No. 826,531. PATENTED JULY 24, 1906.

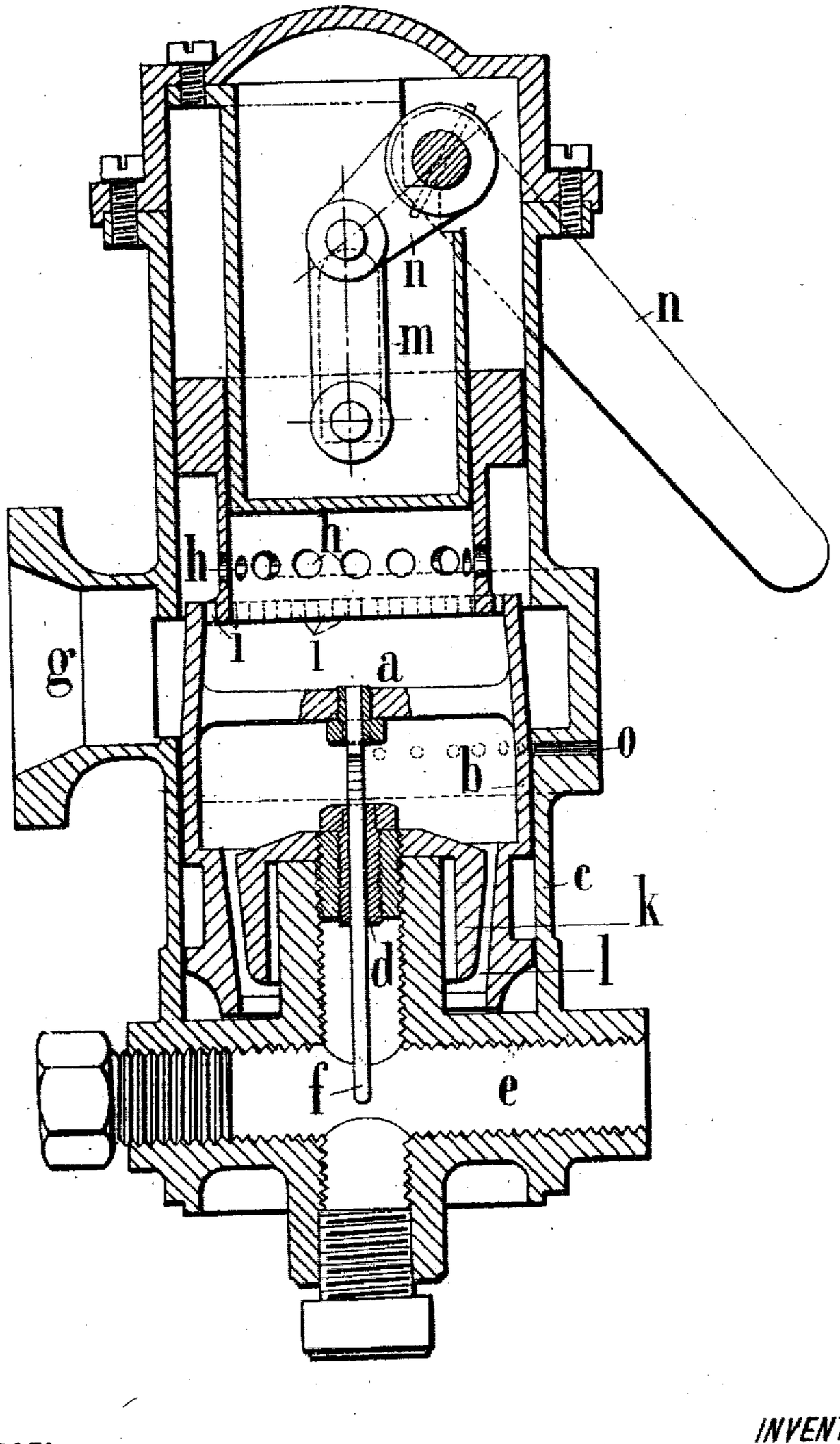
J. E. M. BRIEST.

CARBURETER.

APPLICATION FILED MAR. 11, 1905.

7 SHEETS—SHEET 1.

Fig.1



WITNESSES:

Wm. M. Golden Jr.

Herbert E. Johnston

INVENTOR

Joseph, Eugène, Marie Briest

BY

Max D. Ordmann

ATTORNEY

No. 826,531. PATENTED JULY 24, 1906.

J. E. M. BRIEST.

CARBURETER.

APPLICATION FILED MAR. 11, 1905.

7 SHEETS—SHEET 2.

Fig. 2.

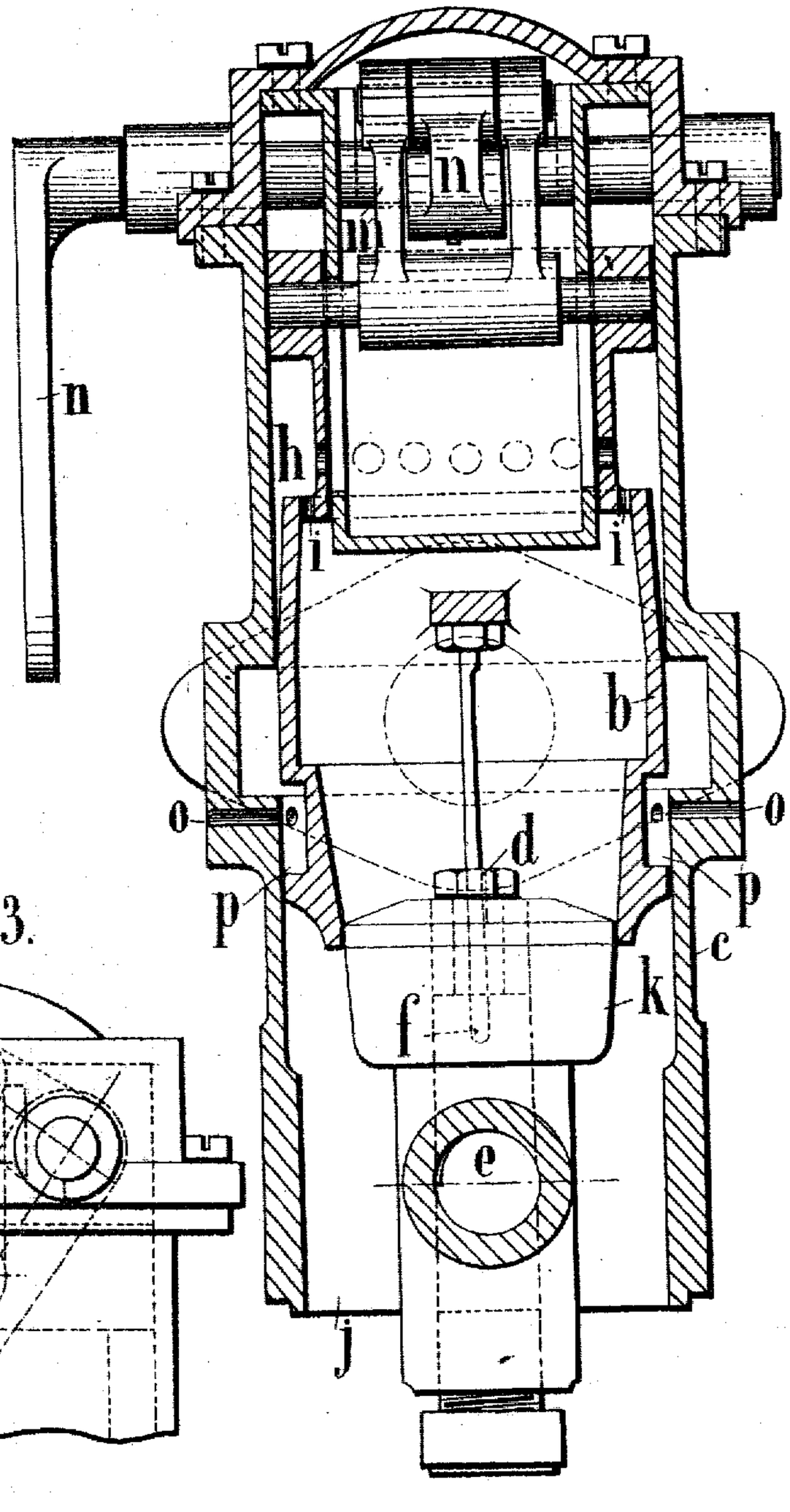
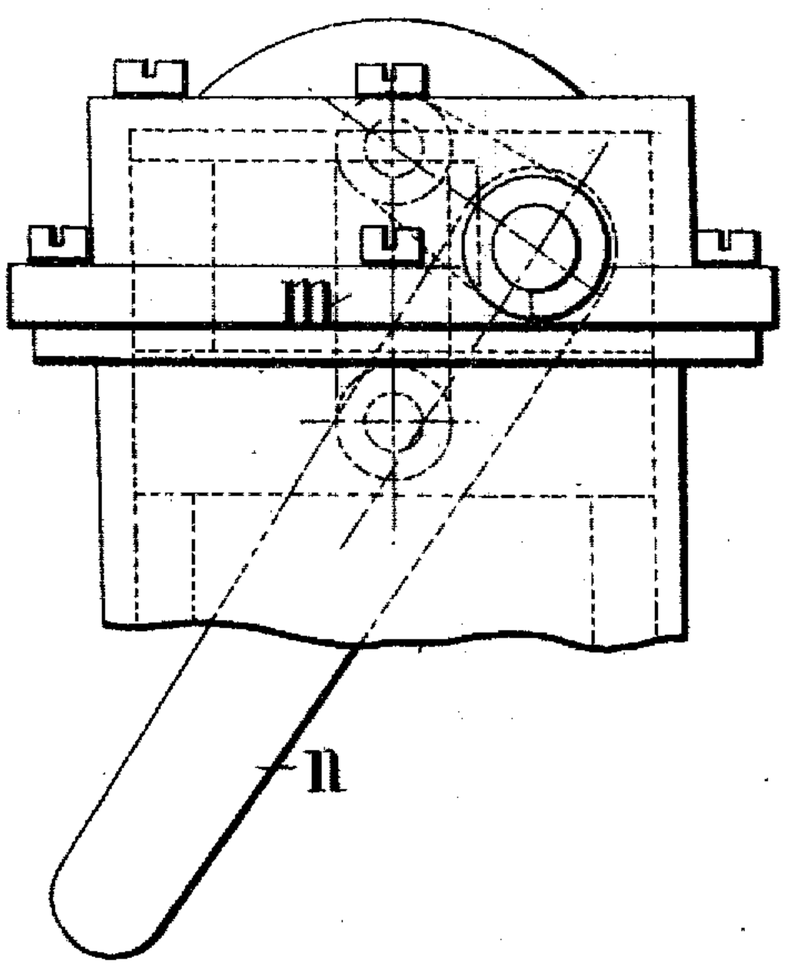


Fig. 3.



WITNESSES:
Wm. M. Goldenz Jr.,
Herbert E. Johnston

INVENTOR
Joseph, Eugène, Marie Briest.
BY
Max D. Ordmann
ATTORNEY

No. 826,531.

PATENTED JULY 24, 1906.

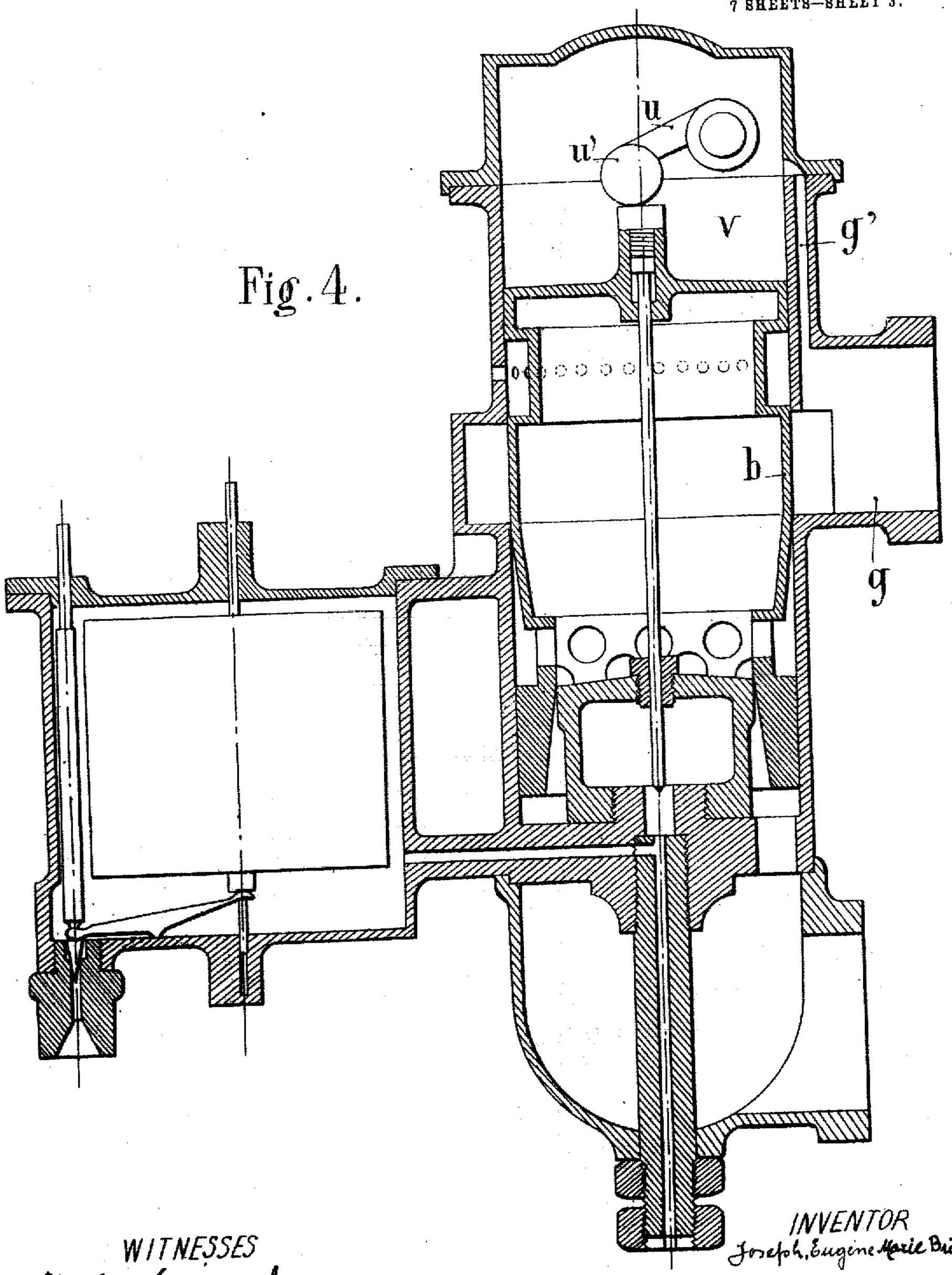
J. E. M. BRIEST.

CARBURETER.

APPLICATION FILED MAR. 11, 1905.

7 SHEETS—SHEET 3.

Fig. 4.



WITNESSES

Wm M. Goeden Jr.

Herbert M. Johnston

INVENTOR

Joseph, Eugene Marie Briest

BY Max E. Ordmann

ATTORNEY

No. 826,531. PATENTED JULY 24, 1906.

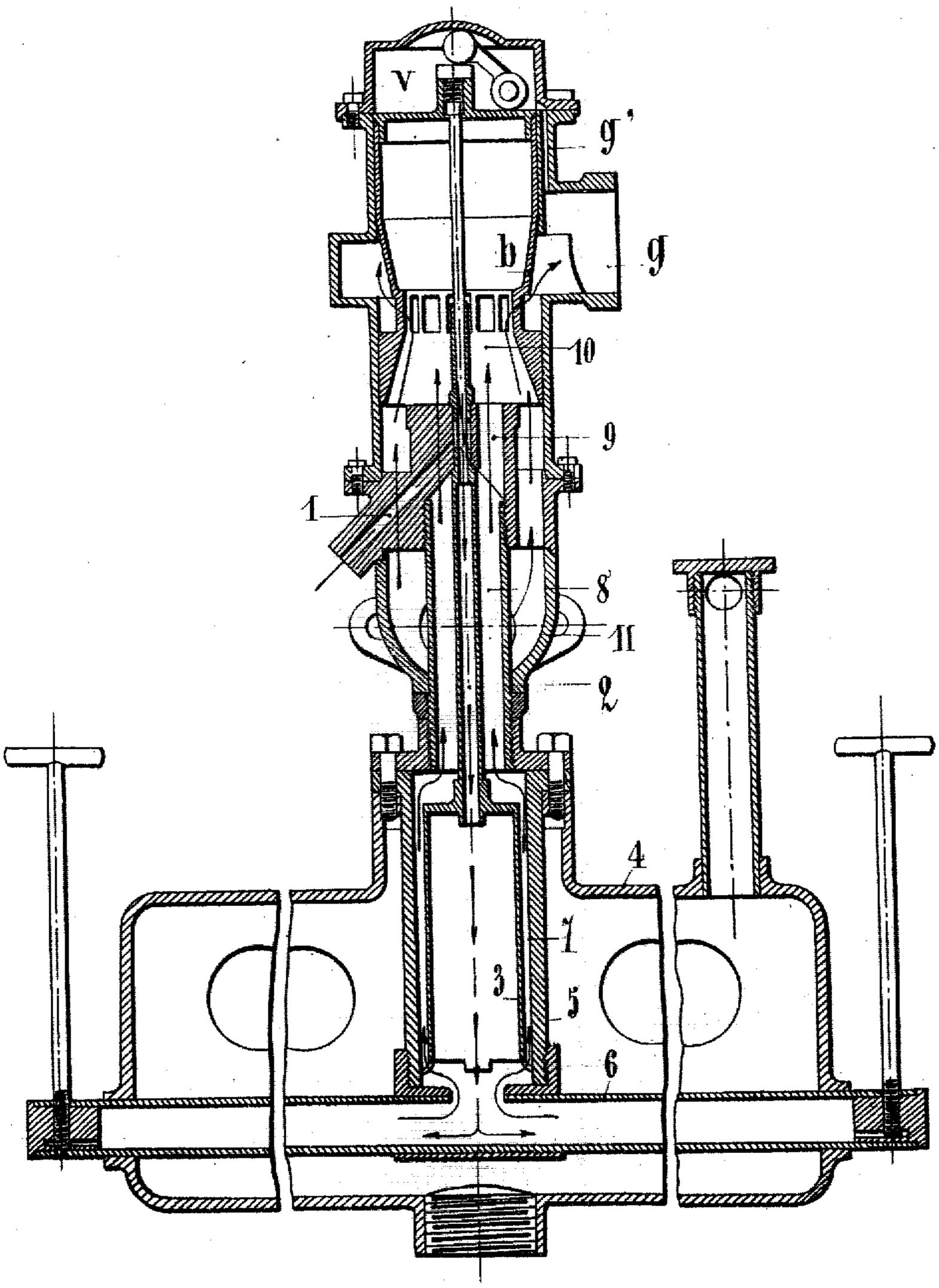
J. E. M. BRIEST.

CARBURETER.

APPLICATION FILED MAR. 11, 1905.

7 SHEETS—SHEET 4.

Fig. 5.



WITNESSES

Wm M. Goldsmith

Herbert W. Johnston

INVENTOR

Joseph, Eugène, Marie Briest

BY

Max O. Ordmann

ATTORNEY

No. 826,531. PATENTED JULY 24, 1906.

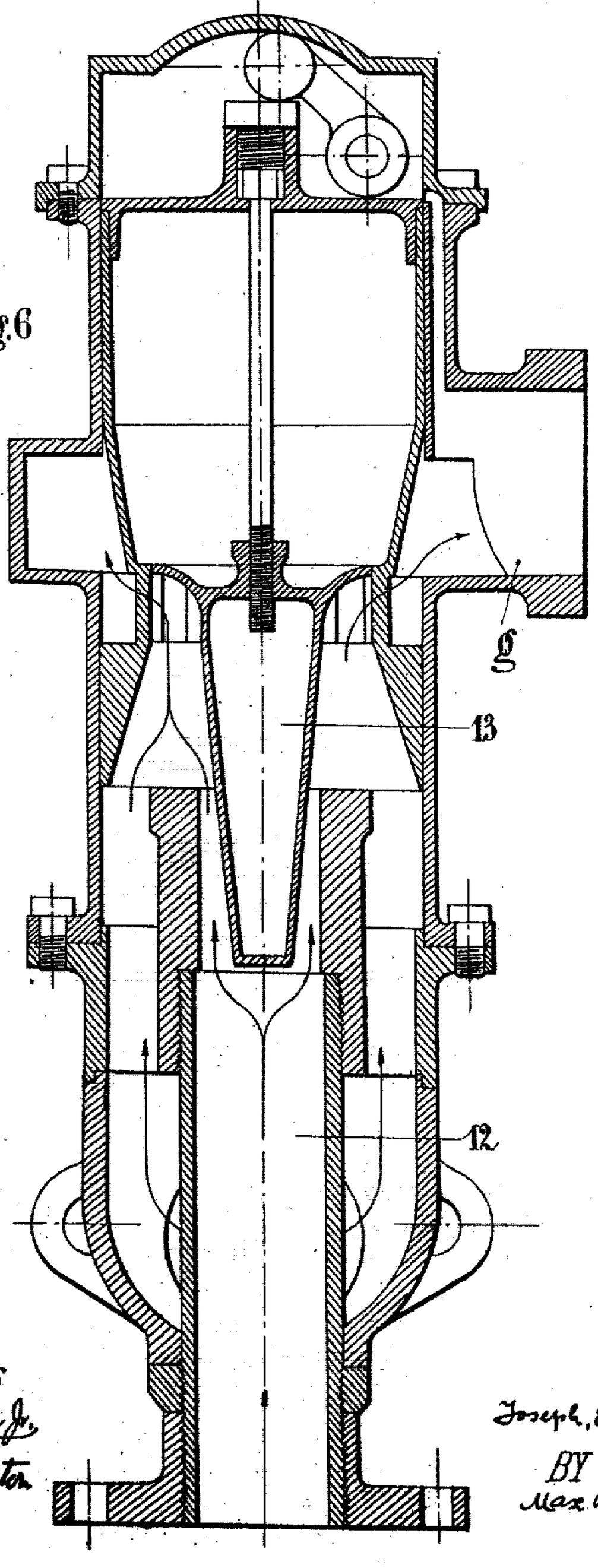
J. E. M. BRIEST.

CARBURETER.

APPLICATION FILED MAR. 11, 1905.

7 SHEETS—SHEET 6.

Fig. 6



WITNESSES
Wm. M. Golden Jr.
Herbert G. Johnston

INVENTOR
Joseph, Eugéne, Marie Briest
BY
Max B. Ordmann
ATTORNEY

No. 826,531. PATENTED JULY 24, 1906.

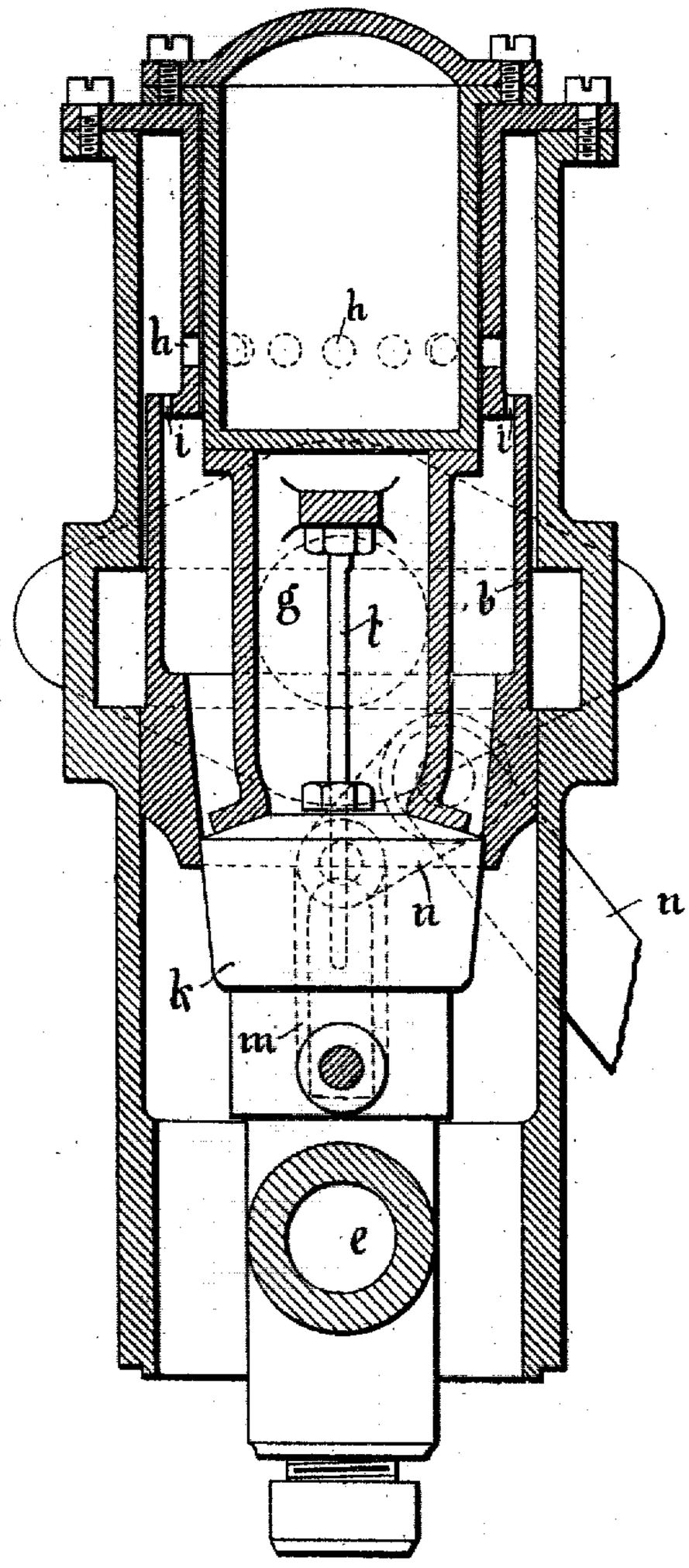
J. E. M. BRIEST.

CARBURETER.

APPLICATION FILED MAR. 11, 1905.

7 SHEETS—SHEET 6.

Fig. 7



Witnesses
S. Herzog
C. U. Wale.

Inventor
Joseph Eugène Marie Briest
By his Attorney
Max S. Ordnance

No. 826,531. PATENTED JULY 24, 1906.

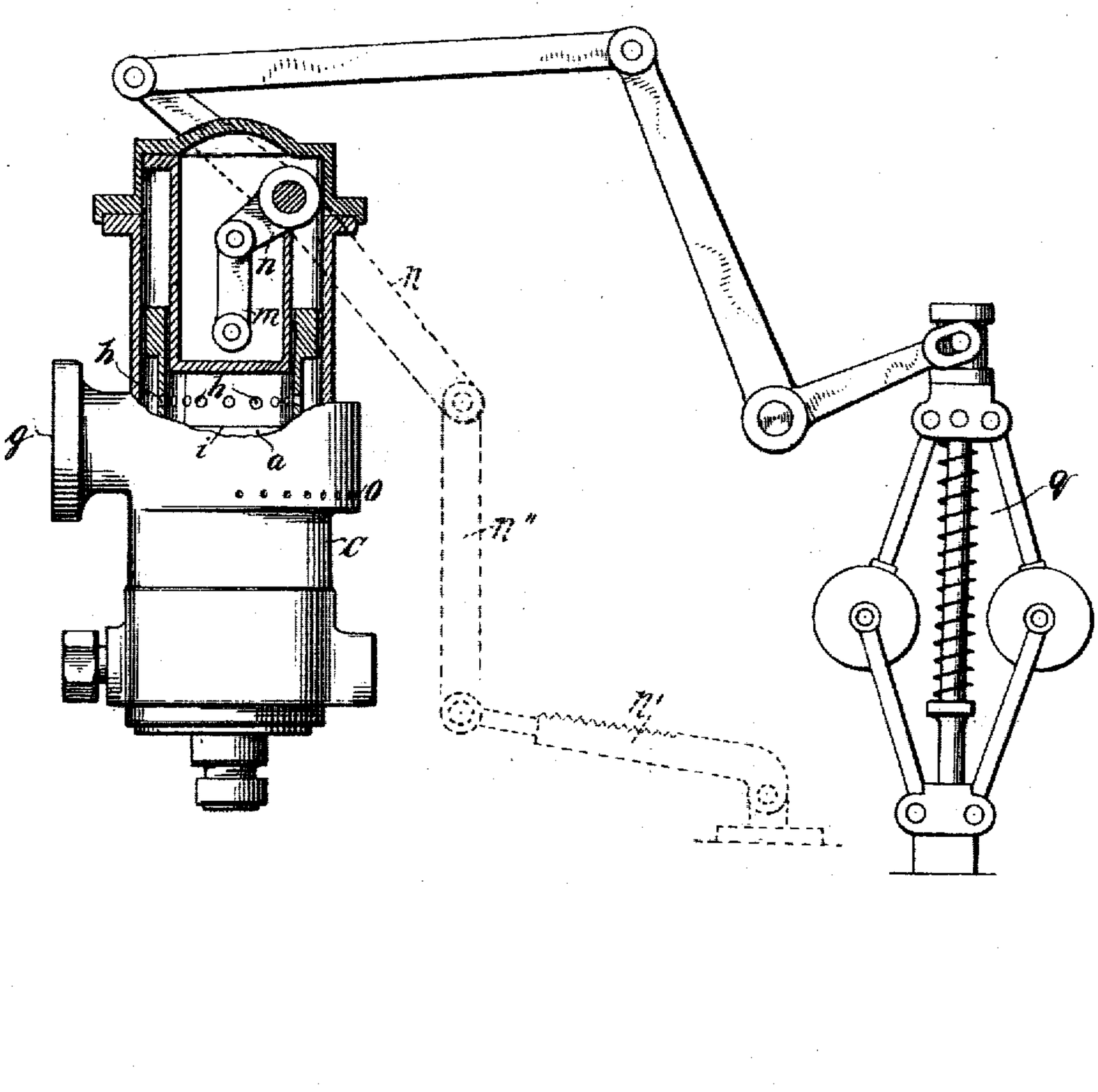
J. E. M. BRIEST.

CARBURETER.

APPLICATION FILED MAR. 11, 1905.

7 SHEETS—SHEET 7.

Fig. 8.



WITNESSES:

Harry C. Hebig

Estelle V. Wale.

INVENTOR

Joseph Eugène Marie Briest

BY

Marks Ordmann

ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEPH EUGENE MARIE BRIEST, OF LEVALLOIS-PERRET, FRANCE.

CARBURETER.

No. 826,531. Specification of Letters Patent. Patented July 24, 1906.

Application filed March 11, 1905. Serial No. 249,520½.

To all whom it may concern:

Be it known that I, JOSEPH EUGENE MARIE BRIEST, engineer, a resident at Levallois-Perret, in the Republic of France, have invented new and useful Improvements in or Relating to Carbureters, which improvements are fully set forth in the following specification.

This invention relates to a carbureter, one of the characteristic features of which is that it is possible to regulate simultaneously the admission of spirit and of air, the mixture of which takes place in a chamber communicating with the engine under the same conditions under which takes place the admission of spirit and air into the apparatus.

In order to make the following description as clear as possible, a carbureter according to this invention is illustrated in the accompanying drawings.

Figure 1 is a vertical section of the apparatus. Fig. 2 is also a vertical section, but in another direction. Fig. 3 is an elevation of the upper portion of the apparatus. Fig. 4 is a vertical section of a construction of the carbureter, enabling it to be worked automatically by the suction of the engine. Figs. 5 and 6 are vertical sections of modified constructions of the carbureter illustrated in Fig. 4. Fig. 7 is a vertical section of a modified construction of the carbureter illustrated in Fig. 1. Fig. 8 is partly a vertical section and partly an elevation of the carbureter, showing the connection of the movable part *b* thereof with the governor or with the pedal mechanism shown in dotted lines.

The mixing-chamber *a* of the apparatus is constituted by a part *b* capable of moving up and down in the casing *c* of the apparatus and round a longitudinal part provided with a hole *d*. In the hole *d*, which communicates with the spirit-inlet *e*, moves simultaneously with *b* a rod *f*, cylindrical at the bottom and more and more flattened toward the top. Under the action of the vacuum produced by the engine, which communicates with the mixing-chamber (in the position illustrated in Fig. 1) by *g*, and the holes *h i* made in the part *b*, the spirit from the conduit *e* is injected into the chamber *a*, entering through a passage left between the wall of the hole *d* and the flattened portion of the rod *f*.

Air is admitted into the apparatus at the bottom through an inlet *j*, whence it passes into the mixing-chamber through the annular space existing in the position shown in Fig. 1 between the cone of the longitudinal part *k* and the truncated conical portion *l* of the part *b*. The carbureted mixture passes from the chamber *a* to the engine through the holes *h i* and the outlet *g*. Under these conditions it will be readily understood that if the part *b* is mechanically connected to the governor—say, by means of a small rod *m*, connecting the said part to the small arm of a bell-crank lever *n*, the long arm of which is controlled by the governor—the movement of the part *b* and of the rod *f* will regulate the quantities of spirit and air introduced into the mixing-chamber.

Owing to the special shape of the rod *f* and that of the parts *k* and *l*, these quantities decrease as the part *b* rises and become naught after it has reached the top of its stroke, Fig. 2. In the same way the flattened rod *f* could be replaced by a conical needle also moving in a cylindrical hole, and the apparatus would work just as well for regulating the admission of spirit.

As already stated, the carbureter is controlled by the governor *q* by means of the bell-crank *n*. Moreover, it is desirable to be able to control it directly by means of a pedal mechanism, (see dotted lines in Fig. 8,) of which *n'* denotes the pedal and *n''* a connecting-rod, which connects the pedal with the bell-crank lever *n*. By means of this mechanism the engine may be given independently of the governor the impulse required in order, say, to climb a hill or to reduce and even stop completely the admission of carbureted mixture to the engine in order to utilize gravity during a descent or simply the momentum.

The part *b* being at the top of its stroke, Fig. 2, the carbureter offers the advantage, this being another characteristic feature of this apparatus, of preventing the suction of the engine from producing vacuum in the apparatus, which would have the drawback of injuring the parts. It must be pointed out that the communication of the engine with the mixing-chamber is, in fact, cut off before the admission of air and of spirit are completely stopped.

Owing to the arrangement of lateral holes *o* made in the casing *c* and by establishing communications between the engine and the atmospheric air by means of a circular conduit *p*, it is possible to avoid the above-men-

tioned drawback, the engine drawing in and forcing out cold air, which at the same time cools its walls.

All the movable parts are calculated and arranged as regards the areas in such manner as to obtain perfect balance of pressure. The movement can therefore be effected by means of a very limited power.

Without departing from the spirit of this invention the carbureter described can be subjected to various modifications.

In Fig. 4 I have shown a modification in which the carbureter is automatically controlled by the suction of the motor instead of by the governor, as in the previous construction. To this end the suction-tube *g* is connected by a passage *g'* with a chamber *v*, formed in the carbureter above the part *b*. The position of this part *b* is controlled automatically by the suction of the motor, and the arrangement of a governor is thus dispensed with. In order, however, to be able to change instantaneously the movement of the engine, I have arranged a lever-arm *u*, which is pivoted at one end in the walls of the casing *v*, and which with its other extremity *u'* rests on the top of the part *b*. By turning the lever *u* downward the part *u'* causes the return movement of the piston or part *b*. Independently of the above the construction of the carbureter can be modified so as to enable either petrol or hydrocarbon vapors or water-gas to be used. Fig. 5 shows, for instance, a carbureter working by means of liquid petrol. The liquid fuel is admitted at 1 and flows down a central pipe 2. The admission of the petrol into the said pipe is regulated by means of a flattened rod in the same way as the admission of spirit in the preceding construction. On coming out from the said pipe 2 the liquid petrol arrives into a chamber 3, arranged in the exhaust-box 4 of the engine, and finally passes into a tube 6, where it is vaporized under the influence of the suction of the engine produced at *g*. The receptacle 3 is arranged in an outer casing 5, there being an annular space *t* formed between the walls of the two casings 3 and 5. The space 7 is in connection with the pipe 6, that traverses longitudinally the exhaust-box 4. The extremities of the pipe 6 are closed to the outside. The suction of the motor is transmitted through the passage *g*, which, as with the carbureter presented in Fig. 4, is in connection by a passage *g'* with the chamber *v* formed in the carbureter above the piece *b*. The upward movement of the piece *b* causes the rising of the liquid vaporized by the regained heat of the explosion gases which envelop the chamber 3 and the pipe 6. The vapors rise through the annular space 7, formed between the chamber 3 and the casing 5, then through the annular space 8 and the passages 9 and arrive into the part 10, where they mix as intimately as possible with the air, which enters into the apparatus through the opening 11. Finally, the combustible mixture, the quantity of which is controlled by the displacement of the part *b*, enters the motor through the passage *g*.

For utilizing water-gas the construction is as shown in Fig. 6. It is the same arrangement as in Fig. 1, except that the rod-forming plug is much larger and becomes, in reality, a conical part 13, with two flattened sides. Water-gas rises through the conduit 12 and becomes mixed with the air and then goes to the engine through the conduit *g*.

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

1. A carbureter in which the admission of spirit and air is simultaneously controlled, comprising a stationary cylindrical casing, a mixing-chamber capable of moving up and down in said stationary casing, the mixing-chamber having a truncated conical portion, a rod fixed in said mixing-chamber, said rod being cylindrical at its lower end and gradually flattened toward its upper end and adapted to control the admission of the spirit into the mixing-chamber, a stationary conical part forming a passage between its cone and the truncated conical portion of the mixing-chamber, said passage serving for the admission of air and being controlled by the vertical movement of the mixing-chamber, the walls of the mixing-chamber having holes at its upper end for the passage of the mixture, substantially and for the purpose as specified.

2. The carbureter in which the admission of spirit and air is simultaneously controlled, comprising a stationary cylindrical casing, the wall of which is provided with a suction-port and ports leading to the atmosphere, a mixing-chamber provided with a truncated conical portion capable of moving up and down in said casing, means actuated by the movement of the mixing-chamber to regulate the flow of the fluids according to the position of the mixing-chamber within the said cylindrical casing, the above-mentioned port and conical portion being so situated that the truncated conical portion cuts off the communication of the mixing-chamber with the suction-port and establishes communication between the engine and the atmosphere before the admission of air and spirit is completely stopped, substantially as and for the purpose specified.

3. The carbureter in which the admission of spirit and air is simultaneously controlled, comprising a stationary cylindrical casing provided with a suction-port in the wall thereof, a mixing-chamber capable of moving up and down in the said cylindrical casing, a chamber formed above the mixing-chamber and adapted to communicate with the motor through the above-mentioned suction-port, the movement of the mixing-chamber being effected automatically by the suc-

tion action of the motor, means actuated by the movement of the mixing-chamber to regulate the flow of the liquid, and means to control the movement of the mixing-chamber, substantially as and for the purpose specified.

4. The carbureter in which the admission of spirit and air is simultaneously controlled, comprising a stationary casing provided with a suction-port in the wall thereof, a mixing-chamber capable of moving up and down in the said casing, a chamber formed above the mixing-chamber and adapted to communicate with the motor through the above-mentioned suction-port, the movement of the mixing-chamber being effected automatically by the suction action of the motor, a central tube connected with the fluid-supply, a rod fixed at one end in the mixing-chamber and engaging at its other end in said central tube to control the flow of the fluid through the latter before the fluid is vaporized, means to allow the vaporization of the fluid and means through which the vaporized fluid is conveyed into the mixing-chamber, substantially as and for the purpose specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOSEPH EUGENE MARIE BRIEST.

Witnesses:

JULES TOUSSET,

FRANCIS DEROIS.