June 3, 1924. 1,496,124

J. JUHASZ

CARBURETOR

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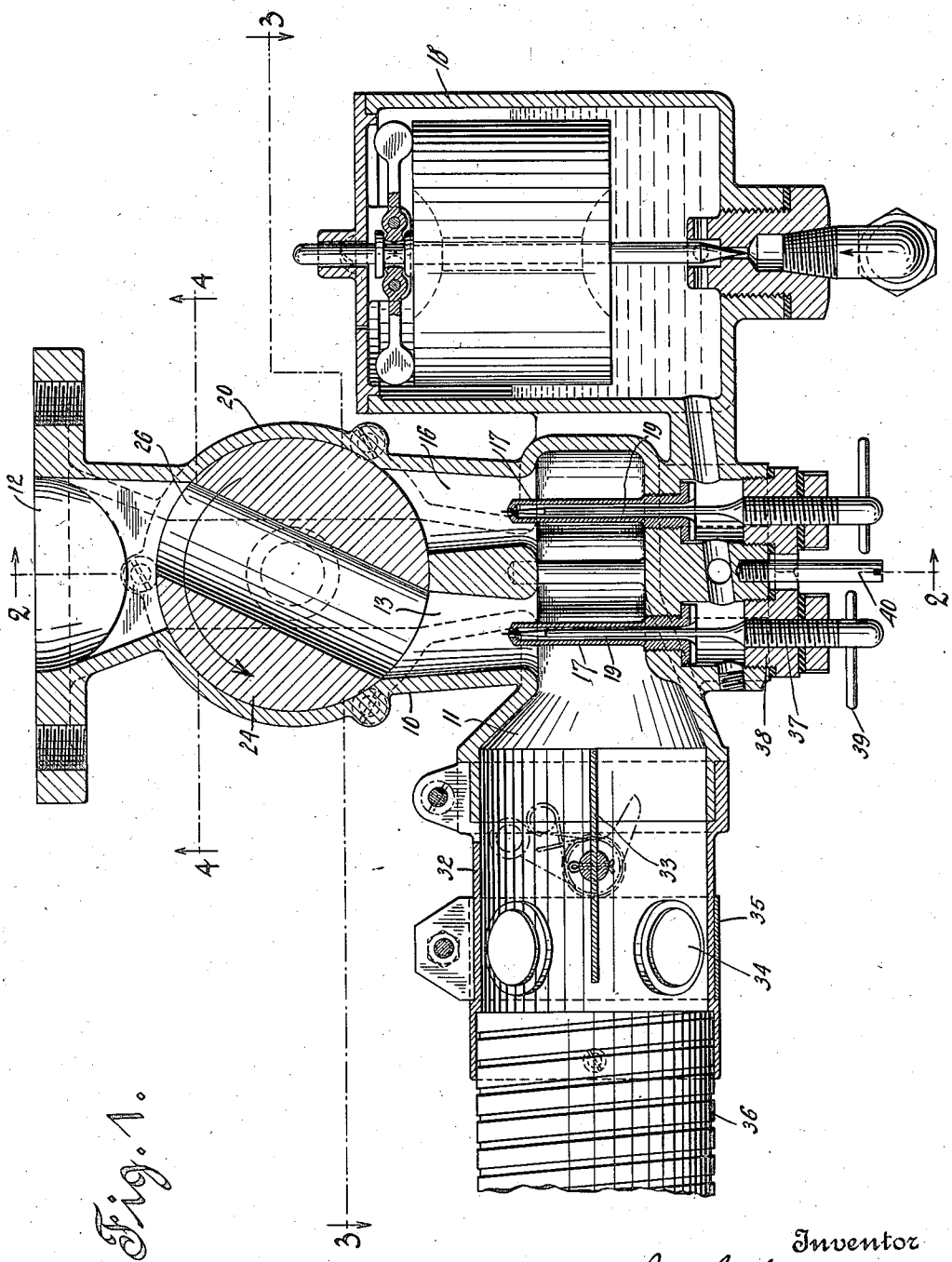


Fig. 1.

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Fig. 2.

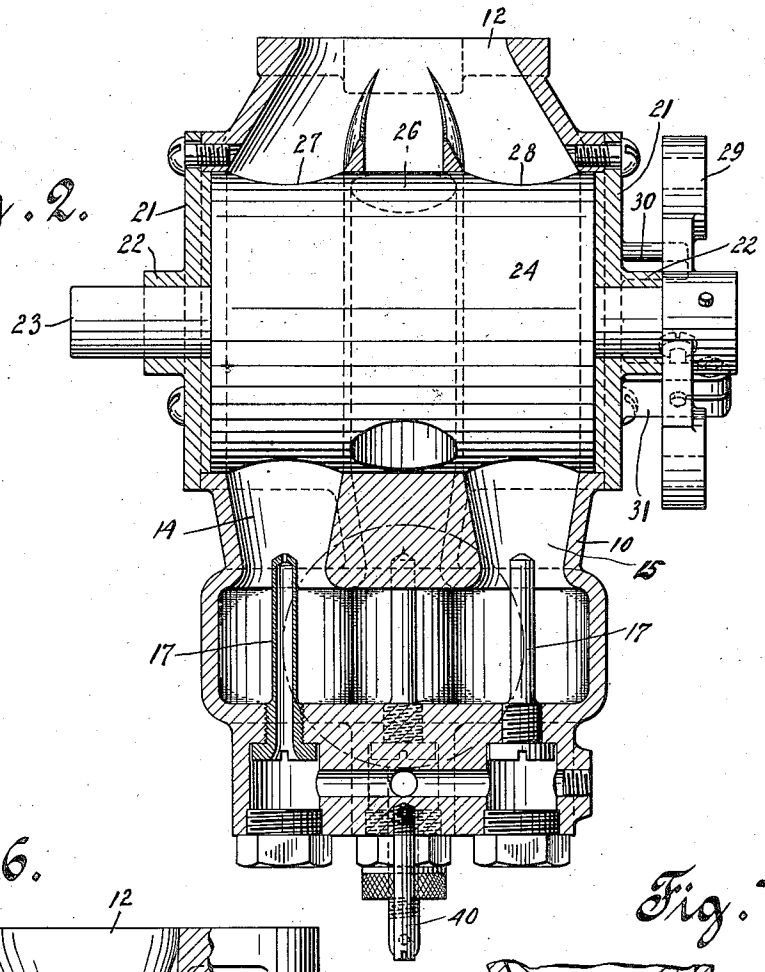


Fig. 6.

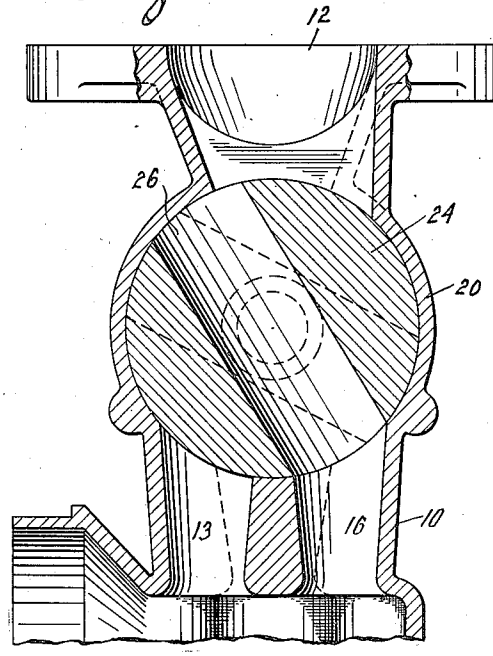
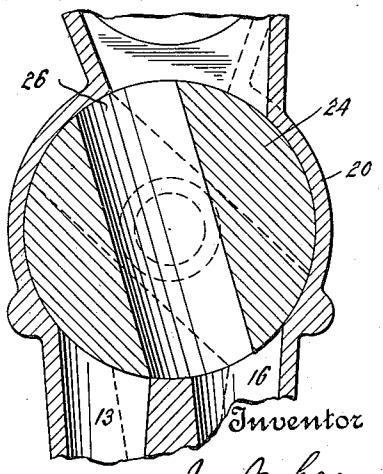


Fig. 7.



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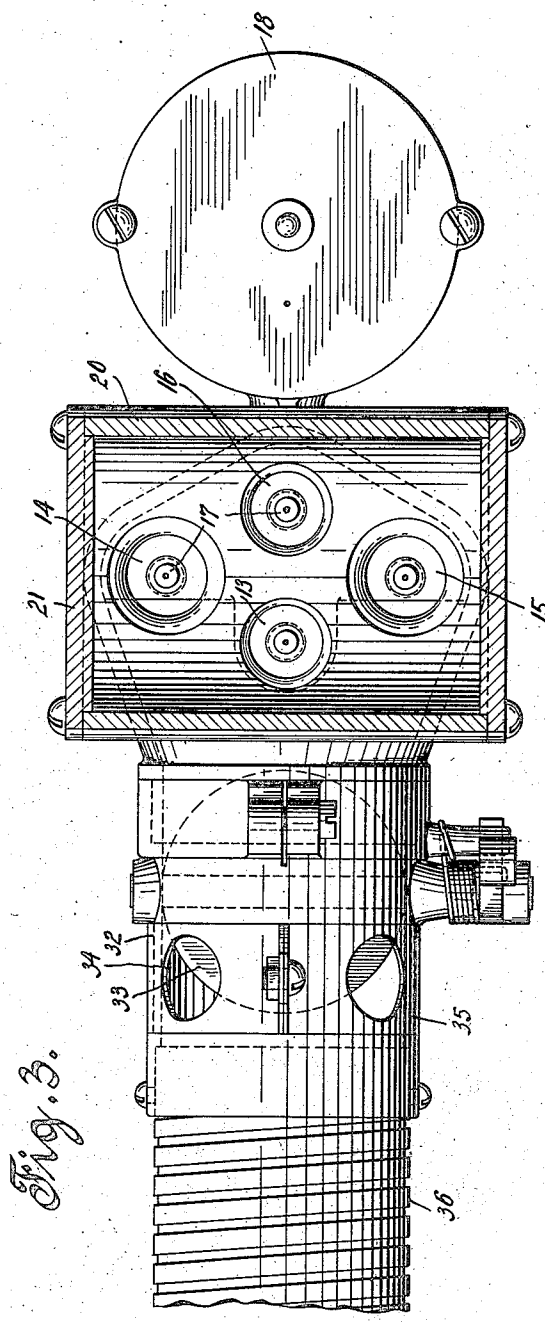


Fig. 3.

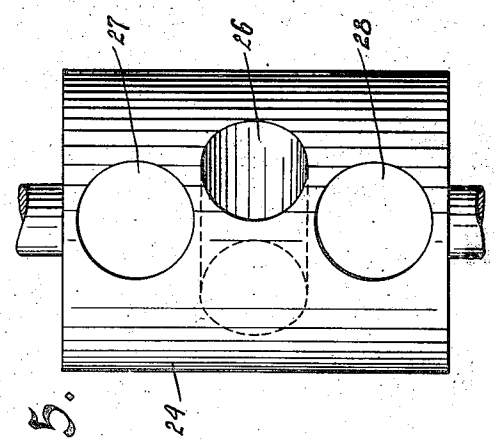


Fig. 5.

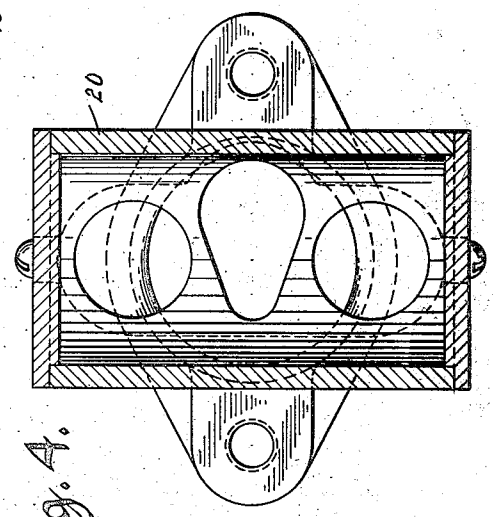


Fig. 4.

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Patented June 3, 1924. 1,496,124

UNITED STATES PATENT OFFICE.

JOHN JUHASZ, OF NEW YORK, N. Y.

CARBURETOR.

Application filed November 21, 1921. Serial No. 516,801.

To all whom it may concern:

Be it known that I, JOHN JUHASZ, a citizen of the United States, and resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Carburetors, of which the following is a specification.

The present invention relates to improvements in carburetors for use in connection with internal combustion engines. The invention relates more particularly to that type of carburetors, in which air is caused to flow at high velocity past the discharge end of a permanently open liquid hydrocarbon supply-conduit, whereby the liquid hydrocarbon is atomized and sprayed, the resultant combustible mixture being composed of air and liquid hydrocarbon in the form of an emulsion. More specifically, the invention pertains to multi-jet carburetors of the type, wherein each jet is disposed within an individual carburetor chamber, all chambers communicating with a single carburetor outlet, the communications being controlled by a valve common to all of said chambers.

With carburetors of this type considerable difficulty has been experienced heretofore for the reason that the valve interposed between the carburetor chambers and the carburetor outlet greatly decreases the efficiency of the device, it causing the formation of pockets, in which the mixtures from the several carburetor chambers stagnate, whereby the fuel is apt to condense. The uniformity of the mixture is thus materially affected. This is mainly due to the fact that in the constructions heretofore in use the passages through the valves are undercut, and in these undercut portions stagnation and condensation of the mixture takes place.

The main object of the present invention is to provide a carburetor overcoming these objections, in that its valve passages are of uniform transverse cross-sectional areas throughout their respective lengths or, in other words, the passages are of cylindrical configuration.

Another object of the invention is to provide a carburetor, which is adapted to furnish a predetermined mixture to an engine for the several speeds at which the latter may be running without readjustment of the carburetor parts.

A further object of the invention is to produce a carburetor, which requires no further attention than the manipulation of its throttle.

A still further object of the invention is to provide an arrangement whereby it becomes impossible to throw the needle valves of the carburetor out of adjustment.

A further object of the invention is to provide a device of this character which is efficient in operation, simple in construction and which is capable of manufacture on a commercial scale, or in other words one which is not so difficult to produce as to be beyond the reasonable cost of such a contrivance.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a vertical central section taken through a carburetor constructed in accordance with the present invention; Fig. 2 is a section taken on line 2—2 of Fig. 1, the throttle being shown in elevation; Fig. 3 is a section taken on line 3—3 of Fig. 1 with the throttle removed; Fig. 4 is a section taken on line 4—4 of Fig. 1, the throttle being removed; Fig. 5 is an elevation of the valve or throttle; and Fig. 6 is a section similar to the one shown in Fig. 1 of a portion of the device with the elements in other positions; and Fig. 7 is a similar section with the elements in still other positions.

In the drawings, the numeral 10 indicates a casing, in the side of which is formed an opening 11, forming the air inlet to the carburetor chambers, an opening 12 being provided in the upper face of the casing, constituting the outlet through which the charges, formed in the chambers, pass to the intake manifold of the engine. The air inlet communicates with a plurality of, in the present case four, Venturi passages, denoted by the numerals 13, 14, 15 and 16, respectively, which form independent carburetor chambers, into each of which projects a liquid hydrocarbon nozzle 17. These nozzles communicate with a float chamber 18 of any suitable construction, the discharge openings of the nozzles associated with the chambers 13 and 16 being controlled, for instance, by needle valves 19, as usual in constructions of this type. The discharge openings of the nozzles, associated with the chambers 14 and 15, are fixed, no adjustment being necessary, as will hereinafter appear. The Venturi passages 14

and 15 are, preferably, of the same shape and have outlets of equal size, while the outlets of the Venturi passages 13 and 16 are somewhat smaller, although this is not essential. The carbureting chambers 14 and 15 are disposed in the transverse center line of the casing 10, as clearly appears from Figs. 2 and 3 of the drawings, the chamber 13 being located centrally in relation to the chambers 14 and 15, but somewhat in rear of the same and the chamber 16 similarly in central relation to the chambers 14 and 15, but somewhat in front thereof (Figs. 1 and 3).

Above the carbureting chambers is formed on the casing a horizontally extending hollow cylindrical portion 20, the ends of which are closed by heads 21, on which are formed bearings 22 for the journals 23 of a cylindrical body 24, which is located within and snugly fits the cylindrical portion of the carburetor casing. The cylindrical body 24 constitutes a throttle valve, as will hereinafter appear. This throttle valve is provided with three bores, denoted by the numerals 26, 27 and 28. These bores are all cylindrical throughout their respective lengths, and extend diametrically through the body of the throttle. The longitudinal axes of the bores 27 and 28 are in the same diametrical plane, while that of the bore 26 is in another plane.

The casing of the carburetor is so shaped immediately above the cylindrical portion thereof that it follows the contours of the discharge ends of the bores in the throttle (Fig. 4), so that, when the throttle is turned, the discharge ends of the said bores are decreased or increased, depending upon the direction in which the throttle is turned. Attention is, however, called to the fact that provision is made in the design of the casing above the cylindrical portion thereof that the central bore 26 is somewhat uncovered when the throttle is in its fully closed position (Fig. 6), so as to permit of a flow of air past the supply nozzle in the chamber 16, as will hereinafter appear, to furnish the proper amount of combustible mixture for the motor, when running slow without load applied thereto, for instance when the automobile, on which the engine is mounted, is at full stop.

For turning the throttle, a lever 29 is fixedly attached to one of its journals, stops 30 and 31, formed upon one of the heads 21, limiting the movement of said throttle.

Into the air inlet opening 11 fits a tubular body 32, within which is mounted a choke valve 33 of any suitable construction. This tubular body is provided with openings 34, controlled by an apertured ring 35, that is oscillatably mounted on said tubular body and serves to control the inflow of air through the openings 34. The tubular body communicates with a flexible piping 36, that is connected with a suitable heating device, to heat the main body of air flowing into the carbureting chambers. The ring 35 serves to control and regulate the inflow of unheated air into the carburetor.

The needle-valves 19 include each a screw-threaded stem 37, meshing with the threads in a stationary nut 38 in the carburetor casing and extending therethrough. Through each of these stems extends, outside of the carburetor casing, a pin 39, fixed in any suitable manner to the respective stem. These pins extend at right angles to the longitudinal axes of the stems 37. Between the stems 37 is fixed to the casing 10 a stop 40 for co-operation with said pins.

The operation of the carburetor is as follows: When the throttle is in its closed position, that is to say when it is turned in the direction of the arrow shown in Fig. 1 of the drawings, as far as the respective stop will permit, the elements being then in the positions shown in Fig. 6 of the drawings, the carbureting chambers 13, 14 and 15 do not communicate with the carburetor outlet 12. The carburetor chamber 16 communicates, however, through the central bore 26 in the throttle with the said carburetor outlet, a minimum opening being provided sufficient to permit of a flow of air past the supply nozzle in the carburetor chamber 16, thereby furnishing combustible mixture for the motor to permit the same to run idle, that is to say without load applied thereto. For some time, during the movement of the throttle toward opening position, the central bore 26 communicates with the carbureting chamber 16 alone, more particularly until the leading edge of the bore 26 reaches the rear edge of the carbureting chamber 13. When this occurs, the leading edges of the bores 27 and 28 register with the rear edges of the chambers 14 and 15, respectively (Fig. 7). In the further opening movement of the throttle the chambers 13, 14 and 15 are cut in simultaneously, combustible mixtures flowing through the bore 26 from the chambers 16 and 13, until the chamber 16 is cut off. In other words, the carburetor chambers 13, 14 and 15 are rendered operative after the carburetor chamber 16 has reached its maximum capacity, the latter chamber being cut off as the chambers 13, 14 and 15 are gradually opened. Inasmuch as the carbureting chambers are not interconnected, obviously the same effect will be obtained as if a plurality of independent carburetors were provided. These carburetors, however, are caused to co-operate, inasmuch as they are controlled by a common throttle. The quantity of liquid hydrocarbon and air drawn may thus be varied in proportion to the desired performance of the engine. Inas-

much as the bores in the throttle are cylindrical throughout their lengths, the combustible mixtures cannot stagnate therein, the result being that a uniform mixture is continuously obtained.

If the sizes of the discharge openings of the fuel nozzles associated with the Venturi passages 14 and 15 are once determined, no further adjustment of these elements becomes necessary. The sizes of the nozzles associated with the Venturi passages 13 and 16 may be adjusted by the needle valves 19 co-acting therewith. It is to be observed, however, that when the pins 39 are once, after adjustment, permanently fixed in place on the stems 37, it becomes impossible to throw these needle-valves out of adjustment, by reason of the fact that the pins will in either direction of rotation of the respective needle-valve abut against the stop 40, which, obviously, permits of a limited movement only of the needle-valves.

What I claim is:—

1. A carburetor comprising a casing having an air inlet and a combustible-mixture outlet, a plurality of carbureting chambers communicating with said inlet, and a cylindrical throttle interposed between said carbureting chambers and said outlet provided with bores cylindrical throughout their lengths through which communications are adapted to be established between said carbureting chambers and said outlet, said throttle being rotatable and thereby adapted to gradually open and close said communication, the longitudinal axes of two of said carbureting chambers being disposed in a plane at right angles to the plane in which the longitudinal axes of the remaining carbureting chambers are located, one in front of said last-mentioned plane and another one in rear thereof, one of said throttle bores being adapted to co-operate with said first-mentioned two carbureting chambers and its longitudinal axis being disposed at an angle to the longitudinal axes of the remaining bores therein.

2. A carburetor comprising a casing having an air inlet and a combustible-mixture outlet, a plurality of carbureting chambers communicating with said inlet, and a cylindrical throttle interposed between said carbureting chambers and said outlet provided with bores cylindrical throughout their lengths through which communications are adapted to be established between said carbureting chambers and said outlet, said throttle being rotatable and thereby adapted to gradually open and close said communications, the longitudinal axes of two of said carbureting chambers being disposed in a plane at right angles to the plane in which the longitudinal axes of the remaining carbureting chambers are located, one in front of said last-mentioned plane and another one in rear thereof, one of said throttle bores being adapted to co-operate with said first-mentioned two carbureting chambers and its longitudinl axis being disposed at an angle to the longitudinal axes of the remaining bores therein, said first-mentioned bore being adapted to communicate solely with either one of the carbureting chambers co-operating therewith or with both of the same simultaneously.

Signed at New York, in the county of New York and State of New York, this 27th day of October, A. D. 1921.

JOHN JUHASZ.