C. R. GREUTER.

CARBURETER.

APPLICATION FILED DEC. 26, 1908.

1,049,705.

Patented Jan. 7, 1913.

2 SHEETS—SHEET 1.

Fig. 2.

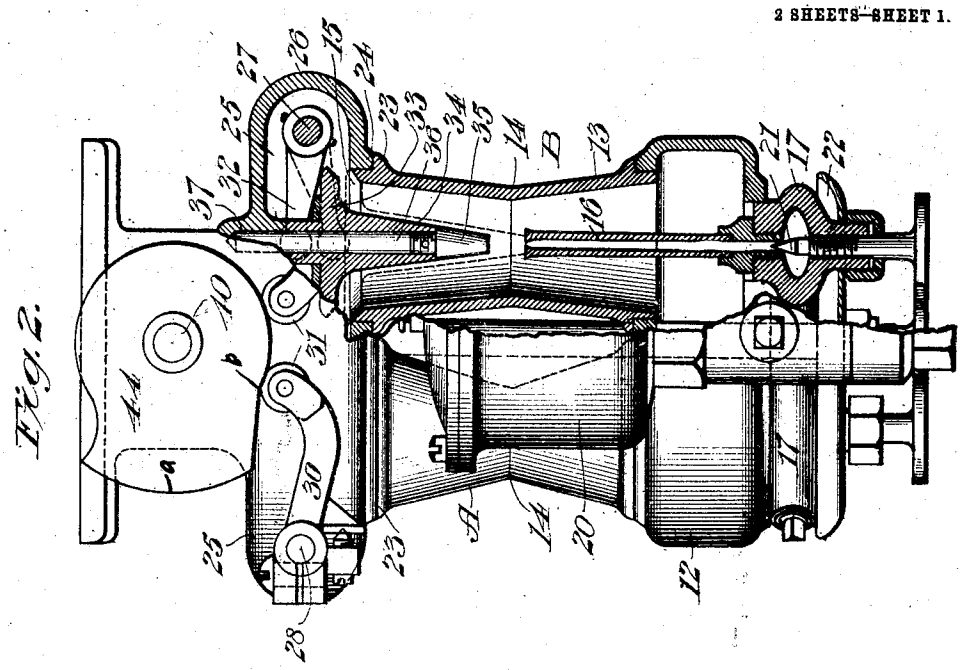
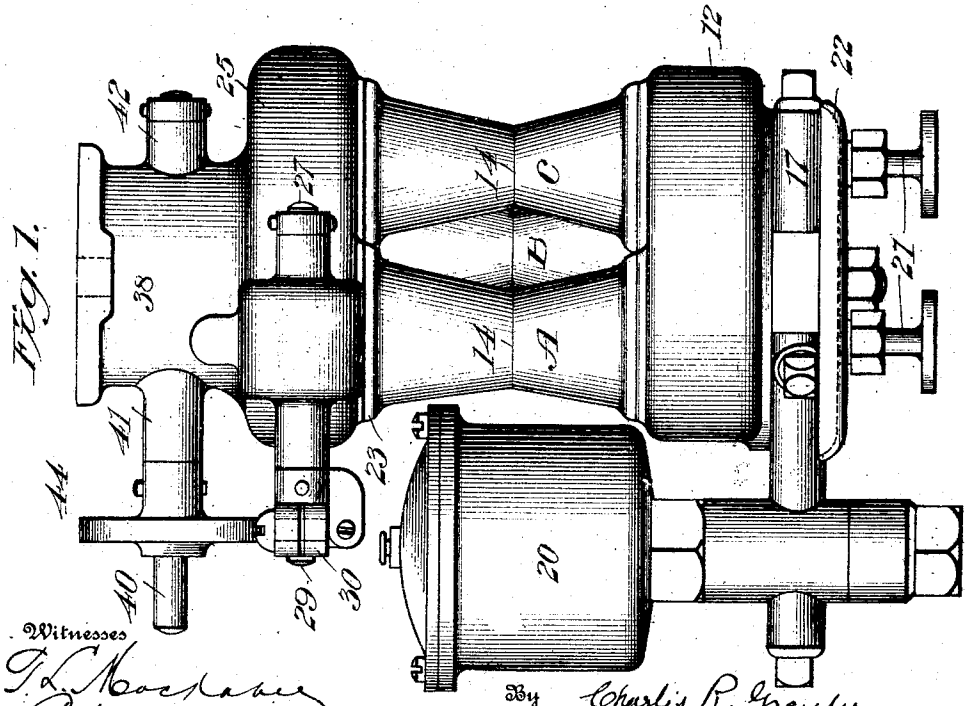


Fig. 1.



Witnesses

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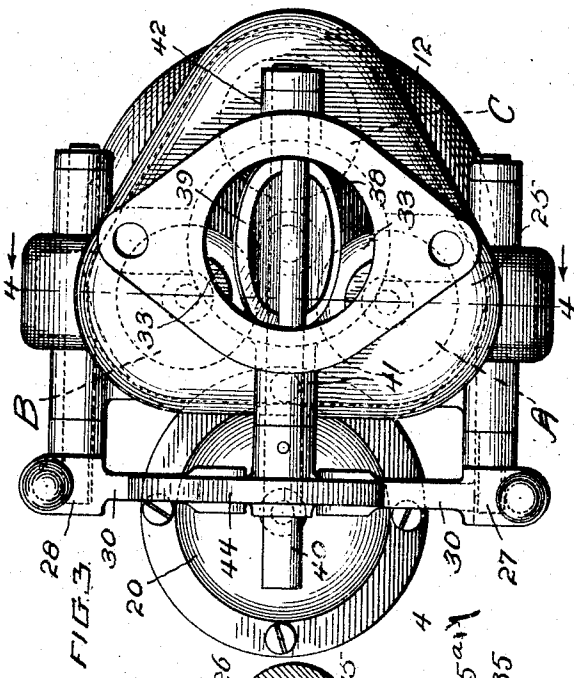

FIG. 3.

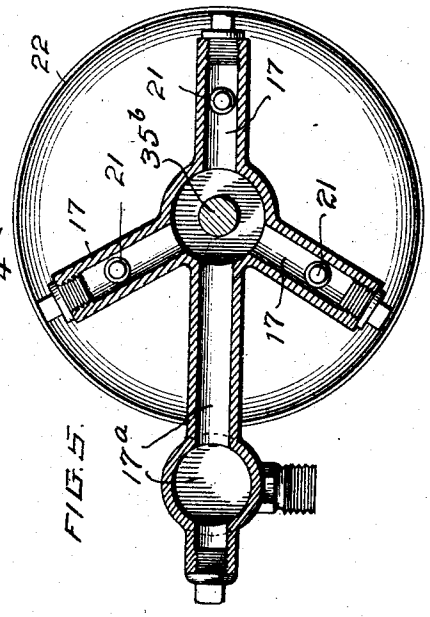

FIG. 5.

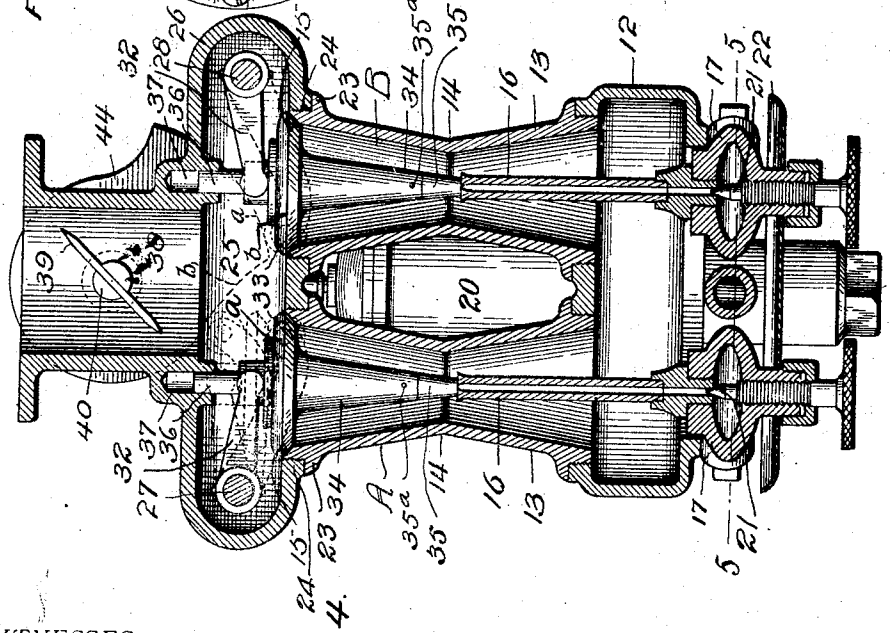

FIG. 4.

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CHARLES R. GREUTER, OF SAUGUS, MASSACHUSETTS.

CARBURETER.

1,049,705. Specification of Letters Patent. Patented Jan. 7, 1913.

Application filed December 26, 1908. Serial No. 469,317.

To all whom it may concern:

Be it known that I, CHARLES R. GREUTER, a citizen of the United States, and a resident of Saugus, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Multiple-Jet Carbureters, of which the following is a specification.

This invention relates to carbureters of the multiple jet type embodying a plurality of carbureter units, and has especially in view novel mechanism whereby the discharge from certain of said units is successively controlled, so as to insure of the delivery of the mixture being regulated in accordance with the requirements of the engine.

In carrying out the objects of the invention generally stated above, it will of course be understood that the essential features thereof are susceptible to structural change and arrangement of parts without departing from the spirit or scope of the invention, but a preferred and practical embodiment of the same is shown in the accompanying drawings, wherein—

Figure 1 is a side elevation of the improved carbureter. Fig. 2 is a front elevation, partly in section. Fig. 3 is a top plan view of the carbureter showing the relative positions of the several carbureter units. Fig. 4 is a vertical sectional view of the entire carbureter, which section includes two complete units and is taken on the line 4—4 of Fig. 3. Fig. 5 is a horizontal sectional view on the line 5—5 of Fig. 2 showing the means for supplying fuel to the several carbureter units.

Like characters of reference designate corresponding parts in the several figures of the drawings.

The improved carbureter contemplates in its general organization an open air-supplying base 12 upon which the carbureter units A, B, and C are mounted, said units each comprising a carbureting tube 13 having a centrally contracted portion 14 to provide a substantially hour-glass shape therefor. One of said tubes, namely that belonging to the unit C, has a plain open top, and the other tubes of the units A and B have their upper ends arranged and constructed to form a valve seat 15. For each carbureter unit a jet nozzle 16 projects through the base 12 and extends into the carbureting tube to approximately the centrally contracted portion. The lower ends of the jet nozzles are mounted on, and in communication with separate fuel chambers 17. The separate chambers 17 have a separate pipe connection 17ª with a float feed reservoir 20. The fuel chambers 17 have needle valves, or equivalents, 21 extending through them which control the feed of the fuel into the jet nozzles 16. A drip pan 22 is held in a position below the base, and performs the usual functions of a pan of this character.

The upper ends of the carbureting tubes are provided with external annular flanges 23 which form seats for collars 24 of an outlet valve casing 25, said outlet valve casing having outstanding rounded sides as indicated at 26 in which rocker shafts 27—28 are mounted. One end 29 of each rocker shaft projects through the casing 25 and has an arm 30 mounted thereon, the free end of said arm being upturned and provided with an anti-friction roller 31. The said rocker shafts 27—28 are also provided with valve lifting rods 32 which have suitable connection with suction-controlled valves 33 which control the outlet from the two carbureting tubes of the units A and B which are provided with the valve seats 15. The valves 33 are each provided with a depending tubular stem 34 which has its lower end threaded for the reception of a threaded valve tip 35 which acts as a stopper or valve to seal the outlet from the jet nozzles when the valves 33 are seated. Guide rods 36 fitted in recesses 37 of the valve casing 25 extend into the opening through the tubular stem 34, and serve as supporting guides for said valves 33.

The valve casing 25 is provided with a centrally located upstanding neck 38 which communicates with the engine cylinder (not shown) and in which a butterfly valve 39 is mounted so as to control the discharge of the fuel therefrom. Said butterfly valve 39 is mounted on a rocker shaft 40, the ends of which are seated in outstanding journals 41—42. One end of the rocker shaft 40 projects through its journal 41 and has a cam 44 fast thereon which is adapted to contact with the arms 30 of the rocker shafts 27—28 to so control the separate suction-controlled valves 33 in the manner to be presently explained.

The various steps in the operation of controlling the suction-controlled valves 33 is shown in the drawings, and by reference

thereto it will be seen that when the butterfly valve is closed, the suction-controlled valves will also be closed, the operation of the mechanism for accomplishing this result being as follows: As the butterfly valve and the cam are fast on the same shaft, it will be seen that when the said butterfly valve is closed, the locking surface *a* of the cam will be resting firmly on the arms 30, thereby firmly holding the suction-controlled valves to their seats on the ends of the two carbureting tubes of units A and B. A movement of said shaft in one direction will cause the clearance surface *b* of the cam to move over one of the arms 30 and allow the same to rise, thus removing the pressure on the valve seated on one of the carbureting tubes, which permits the said first-mentioned valve to be opened by the suction from the engine cylinder. A continued movement of the cam brings the clearance surface *b* to a position which allows the release of the other valve, and causes both suction-controlled valves and the butterfly valve to assume open positions, whereupon the mixture has an unobstructed passage to the engine cylinder. A reversal of the above described movement of the cam will, of course, first close one of the valves, then the next valve and the butterfly valve.

From the foregoing it will be understood that in the present embodiment of the invention, the carbureter is composed of three units, two of which are provided with suction-controlled valves which control the outflow of the mixture, said valves being also provided with an adjustable tip which seals the outlet from the jet nozzles when said valves are seated. The other unit is at all times open to the valve casing, and the outflow therefrom is controlled solely by the butterfly valve in said valve casing. Preferably the suction-controlled valves which control the outlet from two of the units are of different weights, and are respectively given the additional designations *a* and *b*. This feature provides means whereby, when the restraining pressure is removed therefrom by the mechanism described above, the lighter valve will be first raised by the suction of the engine cylinder, after which, as the suction increases, the other valve will be raised, so that the mixture from both units will be delivered.

Various minor details of construction may be resorted to without affecting the principle of the invention, such for instance, as the provision of a fastening pin 35[a], if it should be desired or found necessary to additionally secure the adjustable valve tips 35, which act as the valves for the outlets of the jet nozzles 16; also a central tie bolt or rod 35[b], or equivalent means may be employed for connecting the air supplying base 12 with the outlet valve casing 25, thus securing the several parts of the carbureter in operative, though separable, relation.

I claim:—

1. A carbureter comprising a base having a plurality of carbureting tubes mounted thereon, jet nozzles projecting into said carbureting tubes, suction-controlled valves controlling the outlet from said carbureting tubes, an outlet valve casing inclosing said suction-controlled valves and provided with a controlling valve for its outlet, and a cam operating with said controlling valve and controlling the movements of said suction-controlled valves.

2. A carbureter comprising a base having a plurality of carbureting tubes mounted thereon, jet nozzles projecting into said carbureting tubes, an outlet valve casing, a controlling valve controlling the outlet from said casing, suction-controlled valves in said casing controlling the outlet of said carbureting tubes, a cam operating with said controlling valve for the outlet, rocker shafts having a connection with said suction-controlled valves, and arms carried by said rocker shafts and adapted to be controlled by said cam.

3. A carbureter comprising a base having a plurality of carbureting tubes mounted thereon, jet nozzles in communication with said carbureting tubes, an outlet valve casing, suction-controlled valves in said casing and controlling the outlet from said carbureting tubes, a shaft in said casing carrying a controlling valve which controls the outlet from said casing, a cam mounted on said shaft and rotating with said controlling valve, rocker shafts also mounted in said casing and connected with said suction-controlled valves, and tripping rods carried by said rocker shafts adapted to be controlled by said cam.

4. A carbureter comprising a base having a plurality of carbureting tubes mounted thereon, jet nozzles projecting into said carbureting tubes, suction-controlled valves controlling the outlet from said carbureting tubes, an outlet valve casing inclosing said suction-controlled valves and provided with a butterfly valve controlling its outlet, and a cam operating with said butterfly valve and controlling the movements of said suction-controlled valves.

5. A carbureter comprising a plurality of carbureter units having a common outlet and each consisting of a carbureting tube and a supply jet nozzle projecting therein, certain of said units being provided with suction-controlled valves for both the carbureting tube and the jet nozzle thereof, valve holding means, and means for permitting a successive automatic opening of said suction-controlled valves.

6. A carbureter comprising a plurality of

carbureter units having a common outlet, suction-controlled valves for the carbureter units, means for locking the valves to their seats and releasing them, and means for permitting the valves to open and close successively as the suction of the engine is increased or diminished.

7. A multiple carbureter comprising a plurality of carbureting tubes, a jet nozzle projecting into each tube, longitudinally movable valves for the outlets from certain of said carbureting tubes, and cam actuated mechanism for shifting said valves.

8. A carbureter comprising a plurality of carbureter units having a common outlet and each consisting of a carbureting tube and a supply jet nozzle projecting therein, one of said units remaining open for action at all times, and said other units being provided with suction-controlled valves for both the carbureting tube and jet nozzle thereof.

9. A carbureter comprising a plurality of carbureter units having a common outlet and each consisting of a carbureting tube and a supply jet nozzle projecting therein, one of said units remaining open for action at all times, and said other units being provided with suction-controlled valves for both the carbureting tube and jet nozzle thereof, mechanical means for holding all valves closed at the same time, and means for permitting a successive automatic opening of said suction-controlled valves.

10. A carbureter comprising a plurality of carbureter units having a common outlet and each consisting of a carbureting tube and supply jet nozzle projecting therein, one of said units remaining open for action at all times, and said other units being provided with suction-controlled valves for both the carbureting tube and jet nozzle thereof, means for permitting a successive automatic opening of said suction-controlled valves, a controlling valve for the outlet, and mechanical means for holding all valves closed at the same time.

11. A multiple carbureter comprising a plurality of carbureting tubes, a jet nozzle projecting into each carbureting tube, a suction-controlled valve for the outlet from said carbureting tube, said suction-controlled valve having an adjustable valve tip acting as a stopper for the jet nozzle, and means for shifting said suction-controlled valve.

Signed at Boston, in the county of Suffolk and State of Massachusetts, this 21st day of December, A. D. 1908.

CHARLES R. GREUTER.

Witnesses:
WALTER SCOTT,
FRED PARKER CARR.