A. J. ABEL.

CARBURETER.

APPLICATION FILED JULY 13, 1908.

911,105.

Patented Feb. 2, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

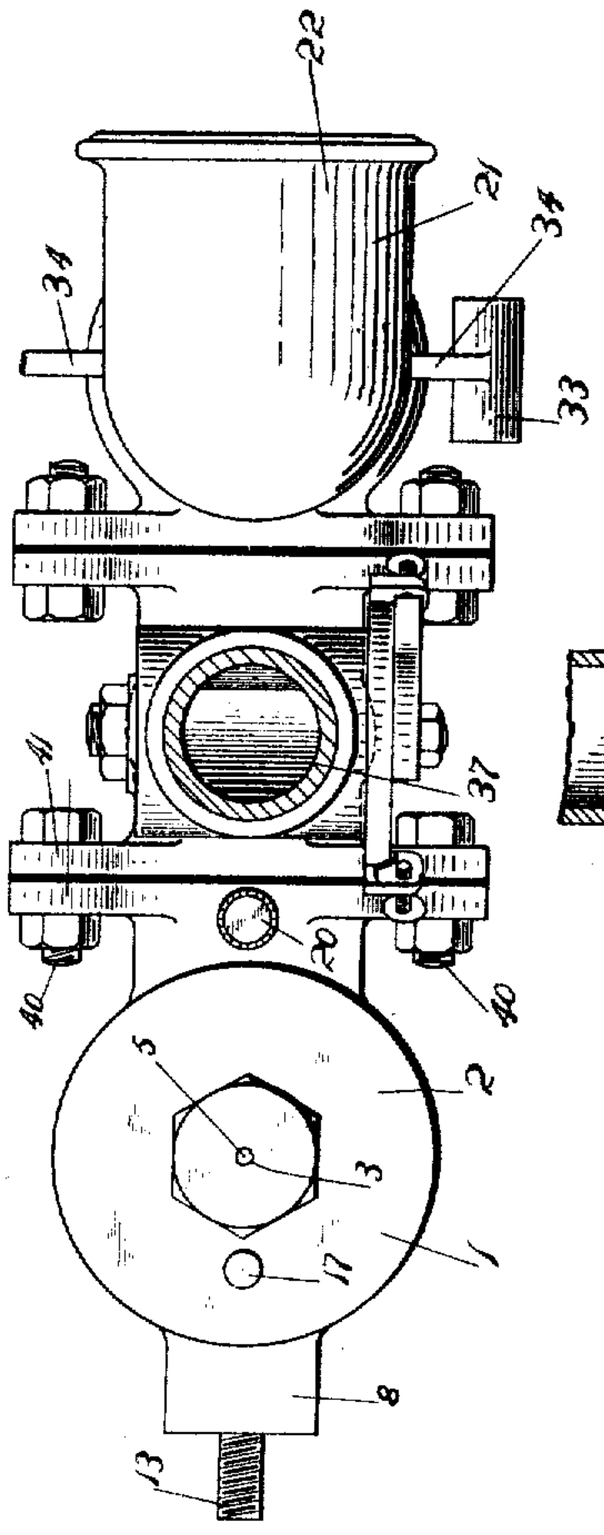
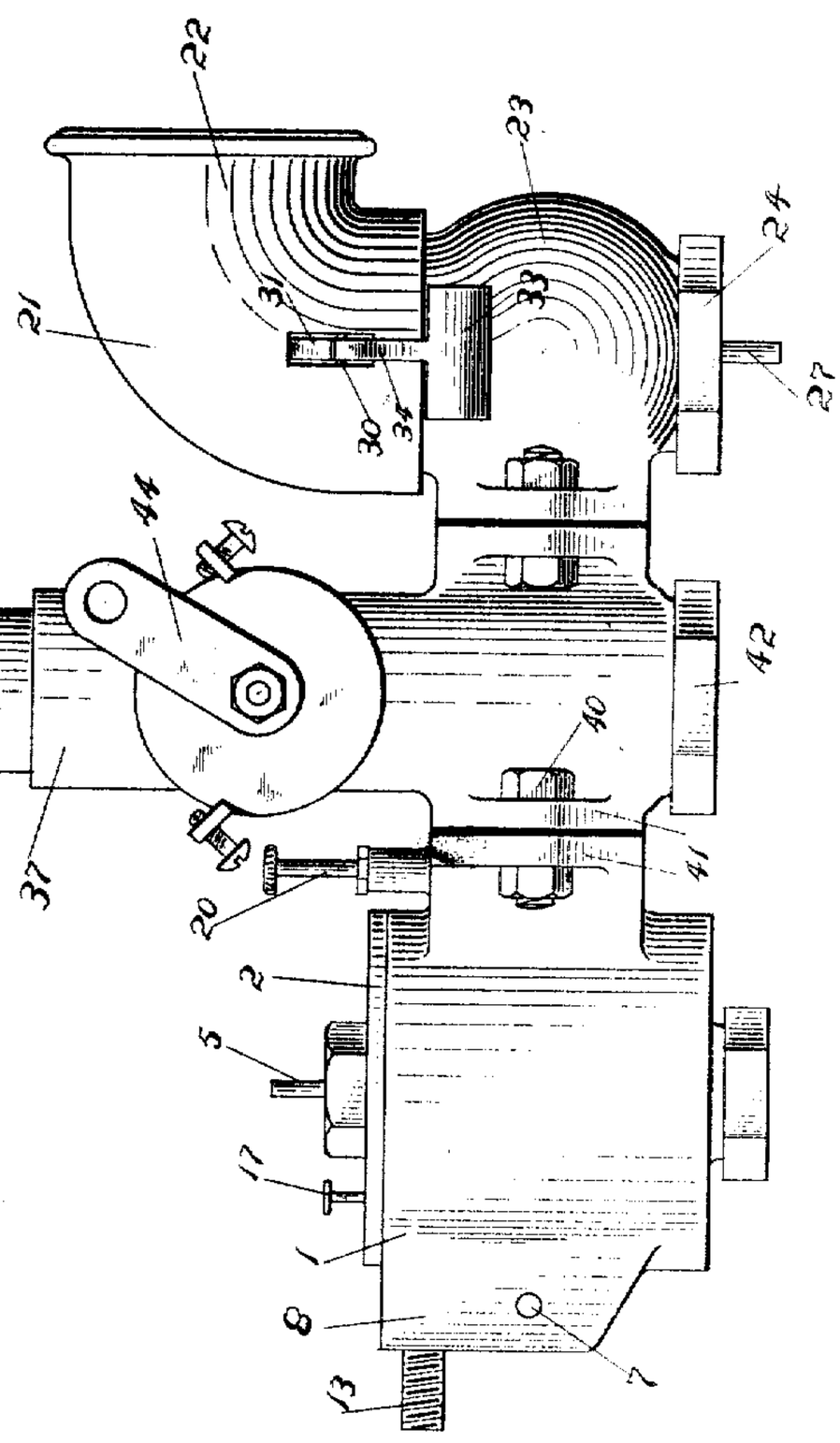


Fig. 2.



Witnesses:
Darwin Seymour.
William C. Smith.

Inventor:
Arthur James Abel.
By. Joshua R. H. Potts
Atty.

A. J. ABEL.

CARBURETER.

APPLICATION FILED JULY 13, 1908.

911,105.

Patented Feb. 2, 1909.

2 SHEETS—SHEET 2.

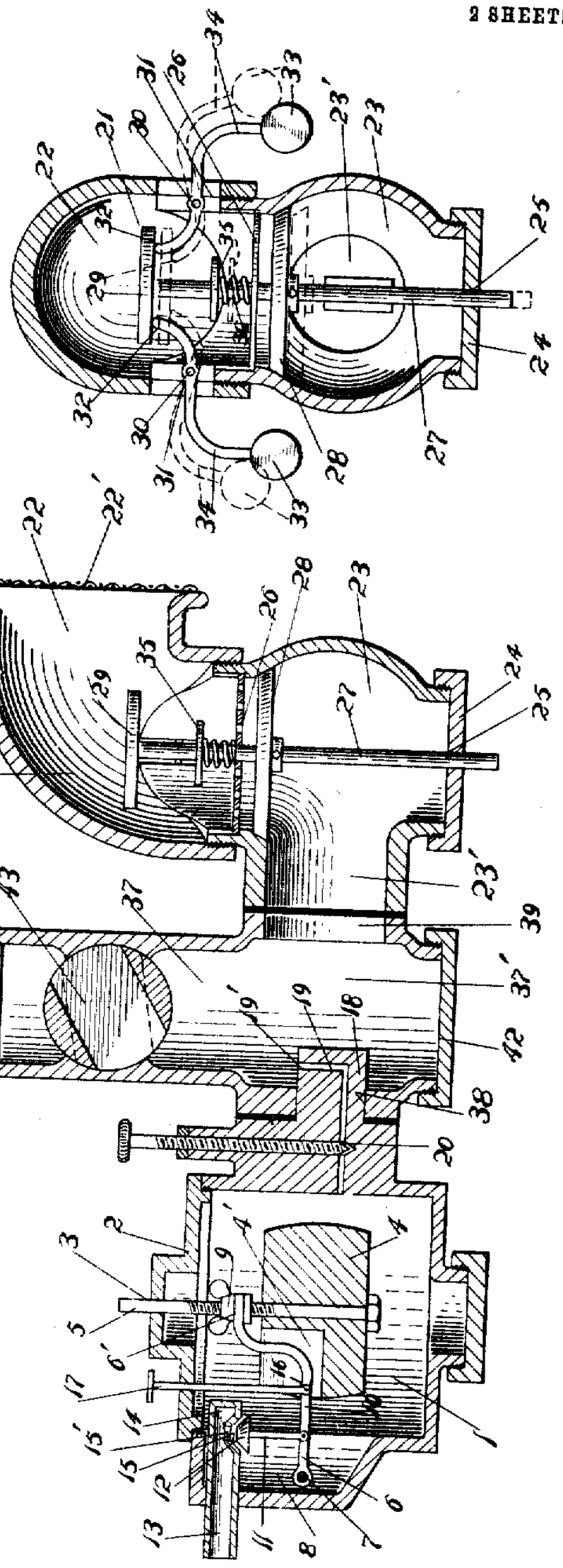


Fig. 4.

Fig. 3.

Witnesses:

Darwin Seymour.

William C. Smith.

Inventor:

Arthur James Abel.

By Joshua R. H. Potts

Atty.

UNITED STATES PATENT OFFICE.

ARTHUR JAMES ABEL, OF DAVENPORT, IOWA.

CARBURETER.

No. 911,105. Specification of Letters Patent. Patented Feb. 2, 1909.

Application filed July 13, 1908. Serial No. 443,195.

To all whom it may concern:

Be it known that I, ARTHUR JAMES ABEL, a citizen of the United States, residing at Davenport, county of Scott, and State of Iowa, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to apparatus for carbureting air, and more specifically to that class of the same which is particularly adapted for use in connection with automobiles or marine gas engines.

The object of my invention is to provide an apparatus of the character mentioned, which will be adapted to be used in connection with a gas engine, for the purpose of producing a thorough, hence, effectual explosive mixture of air and oil vapor, for operating said gas engine.

A further object of my invention is to provide an apparatus or carbureter of the character mentioned, which will not readily be affected, that is hindered or disturbed in its correct working by jolting or jarring of the same, as is necessarily the case when an automobile is traveling over a rough road or a boat sailing upon a rough sea.

A further object of my invention is to provide a carbureter of the character mentioned which will be strong and durable, and of the highest possible efficiency.

Other objects will appear hereinafter.

With these objects in view, my invention consists generally in an oil float chamber, the same being provided with novel means for automatically regulating the flow of oil into the same.

My invention further consists in an air chamber, the same being provided with gravity governed air feeding or admitting means, and in an air and oil vapor mixing chamber to opposite sides of which are detachably connected said air and float chambers and in such a manner as to effect a most thorough mixture of the air and oil vapor which are fed into said mixing chamber.

My invention further consists in various details of construction and arrangements of parts, all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a front elevation of my carbureter in its preferred form, Fig. 2 is a top plan view thereof, Fig. 3 is a vertical longitudinal section through the same, and Fig. 4 is a vertical transverse section taken through the air chamber embodied in my invention.

Referring now to the drawings, 1 indicates a substantially cylindrical oil float chamber, provided with the removable top plate 2, said plate being provided with a central perforation 3. So as to facilitate automatically regulating the flow of oil into said chamber, I provide a float 4 of any suitable material but preferably cork, the same being fixed upon a vertically reciprocating threaded rod 5, the upper end portion of said rod being adapted to rest or be guided in said perforation 3 in the plate 2. Having its end portion 6 pivotally mounted upon a pivotal bolt 7 secured in the enlarged portion 8 of the float chamber 1 and having its other end portion 6′ suitably secured to a vertical adjusting nut 9 threaded upon said float rod 5, is a lever 10, the float 4 being slotted as at 4′ to receive the same.

Fixed to a horizontally extending portion of the lever 10 and vertically extending therefrom, is a valve stem 11, to the upper extremity of which is secured a valve 12. A supply pipe 13 the outer extremity of which is connected with an oil tank or other suitable oil supply source and the inner extremity 14 thereof, leading or exhausting into said float chamber 1, as clearly shown in Fig. 3 in the accompanying drawings, is provided with a valve seat 15 at its inner or exhaust opening 15′ for the reception of said valve 12. Pivotally secured to said lever 10 as at 16 and vertically extending therefrom through the top plate 2 of the float chamber 1, is an ordinary starting plunger 17.

The oil from the tank or other oil supplying source when my carbureter is attached to an engine, will be admitted through the supply pipe 13 and the valved opening 15′ therein, into the float chamber 1 and will rest in the bottom portion thereof, in which case the float will be supported, that is, will float upon the surface of the oil and will therefore rise and fall simultaneously with the surface of the same. It is obvious that when the surface of the oil rises to a certain level in said chamber, the valve 12, which being indirectly secured to the float rod 5, hence, rises and falls simultaneously with the float 4, will be forced into its seat 15 in the supply pipe 13, and hence, will shut off the flow of oil into said chamber through the opening 15′; but as oil is gradually con-

sumed by the engine, the surface of the oil in the chamber 1, will gradually fall, thereby causing the float to fall, and hence, the valve to be lowered thereby opening the passage 15′ in the supply pipe 13 and thus admitting more oil into the chamber 1. It is obvious therefore by this arrangement, that the level or the amount of oil in the oil chamber will be constant as the suppy of the same is automatically regulated. By adjusting the vertical position of the nut 9 upon the float rod 5, it is obvious that the amount of oil to be carried in the float chamber may also be regulated, the latter however, is adapted to be regulated manually. Leading from said chamber 1 and through a projection 18 extending laterally from, and preferably formed integrally with said chamber, is an oil passage 19, the same being provided with the usual needle valve 20 which is adapted to be actuated in regulating the amount of oil to be exhausted from the outlet 19′ of said passage.

21 indicates a metallic air chamber member, the same preferably consisting of the upper and lower parts or castings 22 and 23, respectively, the latter being preferably threaded into the former of said parts, as clearly shown in Figs. 3 and 4. Air is admitted through the intake 22′ at the upper extremity of the part 22 and passes through said chamber and is exhausted through the horizontally extending passage 23′ in the part 23 of the chamber 21. The bottom of said chamber is preferably closed by a nut 24 threaded upon the lower extremity of the same, thus facilitating access into the interior of said chamber for possible cleaning of the same. Centrally mounted for vertical reciprocation in a perforation 25 provided in the nut 24, and in a perforated disk 26 secured in said chamber, is a valve stem 27, to which is secured the valve 28. Said valve is preferably formed of leather and is adapted to normally rest in a seat 29 provided in the lower portion 22 of said chamber 21. To the upper extremity of said valve stem 27 is fixed a disk 29. Pivotally mounted as at 30 in slots 31 extending through the walls of the chamber 21, and having their inner ends 32 resting against the undersurface of said disk 29 and their outer extremities provided with weights 33, are the similar weight arms 34. It is obvious that said arms as positioned, normally close the passage through said chamber, that is, keep the valve 28 seated, and that as the valved passage is opened, that is, as the valve is lowered, the weighted ends of the weight arms 34, will be raised, the path of said weights while being raised, being outward and upward, as shown in dotted lines in Fig. 3. Hence, as the valve is gradually lowered, that is, the valve opening increased in size, it is obvious that the leverage of the weights upon the weight arms is gradually increased. With this arrangement, it is obvious that the valve is comparatively sensitive to admitting air while starting the engine as at this time, the leverage of the weight arms is very low, but that said valve is not so readily affected in this regard when the engine is running at full speed as in the latter case the leverage of the weight arms is very great, in other words, the resistance of the weight arms increases in a direct ratio with the speed of the engine. With this arrangement, it is also obvious that the amount of air admitted will be in accordance with the demand for it, that is, as the piston of the engine to which my carbureter is attached gradually moves faster, the demand for air will necessarily gradually increase, that is, the force of suction below the air valve will be increased and which naturally causes the valve to be forced downwardly and the weighted ends of the weight arms raised, thereby admitting air. Now as the demand for air is fulfilled, the force of suction below the air valve, will be reduced and the weight arms will by the force of gravity force the valve upwardly or tend to close the same, the position of the valve being governed by the amount of suction force below it, thus as before stated, a gravity governed air feed is effected. If the carbureter of which the air chamber just described, forms a part, were subject to jarring or jolting while the same is in operation, it is obvious that the means just described for governing the supply of air fed into said mixing chamber, would be inefficient, as the weighted arms in this case would be constantly bobbing up and down. So as to facilitate governing the air supply by the same means just as efficiently under the conditions as stated as when the engine is free from jarring or jolting, I supply the valve stem 27 with a disk 35 and interpose between said disk and the upper surface of the perforated disk 26 a coil spring 36. With this arrangement, said spring acts as an auxiliary air feed governor, and it is obvious that by the provision of the same, the bobbing of the weight arms will make no material difference in the working of the valve as the pressure of the spring upon the disk 35 secured to the valve stem 27 is constant.

37 indicates a substantially cylindrical or tubular mixing chamber provided at its lower portion 37′ with the oppositely extending openings 38 and 39, said openings being substantially in horizontal alinement with each other for a purpose hereinafter stated. The oil float chamber 1 is attached to said mixing chamber over the opening 38 thereof as by bolts 40 extending through flanges 41 provided upon the adjacent surfaces of each of said members, with the portion 18 of said chamber 1 projecting into said mixing chamber, as clearly shown in Fig. 3. The

chamber 21 is attached by similar means to said mixing chamber over the opening 39 of the same, that is, with the horizontal passage 23′ of said air chamber registering with said opening 39. The chamber 37 is preferably provided with a nut 42 threaded upon the lower extremity thereof, which facilitates access into the interior of said chamber for possible cleaning of the same. Said chamber is provided in its upper portion with a plug throttle valve 43 to the front extremity of which is suitably secured the ordinary throttle valve actuating the lever 44. As shown in the drawings, and as before stated, the air and oil vapor are fed into said mixing chamber at the same level which necessarily facilitates a thorough mixture of the two, and it is to insure a still more thorough mixture that I provide the projection 18 upon the float member 1, through which extends the oil passage leading from said oil float chamber. By this provision, the oil vapor is exhausted into substantially the center of the mixing chamber, that is, is fed into substantially the center of the air supply current from the air chamber 21, hence, necessitating as thorough a mixture of the two as is possible.

The carbureter as described may be attached by its upper flanged end portion 45 to any convenient part of the engine.

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

1. In a carbureter consisting of a mixing chamber member and of oil and air chamber members detachably secured to opposite sides of said mixing chamber, a vertically extending valve stem centrally positioned in the chamber of said air chamber member, a valve secured to said valve stem, the same being adapted when resting in a valve seat provided in said air chamber member to close the passage through said member, a disk member secured to the upper extremity of said valve stem, and weight arms pivotally mounted in slots provided in opposite sides of said air chamber member, the inner ends of said arms being adapted to rest against the undersurface of said disk member and the outer ends of said arms being provided with weight members, said weight arms being adapted to normally keep said valve in seated position, substantially as described.

2. In a carbureter of the class described, a valve adapted to normally close the passage through the air chamber of said carbureter, arms pivotally mounted in slots provided in the air chamber member of said carbureter, weight members formed upon the ends of said arms, and means secured to the valve stem of said valve against which the inner ends of said arms are adapted to rest, said arms being adapted to normally force said valve into a valve seat provided in said passage through said air chamber, the weighted ends of said arms being adapted when said valve is opened, to be raised in an outward and upward path simultaneously with the opening of said valve, substantially as described.

3. In a carbureter of the class described, a valve adapted to normally close the air passage through the air chamber of said carbureter, a perforated disk fixed in said air chamber, said disk being adapted to form a guide for the stem of said valve, and a coil spring interposed between means fixed to said valve stem and said perforated disk adapted to normally keep said valve seated, substantially as described.

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

ARTHUR JAMES ABEL.

Witnesses:
J. H. Gay,
Ch. Hartwig.