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CARBURETOR

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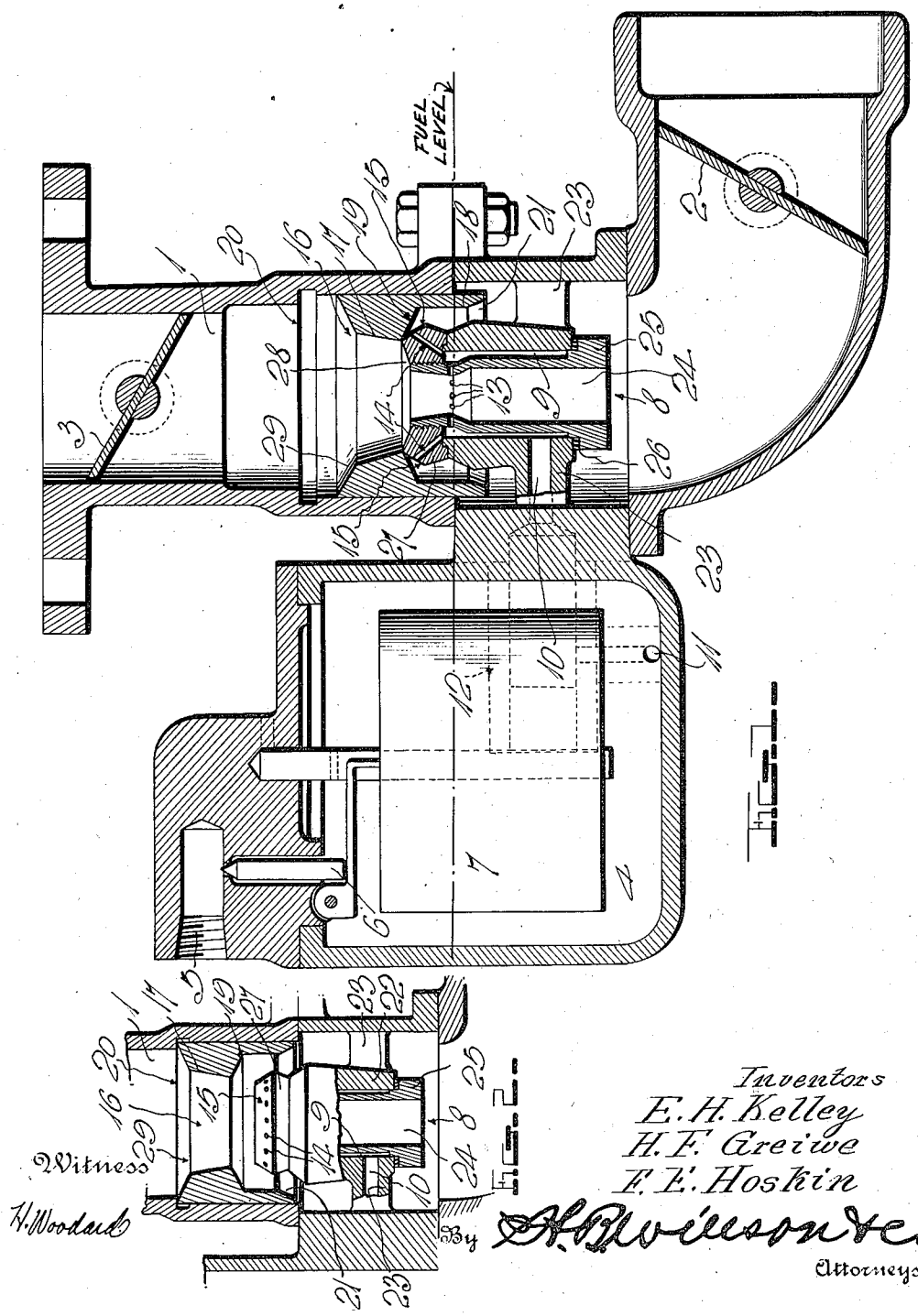


FIG. 1.

FIG. 2.

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CARBURETOR.

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Our invention aims to provide a simple and inexpensive, yet an efficient and reliable carburetor which is provided with improved means for automatically controlling the mixing of air and fuel, in the proper proportions at all engine speeds.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Figure 1 is a vertical sectional view showing the relation of parts when the motor is idling or running at a relatively low speed.

Figure 2 is a detail sectional view similar to a portion of Fig. 1, illustrating the relation of parts when the motor is operating at a comparatively high speed.

In the drawing above briefly described, the preferred form of construction has been illustrated and this construction is hereinafter rather specifically described, with the understanding however that within the scope of the invention as claimed, numerous modifications may be made.

The numeral 1 designates a main air passage whose major portion is disposed vertically, said passage having the usual choke 2 at its inlet end, and a throttle valve 3 at its delivery end. This main air passage may well be formed of sections detachably connected with each other as shown, and one of these sections may well carry a fuel bowl 4 having a fuel inlet 5 controlled by an appropriate valve 6, which valve is in turn controlled by a suitably mounted float 7 in the bowl 4.

A relatively small, hollow-walled passage member 8 is vertically disposed at the center of the passage 1, the hollow wall of said member 8 forming a fuel reservoir 9, to which fuel is supplied from the bowl 4, through ports 10 and 11 and an appropriate casing 12 which is adapted to contain a strainer (not shown). The relatively small passage 8 is internally modeled after a Venturi tube, and at its contracted portion is provided with a plurality of fuel feeding ports 13 which lead to its interior from the fuel reservoir 9. Also leading from the reservoir 9 to the main air passage 1, at the exterior of the passage member 8, are a plurality of additional ports 14, the upper end portion of the member 8 being by preference externally beveled as at 15, across the outer ends of said ports 14.

A slidable valve 16 engages the inner side of the passage 1, said valve being of annular form and having a comparatively small internal diameter 17 at its upper end, a comparatively large internal diameter 18 at its lower end, and a downwardly facing continuous shoulder 19 which joins the two portions 17 and 18 of different diameters. This shoulder normally rests on the upper end of the passage member 8, above the ports 14, that is it rests in this manner when the engine is idle. It also assumes the same position when the motor is operating at comparatively low speeds. Then, direct passage of air takes place through the passage member 8 but cannot take place around this passage member, from the inlet to the delivery end of the passage member 1. By the suction of the motor, however, some air travels through the ports 14 into the fuel reservoir 9, here mixes with the fuel, and discharges with the latter through the ports 13, into the current of air passing through the passage member 8. A thorough mixture of fuel and air is thus provided, which will permit effective operation of the motor at relatively low speeds. When the motor is run a little more rapidly, the increased suction through the carburetor will raise the valve 16, permitting passage of air around the passage member 8 so that the inflow of of air through the ports 14 ceases. Upon still faster operation of the motor, the valve 16 raises until it strikes a stop shoulder 20 in the passage member 1. When this takes place, an internal bevel 21 at the lower extremity of the skirt-like lower portion of the valve 16, is positioned to direct an inward blast of air across the beveled end 15 of the passage member 8, as seen in Fig. 2. This blast of air, in passing across the outer ends of the ports 14, draws fuel through these ports for mixing with the air. It will thus be seen that at high engine speeds, both sets of ports 13 and 14 are instrumental for feeding fuel, whereas, at comparatively low engine speeds, the ports 14 merely supply air to the chamber 9.

In constructing the inner passage member 8, we prefer to cast an annular wall 22 within the passage member 1, connecting it with the wall of said passage member by webs 23, at least one of which is hollow so that its interior constitutes the port 10. A vertical tube 24 is received within the wall 22 and is provided with an enlarged head 25 at its lower

end, between which and said wall 22, a gasket 26 is interposed. A ring 27 is preferably threaded on the upper end of the tube 24 to provide a seat for the valve 16, said ring being in abutting relation with the upper edge of the wall 22. The ports 14 may well be formed through this ring 27, and the upper side of said ring is preferably declined at 28 to the tube 24 to assist in returning any surplus fuel to said tube. The upper end of the valve 16 is also preferably declined inwardly as indicated at 29, for the same purpose.

By providing the construction shown and described or a substantial equivalent thereof, a carburetor is produced which will be simple and inexpensive, yet will be highly efficient and desirable. As excellent results are obtainable from the details disclosed, they are preferably followed, but within the scope of the invention as claimed, numerous modifications may be made.

It may be added that the term "portage", herein used, is to be construed as meaning either a single port or a plurality of ports.

We claim:

1. A carburetor comprising a main air passage a relatively small air passage disposed in said main air passage, said small air passage having a hollow wall providing a fuel chamber, said hollow wall having fuel feeding portage leading to its inner side from the fuel chamber and also having additional portage leading from said fuel chamber to the main air passage, and port-controlling means for closing the main air passage, said means being disposed about the small air passage on the engine side of said additional portage at low engine speeds to permit said additional portage to then communicate with the inlet end of said main air passage for the purpose of supplying air to the aforesaid fuel chamber, said port-controlling means being mounted for movement to another position for allowing flow of air through the main air passage past said additional portage at relatively high engine speeds.

2. A structure as specified in claim 1; said port-controlling means embodying means for directing a blast of air from the main air passage across the outer ends of said additional portage when moved to said other position at relatively high engine speeds.

3. A structure as specified in claim 1; the walls of the two air passages being spaced apart to permit travel of air therebetween; said port-controlling means comprising an annular valve slidable in the main air passage and at low engine speeds engaging the wall of the small air passage to prevent direct travel of air from one end of said main air passage to the other end thereof through the space between the two passage walls.

4. A carburetor comprising a main air passage, a relatively small air passage mounted therein in spaced relation to the wall thereof to permit air to pass between the walls of the two passages, said small passage having a hollow wall providing a fuel chamber, said hollow wall having fuel feeding portage leading to its inner side from said fuel chamber and also having additional portage leading from said fuel chamber to the main air passage, the upper end of said hollow wall being externally beveled across the outer ends of said additional portage; and an annular valve slidable in said main air passage, said valve having a small internal diameter at its upper portion and a relatively large internal diameter at its lower portion, providing a downwardly facing shoulder between said end portions and a skirt-like portion below said shoulder; said shoulder resting on the wall of said small air passage above the aforesaid additional portage at low engine speeds, said skirt-like portion being outwardly spaced from said small air passage and having an internally beveled lower end adapted to direct a blast of air across the externally beveled end of said wall of the small air passage when the valve is moved upwardly at relatively high engine speeds.

In testimony whereof we have hereunto affixed our signatures.

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