

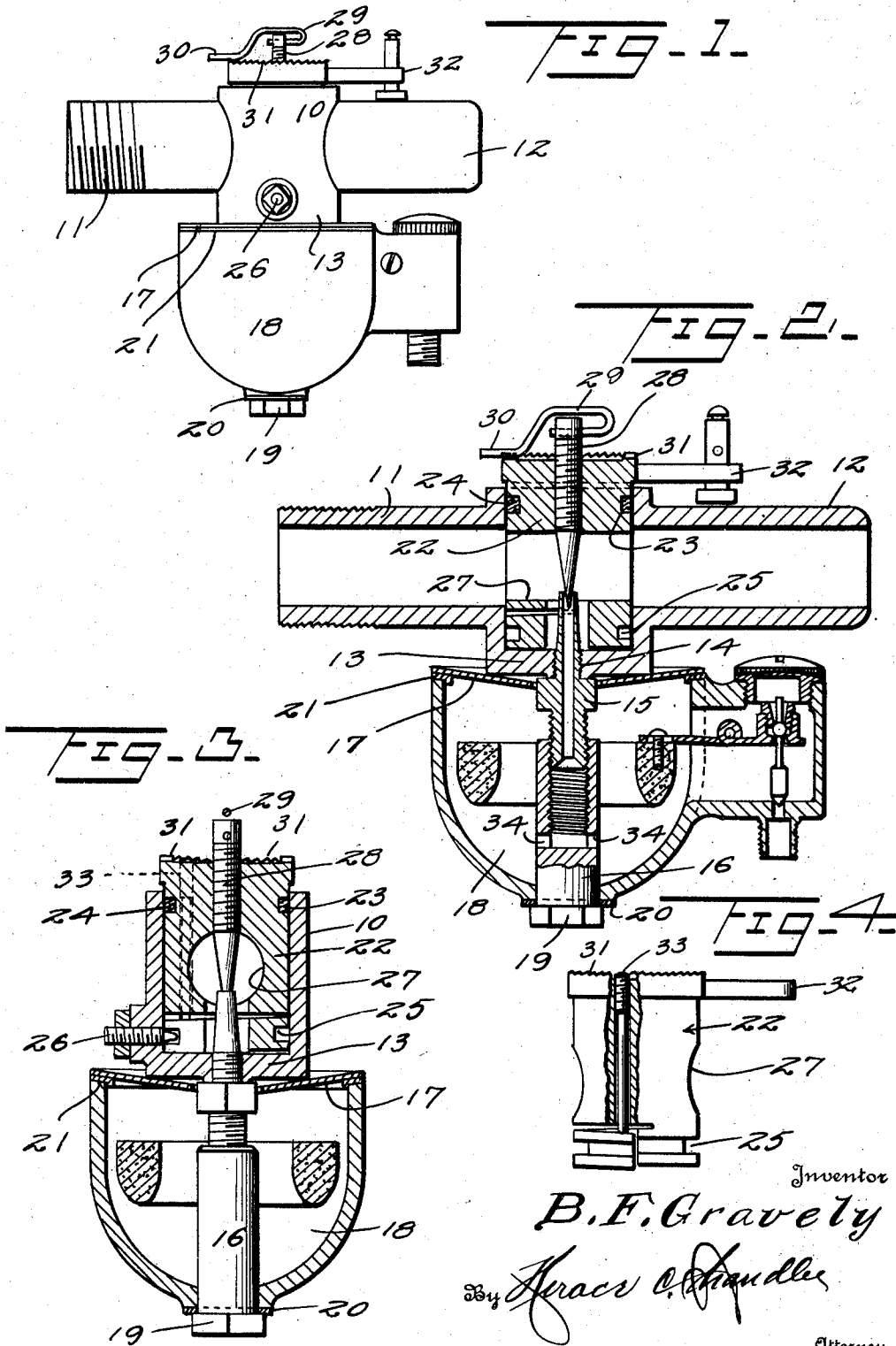
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B. F. GRAVELY

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CARBURETOR

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Inventor

B. F. Gravelly

By *Harvey C. Chandler*

Attorney

UNITED STATES PATENT OFFICE

BENJAMIN F. GRAVELY, OF DUNBAR, WEST VIRGINIA

CARBURETOR

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This invention relates to new and useful improvements in controlling devices, and particularly to carburetors for internal combustion engines.

One object of the invention is to provide a carburetor including a throttle valve, in which the proportion of air, which is mixed with the gasoline, is increased and diminished in proper ratio to the volume of gasoline flowing through the throttle valve.

Another object is to provide a device of this character wherein the air admission is automatically regulated, in conjunction with the regulation of the admission of the gasoline, such air being also regulatable by hand, to a fixed ratio to the amount of gasoline.

Another object is to provide a combined throttle valve and needle valve, which are arranged to move in unison, whereby to properly proportion the air and gasoline, such throttle valve having means for moving the throttle valve in a direction to raise and lower the needle valve, such means being regulatable to increase or decrease the said movement.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawing.

In the drawing:

Figure 1 is an elevation of a carburetor made in accordance with the present invention.

Figure 2 is a vertical sectional view through the carburetor.

Figure 3 is a vertical sectional view taken in a plane at right angles to that of Figure 2.

Figure 4 is an elevation of the throttle valve, with fragments of the casing associated therewith, showing the grooved and split portion of the said valve, with which the screw of the casing engages.

Referring particularly to the accompanying drawing, there is shown a cruciform member which includes the central vertical portion 10, from the opposite sides of which extend the branches 11 and 12, the former being formed for connection with an intake manifold, while the latter is adapted to receive air. The lower end of the vertical portion 10 is formed with a bottom wall 13, hav-

ing a central threaded opening 14. Screwed up into this opening 14 is the spray nozzle 15, the lower end of said nozzle being externally threaded to receive thereon the tube 16. A plate 17 is disposed against the lower end of the member 10 and has a central opening receiving the nozzle 15 therethrough, and engaged against the lower face of this plate is the upper end of the carburetor bowl 18. The tube 16 is disposed upwardly through the bottom of the bowl 18, and is threaded onto the said nozzle 15, as before stated, the lower end of the tube 16 being provided with a head 19, which engages with the bottom of the bowl to tightly clamp the bowl on the body 10, suitable packing washers 20 and 21 being disposed respectively between the head and bowl, and between the upper end of the bowl and the plate, as well as between the plate and the bottom of the body 10. Disposed in the body 10 is the rotatable throttle valve body 22, said body having a peripheral groove 23, adjacent its upper end, in which is disposed the packing ring 24, and the peripheral groove adjacent its lower end, shown at 25. In the side wall of the body 10 is engaged a screw 26, said screw having its inner end engaged in said groove 25. Formed transversely through the valve body 22 is the air port 27, and projecting upwardly into this port is the upper end of the before-mentioned spray nozzle 15. Screwed downwardly through the upper end of the valve body 22 is the needle valve 28, the point of which lies within the upper end of the spray nozzle, as clearly seen in the drawing. The upper end of this needle valve is provided with a finger piece 29, provided with a tail 30 which engages in the ratchet teeth 31 formed in the upper end of the valve. By this arrangement the needle valve can be adjusted upwardly and downwardly to pass into the spray nozzle to greater or lesser extent, whereby to regulate the flow of gasoline from said tube. The upper end of the valve 22 is provided with a radially extending arm 32 which is adapted to be connected with any suitable means for rotating the valve.

The lower end of the valve 22 is cut in a horizontal plane, approximately one-half

way through the body, such cut being made just above the lower groove 25. A second cut is made vertically in the body 22, from one end of the first cut through the bottom of the body, such second cut extending into the central opening 14, whereby a portion of the lower end of the valve body is partially separated therefrom. Disposed vertically through the valve body 22 is a screw 33, the lower end of which bears against the upper face of the free end of the partially separated portion of said body, said screw being turned down to flex said end down so that that portion of the groove 25, which is formed in the partially separated portion, is inclined with respect to the remaining portion of the groove, whereby to produce a cam action on the screw 26, to produce the vertical sliding movement of the valve simultaneously with the rotation thereof. This vertical movement of the valve causes the needle valve to move into and out of the upper end of the spray nozzle to regulate the flow of gasoline from the upper end of said tube, as the throttle valve 22 is rotated. The degree of vertical movement of the throttle valve can be regulated by means of the screw 33, which is adapted to flex the partially separated portion of the valve downwardly to greater or lesser degrees, or permit the same to flex upwardly. Such upward and downward flexing of said portion serving to change the inclination of the associated portion of the groove 25, so that the distance that the valve will slide can be regulated, and thereby the degree to which the needle valve moves into and out of the spray nozzle.

It will be understood that the gasoline in the bowl 18 flows into the tube 16 through the lateral openings 34, formed in said tube, and from thence rises to the upper end of the spray nozzle, to be sucked therefrom by the current or air which passes through the portion of the throttle valve.

What is claimed is:

1. A carburetor including a casing, a spray nozzle, a transversely apertured throttle valve in the casing receiving the said nozzle in the aperture thereof, a needle valve carried by the throttle valve and adjustable into and out of the nozzle, the throttle valve having a groove, means on the casing engaged in said groove, a portion of the grooved part of the throttle valve being partially separated from the body of the valve and inclined with respect to the remainder of the grooved part, whereby upon rotation of the throttle valve said valve will be moved longitudinally by the casing carried means engaged in said groove to simultaneously move the needle valve into and out of the spray nozzle.

2. A carburetor including a casing, a transversely apertured throttle valve rotatable in the casing, a portion of the valve

being partially separated from the remainder of the valve in a spiral line, such partially separated portion having a circumferential groove, movable means for flexing said partially separated portion whereby to change the inclination of the groove, and means on the casing engaged in the groove for moving the valve longitudinally upon rotation thereof.

3. A carburetor including a casing, a transversely apertured throttle valve rotatable in the casing, an end portion of the valve being partially separated therefrom and being flexible, said partially separated portion having a circumferential groove therein, means on the casing engaged in the groove, and a threaded member in the valve engaged with the partially separated portion arranged to flex said portion whereby to vary the inclination of the groove thereof and consequently the longitudinal movement of the valve in the casing.

4. A carburetor including a casing, a transversely apertured throttle valve rotatable in the casing and having a portion provided with an inclined circumferential groove, means on the casing engaged in the groove whereby to cause longitudinal movement of the valve upon rotation thereof, and means for adjusting said grooved portion whereby to change the inclination of said portion.

In testimony whereof, I affix my signature.
 BENJAMIN F. GRAVELY.

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