

No. 675,076.

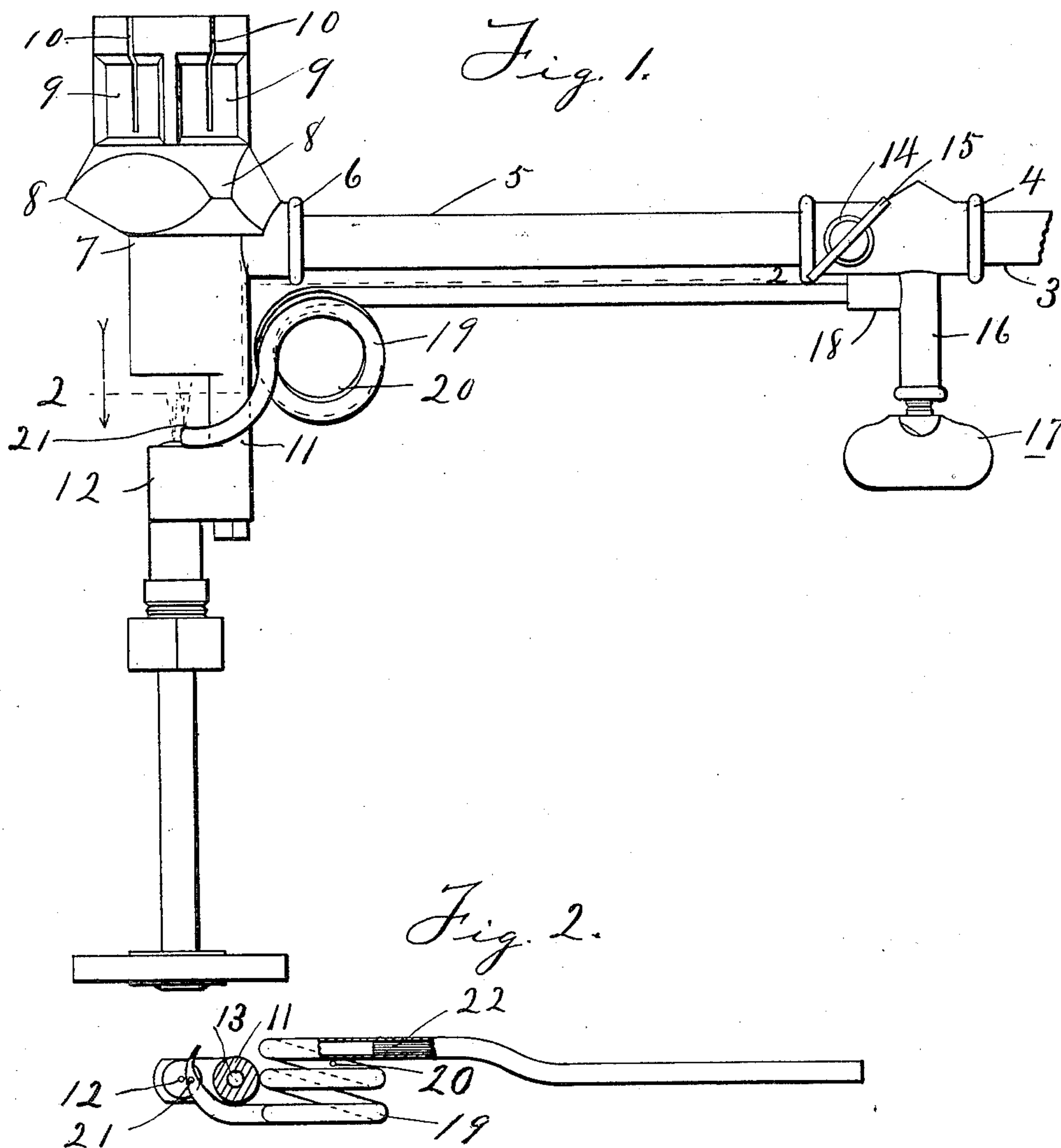
Patented May 28, 1901.

S. G. WELLS.  
HYDROCARBON BURNER.

(Application filed Mar. 3, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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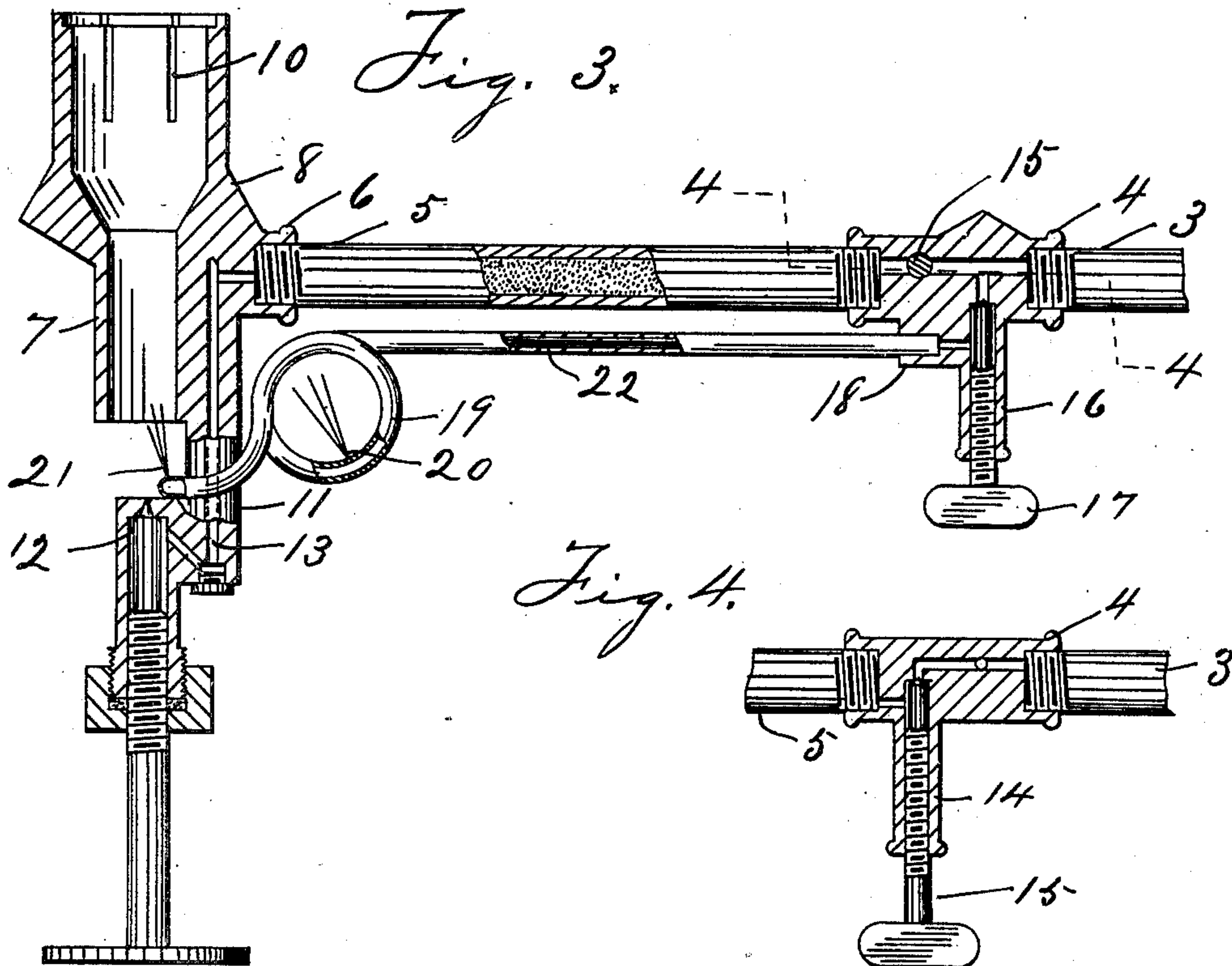
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WITNESSES:

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# UNITED STATES PATENT OFFICE.

SEMER G. WELLS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO HENRY B. SCAMMELL, OF SAME PLACE.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 675,076, dated May 28, 1901.

Application filed March 3, 1900. Serial No. 7,193. (No model.)

*To all whom it may concern:*

Be it known that I, SEMER G. WELLS, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Improvement in Hydrocarbon-Burners, of which the following is a specification.

My object is to construct a hydrocarbon-burner which may be lighted instantly, like a gas-jet; and my invention consists of a main burner and a subburner adapted to be heated and started by the flame of a match and when so started to direct its flame against the generating part of the main burner and at the same time furnish gas for the main burner, as required to maintain light in the mantle while the main burner is being heated.

Figure 1 is a side elevation of a hydrocarbon-burner constructed in accordance with the principles of my invention. Fig. 2 is a horizontal section on the line 2 2 of Fig. 1 and looking downwardly. Fig. 3 is a sectional elevation of the burner, and Fig. 4 is a horizontal section on the line 4 4 of Fig. 3.

Referring to the drawings in detail, the supply-pipe 3 leads to the coupling 4, and the packed generator 5 leads from the coupling 4 to the nipple 6 of the main burner. The nipple 6 is joined to the mixing pipe-chamber 7 at a point slightly below its center. The shoulders 8 project outwardly from the center of the mixing-chamber to support the chimney-frame. Recesses 9 are formed in the outer face of the upper portion of the mixing-chamber, and the slits 10 are cut from the upper end of the mixing-chamber through the wall of the pipe down into the recesses 9 and from the gas-openings leading from the mixing-chamber through its wall to the recesses. The arm 11 leads downwardly from the nipple 6, and the needle-valve 12 is attached to the lower end of the arm 11 in position to discharge gas into the mixing-chamber 7. The passage 13 leads from the nipple 6 through the arm 11 to the jet-orifice of the needle-valve. The valve-casing 14 extends laterally from the coupling 4, and the valve 15, operating in this valve-casing, controls the passage to the main burner. The valve-casing 16 projects from the coupling 4 on the oil side of the valve 15, and the valve 17 operates in this cas-

ing 16. A nipple 18 extends from the casing 16 parallel with the coupling 4, and the tube forming the lighter or subburner is attached to this nipple 18.

The lighter consists of a coil 19, connected to the nipple 18 and having a jet-orifice 20 in position to direct a subflame against the nipple 6 and arm 11 of the main burner and having the jet-orifice 21 in position to discharge into the mixing-chamber of the main burner.

In forming the lighter I use a piece of soft seamless tubing an eighth of an inch or less in diameter, and I insert wires 22 into the end of the tube which is to be attached to the nipple 18, and the wires 22 extend to a point near the beginning of the coil, thus leaving the portion of the lighter which is to be coiled and heated empty to form a gas-chamber.

In forming the coil 19 I bend the tube to make two complete circles and one-quarter of another circle, and I spread the coil, as shown in Fig. 2, thus bringing the central portion in alinement with the arm 11 and the generator 5, and the jet-orifice 20 is formed through one wall of the tube at the inner side of the circle and the lower part of the coil, so that it blows gas directly against the central portion of the coil, causing the gas to spread and go part on one side and part on the other side and strike the nipple 6 of the main burner. The flame caused by burning this gas heats all the parts of the coil, thus heating the gasoline before it gets to the jet-orifice, and the same flame heats the nipple 6, the generator 5, and the arm 11. The jet-orifice 20 is about an inch from the lowest part of the nipple 6. After forming the coil 19 the tube is extended downwardly to a level with the jet-orifice of the needle-valve and then bent around the arm 11, and the jet-orifice 21 is formed as near as possible to the jet-orifice of the needle-valve. I close the end of the tube a short distance beyond the jet-orifice 21 by flattening the tube and hammering the sides tightly together, care being taken to leave a little pocket in the end of the tube beyond the jet-orifice 21. The jet-orifice 20 furnishes gas to heat the main burner, and the jet-orifice 21 furnishes gas to maintain the light in the mantle above the main burner while the main burner is being heated. The jet-orifice 20 is



so located that the gas from the orifice 21 will not ignite from the subflame, and the subflame is at one side of the main burner, so that the products of combustion will not interrupt the fresh air required to maintain the light. The lower end of the mixing-chamber pipe 7 is on a level with the jet-orifice 20, so that there is no danger of the subflame interfering with the draft of air to the mixing-chamber. With such an arrangement there is no use for a mixing-chamber for the jet-orifice 20. The gas blows through about three-quarters of an inch of fresh air and strikes against a solid body, and this produces even a better result for the purpose than can be produced with a mixing-chamber. The result is a very hot blue flame which wraps itself around the upper part of the coil 19 and around the adjacent parts of the main burner.

When it is desired to start the light, a burning match is placed under the coil 19, and in the course of a few seconds, as soon as the match gets a good start and the flame envelops the coil, open the valve 17 and the subflame will start instantly. Then apply the same match to the main burner, and it will start also, thus producing a light in the mantle above the main burner, and the flame in the mantle and the subflame will heat the main burner very quickly. Then open the needle-valve a little, shut off the lighter, and turn on the main burner full blast, thus switching from one burner to the other without extinguishing the light.

There are some forms of burners upon which it may be inconvenient to use the jet-orifice 21, and this jet-orifice may be omitted and the subflame used solely as a heater. The heat of the match applied to the light material of the coil 19 generates the initial gas required to start the lighter. Then the coil heated from the jet 20 furnishes gas for said jet and also for the jet 21.

If desired, the valve 15 may be omitted. It simply serves as a cut-off for the main burner. It is not necessary that the subgenerator be in the form of a coil. It is only necessary that the subgenerator be in such a form that its flame will heat the gasolene before it reaches the jet-orifice.

By forming the jet-orifices in the side of

the small tube the danger of clogging is greatly lessened. There is nothing to guide the particles to the orifices, and the result is that the dirt will collect in the pocket beyond the jet-orifice 21.

I claim—

1. In a hydrocarbon-burner, a subgenerator adapted to be started with a match, and having a jet orifice for heating itself and the main burner, and a second jet-orifice to furnish gas to the main burner.

2. In a hydrocarbon-burner, a subgenerator having a jet-orifice for heating itself and a second jet-orifice to furnish gas to the main burner, said jet-orifices being separated so that the burning of the first does not interfere with the burning of the second, substantially as specified.

3. In a hydrocarbon-burner, a supply-pipe, a valve-casing connected to the supply-pipe, a valve in the casing, a nipple extending from the casing, a subgenerator connected to the nipple and in position to direct its flame against the main burner and to supply gas to the mixing-chamber of the main burner.

4. In a hydrocarbon-burner, a subgenerator having a jet-orifice for heating itself and the main burner, and a second jet-orifice to furnish gas to the main burner, and a valve for controlling the flow of oil to the subgenerator, substantially as specified.

5. In a hydrocarbon-burner, a subgenerator consisting of a small tube having a coiled portion with a jet-orifice for heating itself, a straight portion connecting the coil to the supply-pipe, and a third portion extending from the opposite end of the coil and having a jet-orifice for furnishing gas to the main burner, substantially as specified.

6. In a hydrocarbon-burner, a subgenerator consisting of a small tube having a jet-orifice for heating itself and the main burner, and a second jet-orifice for supplying gas to the main burner, the second jet-orifice being formed in the side of the tube with a pocket beyond the orifice to catch dirt, substantially as specified.

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