

No. 816,267.

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M. STEEL.
CARBURETING APPARATUS.
APPLICATION FILED FEB. 3, 1905.

Fig. 1.

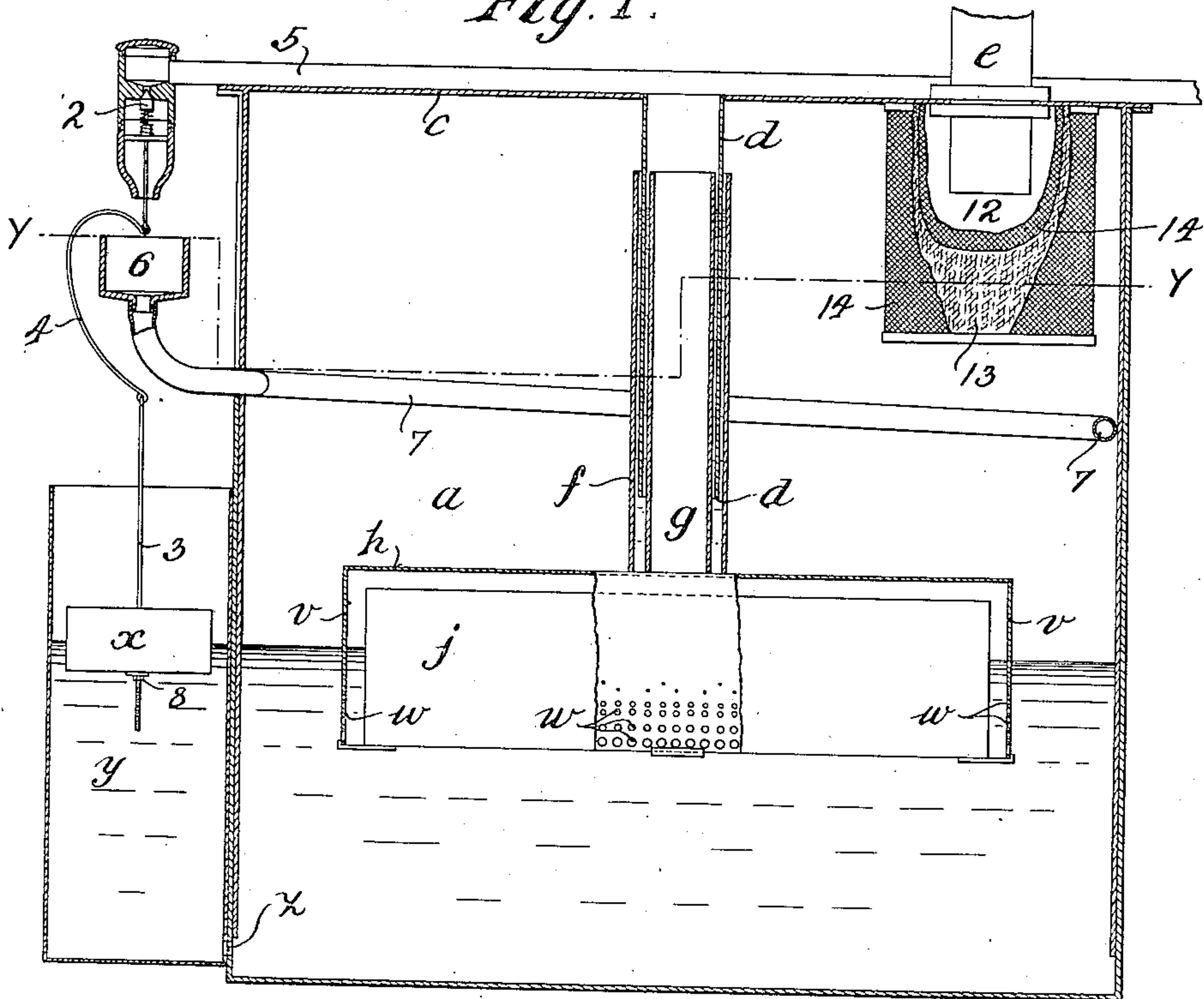
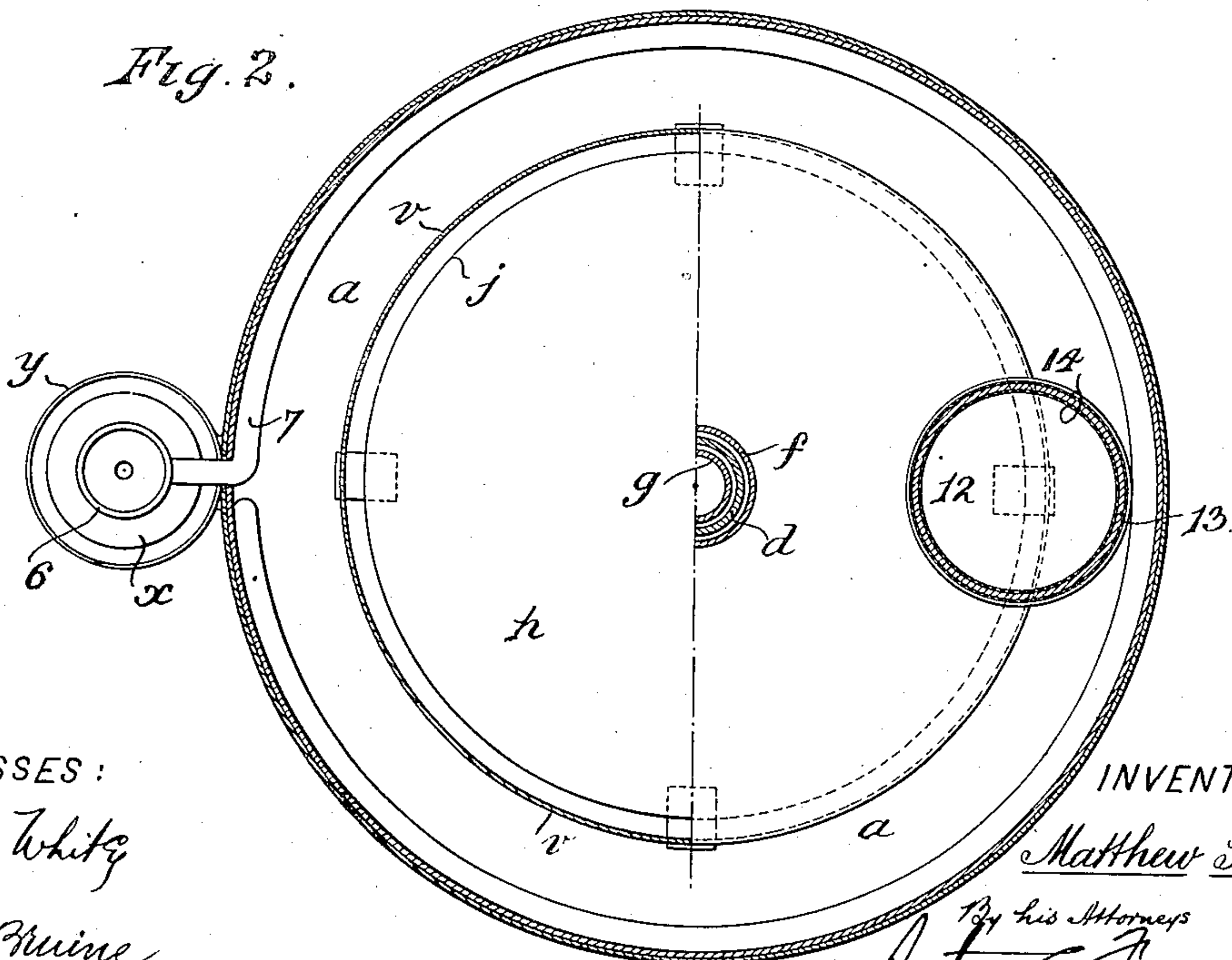


Fig. 2.



WITNESSES:

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MATTHEW STEEL, OF GOSFORTH, ENGLAND.

CARBURETING APPARATUS.

No. 816,267.

Specification of Letters Patent.

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Application filed February 3, 1905. Serial No. 244,033.

To all whom it may concern:

Be it known that I, MATTHEW STEEL, a subject of the King of Great Britain and Ireland, and a resident of Gosforth, in the county of Northumberland, England, have invented certain new and useful Improvements in Carbureting Apparatus, of which the following is a specification.

This invention relates to carbureting apparatus, and has for its object to provide a simple and efficient apparatus for carbureting air for lighting, heating, or other purposes.

Apparatus in accordance with this invention comprises a carbureter or vessel for containing hydrocarbon and having an inlet adapted to deliver the air to be carbureted to the interior of a hollow float or a chamber formed in one with or carried by a float, whence it issues through an outlet or a series of outlets below or about the surface of the hydrocarbon, means for varying the immersed depth of the outlet or outlets below the surface of the hydrocarbon, and hence the richness of the resultant carbureted air, as required, and means for maintaining any desired level of hydrocarbon within the carbureter.

I will further describe my invention with reference to the accompanying drawings, wherein—

Figure 1 is a sectional elevation, and Fig. 2 a plan of same on the line Y Y.

In the drawings and in the following description like marks of reference indicate like parts.

A carbureter made in accordance with this invention comprises a vessel *a*, suitably supplied with hydrocarbon and closed by a cover *c*, provided with an inlet-pipe *d* and an outlet pipe or pipes *e*. The inlet-pipe *d* depends and is sealed by mercury or some other heavy liquid between a pair of concentric tubes *f g*, the inner of which, *g*, communicates with a chamber *h*, formed in one with or carried by a hollow or other suitable float *j*.

v is a depending flange which forms around the float *j* an annular outlet from the chamber *h*. The lower portion of the depending flange *v* is provided with rings or rows of graduated perforations *w*, through which the air from the chamber *h* can pass in addition to passing below the edge of the flange. The perforations *w* are so arranged that increased pressure within the chamber increases the area of liquid upon which the air acts.

The supply of hydrocarbon to the carbu-

reter is controlled by a float *x*, arranged in a chamber or vessel *y*, communicating by a passage or opening *z* with the carbureter or vessel *a*, said float *x* being adapted to open a valve 2 when the level of the hydrocarbon within the carbureter *a* and chamber *y* has fallen to a predetermined height by means of a rod 3 and connection 4 to admit more hydrocarbon from the supply-pipe 5 to a cup 6, whence it is delivered to the carbureter *a* by a perforated pipe 7. The pipe 7 is preferably arranged spiral fashion within the carbureter *a*, so that the hydrocarbon is evenly distributed within same, and the float *x* is adjustable on the rod 3 by a nut 8 or otherwise conveniently, so that the level maintained by the same can be varied as desired. The depth of the edge of the flange *v* and the perforations *w* below the hydrocarbon may be regulated by varying the quantity of mercury or other liquid between the flanges *f* and *g*.

Carbureting apparatus as above described may be used in connection with internal-combustion engines or may be employed for carbureting air for lighting, heating, or other purposes. When used in connection with an internal-combustion engine, the air to be carbureted will be induced through the inlet-pipe *d* by the suction-strokes of the engine. When used for carbureting air for lighting, heating, and similar purposes, the air to be carbureted may be induced or forced through the inlet-pipe *d* by a pump, blower, or the like and may be heated by a suitable heater before being admitted to the inlet-pipe *d*. In any case the operation is such that the air entering the inlet-pipe *d* flows down the inner, *g*, of the concentric tubes *f g* into the chamber *h* at the end thereof, whence it issues through the perforations *w* and below the edge of the depending flange *v*, depending below the surface of the hydrocarbon. The air then passes or bubbles up through the hydrocarbon, thereby becoming carbureted, and the resultant carbureted air is drawn off through the outlet or outlets *e* to the engine or for use directly it is made or stored in a suitable holder or holders for subsequent use, as required. It will now be observed that the float *j*, carrying the air-chamber *h*, rises and falls with the level of the hydrocarbon, and the outlet or outlets from the chamber is or are thereby always preserved in fixed relation to the level of the hydrocarbon, and the air

issuing from said outlets always passes through a fixed head or depth of hydrocarbon and is thoroughly or evenly carbureted.

5 The surface of liquid between the inlet and the outlet or outlets of the chamber is considerably greater than the cross-sectional area of the inlet-pipe, and the cross-sectional area of the outlet or outlets is greater than the cross-sectional area of the inlet-pipe, thus the
10 liquid can readily flow in and out of the outlet or outlets, and the air is not throttled, but is absorbed by the hydrocarbon and allowed to issue in the absorbed state and in bubbles, as distinguished from continuous streams.

15 In some cases the carbureted air before passing to the outlet or outlets *e* may be caused to pass through a filter 12, composed of flannel or other suitable material 13, arranged between fine gauze 14 14 for absorb-
20 ing any moisture in the carbureted air and further insuring that the same shall be evenly carbureted.

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

25 1. The improved carbureting apparatus comprising the combination of a vessel adapted to hold liquid hydrocarbon, concentric tubes through which the air to be carbureted passes to the hydrocarbon, an inlet-pipe de-
30 pending between said concentric tubes, a

float, a casing around said float forming a chamber, said concentric tubes forming a liquid seal and telescopic connection between the depending inlet-pipe and said chamber, said casing being provided with holes at different levels all below the normal level of the hydrocarbon, the total area of said holes in-
35 creasing at each successive lower level.

2. The improved carbureting apparatus comprising the combination of a vessel adapted to hold liquid hydrocarbon, concentric tubes through which the air to be carbureted passes to the hydrocarbon, an inlet-pipe depending between said concentric tubes, a float, a casing around said float forming a chamber, said concentric tubes forming a liquid seal and telescopic connection between the depending inlet-pipe and said chamber, said casing being provided with holes at different levels all below the normal level of the hydrocarbon, the area of liquid in the chamber being greater than the cross-sectional area of said inlet-pipe.
40 45 50

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.
55

MATTHEW STEEL.

Witnesses:

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HERBERT HOWARD.