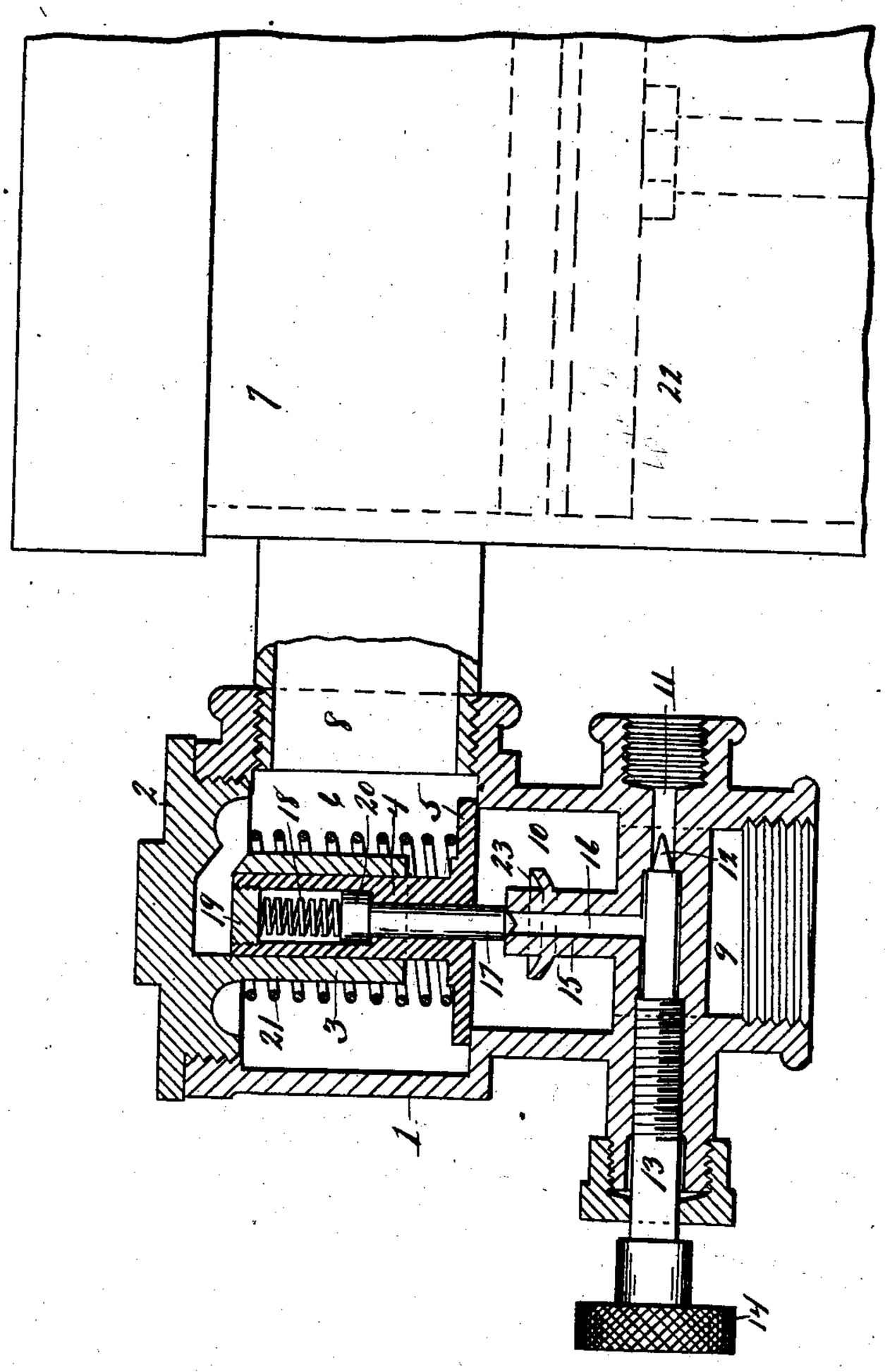
No. 729,254. PATENTED MAY 26, 1903.

M. F. BATES.

CARBURETING DEVICE FOR EXPLOSIVE ENGINES.

APPLICATION FILED MAY 4, 1901.

NO MODEL.



WITNESSES.

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No. 729,254. Patented May 26, 1903.

UNITED STATES PATENT OFFICE.

MADISON F. BATES, OF LANSING, MICHIGAN.

CARBURETING DEVICE FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 729,254, dated May 26, 1903.

Application filed May 4, 1901. Serial No. 58,688. (No model.)

To all whom it may concern:

Be it known that I, MADISON F. BATES, a citizen of the United States, residing at Lansing, in the county of Ingham, State of Michigan, have invented certain new and useful Improvements in Carbureting Devices for Explosive-Engines; and I do 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, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which forms a part of this specification.

This invention relates to a carbureting device for explosive-engines; and it consists in the construction and arrangement of parts hereinafter fully set forth, and pointed out particularly in the claims.

The object of the invention is to provide simple and efficient means automatically actuated for delivering a complete mixture of air and gasolene-vapor to the combustion-chamber of an explosive-engine.

The above object is attained by the device illustrated in the accompanying drawing, in which there is shown a sectional view of my improved carbureting device connected with the cylinder or combustion-chamber of an engine, parts of said cylinder being broken away and the piston within said cylinder showing only in dotted lines, as such parts are merely incidental to the operation of my device.

Referring to the characters of reference, 1 represents the body of the carbureter, which may be of any suitable formation and which is closed at the top by a screw-cap 2. Depending centrally from said cap is a guiding-tube 3, adapted to receive the valve-stem 4 of the valve 5, whereby said valve is directed in its movement. The valve-chamber 6, controlled by the air-valve 5, communicates with the engine-cylinder or combustion-chamber 7 by means of the connecting pipe-section 8, through which the carbureted air is delivered to the engine-cylinder. The air-admission port 9 opens through the bottom of the carbureter-body and terminates in a carbureting-chamber 10, whose upper end is normally closed by the valve 5.

The gasolene-admission port 11 communicates with the gasolene-supply tank (not shown) and which is located at such an elevation as to cause the gasolene to flow into said admission-port by gravity. Controlling said admission-port is a needle-valve 12, whose stem 13 extends through the wall of the carbureter and carries a knurled disk 14, through the medium of which the valve may be operated.

Projecting vertically into the carbureting-chamber 10 is a tubular extension or stand-pipe 15, the opening 16 of which communicates with the valve-controlled gasolene-admission port 11, whereby said stand-pipe becomes filled with gasolene upon the opening of the valve 12.

The stem 4 of the valve 5 is hollow, and seated therein is a depending valve 17, adapted to seat upon the upper end of the stand-pipe 15 and close the opening therethrough. The valve 17 is adapted to reciprocate vertically in the stem of the valve 5 and is held in place by a coiled spring 18, which bears upon the valve 17 and is confined by the screw-plug 19, which closes the upper end of the valve-stem 4. The annular collar or head 20 upon the upper end of the valve 17 prevents it from descending too far through the stem of the valve 5.

Bearing upon the valve 5 is a coiled spring 21, which surrounds the guiding-tube 3 and is confined by the cap 2.

In the operation of this device when it is desired to admit a charge of explosive mixture to the engine the vacuum created in the engine-cylinder by a forward movement of the piston 22 causes a rush of said air through the air-admission port 9, which raises the valve 5 from its seat against the action of the spring 21 and at the same time carries the valve 17 from its seat on the upper end of the stand-pipe 15, allowing the gasolene to flow from said stand-pipe, which is taken up and mixed with the inwardly-flowing current of the air, forming an explosive mixture which enters the engine-cylinder through the connecting-pipe 8. After the engine has received a charge the spring 21 closes the air-valve 5 and allows the gasolene-valve 17 to return to its seat, thereby stopping the flow of gasolene through the opening 16. It will be observed that the gasolene-valve 17 has a

vertical movement independent of the valve 5. The arrangement of said parts is such that the air-valve 5 will leave its seat slightly in advance of the gasolene-valve 17 to induce a flow of air through the carbureting-chamber before the gasolene is discharged from the stand-pipe, so that the gasolene may be taken up and vaporized as it flows from the stand-pipe upon the raising of the valve 17. From the fact that the gasolene-valve 17 is the last to leave its seat it will be the first to reach its seat upon a return of the valve 5, so that the discharge of the gasolene is cut off before the valve 5 is closed.

Surrounding the stand-pipe within the carbureting-chamber is a drip-pan 23, which serves to catch the surplus gasolene not taken into the engine.

It will be observed that the operation of this carbureter is entirely automatic and that by means of the needle-valve 12 the quantity of gasolene which flows to the carbureting-chamber may be regulated to insure a perfect mixture thereof with the inflowing air and a perfect combustion of the charge in the engine-cylinder.

Having thus fully set forth my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a carbureter, the combination of a suitable case having an air-intake opening, a gasolene-intake port, a hollow transverse member crossing the air-intake port and communicating with the oil-admission port, a valve in said member for controlling the flow of oil, a stand-pipe projecting vertically from said transverse member having a central opening therethrough which communicates with the oil-controlling valve, a drip-pan around the upper end of said stand-pipe adapted to catch the overflow of gasolene therefrom, an air-intake valve adapted to control the inflowing air, said valve having a hollow stem, a gasolene-valve located in the hollow stem of the air-valve, and adapted to seat over the end of the stand-pipe, said gasolene-valve having an enlarged head which prevents it from slipping through the stem of the air-valve, and a spring within the stem of the air-valve pressing downwardly upon said gasolene-valve.

2. In a carbureter, the combination of a suitable case having an air-intake and gasolene-admission port, a stand-pipe standing centrally within the air-intake and communicating with said admission-port, an air-valve to control the passage of carbureted air, said valve being located above the stand-pipe and provided with a hollow stem, a gasolene-valve located in the stem of the air-valve, and projecting through the face thereof, the lower end of said gasolene-valve being adapted to seat in the end of the stand-pipe, and the upper end of said valve having an enlarged head which limits the downward movement thereof, a spring in the hollow stem of the air-valve resting upon the head of the gasolene-valve, and a screw-plug in the stem of the air-valve for confining said spring in place.

3. In a carbureter, the combination of a suitable case having an air-intake opening and a gasolene-port, a stand-pipe located centrally within the air-intake port communicating with the gasolene-port, an air-valve closing the upper end of the air-intake having a vertical stem, said stem being hollow, the upper portion of said opening in said stem being of greater diameter than the lower portion, a gasolene-valve having a reduced body adapted to pass through the lower portion of the hollow stem of the air-valve and to seat in the end of the stand-pipe, said gasolene-valve having at its upper end an enlarged head which fills the larger upper portion of said hollow stem, and limits the downward movement of the valve and spring within the enlarged upper portion of the hollow valve-stem bearing upon the head of said gasolene-valve.

In testimony whereof I sign this specification in the presence of two witnesses.

MADISON F. BATES.

Witnesses:
JNO. H. CHASE,
JAMES P. EDMONDS.