

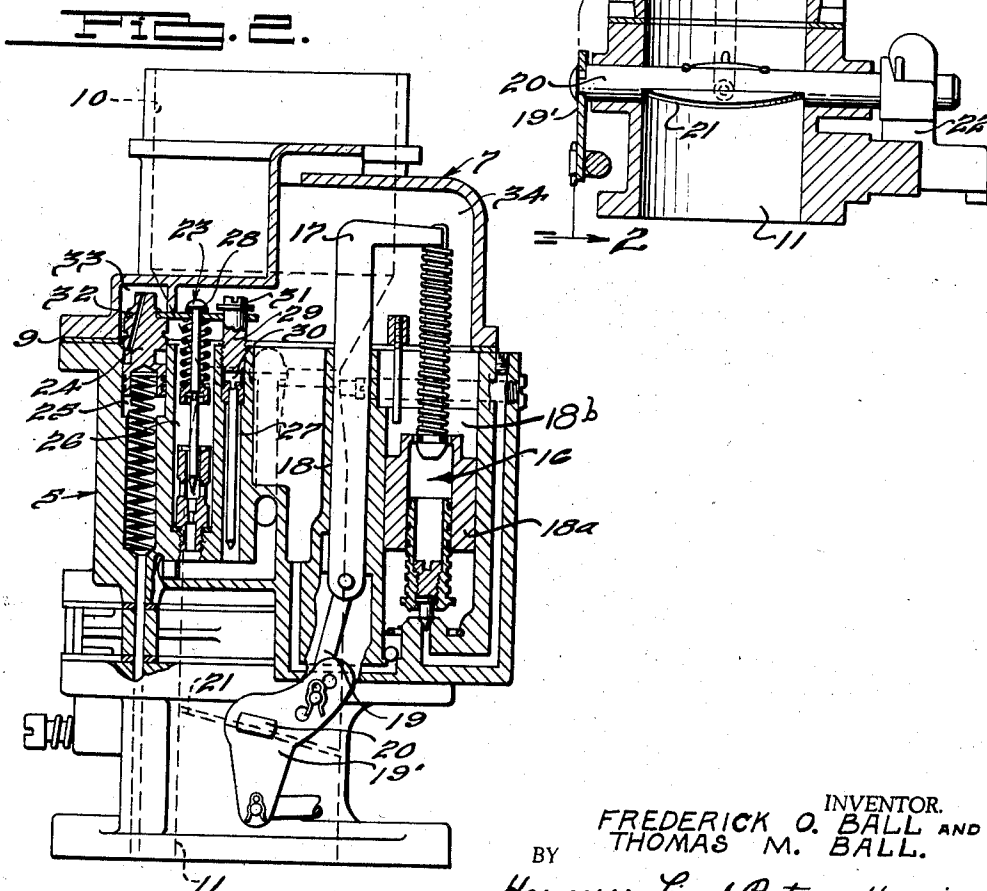
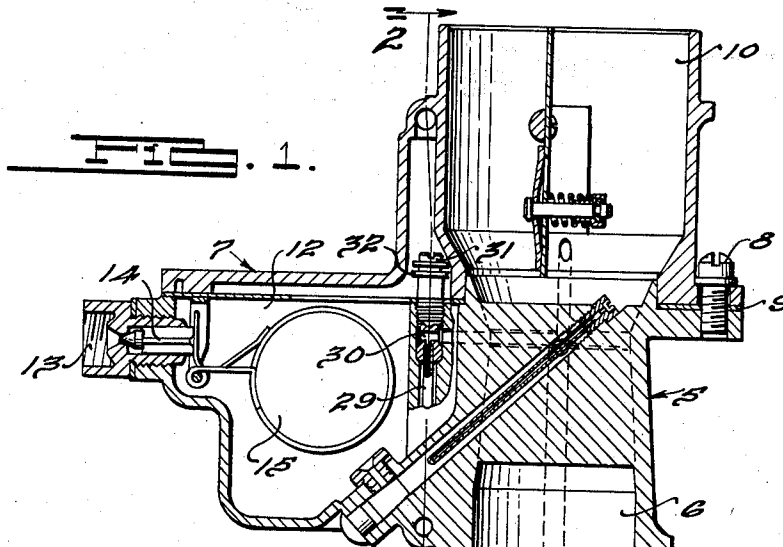
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CARBURETOR

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CARBURETOR

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3 Claims. (Cl. 261—34)

This invention relates to improvements in carburetors.

More particularly the invention pertains to improvements in automatic carburetor pick-up mechanism, by which the discharge of fuel from a carburetor is temporarily augmented during opening movements of the throttle valve thereof and step-up mechanism, by which the fuel mixture ratio is increased under predetermined operating conditions and to improved carburetor body construction for accommodating the latter.

One of the main objects of the invention is the provision of separable parts in the body structure of a carburetor which substantially completely envelop the pick-up and step-up mechanism thereof and which when separated facilitate convenient access to these mechanisms.

Another object of the invention is to provide a carburetor having a main body portion by which substantially all of the parts of the pick-up pump and step-up systems are carried and a cover body portion for substantially completely enclosing such parts, which when removed, permits examination and inspection of the pick-up and step-up systems while the carburetor is in normal operation on an engine.

A further object of the invention is to provide a carburetor having a body portion in which is self-contained all the passage and connections of a vacuum operable step-up system in order to avoid the necessity of providing vacuum conducting passage in separable carburetor body parts and the hermetic sealing together of such parts and joining of the vacuum passage sections thereof.

A still further object of the invention is the provision of a substantially enclosed mechanically operable pick-up pump system which has operating parts extending through a downwardly opening passage in the body structure, through which dirt and foreign matter do not readily gain access in their normal downward travel under the action of gravity.

Other objects and advantages of the invention will be more apparent from the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a side elevational view, partly in section, of a carburetor embodying the invention and showing portions thereof removed to disclose the underlying structure.

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1.

With reference to the drawing a down-draft carburetor is provided with a body portion 5 in

which is formed a fuel mixture passage 6. A cover member 7 is detachably secured to the body portion 5 by screws 8, and a gasket 9 is located therebetween. The cover member 7 is provided with a tubular part 10 which serves as an inlet to passage 6, and with a throttle body 11 having a passage from which fuel mixture is delivered to an intake manifold of an engine (not shown). The body portion 5 of the carburetor is provided with a fuel reservoir 12 having an inlet 13 which is controlled by a valve 14. The valve 14 is operated by conventional float mechanism 15 which predetermines the fuel level in the reservoir.

Located substantially within the body portion 5 is a mechanically operable pick-up system generally indicated at 16, which has all its passages and connections. The mechanism 16 includes an L-shaped bar 17 slidably mounted in a vertical passage 18 opening at respectively opposite extremities of the body portion 5. The bar 17 is connected to a pick-up piston 18^a slidably mounted in a bore 18^b by a connecting link 19 which is pivotally attached at one extremity to the lower end of the bar 17 and pivotally attached at its other end to a lever 19' non-rotatably fixed on a rotatable throttle valve shaft 20 having a throttle valve 21 thereon disposed in the outlet end portion 11 of the fuel mixture passage 6. The bar 17 moves when the throttle valve 21 is opened by conventional throttle valve operating apparatus generally designated at 22.

Confined substantially entirely within the body portion 5 is a step-up mechanism including all passages and connections, which is generally indicated at 23. This mechanism is adapted to vary the fuel mixture ratio in response to the degree of vacuum in a manner that is well known to those familiar with the art. The step-up mechanism 23 includes a piston 24 adapted for reciprocatory travel in response to variations in air pressure within a bore 25 of three parallel bores 25, 26, and 27 in the body portion 5. This variation in pressure results from variation in carburetor suction. A step-up valve mechanism 28 is located in the bore 26 for controlling the flow of liquid fuel to the fuel mixture passage 6. An idling tube 29 is housed within the bore 27 and has an orifice 30 for predetermining the supply of liquid fuel to said fuel mixture passage 6 during idling operations. The idling tube 29 has an external shank portion 31 which slidably engages a plate 32 carried by the piston 24 and coacts with the set-up valve mechanism 28 for operating the mechanism 28 in accordance with changes of carburetor suction conditions.

Heretofore it has been necessary to have portions of the pick-up and step-up devices outside the body portion of the carburetor where these mechanisms were unprotected against injury, dirt and foreign matter anywhere they could not be conveniently inspected or adjusted without removing the carburetor from the engine. However, with the illustrated embodiment of our invention the pick-up and step-up devices are supported and substantially enveloped by the carburetor body portion, and a detachable carburetor cover encloses the rest of these mechanisms so that this cover may be removed while the engine is running to facilitate convenient inspection and adjustment of the pick-up and step-up mechanisms as well as the idling system.

The cover member 7 has a recess portion 33 for housing the upper end of the step-up mechanism 23, as illustrated in Fig. 2. A chamber 34 in the cover member 7 receives the upper portion of the pick-up mechanism 16 and allows the bar 17 to reciprocate inside the cover member 7 and the body portion 5 in response to rotation of the shaft 20.

During the operation of the illustrated embodiment of our invention, the carburetor functions in a manner well known to those familiar with the art. The cover member 7 envelopes the portion of the step-up and pick-up mechanisms not housed within the carburetor body portion 5, thus protecting these mechanisms against dirt and other foreign matter which tend to settle under the action of gravity. If desired, the cover member 7 can be removed from the body portion 5 by removing the screws 8 even when the engine is running.

With the cover member 7 removed from the body portion 5, the upper portions of the pick-up, step-up, and idling tube 25 mechanisms are uncovered for convenient inspection or adjustment. After the inspection or adjustment of the pick-up, step-up, and idling tube 25 mechanisms the cover member 7 may be reinstalled on the body portion 5 and detachably secured by the screws 8 while the engine is in operation.

Various modifications and changes may be effected in our application without departing from the spirit of our invention or from the scope of the appended claims.

What we claim is:

1. A carburetor including a main body portion having three substantially parallel bores therein, means providing a communicative connection between one of said bores and the fuel mixture passage of said carburetor for applying the normal suction of said carburetor to the interior thereof, a piston in said latter bore, step-up valve mechanism in another of said bores for controlling the flow of liquid fuel to said fuel mixture passage, an idling tube in the other bore having an orifice for predetermining the supply of liquid fuel to said fuel mixture passage during idling operations and having a shank portion projecting externally of said latter bore, and a plate

carried by said piston and slidably engaged on the shank portion of said idling tube and coacting with said step-up valve mechanism for operating the latter in accordance with changes of carburetor suction condition.

2. A carburetor including a main body portion having three substantially parallel bores therein, means providing a communicative connection between one of said bores and the fuel mixture passage of said carburetor for applying the normal suction of said carburetor to the interior thereof, a piston in said latter bore, step-up valve mechanism in another of said bores for controlling the flow of liquid fuel to said fuel mixture passage, an idling tube in the other bore having an orifice for predetermining the supply of liquid fuel to said fuel mixture passage during idling operations and having a shank portion projecting externally of said latter bore, a plate carried by said piston and slidably engaged on the shank portion of said idling tube and coacting with said step-up valve mechanism for operating the latter in accordance with changes of carburetor suction condition, and a cover portion on said body portion enclosing portion of said piston, step-up valve mechanism and idling tube, said piston, step-up valve mechanism and idling tube being conveniently accessible when said cover is removed.

3. A carburetor including a main body portion having a fuel mixture passage and having a plurality of adjacent passages therein, all extending through the upper extremity of said body portion, a fuel reservoir in said main body portion having an open upper end at said upper extremity of said body portion, apparatus disposed in said reservoir for controlling the level of fuel therein including valve and valve actuating mechanisms mounted directly on said main body portion independently of the remaining structure of said carburetor, an automatic step-up system disposed in certain of said plurality of passages and comprising step-up valve and valve actuating mechanisms mounted entirely directly on said main body portion independently of the remaining structure of said carburetor, a pick-up pump fuel displacing apparatus supported wholly by said main body portion including a fuel displacing member in one of said plurality of passages and actuating mechanism therefor, an idling system provided in and having all portions supported directly by said body portion independently of the remaining structure of said carburetor, and a removable member for covering the upper extremity of said main body portion including cover portions for said reservoir and said plurality of passages and having an air intake passage registerable with said fuel mixture passage, said fuel level control apparatus and said idling, step-up and pick-up systems being normally operable for inspection and adjustment when said cover member is removed.

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