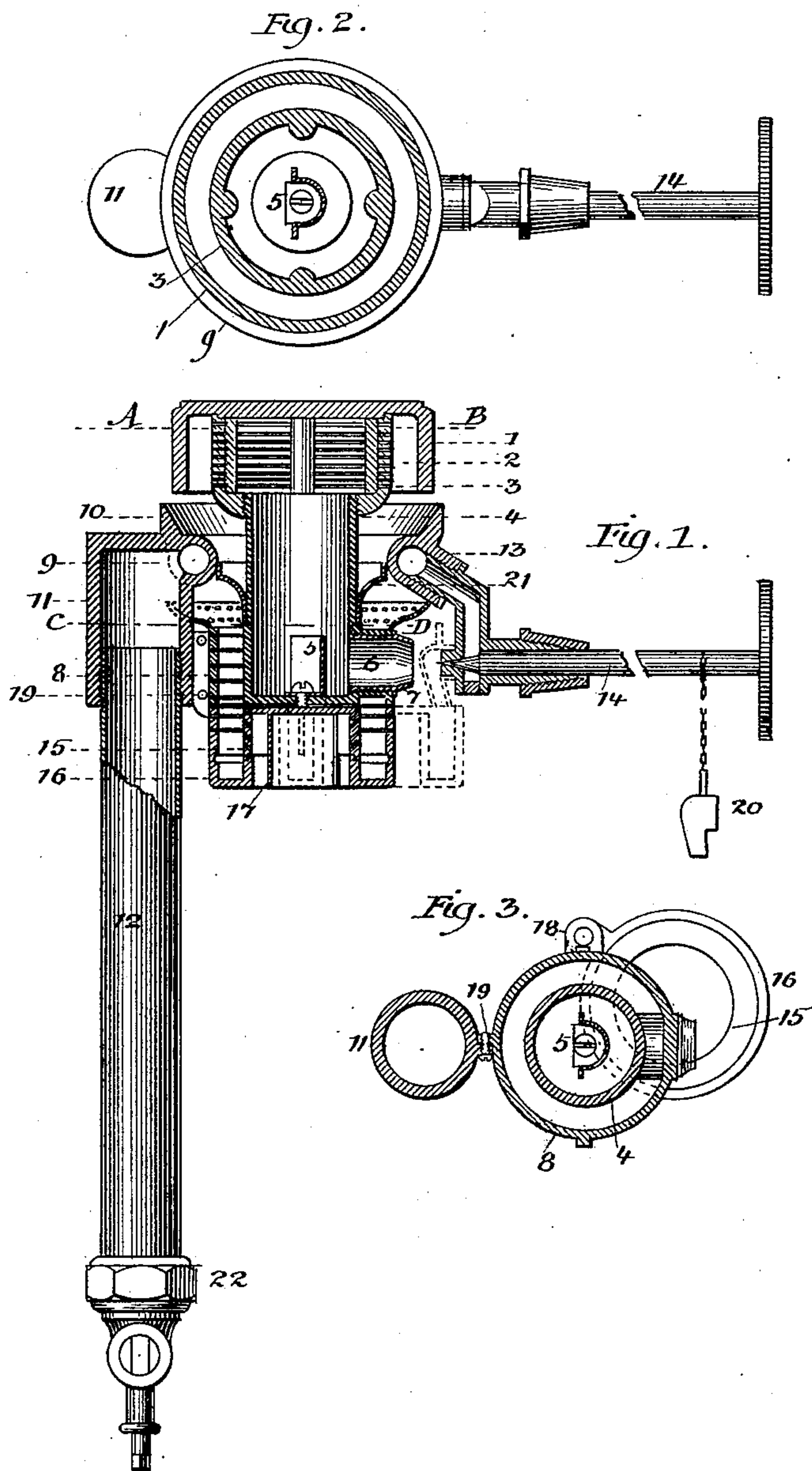


(No Model.)

A. GATEAU.
VAPOR BURNER.

No. 434,634.

Patented Aug. 19, 1890.



Witnesses:
Frank Blanchard
Charles Shervey.

Inventor:
Antoine Gateau

UNITED STATES PATENT OFFICE.

ANTOINE GATEAU, OF CHICAGO, ILLINOIS.

VAPOR-BURNER.

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Application filed May 16, 1890. Serial No. 352,053. (No model.)

To all whom it may concern:

Be it known that I, ANTOINE GATEAU, of Chicago, State of Illinois, have invented certain new and useful Improvements in Vapor-Burners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the numbers of reference marked thereon, which form a part of this specification.

This invention relates to improvements in vapor-burners in which the gasoline is forced by means of a pressure of hydrogen or air.

The object is to take advantage of the pressure (which is relatively high compared with the one given by the elevated reservoir used in all the ordinary gasoline-stoves) to supply the burner with a superheated gas in order to obtain a better combustion of the gas and to economize the gasoline.

The invention also relates to a device for initially heating the burner of a vapor-stove. Its object is to avoid the smoke, smell, and the collecting of soot around the burner, and to remove the inconveniences afforded by the drip-cup used in gasoline-stoves.

The invention consists in the several novel devices and combinations, hereinafter explained, and pointed out in the appended claims.

Figure 1 is a vertical section of the burner and cup. Fig. 2 is a plan view through line A B. Fig. 3 is a plan view through line C D, showing the cup opened.

In the drawings, 1 represents the burner-cup. Its interior face rests in the upper end of the burner 3. Between its interior wall and the exterior of the burner 3 a space 2 is formed, in which the superheated gas burns before it escapes outside.

3 is the burner or its principal part. Its circumference is cut by a series of slits by which the gas passes into space 2. Its lower end is screwed on the upper part of the gas and air mixing chamber 4.

4 is a gas and air mixing chamber. Its upper end opens into the burner 3, and is screwed in with it. The lower end has a bottom on which is screwed the spreader 5. Near its bottom an opening is provided for the admittance of the gas and air, and this is formed

by the ferrule 7, screwed tight against the cup's extension-pipe 8.

9 is a circular chamber in which the gas is generated. On its upper end it has a conical border 10 cast with it. Its object is to deflect the flame upon the circular chamber 9. The boss 11, cast with the same, serves to connect the stand-pipe 12 with it. On the opposite side is another boss 13, which serves to hold the stem-valve 14.

16 is a cup, which serves to burn some gasoline for the purpose of warming the burner when it is desired to start it. It has a central opening, which is covered by the cap 15. Said cap has around its circumference a series of slits cut through at a certain angle for the admittance of air into the cup 16. It has also a circular partition 17 attached to it. Its use is to decrease the space in order to prevent in it an accumulation of gas when the cup 16 is in operation. (The gas must be confined in a narrow space or otherwise it would take fire and interfere with the operation.) The cup 16 has also at its circumference a projection 18, (see Fig. 3,) which receives a pin. In the cup's extension 8 is a similar projection, in which said pin passes for the purpose of moving the cup 16 when desired.

8 is a cup's extension-pipe. Its circumference is cut with a series of slits for the admittance of the air. Its upper end is enlarged, the object being to carry the flame perpendicularly with the outside wall of the circular chamber 9. (Without it the flame coming out of the cup 16 will impinge against the under part of the circular chamber 9, and the circulation of the flame would be prevented, and instead of giving a blue flame it would burn inside of the extension and cup with a red smoking flame.) It is provided at its circumference with a rib 19. Its object is to fasten it against a similar rib cast with the boss 11. Near its bottom is a hole bored through its circumference in which the ferrule 7 passes.

14 is a stem-valve screwed tight in the boss 13. Its object is to regulate the admittance of the gas into the burner.

20 is a curved pipe, used to fill up the cup 16.

21 is a conical tube. Its upper end fits the inside of the lower part of the circular chamber 9 and its lower end stands on a shoulder

cut around the gas and air mixing chamber 4. It serves to direct around and outside of the circular chamber 9 the flame of the gasoline burning in the cup 16 when it is desirable to start the burner.

22 is a connecting-union with a stop-valve. It serves to put the burner through the connecting-pipe 12, in communication with the reservoir containing the gasoline.

The operation is as follows: The curved pipe 20 being placed at the end of the stem-valve 14, the cup 16 is moved in its proper position, as shown in Fig. 1 by the dotted lines, to receive the necessary amount of gasoline, the valve 14 is opened, and the gasoline passes through the curved pipe 20 into the cup 16. This done, the curved pipe is removed, the gasoline is ignited, and the cup moved back to its place. The blue flame soon ascends in the extension-pipe 8 and against the circular chamber 9. It takes but few minutes to warm it and vaporize the gasoline contained in it, and before the flame is out the valve 14 is opened and the escaping gas in coming through the burner in contact with the flame is ignited.

An attentive examination of the working of this burner will demonstrate that the initial heating is attended without any smoke or injurious smell, because the gasoline is confined in a narrow space between the wall of the gas and air chamber 4 and that of the cup's extension-pipe 8. The amount of air that it receives between the two is very limited. The gasoline burns with a blue flame, emitting no injurious smell or smoke, and the burner remains clean. It will not be surrounded by a layer of soot, as is the case with the ordinary gasoline-burners in use. Furthermore, the burner and its cap, by the action of the burning gas, are soon red hot. The flame confined in the space 2 is deflected all around the upper part of the circular chamber 9. The gas that it contains is by this action superheated. The gas then escapes with great ve-

locity against the spreader 5 and is broken up. The high temperature that it still retains permits it to saturate itself with a great quantity of air, which air contributes to maintain the burner and its cap red hot at a very little expense of gas. The gasoline saved by this burner is great. It depends, of course, on the attention given to its operation.

What I claim is—

1. In a vapor-burner, the combination of the circular chamber 9, the stand-pipe 12, which supports the same and through which it receives its supply, the stem-valve 14, by which the gas escapes into the gas and air mixing chamber 4, and secured to the circular chamber 9, the gas and air mixing chamber 4, supporting the burner 3 and having near its bottom an opening for the entrance of the gas and air, the burner on which stands the cap 1, the cap 1 made so as to leave a space 2, and the spreader 5, secured at the bottom of the gas and air mixing chamber 4, all substantially as described, and for the purpose set forth.

2. In a vapor-burner, the combination of the cup 16 with a central opening, the cap 15 covering the same having means for the admittance of air into the cup 16, and a circular partition 17, the cup's extension-pipe 8, secured to the circular chamber 9 and provided with means to move the cup 16 around a center 18, and having a hole through its circumference in which passes the ferrule 7, the ferrule 7, which secures the gas and air mixing chamber 4 against the cup's extension-pipe 8, the conical tube 21, directing the flame of the cup 16 out and around the circular chamber 9, and the curved pipe 20, used as an auxiliary to fill up the cup 16, all substantially as described, and for the purpose set forth.

ANTOINE GATEAU.

Witnesses:

EUGENE GEISSLER,
JOSEPH DESJARDINS.