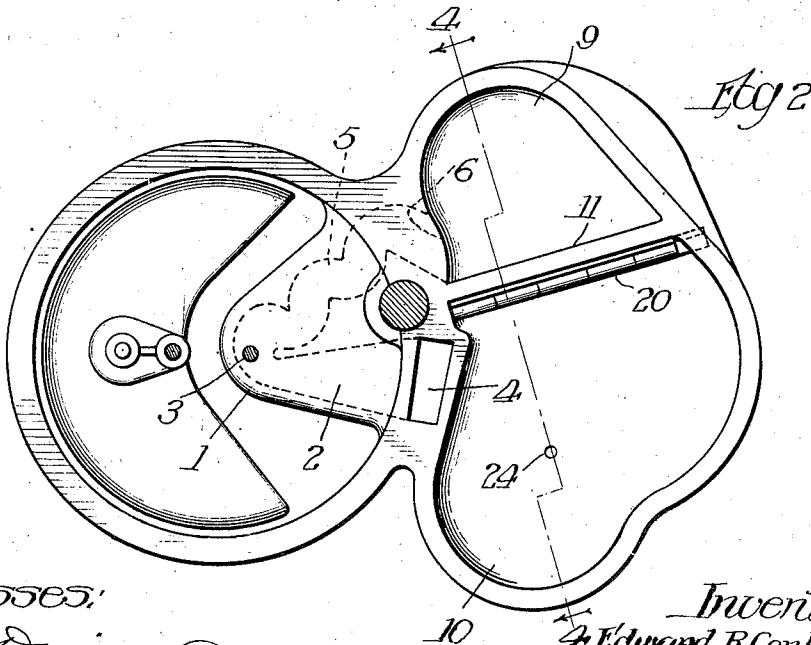
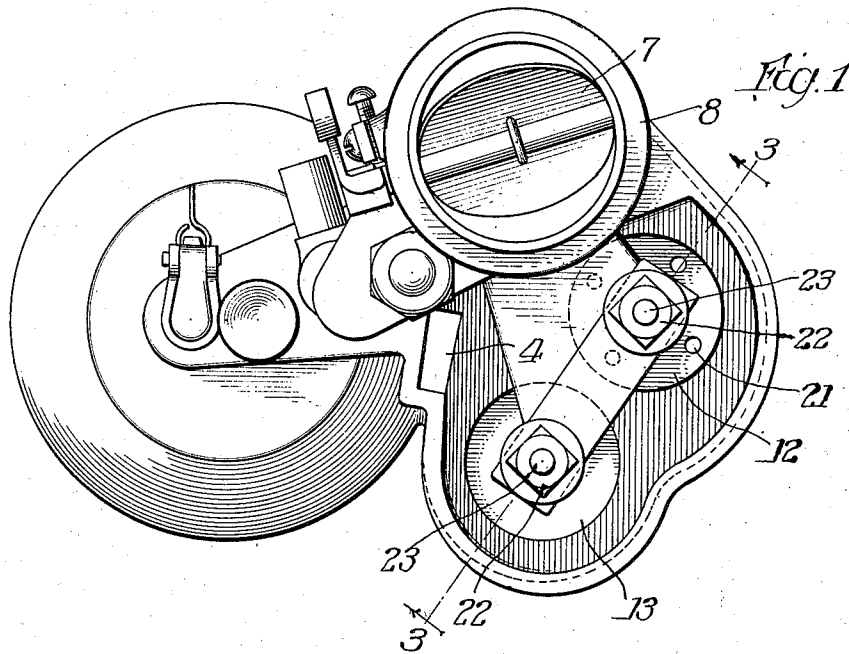


E. R. CONKLIN.
CARBURETER.
APPLICATION FILED MAR. 16, 1911.

1,062,273.

Patented May 20, 1913.

3 SHEETS—SHEET 1.



Witnesses:
Geo. C. Davison
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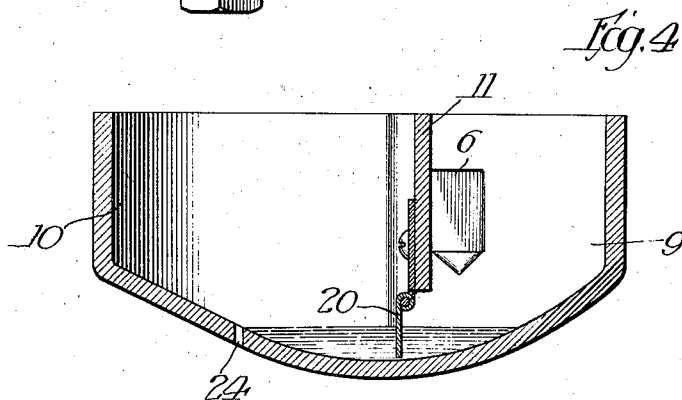
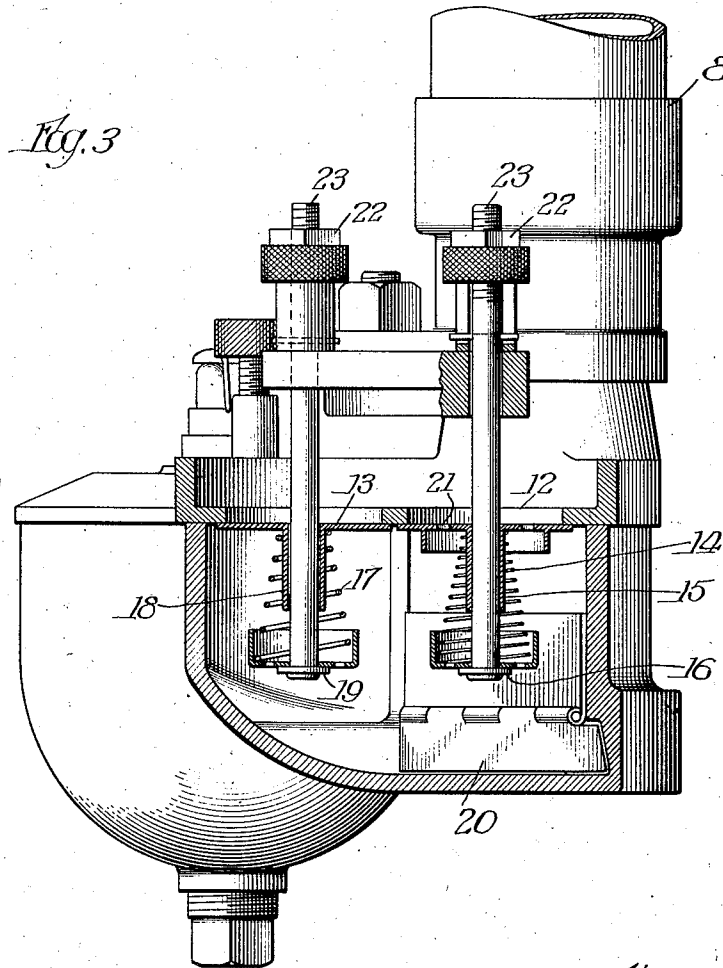
Inventor:
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3 SHEETS—SHEET 2.



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CARBURETER,

Patented May 20, 1913.

3 SHEETS--SHEET 3.

Fig. 5.

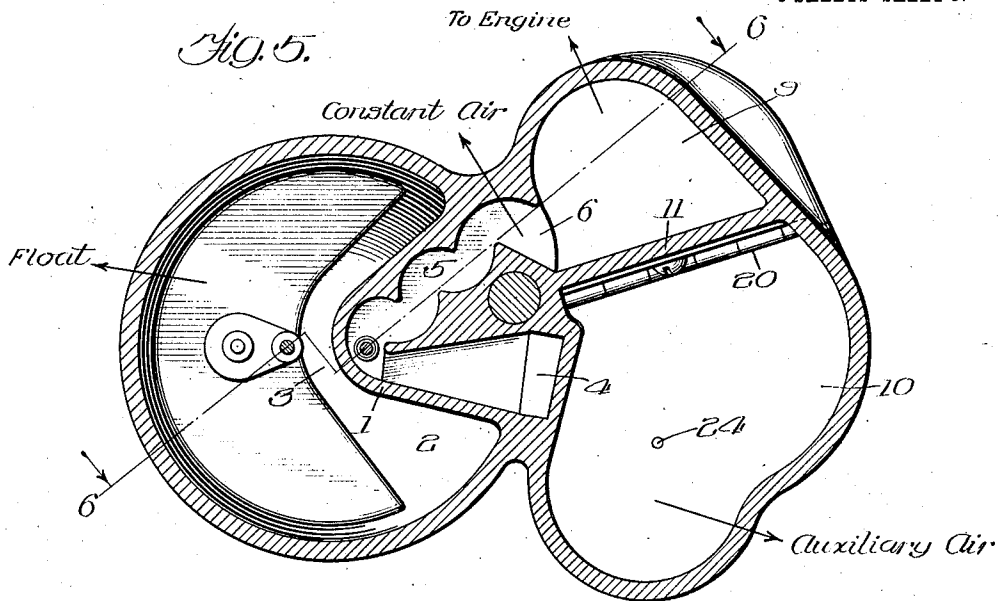
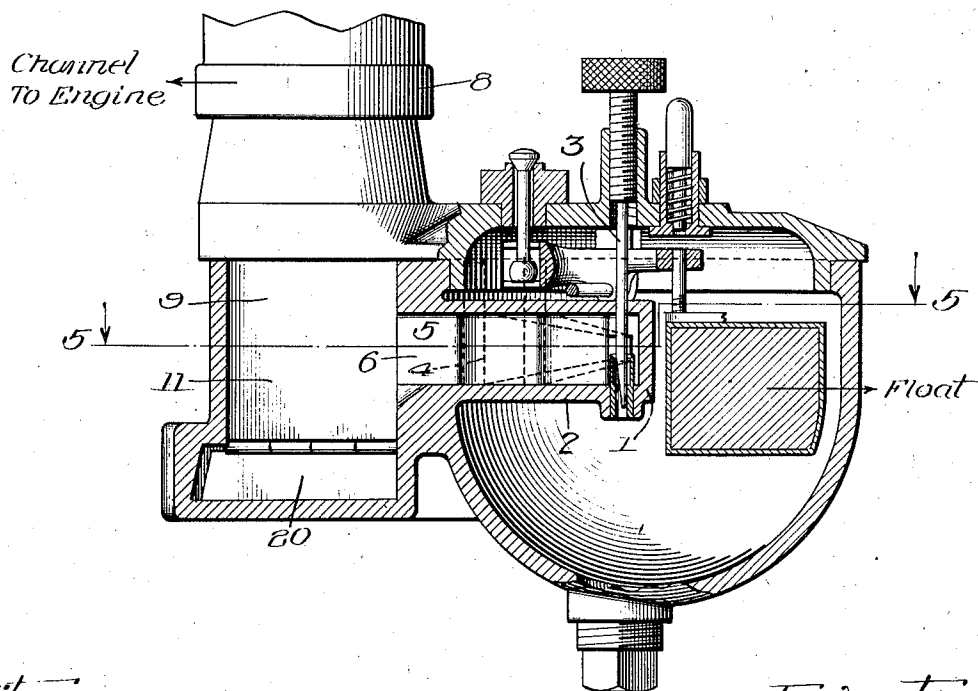


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWARD R. CONKLIN, OF AURORA, ILLINOIS.

CARBURETER.

1,062,273.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed March 16, 1911. Serial No. 614,883.

To all whom it may concern:

Be it known that I, EDWARD R. CONKLIN, citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois; have invented a certain new and useful Improvement in Carbureters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to carbureters and has for its main object the provision of improved valving mechanism to gain better control over what is termed in the practical art of the carburation of air as "auxiliary air" when the engine is operating below a predetermined speed.

A carbureter that is constructed in accordance with the preferred embodiment of my invention, includes a gravity closed valve that is interposed in the path of the auxiliary air as it flows toward the engine, and which feature serves nicely to permit the passage of the volume of auxiliary air which is suited to the lower speeds of the engine, the amount of auxiliary air that is permitted to pass by this valve varying in proportion to the speed of the engine up to a certain fixed speed, whereafter this valve desirably remains fully open, other valving mechanism then coming into play for the purpose of admitting the auxiliary air in increased volume to suit the higher speeds of the engine.

I will explain my invention more fully by reference to the accompanying drawings showing the preferred embodiment thereof and in which—

Figure 1 is a plan view of a form of my improved carbureter; Fig. 2 is a plan view of the carbureter with the cover removed; Fig. 3 is a sectional elevation on line 3 3 of Fig. 1; Fig. 4 is a sectional elevation on line 4 4 of Fig. 2; Fig. 5 is a sectional view on line 5 5 of Fig. 6; and Fig. 6 is a sectional view on line 6 6 of Fig. 5.

Like parts are indicated by similar characters of reference throughout the different figures.

There are many details of construction which are exhibited in the drawings that will be well understood by those skilled in the art and which, therefore, will not be specifically described.

The fuel bowl of the carbureter is provided with an inseting projection 1 in which

there is provided a channel 2 formed in two main branches that merge in what may be termed the bight of the channel where the liquid fuel is admitted to the channel through a valve opening 3 in a manner which is well understood. One branch of this channel has communication at 4 with the external atmosphere in order that "constant air" as it is termed, may be admitted as a consequence of engine suction, to impinge upon the liquid fuel, which is preferably gasoline, admitted at the point 3. The liquid fuel, after it has been subdivided and intermixed with the "constant air" flows toward the engine through the sinuous portion 5 of the channel, this sinuous portion having an outlet indicated at 6 which is located below the manually controlled throttle valve 7, this throttle valve being located in a piping portion 8 that intervenes between the carbureter and the cylinder or cylinders of the internal combustion engine in connection with which it is used. The bulk of the air which is to be carbureted is not admitted at 4, but is admitted to the chamber 9 into which rich mixture is discharged through the mouth 6. The auxiliary air, before being admitted to the chamber 9, is admitted to another chamber 10 which is separated from the chamber 9 by a partition 11. The valving mechanism which controls the communication between the chamber 10 and its exterior, includes two spring pressed valves 12 and 13, the valve 12 having closing action exerted thereupon by means of a light spring 14 in order that it may be opened by the suction created by the operation of the engine on its lower speeds, or certain of them, this spring 14 remaining under its maximum compression when the engine has exceeded a predetermined speed. The extent to which the valve 12 may be opened is limited by the sleeve 15 when it is brought into contact with the limiting stop 16. After the valve 12 has been fully opened, and in the event of the increase of the engine speed above the aforesaid predetermined limit and during the time the valve 12 remains fully open, the valve 13 is subject to an opening action by the increased rapidity with which vacuum, or partial vacuum, is produced at the engine, the heavier spring 17 thereupon yielding to the increased suction. The valve 13 is also provided with a sleeve 18 that is brought into engagement with the stop 19 to limit the extent to which the valve 13 may

be opened. The valves 12 and 13 operate in sequence, the valve 12 preferably performing its fullest function before the valve 13 is brought into play, and the springs which exert closing action upon the valves, exert such closing action independently of each other upon their respective valves and also oppose the action of suction upon the valves independently of each other.

While the valve 12 is designed to regulate the volume of auxiliary air that is to be admitted to the chamber 9, yet I have found that such a valve does not perform its function with that degree of refinement which is suited to very low speeds of the engine. I have, therefore, provided a supplemental and gravity closed valve 20 which is adapted to properly admit the required smaller quantities of air which the engine needs for its operation on its very low speeds, those speeds at which the valve 12 would not properly respond. In order that the valve 20 may thus have initial control over the auxiliary air, the valve 12 is provided with a passage or passages 21 through which the auxiliary air may be admitted to the chamber 10 without the necessity of opening the valve 12. When the engine is operating on its lowermost speeds, the valve 20 will be deflected so as delicately to vary the size of the passage between the chambers 9 and 10 and through which passage the auxiliary air is to flow. The carbureter of my invention may, in other words, be described as a carbureter provided with constant and auxiliary air channels, a channel for engine connection whose opening for the admission of carbureted air that is to be passed to the engine is in communication with the discharge ends of the constant and auxiliary air channels, a main valving mechanism serving to vary the volume of air admitted to the auxiliary air channel upon variation of engine speed, and a gravity closed valve located in position to be passed by auxiliary air and serving to regulate the volume of auxiliary air that may flow on the lower engine speeds. The gravity closed valve is the valve which performs the function required, and a pendant valve is the preferred type of gravity closed valve which is employed. This pendant valve is in the form of a curtain which is swingingly mounted at its top edge and serves, when closed by the action of gravity, sufficiently to obstruct the passage between the chambers 9 and 10. The lightest suction exerted as a consequence of the operation of the engine will cause a corresponding deflection of the valve 20 from its vertical position toward chamber 9, whereby just that volume of air is admitted to the chamber 9 which is required. When the engine has reached a predetermined speed, the valve 20 is finally swung to a substantially horizontal position within chamber 9, this position of the valve

being substantially maintained while the engine is at or exceeds this speed. The type of valve 20 illustrated is preferred since a minimum amount of suction is required to deflect it from normal position, while at the same time, increasing power of suction is required in order to continue the movement of the valve from normal, that is, the opposition furnished by the valve to its opening action increases as the engine speed increases, in a proper ratio. After the valve has reached the position indicated by dotted lines in Fig. 4, and as a consequence of further increase in the speed of the engine, the valve 12 is operated upon by the engine suction to open it, and when the valve 12 has been fully opened, the valve 13 is operated upon by further increased engine suction to open it. Ideally, the valve 20 is completely open before the valve 12 starts to open, and the valve 12 is completely open before the valve 13 starts to open, though it is obvious that the valve 12 may be adjusted so as to start to open before the valve 20 is completely opened and that the valve 13 may be adjusted to start to open before the valve 12 is completely open. This adjustment of the valves 12 and 13 is effected by means of the adjusting nuts 22 working upon the upper ends of the threaded rods 23 which carry the stops 16 and 19 at their lower ends.

Hitherto, the valving mechanism employed was not adapted to properly respond, when the engine operated at its lowest speed or speeds, to admit auxiliary air in suitable proportion to the fuel admitted into the chamber 9 through the mouth 6. That is, the valve action was so sluggish as to cause the engine to draw in an unduly large proportion of liquid fuel at low speed. This harmful result was overcome by reducing the liquid fuel opening at 3, but such a reduction unduly limited the amount of fuel which the engine could supply at its higher speeds. By providing the sensitive valve 20, the initial flow of liquid fuel at the point 3 may be suited to the higher engine speeds since said valve will operate to permit the entry of the required proportion of auxiliary air at the very lowest engine speeds.

In order to prime the carbureter, I provide a depression in the bottom wall common to the chambers 9 and 10 as indicated in Fig. 4, in which depression the liquid fuel may be received up to some suitable level, which level may be determined by an overflow vent 24. Gasolene or other liquid fuel may be admitted to the portion 9, 10 of the carbureter by passing the nose of a fuel can through an opening 21 whereafter the can may be manipulated to pass the required amount of fuel into the carbureter structure. Carbureters are usually provided with means whereby fuel in liquid state may be admitted to the carbureter interior, as is well under-

stood by those skilled in the art, so that a fuel can need not necessarily be employed. The body of fuel placed in this depression is located in the path that is followed by the auxiliary air as it flows to the engine, whereby the engine is supplied with air which is carbureted when it flows through and by the fuel. A part of this liquid fuel is located between the valve 20 and the engine and all of this liquid fuel is located between the valve 12 and the engine. The air which is thus initially carbureted has its flow governed by the valve 20, which valve desirably projects into the liquid fuel to enable the liquid fuel to seal or partially seal the valve and in order that the air permitted to pass by the valve may be forced to encounter the liquid fuel.

While I have herein shown and particularly described the preferred embodiment of my invention, I do not wish to be limited to the precise details of construction shown, as changes may readily be made without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent the following:—

1. A carbureter provided with constant and auxiliary air channels, a channel for engine connection whose opening for the admission of carbureted air that is to be passed to the engine is in communication with the discharge ends of the constant and auxiliary air channels, a main valving mechanism serving to vary the volume of air admitted to the auxiliary air channel upon variation of engine speed, and a gravity closed valve located in position to be passed by auxiliary

air and serving to regulate the volume of auxiliary air that may flow on the lower engine speeds. 40

2. A carbureter provided with constant and auxiliary air channels, a channel for engine connection whose opening for the admission of carbureted air that is to be passed to the engine is in communication with the discharge ends of the constant and auxiliary air channels, a main valving mechanism serving to vary the volume of air admitted to the auxiliary air channel upon variation of engine speed, and a gravity closed valve located in position to be passed by auxiliary air and serving to regulate the volume of auxiliary air that may flow on the lower engine speeds, there being present fuel receiving space in direct communication with the auxiliary air channel for holding a supply of fuel to assist in starting the engine. 45 50 55

3. A carbureter provided with constant and auxiliary air channels, and a channel for engine connection whose opening for the admission of carbureted air that is to be passed to the engine is in communication with the discharge ends of the constant and auxiliary air channels, the constant air channel having a bight therein where the fuel inlet is located and having a sinuous portion between the liquid fuel intake and the channel for passing carbureted air to the engine. 60 65

In witness whereof, I hereunto subscribe my name this 14th day of March A. D. 1911. 70

EDWARD R. CONKLIN.

Witnesses:

G. L. CRAGG,
GEO. C. DAVISON.