectional elevation, the parts of a hydro-carbon motor essential to an understanding and practical operation of our invention.

P is the reciprocating piston within the cylinder C, the upper part *c*, of which constitutes in this case the combustion chamber, in which the successive charges are exploded by a sparking device S, of any desired or well known construction.

M, is the main mixing chamber in which, during the normal running of the motor, liquid hydro-carbon is forced through an injector I, in the usual manner,—the liquid hydro-carbon thus injected being made to impinge against a perforated screen *m*, as heretofore, said screen *m*, being interposed between the injector I and the automatic induction valve V, which in turn is interposed between the main mixing chamber M, and the combustion chamber *c*, in the cylinder C. Air is admitted to the main chamber through a damper D, as heretofore to be mixed with the vaporized hydro-carbon before its introduction into the combustion

chamber. After the preliminary heating and starting of the motor, the feeding and operation of the motor is the same as usual.

The main novelty in the present application consists in the use of a relatively small auxiliary mixing chamber A, and accessories hereinafter described, whereby preliminary charges of vaporized hydro-carbon mixed with air may be introduced into the lower part of the main mixing chamber immediately above and adjoining the induction valve V, which is operated as heretofore by suction caused by the piston. For this reason the auxiliary vaporizing chamber A, is connected directly by a conduit *a*, with the lower portion of the main mixing chamber M, in proximity to said induction valve V, substantially as illustrated in the accompanying drawings.

Within the auxiliary mixing chamber A, is the vaporizing plate *b*, preferably made of copper or other metal of relatively high conductivity,—the object being, in this connection, to afford a vaporizing medium which may be quickly heated to a temperature sufficient to vaporize liquid hydro-carbon brought into contact therewith. Underneath, and in close proximity to, this vaporizing plate *b*, is an electric heating device E, of any desired or well known form, that shown in the drawing being represented symbolically and consisting of a resistance coil *e*, interposed in an electric circuit *e'*, of which the battery F, or other source of electricity forms a part,—the electric circuit being controlled by a suitable switch represented symbolically at *e''*.

d, is a puppet valve which opens automatically to admit air to oxidize the hydro-carbon vaporized by the plate *b*, when the main induction valve V, is open.

H, is an oil cup or holder of any suitable character disposed in position as may be found most convenient, containing an auxiliary supply of liquid hydro-carbon, the admission of which to the auxiliary vaporizing chamber A, is regulated by a suitable valve *h*, interposed between the inlet pipe *h'*, and the cup or holder.

By the use of the supplementary means above described for effecting the preliminary heating and starting of the motor we are enabled to materially shorten the said operation, since the vaporizing plate *b*, may be raised almost instantaneously by the electrical heating device to a temperature sufficient to effect the vaporization of the liquid hydro-carbon.

What we claim as our invention and desire to secure by Letters Patent is,

1. In a hydro-carbon motor of the character designated the combination with the combustion chamber and main mixing chamber, and with the induction valve interposed between said combustion chamber and said main mixing chamber, of an auxiliary mixing chamber communicating with the lower part of the main mixing chamber adjacent to said induction valve, a vaporizing plate in said auxiliary

mixing chamber, an electrical device for heating said vaporizing plate, means for introducing liquid hydro-carbon into said auxiliary mixing chamber and against said vaporizing plate, and means for admitting air automatically to said auxiliary mixing chamber, for the purpose described.

2. In a hydro-carbon motor of the character designated, the combination with the combustion chamber and main mixing chamber, and with the induction valve interposed between said mixing chamber communicating with the lower part of the main mixing chamber adjacent to said induction valve, a vaporizing plate in said auxiliary mixing chamber, an electrical device for heating said vaporizing plate, means for introducing liquid hydro-carbon into said auxiliary mixing chamber and against said vaporizing plate, means for regulating the supply of liquid hydro-carbon thus introduced into the auxiliary mixing chamber, and means for admitting air to said auxiliary mixing chamber, for the purpose described.

3. In a hydro-carbon motor of the character designated

the combination with the combustion chamber and main mixing chamber, and with the induction valve interposed between said combustion chamber and said main mixing chamber, of an auxiliary mixing chamber, a conduit connecting said auxiliary mixing chamber with the main mixing chamber immediately adjacent to the said induction valve, a vaporizing plate in said auxiliary mixing chamber and an electrical device for heating said vaporizing plate interposed in an electrical circuit controlled by a suitable switch, an oil cup or holder for liquid hydro-carbon, a conduit between said reservoir and said auxiliary mixing chamber, a valve in said conduit for regulating the supply of liquid hydro-carbon, and an automatic valve for admitting air to said auxiliary mixing chamber, for the purpose set forth.

ABBOT AUGUSTUS LOW.
AUGUST WASSMANN.

Witnesses:

D. W. GARDNER,
GEO. WM. MIATT.