

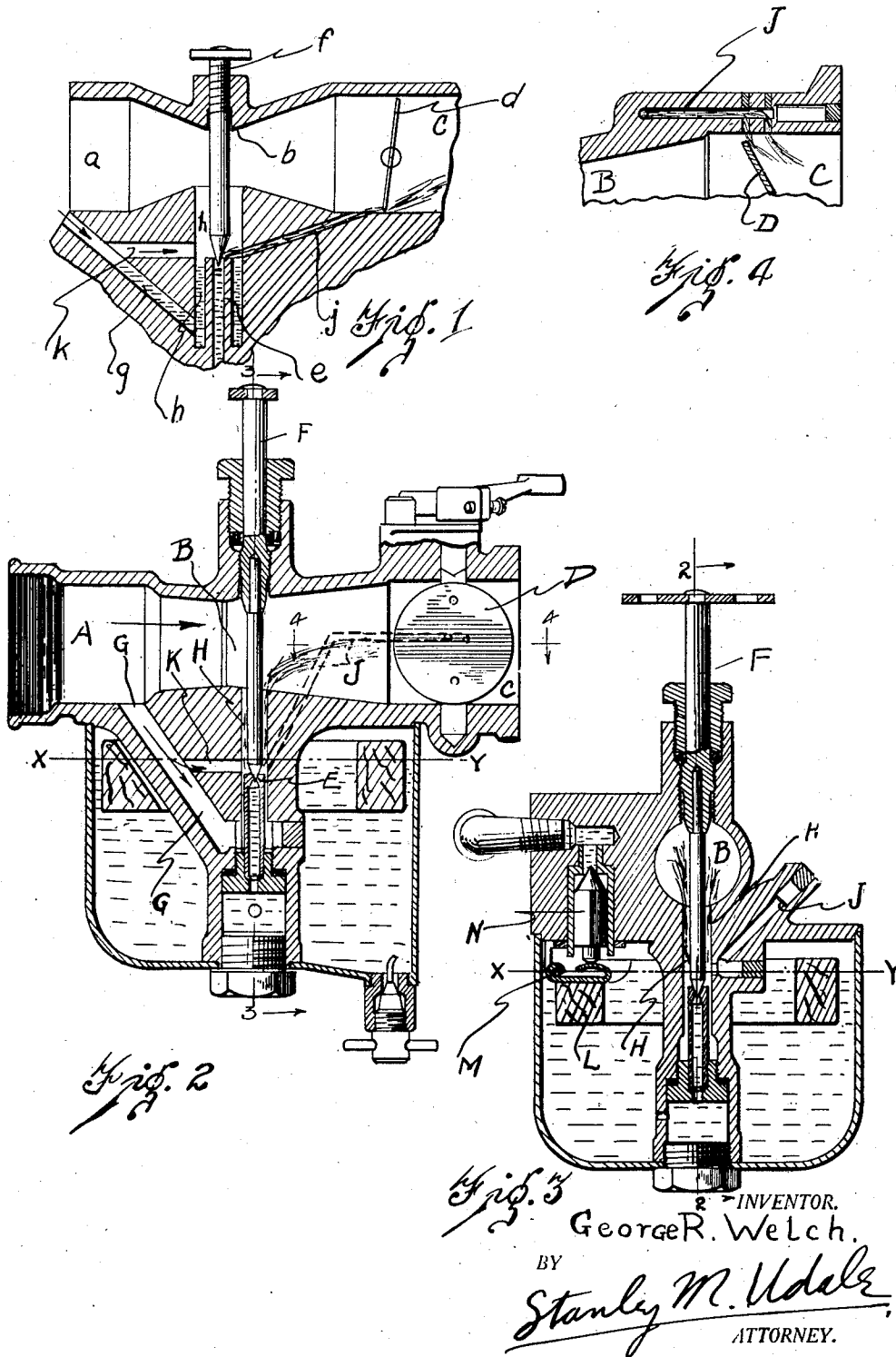
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CARBURETOR

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UNITED STATES PATENT OFFICE.

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CARBURETOR.

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The object of this invention is to provide means whereby the accelerating charge of an automobile carburetor will not be depleted by the low speed operation of the carburetor.

In Figure 1 the principle of operation is illustrated by a cross sectional elevation of a carburetor.

Figure 2 is a cross sectional elevation through a modified carburetor incorporating the invention. This figure is taken on the plane 2—2 of Figure 3.

Figure 3 is a cross sectional elevation on the plane 3—3 of Figure 2.

Figure 4 is a partial sectional plan view taken on the plane 4—4 of Figure 2.

In Figure 1, *a* is the air entrance, *b* is the Venturi tube, *c* is the mixture outlet, *d* is the throttle located therein, *e* is the fuel nozzle controlled by a needle valve *f* and located in a well *h*. *g* is the primary air passage leading to the well *h*, which discharges into the throat of the Venturi tube *b*. A passage *j* connects the well *h*, opposite the discharge point of the nozzle *e*, to the mixture outlet *c* adjacent to the lip of the throttle valve *d* so that the passage *j* is progressively subjected to the depression existing in *c* as the throttle valve is opened in the direction shown by the arrows.

Connecting the primary air passage *g* and the well *h* is another passage *k* located at the level at the upper end of the nozzle *e*, and therefore is substantially at the same level at which the low speed fuel passage *j* communicates with the well *h*. The passage *k* for convenience may be connected to the passage *g*, as shown, or it may alternatively be independent of the passage *g*, thus forming an altogether separate air passage for venting the fuel nozzle *e*.

In Figures 2, 3, and 4, the capital letters A, B, C, D, E, F, G, H, J, and K refer to parts having the same functions as the corresponding parts in Figure 1. In addition the float mechanism is shown consisting of the float L hinged at M and operating the needle valve N. This float maintains the fuel on the level X—Y of Figures 2 and 3, this level being substantially the level of the auxiliary air passage K.

Normal operation.—When running slowly air is drawn through the auxiliary air passage *k*, past the fuel nozzle *e*, and so into the passage *j*, whence the mixture of fuel and air is discharged adjacent to and in advance of the throttle *d*, as shown in Figure 1. The area of K (Fig. 2) is made considerably larger than the passage J, so that the resistance to flow through K when the engine is running slowly (that is on the fuel flow through J) is so small that fuel will accumulate in the bottom of G. On opening the throttle wide the depression in the Venturi tube *b* increases and fuel is discharged from *e* through *h* directly into the Venturi tube *b*.

Acceleration.—Thereupon the fuel held in reserve in *g* is displaced by the atmospheric pressure acting upon it, the fuel moves down *g* and up past the nozzle *e*, thereby emptying the well *h* and passage *g*, and thus providing the accelerating charge so necessary in order to get smooth operation, especially with a cold motor. The operation during acceleration of the device shown in Figures 2, 3, and 4 is substantially identical with the operation of Figure 1.

What I claim is:

In a carburetor having a main mixing chamber of Venturi form, a mixture outlet, a throttle valve therein, a well distinct from and communicating with said mixing chamber, a fuel nozzle discharging therein and extending above the bottom of said well, a low speed fuel passage communicating with the well at a point adjacent to the point of discharge of the said fuel nozzle and communicating with the mixture outlet adjacent to and in advance of said throttle valve, a primary air passage leading from the atmosphere to the bottom of said well, an additional primary air passage communicating with the well at a point adjacent to the point at which the fuel nozzle discharges in said well, whereby the fuel contained in the well is held in reserve during slow speed operation for use during the subsequent acceleration.

In testimony whereof I affix my signature.

GEORGE R. WELCH.