

No. 749,315.

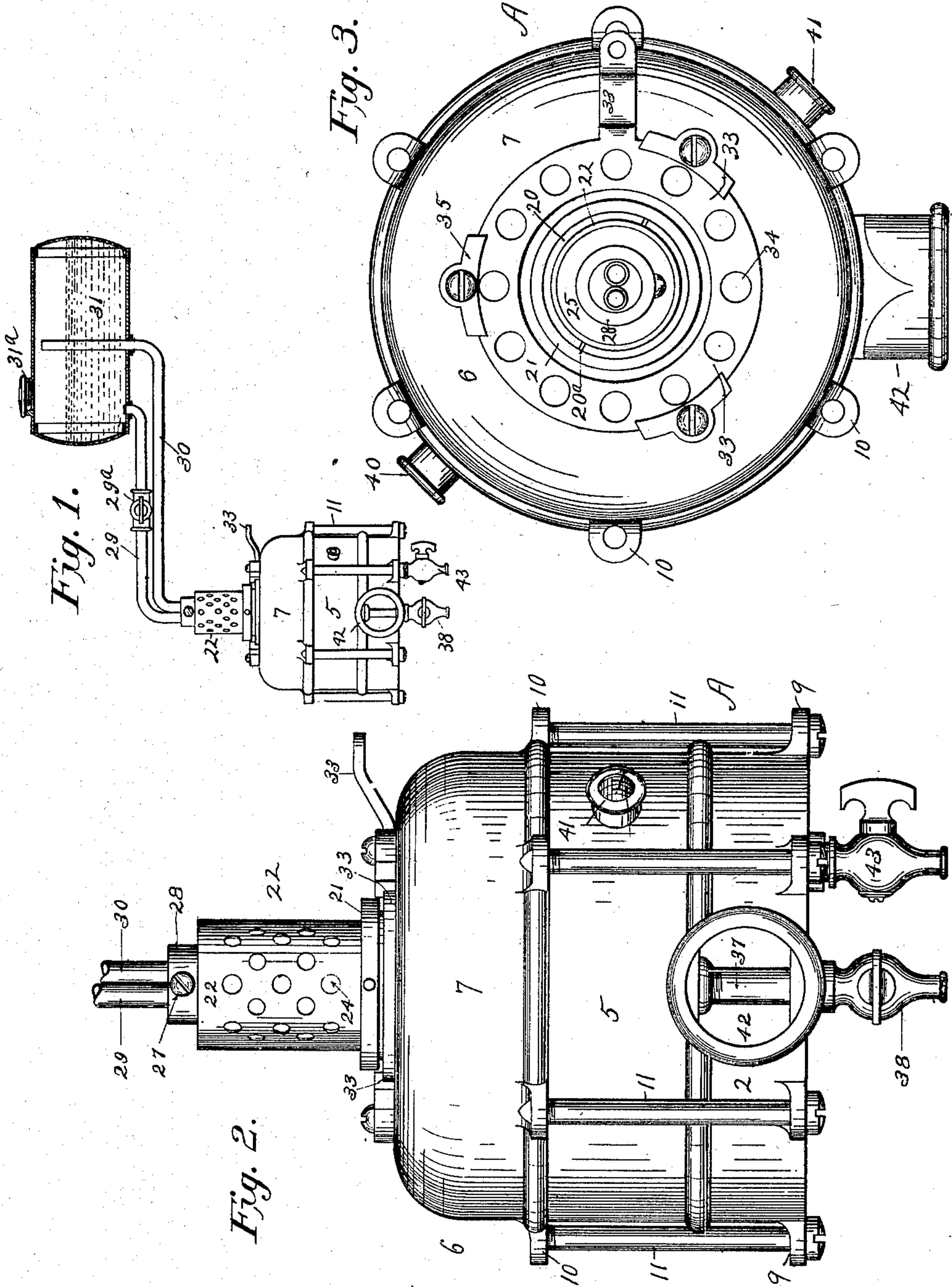
PATENTED JAN. 12, 1904.

L. P. MOOERS.
CARBURETING DEVICE FOR EXPLOSIVE ENGINES.

APPLICATION FILED FEB. 20, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
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Inventor
Louis P. Mooers,
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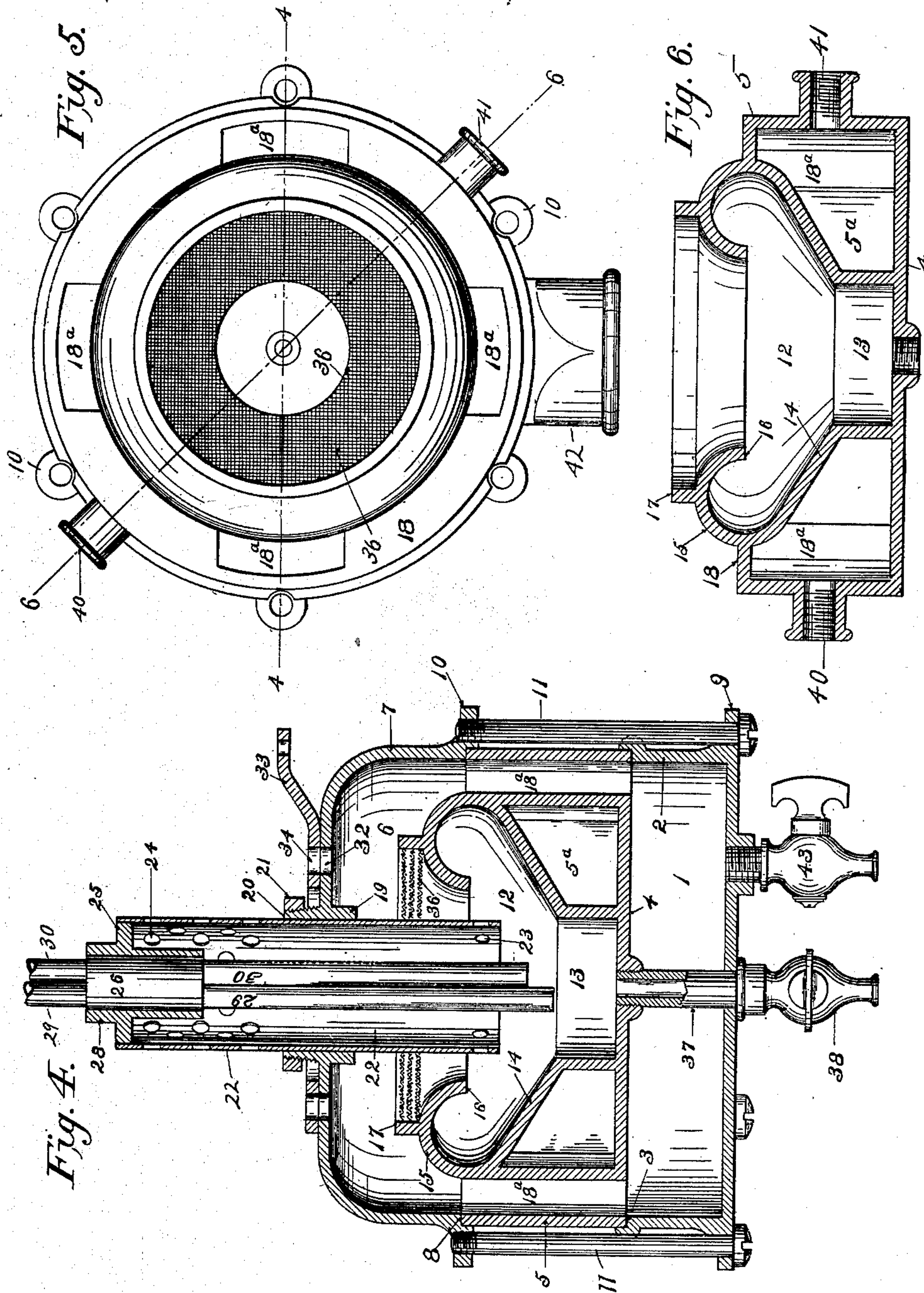
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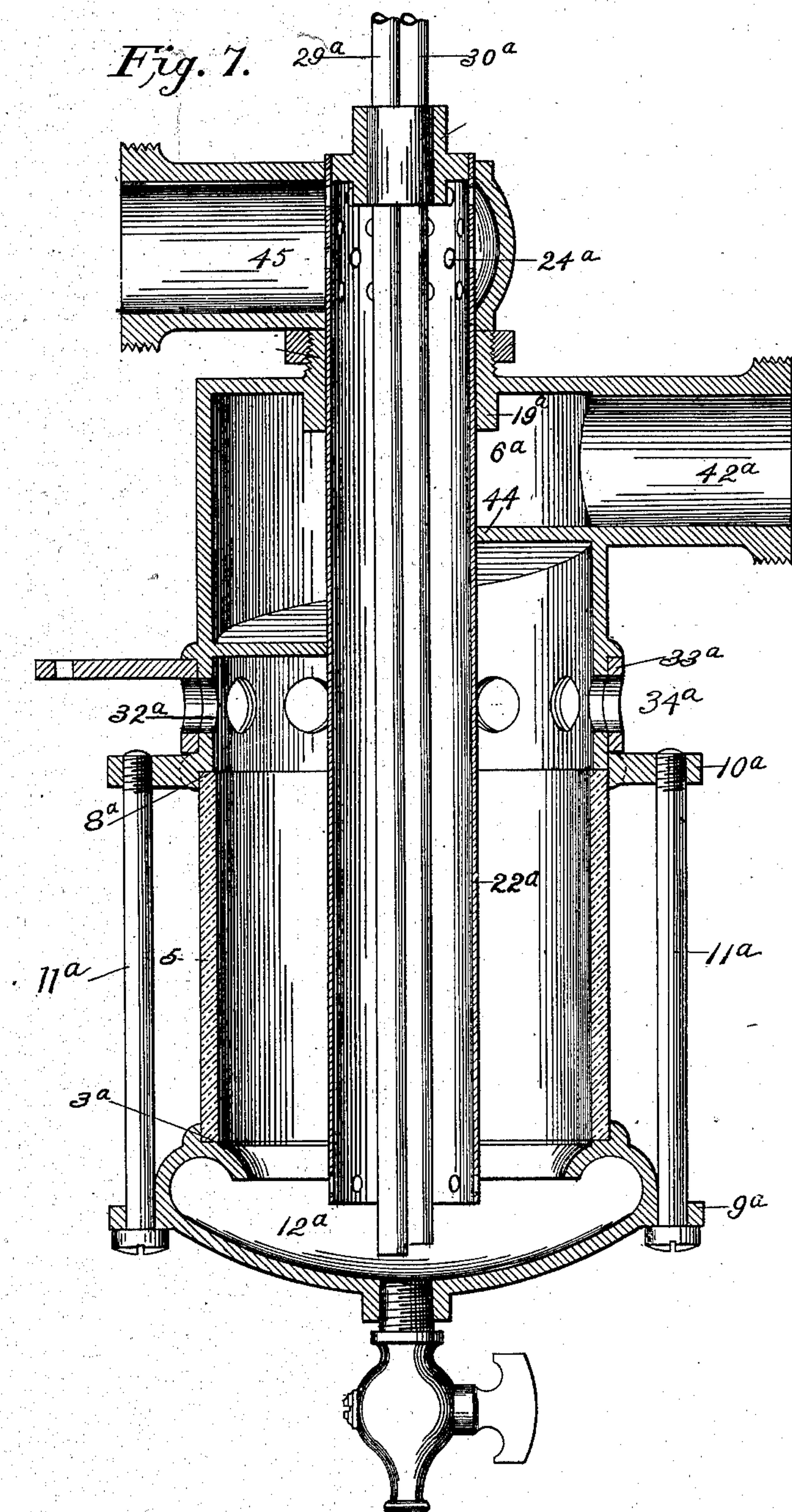
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UNITED STATES PATENT OFFICE.

LOUIS P. MOOERS, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PEERLESS MOTOR CAR COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF WEST VIRGINIA.

CARBURETING DEVICE FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 749,315, dated January 12, 1904.

Application filed February 20, 1902. Serial No. 94,881. (No model.)

To all whom it may concern:

Be it known that I, LOUIS P. MOOERS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Carbureting Devices for Explosive-Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The invention relates to a device especially adapted for use in connection with a gasoline explosion-engine, whereby to vaporize the gasoline and to mix the resultant gas with the requisite volume of air to make the explosive mixture.

The apparatus in which my invention is embodied, as shown in the drawings, includes a vaporizing-chamber, a gas-tight reservoir located above it and with which it is connected by a suitable pipe, means, substantially as shown, for maintaining in the vaporizing-chamber a substantially uniform quantity of the volatile hydrocarbon, and means for admitting to the vaporizing-chamber a properly-regulated quantity of air in such a manner as to promote the vaporization of the hydrocarbon and the proper commingling of the air and resultant hydrocarbon gas.

The invention consists in the combination of parts above recited, as well as in the more specific combinations limited to various novel characteristics of the constituent parts, as hereinafter described, and pointed out definitely in the claims.

In the drawings, Figure 1 is a diagrammatic view of the entire apparatus. Fig. 2 is a side elevation of the carbureter. Fig. 3 is a plan view thereof. Fig. 4 is a side central vertical section thereof. Fig. 5 is a plan view of the carbureter with the upper part of the casing and the parts carried thereby removed. Fig. 6 is a central vertical section on the line 6-6 of Fig. 5 of the middle part of the carbureter-casing, and Fig. 7 is a vertical sectional view of a modified form of carbureter.

The following is a detail description of the embodiment of the invention shown in the drawings.

A represents the carbureter-casing, and 31 a reservoir or supply-tank, which must be gas-tight. This characteristic in the construction shown grows out of the fact that the single inlet to this tank may be hermetically sealed by a suitable cover or cap 31^a. This reservoir must be elevated with reference to the vaporizing-chamber, to which the liquid hydrocarbon flows by gravity from the reservoir 31 through a feed-pipe 29 when the cock 29^a therein is opened.

The carbureter-casing consists of three parts—namely, the bottom member 1, the middle member 5, and the top member 6. There are rabbets 3 and 8 formed, respectively, in the edges of the vertical portions 2 and 7 of the bottom and top members of this casing, which rabbets respectively receive the lower and upper edges of the outer shell of the middle member 5, and these three parts are connected together by means of bolts 11, which engage with laterally-projecting external ears 9 and 10 on the lower and upper members of the casing.

In the middle member 5 is a centrally-placed vaporizing-chamber 12, whose walls 14 incline outward and upward and at their upper ends are curved inward and downward, as at 15 and 16. The bottom of this vaporizing-chamber extends below the inclined wall 14, forming what may be called a "sediment-chamber" 13, into which the impurities in the gasoline settle and from which they may be withdrawn from time to time through a drain-pipe 37, having a cock 38. In this middle section 5, extending around and under the vaporizing-chamber, is a cored-out annular recess 5^a. The exhausted or exploded gases discharged from the engine enter this annular chamber through the opening 40 and pass out through the outlet 41, having in the meantime heated the hydrocarbon liquid in the vaporizing-chamber and brought it more nearly to the vaporizing temperature.

An air-tube 22 passes down centrally through the top of the casing, its lower end being extended a short distance down into the vaporizing-chamber, said lower end being in a plane

only a little above the plane in which the top surface of the liquid hydrocarbon will lie. Through this tube 22, near the upper end thereof, are a plurality of holes 24, said holes
 5 being of such size and number that approximately the desired volume of air for mixing with the hydrocarbon gas may pass through them. In the lower end of this tube there may be other holes 23, through which some of the
 10 air may pass into the vaporizing-chamber, such air being additional to that which passes under the lower edge of said tube. 30 represents a pipe which, together with the feed-pipe 29, passes through a hole in a plug 25,
 15 which closes the upper end of the tube 22. The lower end of this pipe extends into the vaporizing-chamber and lies in the plane substantially in which it is desired to maintain the surface-level of the hydrocarbon. This
 20 pipe 30 extends up to the reservoir, with which it is connected in such wise that its open upper end is in the tank above the liquid therein.

The casing A has a lateral discharge-neck 42, with which a pipe may be connected, which
 25 leads to the explosion-chamber or delivery-point of the explosive mixture. In the operation of this device when properly connected with an explosion-engine the operation of the piston sucks the explosive mixture through
 30 this neck 42 out of the casing. This of course causes air to be drawn into the casing through the holes 24 and down through the tube 22, which air as it emerges from the lower end of this tube strikes directly upon the surface of
 35 the hydrocarbon liquid in the vaporizing-chamber, thereby agitating it to some degree and accelerating its vaporization. The air and the gas thus generated will be forced laterally and will follow the inclined sides 14
 40 and will be turned back upon itself by the overhanging wall 15, and thereby will become pretty thoroughly mixed, and this mixed gas will flow out of the vaporizing-chamber around the tube 22. One or more wire screens
 45 36 are stretched across the top of the vaporizing-chamber and around the tube 22. It is therefore necessary that this air and gas shall pass through said screen or screens, wherefore the mixing of the air and gas will
 50 be more completely effected. Through the top of the casing are a plurality of holes 32, and surrounding the tube resting upon the casing is a movable plate 33, having a plurality of holes 34, which may register with the
 55 hole 32, thus admitting to the casing more or less air, depending upon the position of said plate. This air will be more or less completely commingled with the explosive mixture produced in the vaporizing-chamber, before explained, and is admitted in the necessary quantity to supply any deficiency of air
 60 admitted from tube 22. The space in the upper part of the casing communicates with the space in the lower part thereof through a plu-

65 rality of passages 18^a. A drain-pipe 43 is connected with the lower part of the casing, wherefore if the casing is flooded with the gasolene through the improper operation of any of the described mechanism all of the gasolene outside of the vaporizing-chamber
 70 may be drawn off.

As the gasolene in the vaporizing-chamber is vaporized and the surface-level thereof falls as a result the lower end of the tube 30 will become uncovered. This will permit air to
 75 flow through it into the reservoir 31, and this permits a corresponding flow of the gasolene from the reservoir through the feed-pipe 29 to the vaporizing-chamber, which flow is not possible normally, because the lower end of
 80 the pipe 30 is sealed by immersion in the gasolene and there is no other channel through which air may be admitted to the reservoir 31.

In the modified form of the carbureter shown in Fig. 7 the lower member of the carbureter-
 85 casing contains the vaporizing-chamber 12^a. The middle member 5 is a simple cylinder, of glass, whose ends fit in rabbets 3^a and 8^a in the ends of the lower and upper members of the casing, and the three members are con-
 90 nected by bolts 11^a, engaging in ears 9^a and 10^a. An air-tube 22^a extends through the top of the upper member and down into the vaporizing-chamber and has the air-inlet holes 24^a near its upper end. The gasolene-feed
 95 pipe 29^a and the air-pipe 30^a extend down through the plugged upper end of tube 22^a into the vaporizing-chamber, as do the corresponding pipes 29 and 30 of the other construction, it being the intention to connect
 100 the upper end of said pipes with a gas-tight gasolene-reservoir, as before explained. In the side of the upper member 6^a are the perforations 32^a, and around the said perforated member is a perforated sleeve 33^a, whose per-
 105 forations 34^a may register with the perforations 32^a, or said sleeve may be turned to more or less completely close said perforations. The outlet for the explosive mixture is through the neck 42^a.
 110

Having described my invention, I claim—

1. In a carbureter, the combination of the casing having an air-inlet and a vapor-outlet, a vaporizing-chamber within said casing hav-
 115 ing walls inclined upwardly and outwardly and then curved inwardly and downwardly, and means for supplying gasolene to said chamber.

2. In a carbureter, the combination with the casing having an air-inlet and a vapor-outlet, a vaporizing-chamber whose walls incline up-
 120 wardly and outwardly and are then curved inwardly and downwardly, a well for gasolene in the lower portion of said chamber and means for supplying gasolene thereto.

3. In a carbureter, in combination with the casing a vaporizing-chamber whose walls in-
 125 cline upwardly and outwardly and are then curved inwardly and downwardly, an air-inlet

tube extending into said vaporizing-chamber, means for feeding gasoline to said vaporizing-chamber.

4. In a carbureter, the combination of a casing, a vaporizing-chamber, whose walls incline upwardly and outwardly and are then curved inwardly and downwardly, a well provided in said vaporizing-chamber and an annular heating-chamber provided around said vaporizing-chamber and adjacent to said well.

5. In a carbureter, the combination of a gas-tight reservoir, a carbureter-casing containing a vaporizing-chamber, whose walls incline upwardly and outwardly and are then curved inwardly and downwardly, an air-inlet tube extended through the walls of the casing and into said vaporizing-chamber and having its open lower end near the surface of the liquid therein, a gasoline-feed pipe connected with said reservoir and extended into said chamber, and an air-tube connected with the reservoir above the liquid therein and extended into said vaporizing-chamber and having its lower end at substantially the desired level of the fluid therein.

6. In a carbureter, the combination of a gas-tight reservoir, a carbureter-casing containing a vaporizing-chamber, whose walls incline upwardly and outwardly and are then curved inwardly and downwardly, an air-inlet tube extended through the walls of the casing and into said vaporizing-chamber and having its open lower end near the surface of the liquid therein, a gasoline-feed pipe connected with said reservoir and extended into said chamber, and an air-tube connected with the reservoir above the liquid therein and extended into said vaporizing-chamber and having its lower end at substantially the desired level of the fluid therein, the air-inlet tube having near its lower end and within said vaporizing-chamber a plurality of lateral holes.

7. In a carbureter, the combination of a cas-

ing consisting of a bottom member, an upper member having a plurality of air-inlet ports, and a middle member containing a vaporizing-chamber, an annular recess surrounding said vaporizing-chamber, and provided with inlet and discharge openings through which a heating medium passes, said three members being connected together, and the middle member having substantially vertical openings through which communication is established between the upper and lower members, an air-inlet tube extending down through the upper member into the vaporizing-chamber, and means for maintaining a substantially uniform quantity of gasoline in said chamber.

8. In a carbureter, the combination of a casing consisting of a bottom member provided with a discharge-cock, an upper member having a plurality of air-inlet holes, and a middle member containing a vaporizing-chamber whose walls incline outwardly and upwardly and then inwardly and downwardly, and which has a recess in its bottom adapted to serve as a sediment-chamber, said middle member having also an annular recess which surrounds said vaporizing-chamber and is provided with inlet and discharge openings through which a heating medium passes, said three members being connected together, and there being through the middle member vertical openings through which communication is established between the upper and lower members, an air-inlet tube extending down through the upper member into the vaporizing-chamber, and means for maintaining a substantially uniform quantity of gasoline in said chamber.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

LOUIS P. MOOERS.

Witnesses:

ALBERT H. BATES,
H. M. WISE.