No. 842,052. PATENTED JAN. 22, 1907

L. ANDERSON.

CARBURETER.

APPLICATION FILED DEC. 8, 1904.

3 SHEETS—SHEET 1

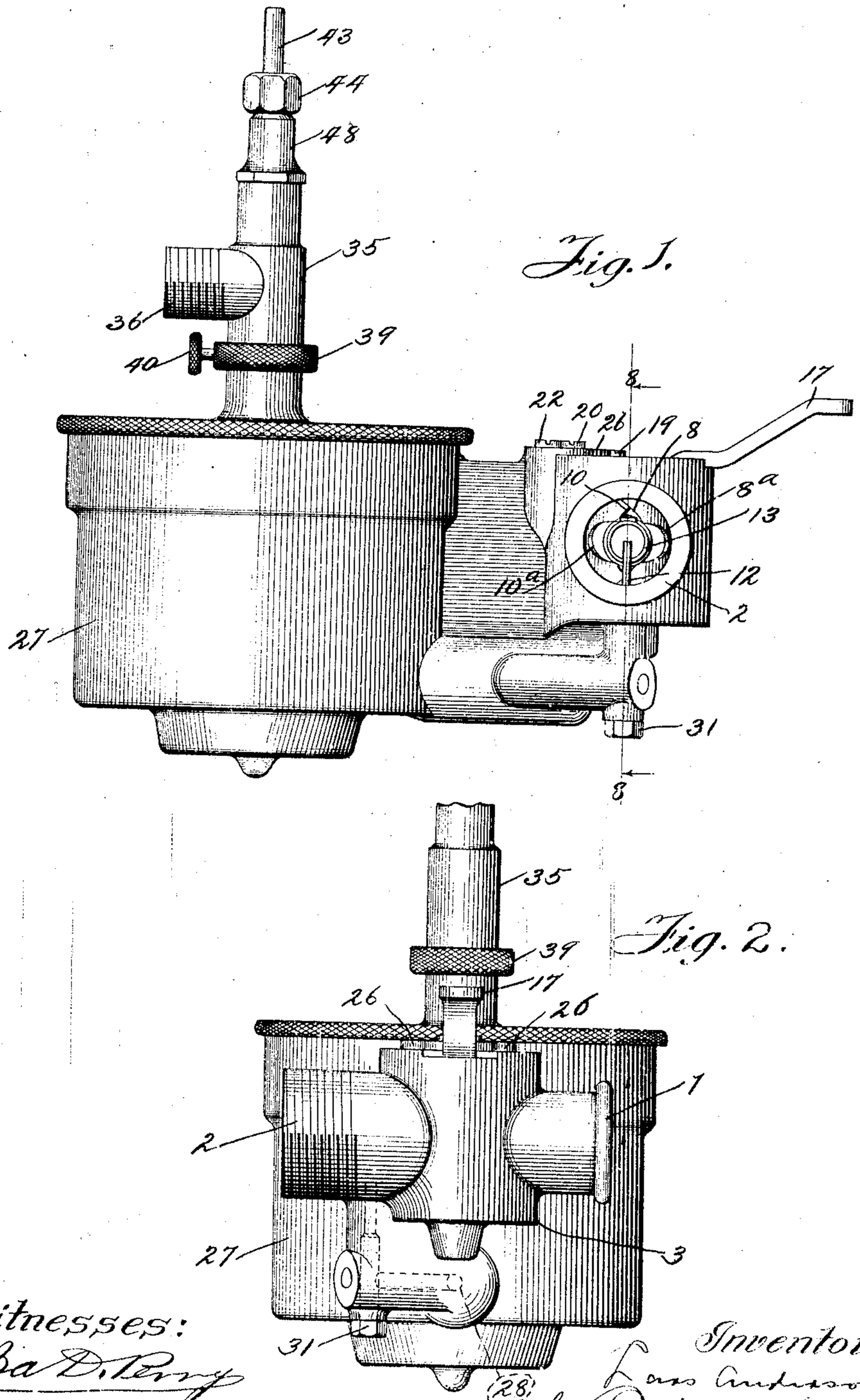

Fig. 1.

Fig. 2.

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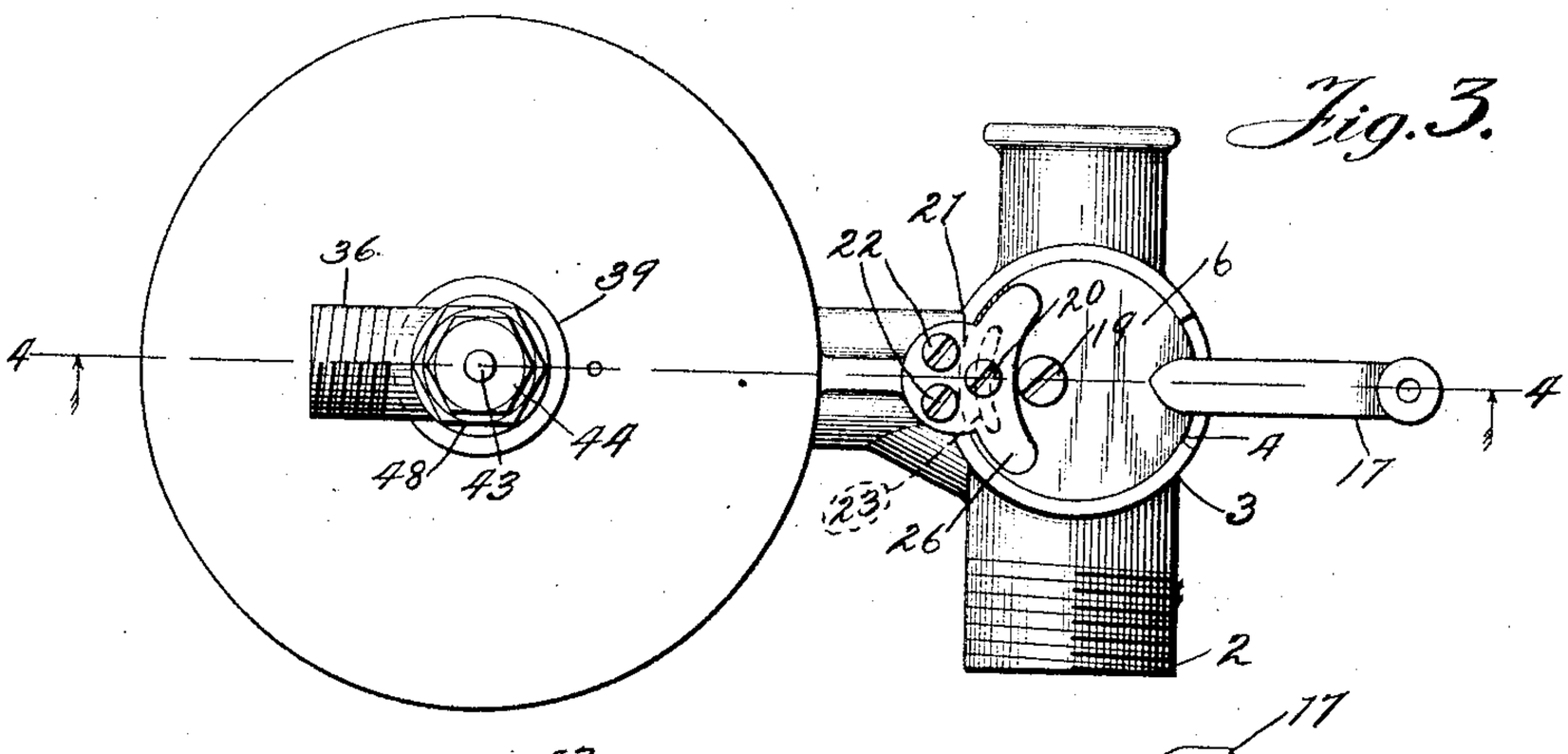
3 SHEETS—SHEET 2.

Fig. 3.



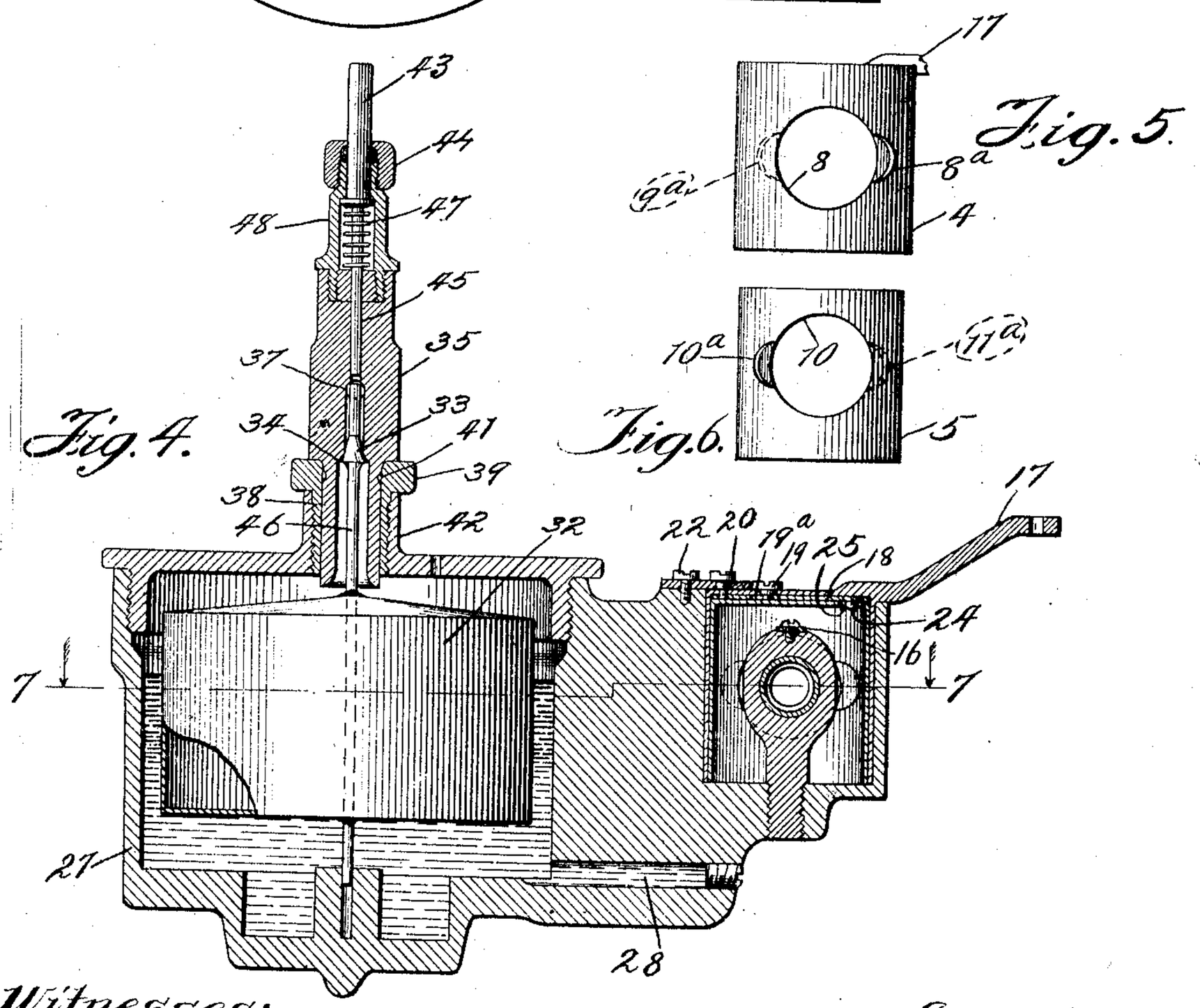


Fig. 4.

Fig. 5.

Fig. 6.

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3 SHEETS—SHEET 3.

Fig. 7.

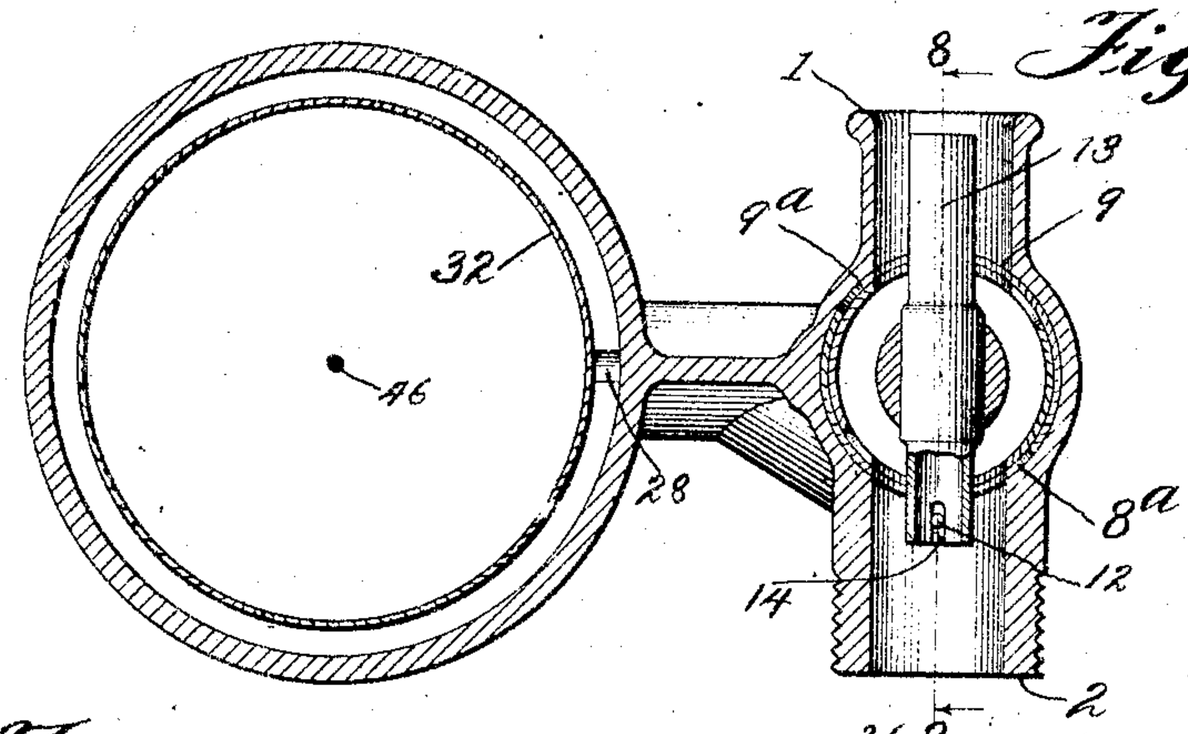


Fig. 9.

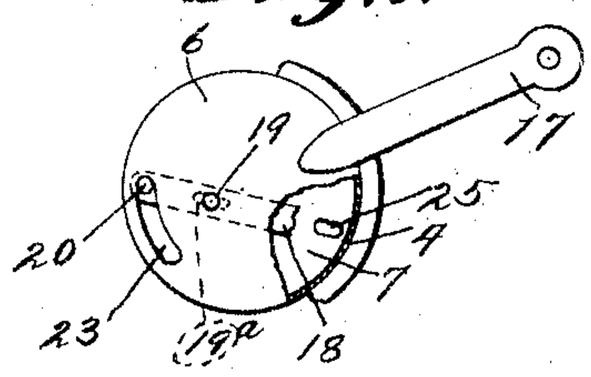


Fig. 8.

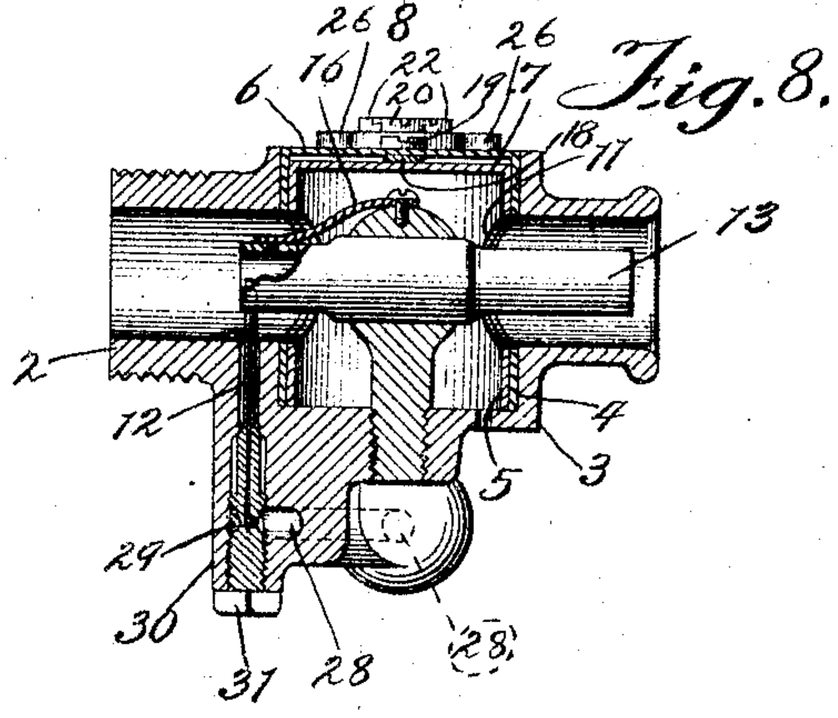


Fig. 10.

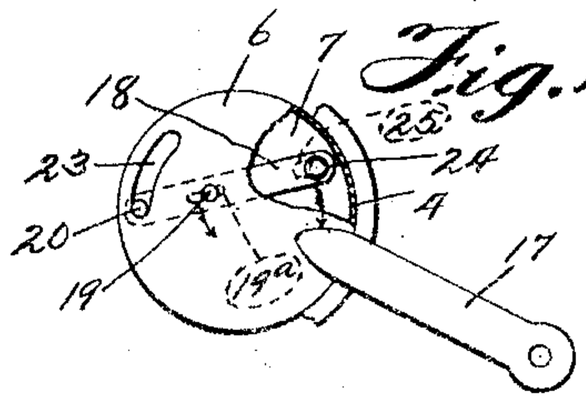


Fig. 11.

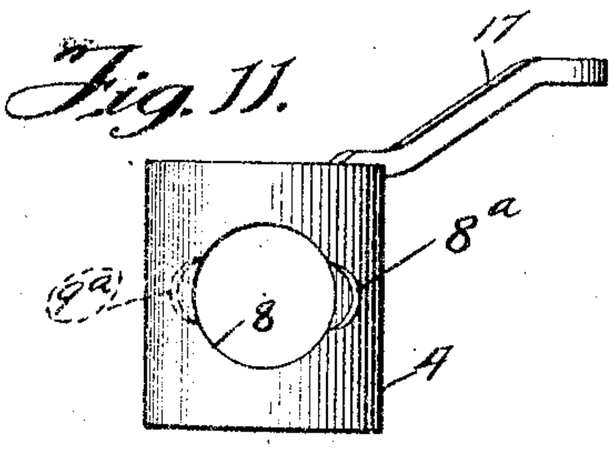
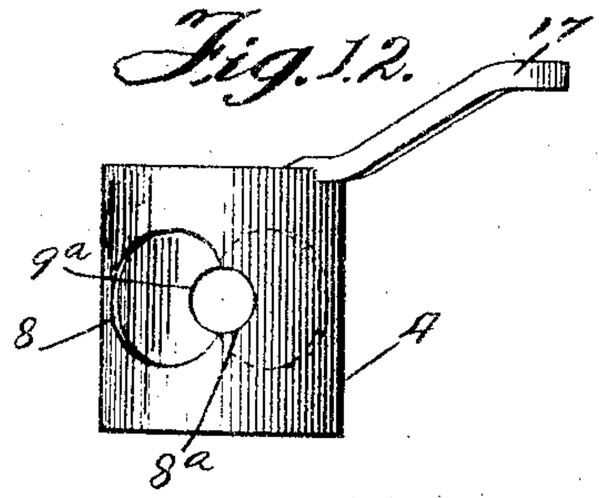


Fig. 12.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

No. 842,052. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed December 8, 1904. Serial No. 235,912.

To all whom it may concern:

Be it known that I, LARS ANDERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Carbureters, of which the following is a full, clear, and exact specification.

My invention relates more particularly to that type of carbureter in which the liquid fuel is supplied to the air in the form of a fine spray, as by an atomizer, and which spray is produced by the force of the air-current itself in passing the end of the atomizing-nozzle; and the invention has for one of its important objects to provide improved and efficient means for keeping the spray substantially central with relation to the current of air notwithstanding any increase or diminution in the volume of the air resulting from the manipulation of the air-controlling valve, thus insuring at all times a uniform or thorough mixture of the air and fuel whether the latter be in a liquid or a gaseous form.

A further object of the invention is to provide improved means whereby the level of the liquid fuel in the float-chamber may be varied at the will of the operator to suit the requirements of the carbureter.

With a view to the attainment of these ends and the accomplishment of certain other objects, which will hereinafter appear, the invention consists in certain features of novelty in the combination, construction, and arrangement of parts hereinafter described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of my improved carbureter looking into the discharge side thereof. Fig. 2 is an elevation taken at right angles to Fig. 1. Fig. 3 is a plan view. Fig. 4 is a vertical section on the line 4 4, Fig. 3. Fig. 5 is a detail side elevation of one of the valve cylinders or members. Fig. 6 is a similar view of the other one of the valve-cylinders. Fig. 7 is a plan section on the line 7 7, Fig. 4. Fig. 8 is a detail vertical section on the line 8 8, Figs. 1 and 7, the float-chamber being omitted. Fig. 9 is a plan view of the two valve members or cylinders, partially broken away. Fig. 10 is a similar view thereof, showing the cylinders at the opposite extreme of the movement from that represented in Fig. 9. Fig. 11 is a side elevation of the two valve-cylinders, showing the valve in the position of its maximum size of opening; and Fig. 12 is a similar view showing the same in the position of its minimum size of opening.

1 is the air-inlet passage, which may communicate directly with the external atmosphere or be supplied with air from any suitable source, and diametrically opposite this passage is a connection 2 of any suitable form and adapted to be attached to the inspiration-pipe of the engine or other apparatus in connection with which the carbureter is to be used. These two passages 1 2 are formed on a valve-housing 3, and in this housing, which has a cylindrical interior, are accurately fitted two telescoped cylinders or cups 4 5, whose upper ends are closed by tops 6 7, respectively, while their lower ends are open and rest directly upon the bottom of the housing 3, so that the side walls of these valve-cylinders 4 5 will project across the passages 1 2, and hence may be utilized as a valve for regulating the amount of air passing through the passages 1 2. The outer cup or cylinder 4 is provided in one side with a circular aperture 8, whose edge on one side is formed with a curved or circular notch 8^a, and this cup or cylinder 4 on the side diametrically opposite the aperture 8 is formed with a similar aperture 9 and a similar notch 9^a; but the notch 9^a instead of being directly opposite or in line with the aperture 8^a is on the opposite side, as indicated by dotted lines in Fig. 5.

The inner cup or cylinder 5 on one side is formed with a circular aperture 10 of substantially the same size as the aperture 8 and is adapted to register therewith and on the side of the aperture 10 opposite that on which the notch 8^a of the aperture 8 is located is formed with a circular notch 10^a, and on the opposite side of cylinder 5 is formed an aperture 11, which is diametrically opposite the aperture 10 and has in its edge a circular notch 11^a, similar to the notch 10^a, but on the opposite side of the aperture 11, as indicated in dotted lines in Fig. 6. Consequently when these two cups or cylinders 4 5 are telescoped and relatively rotated the apertures 8 9 10 11 may at one time be

caused to come into register directly in line with the passages 1 2 and constitute, through the valve, the maximum size of opening, and this opening may be decreased in size on both sides simultaneously by rotating the valve members 4 5 a still further degree in such a direction as to cause the notch 10^a of the cylinder 5 and the notch 8^a of the cylinder 4 to approach each other the notches 9^a and 11^a on the opposite side making a similar movement. By thus reducing or increasing the size of the valve-opening it will be seen that the contraction and expansion are always made toward and from the center or axis of the air-passage, and therefore by situating the gasolene or other fuel-supply nozzle at the center of such air-passage the fuel will be uniformly disseminated throughout the entire cross-area of the air-current notwithstanding the degree of diminution thereof. Such a nozzle for supplying the liquid fuel is shown at 12, and in order that the current of air may be better concentrated against the end thereof for siphoning up the fuel a central air-passage of consistent capacity is employed in the form of a tube 13, arranged lengthwise of the axis of the passages 1 2, with its ends projecting entirely through the valve-cylinders 4 5. One end of this tube preferably receives the upwardly-projecting nozzle 12, and in order that the parts may be assembled and the tube withdrawn when desired such end is provided with a notch or slot 14 for the admission of the nozzle 12. The tube may be supported in any suitable way, as by a standard 15, formed in or secured to the housing 3 and having a spring-catch 16 for holding the tube against longitudinal movement. The notches 8^a 9^a 10^a 11^a are of a size and form complementary to the exterior of the ends of the tube 13 and are adapted to fit around the same when the valve-opening is reduced to its minimum, thus confining the air-current to the tube alone.

The valve members or cylinders 4 5 are so connected that the rotation of one in one direction imparts an opposite direction of rotation to the other one. To that end the outer cylinder 4 is provided with an operating handle or lever 17, and between the two heads 6 7 is situated a lever 18, which is pivoted eccentrically to the upper head 6 by screw or pin 19 and has one end pivoted, by means of pin 20, to a fixed support 21, secured by screws or other means 22 to valve-housing 3, the pin 20 passing through a curved slot 23 on the head 6, so as to allow the head 6 to rotate with relation to pin 20. The opposite end of lever 18 is connected by a pin or pivot 24 to the lower head 7, which is formed with a slot 25 for the reception of said pin 24, and which slot permits the lever to oscillate notwithstanding its eccentric pivot 19; but the slot 25 being formed radially and not concentrically it will be observed that as the head 6 is rotated, carrying the center 19 around with it, and thereby oscillating lever 18 on its fixed pivot 20, the pin 24 will impart rotation to the head 7 and cylinder 5 in the opposite direction, thereby bringing the side notches in the cylinders toward and around the tube 13 to reduce the valve-opening or else forcing them apart to increase the valve-opening.

In order to prevent leakage of air through the slot 23, the support 21 may be formed with an overlapping extension 26. It is of course obvious that should the tube 13 be removed the valve might be still further closed notwithstanding the side notches 8^a 9^a, &c., although the opening on one side of the valve would begin to enlarge after the minimum on that side is reached; but the converging walls of the cylinders on the opposite side would be sufficient to control the air.

The fuel may be supplied to the nozzle 12 by any suitable means. In the exemplification of the invention shown it is supplied from a float-chamber 27 through a passage 28, which leads to a groove 29, formed in the body of the nozzle 12, and which body is screw-threaded in a boss 30 and provided with a wrench-head 31 or other suitable means, so that the nozzle may be readily removed when desired for cleaning it or for submitting another nozzle of a different capacity, the passage of the nozzle 12 being of course in communication with the groove 29, so that the fuel may pass into the nozzle, and if the nozzle should become obstructed a wire or straw may be passed through it. The upper end of the nozzle is situated substantially on a level with the predetermined level of the fuel and chamber 27, which contains a float 32, controlling a valve 33 for stopping the supply of gasolene at the proper time. The amount of gasolene supplied through the nozzle 12 may be controlled in two ways, either by substituting a different size of nozzle or by varying the level of the fuel in the float-chamber. In some instances the latter method may be more convenient, and to that end means are provided for adjusting the valve-seat of the valve 33 with relation to the level at which the end of the nozzle is situated, whereby the gasolene will rise to a higher or lower level before the valve closes. This valve-seat is shown at 34 and is formed on a fitting 35, which has a connection 36 for the supply-pipe, (not shown,) the passage 37 of the connection 36 being situated above the valve 33, as shown in Fig. 4. The lower end of the fitting 35 is provided with a neck 38, loosely journaled in a bushing 39 and held against withdrawal by a pin or screw 40, passing through the bushing 39 and into a groove 41 in neck 38, and the bushing 39 is screw-threaded in a cap 42, which closes the top of the float-chamber in such a way as to be ad-

justable with relation to said cap. Hence it is seen that when the bushing 39 is rotated in one direction the valve-seat 34 will be elevated and in the opposite direction will be lowered and yet the position of the connection 36 for the supply-pipe will not be materially changed.

Should it be desired to prime the carbureter, the float 32 may be depressed by a button 43, which extends through a stuffing-box 44 and bears against pin 45, which is arranged to impinge the upper end of the valve-stem 46, the pin 45 being elevated by spring 47, arranged in a cap 48 on the upper end of fitting 35.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a carbureter, the combination with a valve-housing having a central passage therethrough of cylindrical valve members arranged within said housing extending transversely across said passage, said valve members being telescoped, the one within the other, and having registrable openings, means for relatively displacing said valve members to vary the area of the openings therethrough, and a fuel-supply passage delivering into said housing-passage.

2. In a carbureter, the combination with a valve-housing having a passage therethrough, cylindrical telescope valve members arranged within said housing and extending transversely across said passage, said valve members having registrable openings therethrough, and connections between said valve members whereby when one of said members is moved the other is moved relatively thereto to vary the area of the openings therethrough, and means for delivering a fuel-supply centrally with respect to said passage.

3. In a carbureter the combination with a valve-housing having an inlet and an outlet, and a fuel-supply passage leading thereinto, of telescoped cylindrical valve members arranged in said housing and having registrable passages, and means for rotating said valve members in opposite directions for causing said passages to more or less overlap or register.

4. In a carbureter, the combination with a valve-housing having a passage therethrough, a tube arranged within said passage and extending longitudinally thereof, cylindrical telescope valve members arranged within said housing and extending transversely across the passage therethrough, said valve members having registrable openings, said tube extending through said openings, means for rotatively displacing said valve members relatively to each other to vary the area of the openings therethrough, and means for delivering a fuel-supply into said tube.

5. In a carbureter the combination with a valve-housing having an inlet and an outlet, and a fuel-supply passage thereinto, of two cup-shaped valve members telescoped together and arranged within said valve-housing and having registrable passages, a lever pivotally fixed at one end and having sliding pivotal connection at the other end with one of said members and pivotal connection at an intermediate point with the other of said members, said latter pivot being eccentric to said members, and means for rotating one of said members.

6. In a carbureter, the combination with a valve-housing having a passage therethrough, a tube arranged within said housing and extending longitudinally of said passage, valve members arranged within said housing and extending transversely across the passage therethrough, said valve members having registrable openings through the side walls thereof, said tube extending through said openings, an operating-lever for one of said valve members and a lever connection intermediate said valve members whereby when one is rotatively moved in one direction, the other is correspondingly moved in the opposite direction, and means for delivering a fuel-supply into the passage in said housing.

7. In a carbureter, the combination with a valve-housing having a passage therethrough, cylindrical valve members telescoping, the one within the other, and arranged within said housing to extend across said passage, said valve members having registrable openings through the side walls thereof, a lever connection between said valve members whereby when one of said members is rotatively moved in one direction, the other member is correspondingly moved in the opposite direction, and means for delivering a fuel-supply to the passage inside the housing.

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