W. P. KINGSBURY.

CARBURETER.

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948,977.

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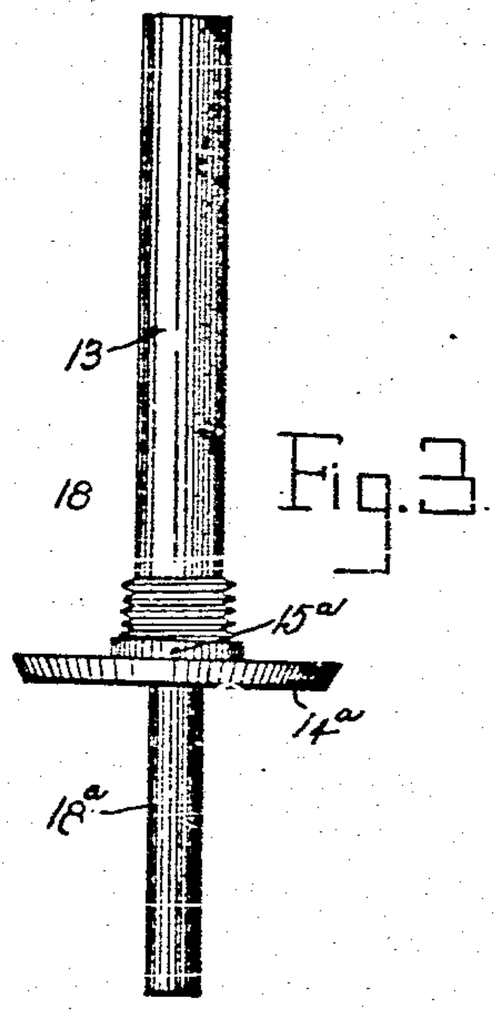

Fig. 3.

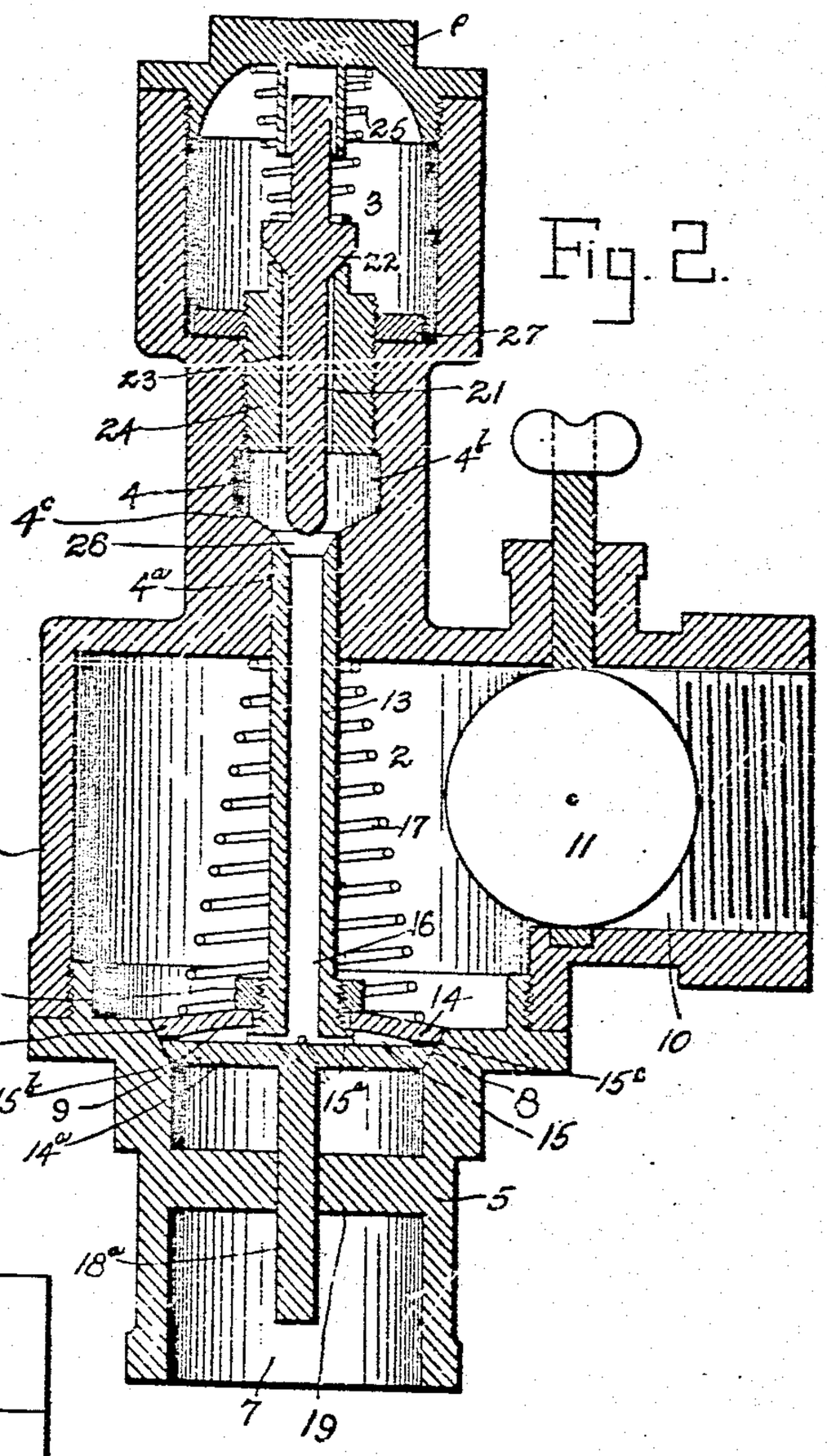

Fig. 2.

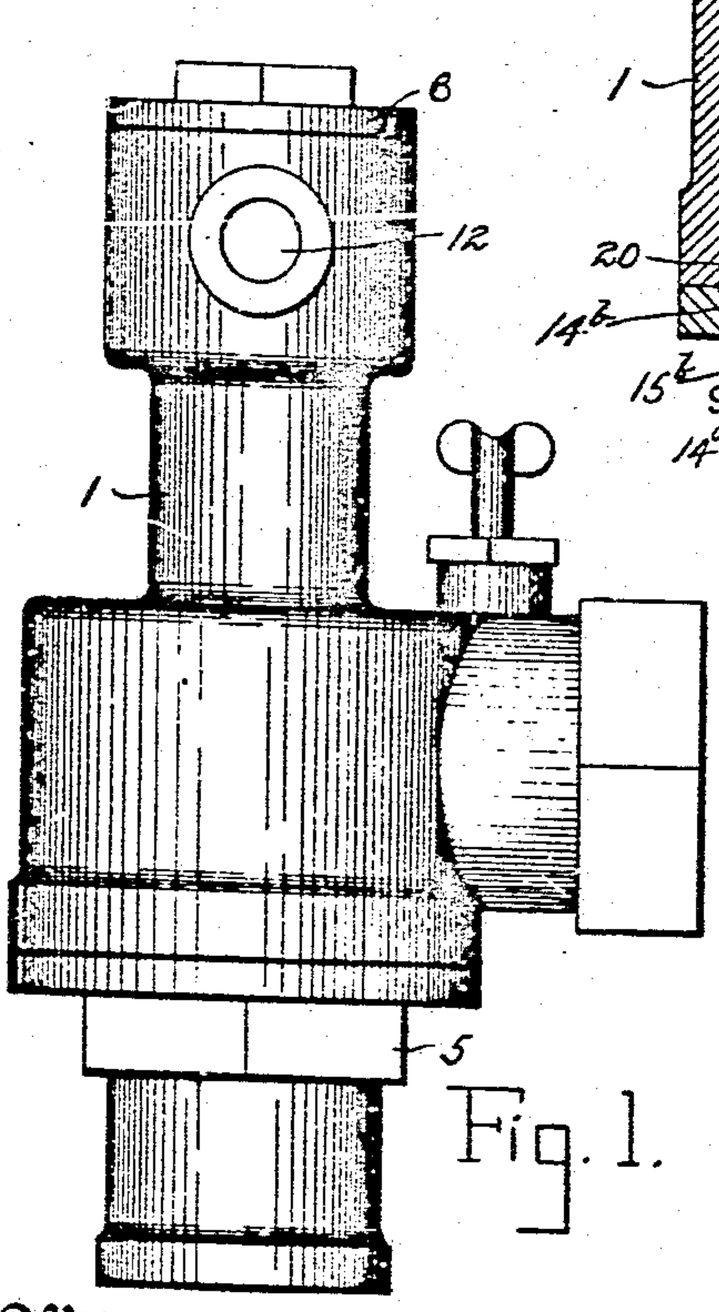

Fig. 1.

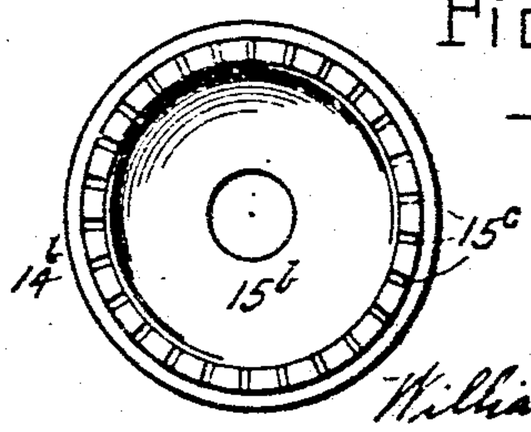

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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CARBURETER.

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To all whom it may concern:

Be it known that I, WILLIAM P. KINGSBURY, a citizen of the United States, residing at Port Arthur, in the county of Jefferson and State of Texas, have invented certain new and useful Improvements in Carbureters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to carbureters or vaporizers for use on internal combustion engines.

The principal object of the invention is to thoroughly and quickly mix the gasolene and air with apparatus which is both simple in construction and economical to manufacture.

Other objects of the invention will become apparent from the following description.

The invention consists primarily in the peculiar construction of the air-inlet valve which is opened by the suction created by the piston in the cylinder of the engine. Said valve is provided with a hollow stem and radial tributary passages in its head communicating with the passage in the stem and opening on the periphery of said head where they are normally closed by the valve seat but are exposed when the valve is raised or opened. Means are provided for feeding gasolene through said stem and tributary passages when the valve is raised or opened. The result is that when the valve is opened, the gasolene is fed or discharged radially in all directions from the periphery of the valve head directly into the current of air drawn into the mixing chamber by the suction which raises said valve whereby the complete mixing of the gasolene and air is effected in the shortest possible time.

The invention also consists in the features of construction and combinations of parts hereinafter described and specified in the claims.

In the accompanying drawing illustrating the preferred embodiment of my invention: Figure 1 is an elevation of the carbureter. Fig. 2 is an enlarged central sectional view thereof. Fig. 3 is a detailed view of the integral portion of the air-inlet valve, and Fig. 4 is a detailed view of the supplemental part of the head or said valve.

In the drawing, 1 designates the main portion of the casing which contains the mixing chamber 2 and gasolene chamber 3 connected by the passage 4. The bottom of the mixing chamber is formed by a separate casting 5, preferably screwed into the main casing. The top of the gasolene chamber consists of a separate nut 6 also screwed into place. The separate casting 5 is provided with the air-inlet opening 7 and the seat 8 for the air-inlet valve 9. An outlet passage 10 for the mixed gasolene is provided in the main casing and is equipped with the usual butterfly valve 11 for regulating the speed of the engine. The passage 12 in the wall of the gasolene chamber is designed to be connected with a suitable source of gasolene supply.

The air-inlet valve is provided with a hollow stem 13 extending through the mixing chamber and fitting into the restricted portion 4^a of the passage 4 connecting said mixing chamber with the gasolene chamber. The head 14 of said valve contains radial tributary passages 15 from the passage 16 in the stem and opening on the periphery of the head. As shown in Fig. 2, the periphery of the head contacts with the valve-seat 8 in the separate casting 5 when the valve is closed and, when in this position, the openings of said tributary passages in the periphery of the valve head are closed by said valve-seat. The valve is normally held down in its seat by a coiled spring 17 abutting at its opposite ends against the head of the valve and the upper wall of the mixing chamber. Said air-inlet valve is preferably made in only two pieces, the larger integral part 18 comprising the hollow stem 13, the lower portion of the head and a downwardly projecting portion 18^a which is centered in a bridge 19 in the separate casting 5. This part 18 of the valve contains passages 15^a comprising parts of the tributary passages 15 and extending from the passage 16 in the stem and opening on to the flat upper surface of the lower portion 14^a of the valve head 14. The supplemental part of this valve comprises a disk-shaped piece 14^b constituting the upper portion of the valve head. This disk-shaped piece is concave on its under surface, as at 15^b, and has small radial grooves 15^c in the lower surface of its periphery, said concave surface and grooves

completing the tributary passages 15. The supplemental part or disk is held in place by a nut 20.

The upper end of the passage 4 leading from the mixing chamber to the gasolene chamber is enlarged, as at 4^b. In it is arranged a pin valve 21 formed with a projecting collar 22 adapted to seat over and close the upper opening of a passage 23 in a sleeve 24 preferably screwed into the upper extremity of said enlarged portion of the passage 4. Said pin valve is normally held down in a closed position by a coiled spring 25 arranged upon the upper portion of its stem and abutting against the collar 22 and the under face of the nut 6. The lower extremity of the pin valve is arranged in a cup 26 formed in the upper end of the hollow stem 13 of the air-inlet valve. The sleeve 24 is secured in the desired position by a lock nut 27 which allows for the sleeve being adjusted to take up wear on the ends of the pin valve 21 and valve stem 13. The bottom of the enlarged chamber 4^b is cupped, as at 4^c, adapted to deliver the gasolene from said chamber to the cup 26 in the upper end of the valve stem 13.

It will be readily understood from this description and the accompanying drawing, particularly Fig. 2. that when the air-inlet valve is raised by the suction created in the cylinder of the engine, the stem 13 will raise the pin valve 21 thereby allowing gasolene to flow from the gasolene chamber 3 down around said pin valve, into the enlarged chamber 4^b. When said air inlet valve moves down into closed position, the pin valve 21 will also close and the gasolene in the chamber 4^b will pass into the passage 16 of the valve stem 13 via the cup 26 which is not closed by the lower end of the pin valve 21 when the parts are in that position. On the next upward movement of the air inlet valve the gasolene will be fed from the passage 16 in its stem through the radial tributary passages 15 into the mixing chamber. The gasolene is discharged by said radial tributary passages at points all around the valve head directly into the current of air which is being drawn by suction into the mixing chamber through the air inlet opening 7.

I claim:—

1. In a carbureter, the combination, with a casing having a mixing chamber, an air inlet passage leading thereto, an outlet passage for the mixed gases, a gasolene chamber, and a passage leading from the gasolene chamber to the mixing chamber, of a spring-pressed valve normally covering the air inlet passage and having a hollow stem fitted in said passage extending from the gasolene chamber to the mixing chamber, a reciprocating valve also arranged in said passage and adapted to control the flow of gasolene from the gasolene chamber into said passage, said latter valve being operated by the stem of the air inlet valve, but arranged above and out of contact therewith when said air inlet valve is closed, and means for feeding the gasolene from the hollow stem of said air inlet valve into the mixing chamber when said valve is opened.

2. In a carbureter, the combination, with a casing having a mixing chamber, an air inlet passage leading thereto, an outlet passage for the mixed gases, a gasolene chamber, and a passage leading from the gasolene chamber to the mixing chamber, of a spring-pressed valve normally covering the air inlet passage and having a hollow stem fitted in said passage extending from the gasolene chamber to the mixing chamber, said passage having an enlarged chamber formed therein above the upper end of said hollow valve stem, a pin valve for controlling the flow of gasolene from the gasolene chamber and terminating in said enlarged chamber above the upper end of the stem of the air inlet valve, said pin valve being operated by the stem of the air inlet valve when the latter is opened, and means for feeding the gasolene from the hollow stem of said air inlet valve into the mixing chamber when the latter valve is opened.

3. In a carbureter, the combination, with a casing having a mixing chamber, an air inlet passage leading thereto, an outlet passage for the mixed gases, a gasolene chamber, and a passage leading from the gasolene chamber to the mixing chamber, of a spring-pressed valve normally covering the air inlet passage and having a hollow stem fitted in said passage extending from the gasolene chamber to the mixing chamber, said last mentioned passage having an enlarged chamber with a cupped bottom formed therein above the upper end of said hollow valve stem which is also cupped, a pin valve for controlling the flow of gasolene from the gasolene chamber and terminating in said enlarged chamber above the upper end of the stem of the air inlet valve, said pin valve being operated by the stem of the air inlet valve when the latter is opened, and means for feeding the gasolene from the hollow stem of said inlet valve into the mixing chamber when the latter valve is opened.

4. In a carbureter, the combination, with a casing containing a mixing chamber, an air-inlet passage leading thereto, an outlet passage therefrom for the mixed gases, a gasolene chamber, and a passage leading from the mixing chamber to the gasolene chamber, of a spring-pressed valve arranged in said mixing chamber so as to normally cover the air-inlet passage, said valve comprising a hollow stem and a head having radial tributary passages leading from the passage in the stem and opening on the pe-

riphery of the head, the openings of said tributary passages being normally covered by the valve-seat when the valve is closed, said hollow stem being fitted in the passage leading from the mixing chamber to the gasolene chamber, and a reciprocating valve also arranged in said last mentioned passage and adapted to be actuated by the stem of the air-inlet valve when the latter is opened whereby gasolene is fed from the gasolene chamber through the hollow stem and radial passages of said air-inlet valve.

5. In a carbureter, the combination, with a casing containing a mixing chamber, an air-inlet passage leading thereto, an outlet passage therefrom for the mixed gases, a gasolene chamber, and a passage leading from the mixing chamber to the gasolene chamber, of a spring-pressed valve arranged in said mixing chamber so as to normally cover the air-inlet passage, said valve comprising a hollow stem and a head having radial tributary passages leading from the passage in the stem and opening on the periphery of the head, the openings of said tributary passages being normally covered by the valve seat when the valve is closed, said hollow stem being fitted in the passage leading from the mixing chamber to the gasolene chamber, and having a cup formed in its end, and a spring-pressed pin-valve also arranged in said last mentioned passage with its lower end extending into said cup, said pin-valve adapted to be actuated by the stem of the air-inlet valve when the latter is opened whereby gasolene is fed from the gasolene chamber through the hollow stem and radial passages of said air-inlet valve.

6. In a carbureter, the combination, with a casing containing a mixing chamber, an air-inlet passage leading thereto, an outlet passage therefrom for the mixed gases, a gasolene chamber, and a passage leading from the mixing chamber to the gasolene chamber, of a spring-pressed valve arranged in said mixing chamber so as to normally cover the air-inlet passage, said valve comprising a hollow stem and a head having radial tributary passages leading from the passage in the stem and opening on the periphery of the head, the openings of said tributary passages being normally covered by the valve seat when the valve is closed, said hollow stem being fitted in the passage leading from the mixing chamber to the gasolene chamber, an adjustable sleeve in the upper end of said last mentioned passage, and a spring-pressed pin-valve arranged in said sleeve with its lower end extending down near to the upper end of the stem of the air-inlet valve, said pin-valve being operated by said stem of the air-inlet valve when the latter is opened whereby gasolene is fed from the gasolene chamber through the hollow stem and radial passages of said air-inlet valve.

7. In a carbureter, the combination, with a casing containing a mixing chamber, an air-inlet passage and an outlet passage for the mixed gas, of a spring-pressed valve arranged in said mixing chamber so as to normally cover the air-inlet passage, said valve comprising a hollow stem, and a head having radial tributary passages leading from the passage in said stem and opening on the periphery of said head where they are covered by the valve-seat when the valve is closed, said valve being made in two pieces, one comprising the stem and lower portion of the head and provided with a passage leading from the passage in the stem and opening on the upper face of said lower portion of the head, said last mentioned passages constituting parts of the tributary passages in said head, the supplemental part of the valve being made in the form of a disk constituting the upper portion of the head, said disk being concave on its lower surface and having radial grooves arranged in the under face of its periphery, said concave portion and grooves completing the radial tributary passages in said head, means to retain said supplemental part in proper position relative to the lower portion of the head, and means to feed gasolene through the hollow stem of said valve and tributary passages to the interior of the mixing chamber when said valve is moved out of its seat.

8. In a carbureter, the combination, with a casing containing a mixing chamber, an air-inlet passage, a bridge arranged in said passage, and an outlet passage for the mixed gas, of a spring-pressed valve arranged in said mixing chamber so as to normally cover the air-inlet passage, said valve comprising a hollow stem and a head having radial tributary passages leading from the passage in the stem and opening on the periphery of the head, the openings of said tributary passages being normally covered by the valve-seat when the valve is closed, said valve also having a downwardly extending portion fitted in an opening in said bridge for the purpose of centering the valve, and means to feed gasolene through said hollow stem and tributary passages to the interior of the mixing chamber when the valve is moved out of its seat.

In testimony whereof, I affix my signature, in presence of two witnesses.

WILLIAM P. KINGSBURY.

Witnesses:
GEORGE L. PRICHARD,
CHAS. R. STEVENSON.