No. 870,052. PATENTED NOV. 5, 1907.

G. M. SCHEBLER.

CARBURETER.

APPLICATION FILED SEPT. 21, 1906.

2 SHEETS—SHEET 1.

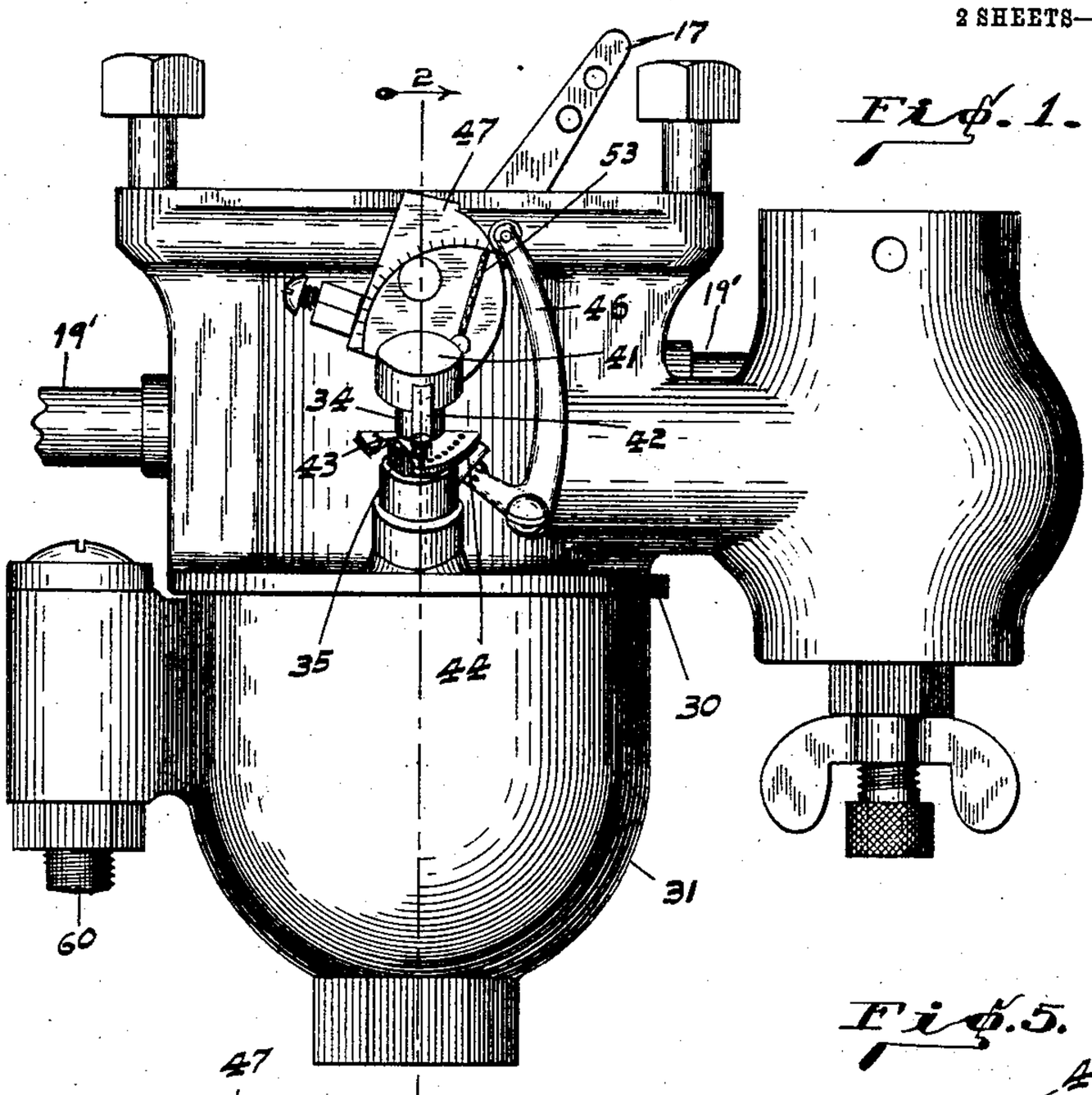

Fig. 1.

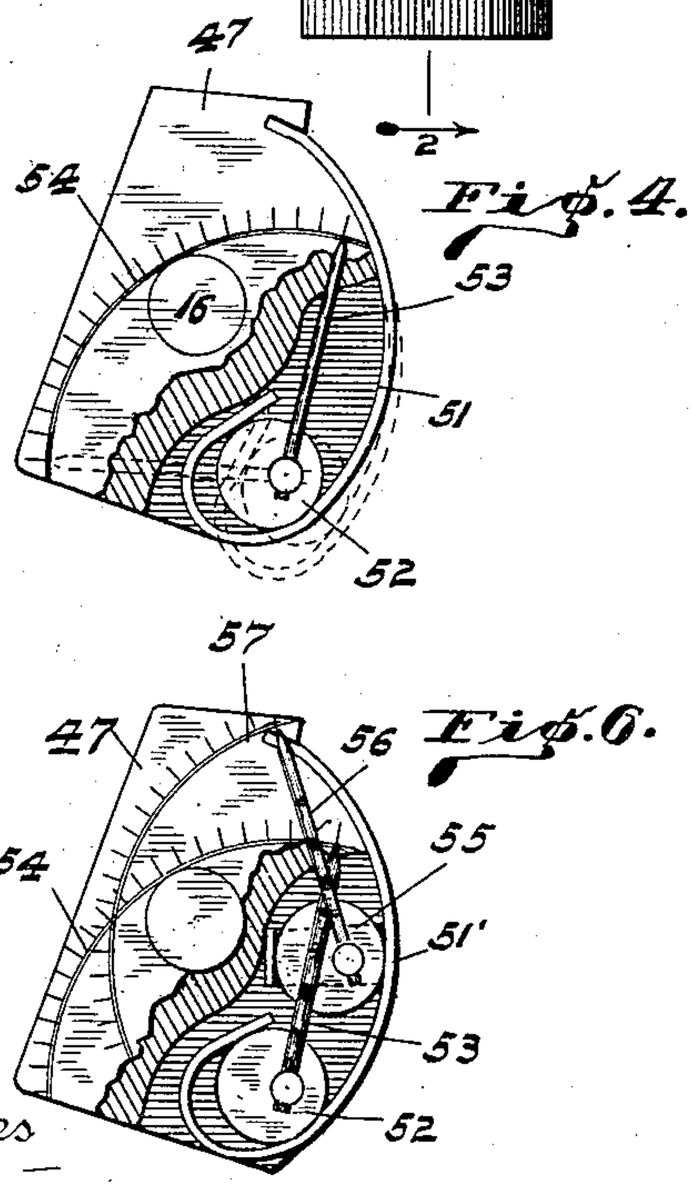

Fig. 4.

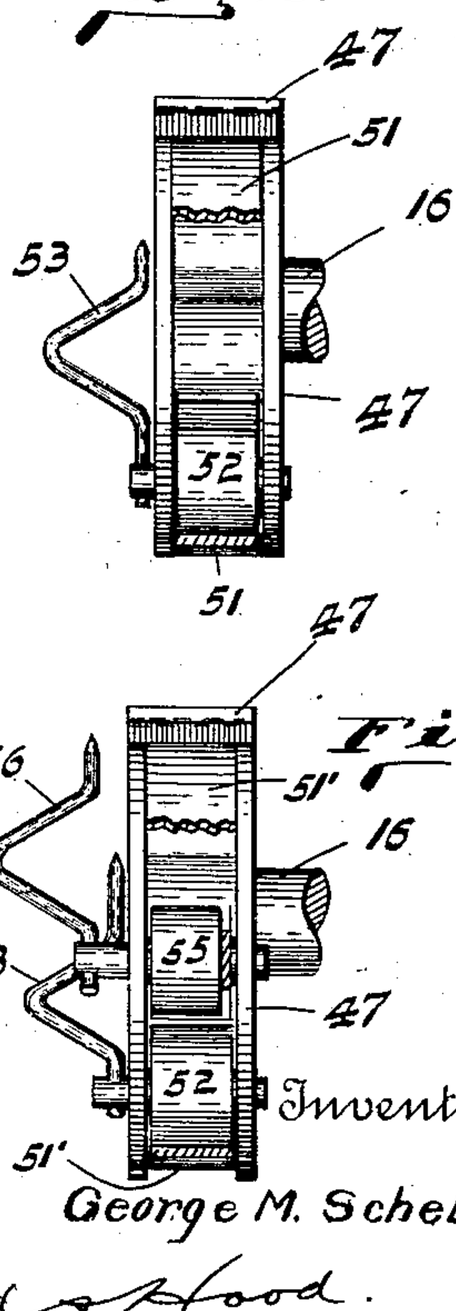

Fig. 5.

Fig. 6.

Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 2.

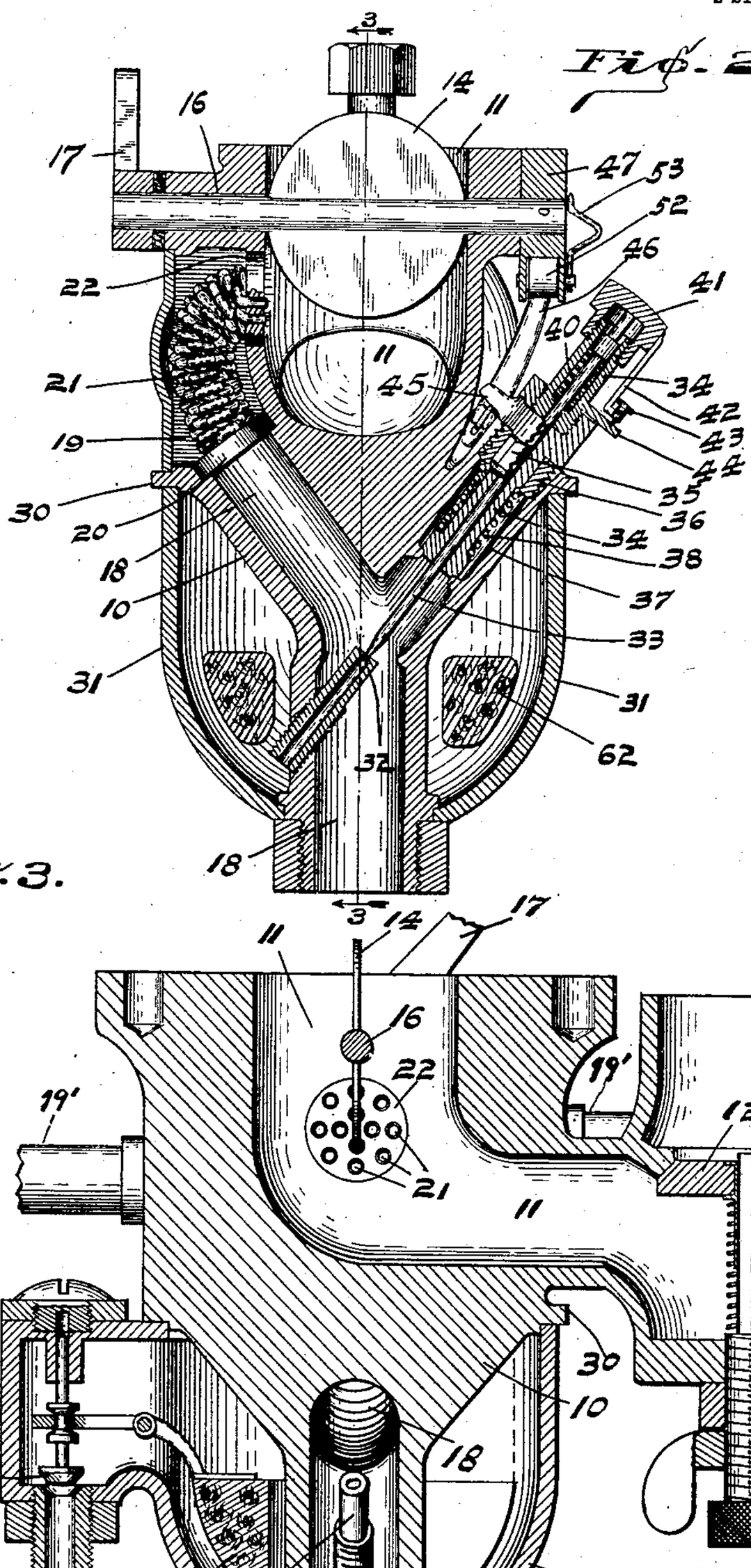

Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE M. SCHEBLER, OF INDIANAPOLIS, INDIANA.

CARBURETER.

No. 870,052. Specification of Letters Patent. Patented Nov. 5, 1907.

Application filed September 21, 1906. Serial No. 335,621.

To all whom it may concern:

Be it known that I, GEORGE M. SCHEBLER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

The object of my invention is to produce a carbureter of such character that the fuel valve may be automatically opened and closed as the speed of the engine is increased or diminished.

A further object of my invention is to provide means whereby the amount of effect upon the fuel valve may be readily adjusted for different adjustments of the throttle valve.

The accompanying drawings illustrate my invention.

Figure 1 is a side elevation of a carbureter embodying my improvements. Fig. 2 is a section on line 2—2 of Fig. 1. Fig. 3, a section on line 3—3 of Fig. 2. Fig. 4, a sectional detail of the adjustable valve-operating cam. Fig. 5, a side elevation thereof. Fig. 6, a sectional detail of a modified form of cam. Fig. 7, a side elevation thereof.

In the drawings, 10 indicates a main body having an air passage 11 with a valve 12 at its inlet end and normally held closed by a light spring 13. Mounted in the outlet end of passage 11 is a throttle valve 14 carried by a shaft 16 which may be operated by means of a lever 17. Leading into the lower end of body 10 is an air passage 18 which leads upward to an exhaust chamber 19 adapted to receive a part or all of the exhaust from the engine, said exhaust passing into and out of said chamber through suitable pipes 19′. Communication between passage 18 and the exhaust chamber 19 is closed by a head 20, which carries a multiplicity of small tubes 21, preferably coiled. The opposite ends of tubes 21 are carried by a head 22 which is set in the wall between passage 11 and the exhaust chamber 19 immediately below the throttle valve. At an intermediate point the body 10 is provided with a flange 30 which forms a closure for the upper end of the reservoir 31. Forming a communication between the lower part of reservoir 31 and the air passage 18 is a nozzle 32, the discharge end of which is adapted to receive a needle valve 33. The valve 33 is carried by a carrier 34 provided with a polygonal portion 35 (shown in Fig. 2 in partial elevation and partial section) which fits in a correspondingly shaped opening in a nut 36 screwed into the outer end of the chamber 37. Carrier 34 is normally urged inward by a spring 38 while the valve 33 is normally urged outward in the carrier by a spring 40, outward movement of the valve stem being limited by a cap 41 threaded upon the outer end of the carrier 34 and the arrangement being such that, by turning cap 41, the valve 33 may be adjusted toward and from nozzle 32. In order to indicate the adjustment of the valve 33, I secure an indicator arm 42 to cap 41, such indicator arm being provided with a catch 43 adapted to engage a gage-plate 44. The gage-plate 44 is partially broken away in Fig. 1 in order to show the polygonal shape of the portion 35 of carrier 34. Carrier 34 is provided with a projecting finger 45 adapted to be engaged by one end of the bell-crank lever 46 pivoted to the main body, the opposite end of said lever being engaged by a cam 47 attached to shaft 16 of the throttle valve 14.

In order that the throw of the lever 46, and consequently the throw of the needle valve 33 may be adjusted, I deem it advisable to provide means for adjusting the throw of cam 47, and I have found a simple means for this purpose to be that shown in Figs. 4 and 5. In these figures the operating face of the cam 47 is a spring member 51 secured to the cam at its initial end and at its outer end engaged by an eccentric 52 journaled in cam 47 and provided with an indicator finger 53, traversing a gaged arc 54. In order that the eccentric 52 may positively actuate the spring face 52 in in either direction, I find it convenient to turn the end of the spring face 51 backward so as to embrace the eccentric, as clearly shown in Fig. 4.

It may be desirable to provide means by which the operating face of the cam may be more accurately adjusted than by the means shown in Figs. 4 and 5, and for this purpose, if desired, the spring face 51′ (Fig. 6) may be provided at an intermediate point with an additional adjusting eccentric 55, which may be turned by a suitable indicator finger 56, traversing a gaged arc 57.

Fuel enters the reservoir 31 through a passage 60 controlled by a valve 61 operated by a float 62 arranged in the reservoir 31 in the usual manner.

In adjusting, the throttle valve 14 is thrown to its minimum opening and in this position the upper arm of lever 46 engages the face 51 of cam 47 at its initial end. The needle valve 33 is then adjusted by means of cap 41 until the desired quantity of fuel is admitted into the air stream coming through passage 18 when the engine is running at its minimum speed. Under these conditions the valve 12 does not open at the suction stroke. The throttle is then opened to its widest point and the plate 51 of cam 47 is adjusted by eccentric 52 until the needle valve 33 is in such position as to admit the necessary additional quantity of fuel for the highest speed. It will now be seen that, as the throttle valve is moved to control the flow of mixture to the engine, the needle valve will be automatically shifted so as to automatically increase or diminish the flow of fuel into the air stream. The air stream passing through passage 18 is substantially uniform at all speeds while at the higher speeds valve 41 yields so as to admit air through the passage 40, this air stream coming into the carbureted air stream immediately below the throttle valve.

I claim as my invention;

1. In a carbureter, the combination, with a fuel container having a discharge outlet, of a fuel valve, an air passage communicating with said outlet, a throttle valve for controlling the flow through said passage, and intermediate connections between said throttle valve and fuel valve whereby operation of the throttle valve will automatically shift the fuel valve, and means for so adjusting the connections between the throttle valve and fuel valve that the effect of movement of the throttle valve on he fuel valve may be independently varied at different points of adjustment of the throttle valve.

2. In a carbureer, the combination, with a fuel holder having a discharge outlet, of a fuel valve for controlling the flow therefrom, an air passage communicating with said outlet, means for heating said passage, a second air passage, into which the first discharges, a yieldingly closed valve arranged in the inlet end of said second passage, a throttle valve controlling the flow from both of said passages, intermediate connections between the throttle valve and fuel valve, whereby the fuel valve will be the effect of movement of the throttle valve on the fuel valve, and means for adjusting said connections to vary the effcet of movement of the throttle valve on the fuel valve variously at different points in the movement thereof.

3. In a carbureter, the combination, with a fuel holder having a discharge outlet, of a fuel valve controlling the flow therefrom, an air passage communicating with said outlet, a second air passage in which the first discharges, a yieldingly closed valve arranged in the inlet end of said second passage, a throttle valve controlling the flow from both of said passages, a means for simultaneously operating the throttle valve and fuel valve, and intermediate connections between the throttle valve and fuel valve, whereby the fuel valve will be shifted simultaneously with the movement of the throttle valve, and means for adjusting said connections to vary the effect of movement of the throttle valve on the fuel valve variously at different points in the movement thereof.

4. In a carbureter, the combination, with a fuel holder having a discharge outlet, of a fuel valve for controlling the flow therefrom, an air passage communicating with said outlet, means for heating said passage, a second air passage into which the first discharges, a yieldingly closed valve arranged in the inlet end of said passage, a throttle valve controlling the flow from both of said passages, a cam operated by movement of the throttle valve, means for adjusting the throw of said cam at different points in the length thereof, and intermediate connections between said cam and the fuel valve.

5. In a carbureter, the combination, with a fuel holder having a discharge outlet, of a fuel valve for controlling the flow therefrom, an air passage communicating with said outlet, a second air passage into which the first discharges, a yieldingly closed valve arranged in the inlet end of said second passage, a throttle valve controlling the flow from both of said passages, a cam operated by movement of the throttle valve at different points in the length thereof, means for adjusting the throw of said cam, and intermediate connections between said cam and the fuel valve.

6. In a carbureter, the combination, with a fuel holder having a discharge outlet, of a fuel valve for controlling the flow therefrom, an air passage communicating with said outlet, means for heating said passage, a second air passage into which the first discharges, a yieldingly closed valve arranged in the inlet end of said passage, a throttle valve controlling the flow from both of said passages, a cam having an operating face formed of a flexible strip, and means for adjusting said strip to change its operating shape relative to the axis of the cam.

7. In a carbureter, the combination, with a fuel holder having a discharge outlet, of a fuel valve for controlling the flow therefrom, an air passage communicating with said outlet, a second air passage into which the first discharges, a yieldingly closed valve arranged in the inlet end of said second passage, a throttle valve controlling the flow from both of said passages, a cam having an operating face formed of a flexible strip, and means for adjusting said strip to change its operating shape relative to the axis of the cam.

8. In a carbureter, the combination, with a fuel holder having a discharge outlet, of a fuel valve for controlling the flow therefrom, an air passage communicating with said outlet, means for heating said passage, a second air passage into which the first discharges, a yieldingly closed valve arranged in the inlet end of said passage, a throttle valve controlling the flow from both of said passages, a cam having an operating face formed of a flexible strip and means for adjusting said strip differentially at different points in its length relative to the axis of the cam.

9. In a carbureter, the combination, with a fuel holder having a discharge outlet, of a fuel valve for controlling the flow therefrom, an air passage communicating with said outlet, a second air passage into which the first discharges, a yieldingly closed valve arranged in the inlet end of said second passage, a throttle valve controlling the flow from both of said passages, a cam having an operating face formed of a flexible strip and means for adjusting said strip differentially at different points in its length relative to the axis of the cam.

10. In a carbureter, the combination, with a main body having a fuel reservoir, an exhaust receiving chamber, a primary air passage passing through said chamber, but having no connection therewith, a secondary air passage, a throttle valve for controlling the flow of carbureted air, a fuel-discharge nozzle forming a connection between the reservoir and one of said air passages, a valve for controlling the flow of fuel through said nozzle, a cam carried by the throttle valve, means for adjusting the throw of said cam at various points in the length thereof, and means operated by the cam for shifting the fuel valve carrier.

11. In a carbureter, the combination, with a fuel holder and discharge nozzle, of a tubular valve-carrier mounted in the fuel holder, a spring for normally urging said carrier toward the nozzle, a valve mounted in said carrier, a spring for normally urging said valve away from the nozzle, an adjustable means forming an abutment for said valve whereby it may be adjusted toward and from the nozzle, and means for shifting the valve carrier away from the nozzle.

12. In a carbureter, the combination, with a fuel valve, of means for shifting said fuel valve comprising two cooperating members, one of which is a flexible strip flexible transversely of its length, and means for adjusting said strip transversely at intermediate points of its length.

13. In a carbureter, the combination, with a fuel valve, of means for shifting said fuel valve, comprising a cam having a face flexible transversely of its length, and means for adjusting said face transversely at intermediate points in its length.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this 1st day of September, A. D. one thousand nine hundred and six.

GEORGE M. SCHEBLER. [L. S.]

Witnesses:

ARTHUR M. HOOD,

THOMAS W. MCMEANS.