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Patented Sept. 9, 1902.

C. S. & C. E. SHATTUC.

VAPOR BURNER.

(Application filed Dec. 26, 1900.)

(No Model.)

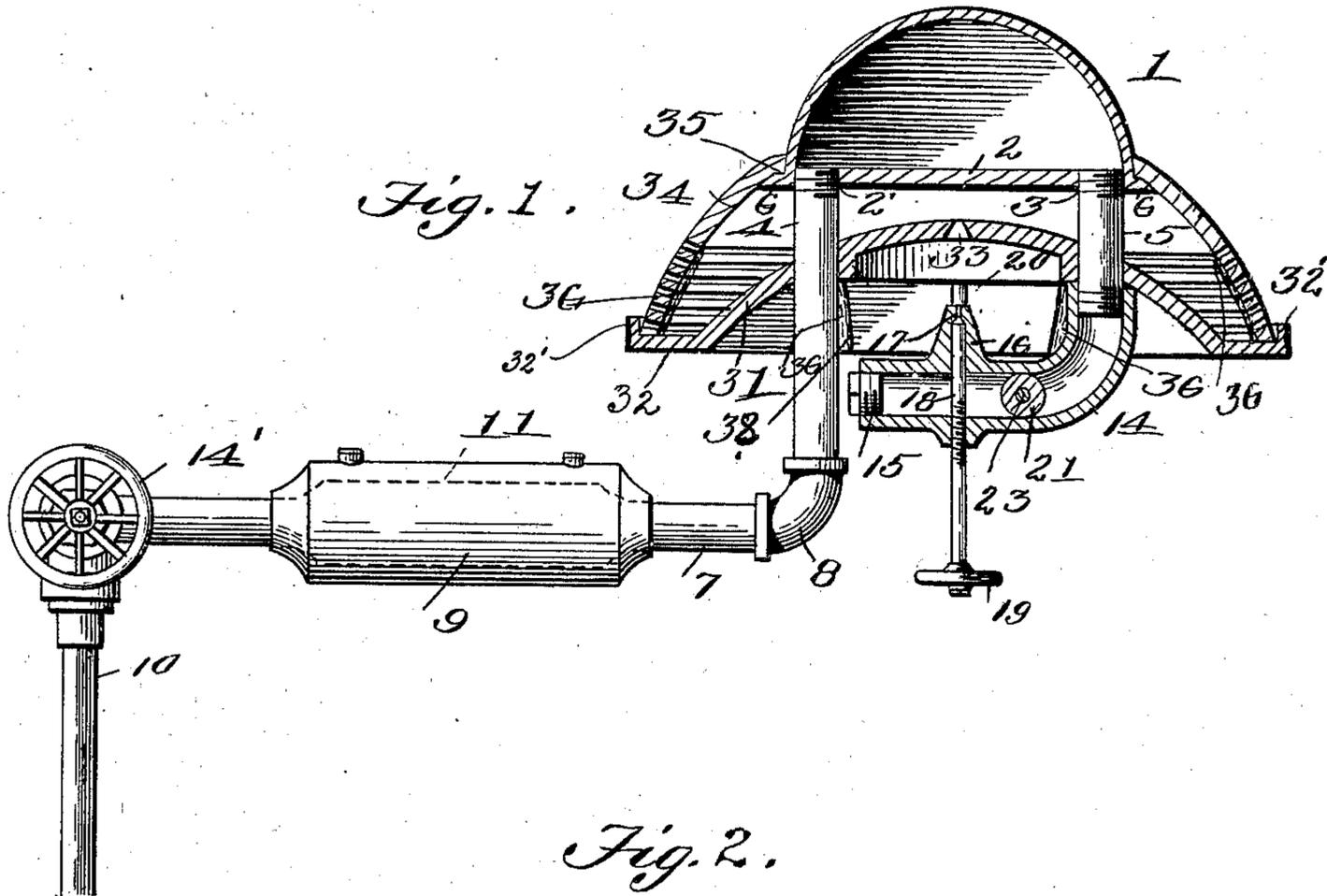
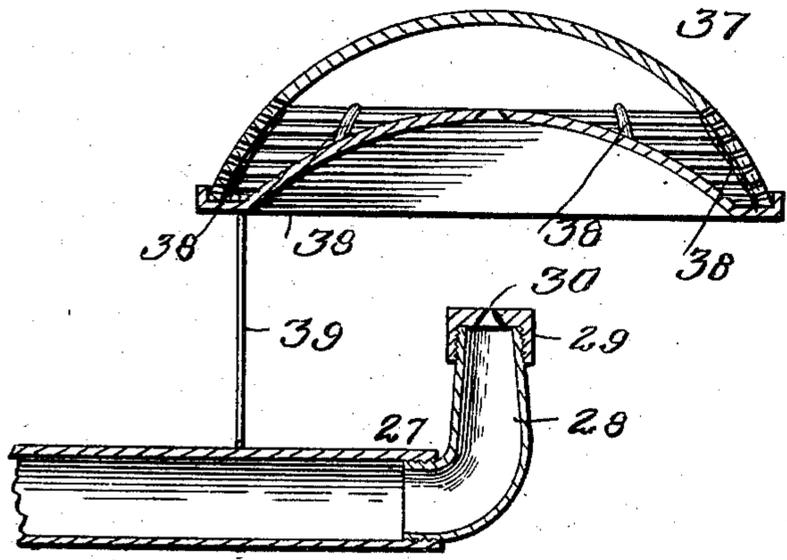


Fig. 2.



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UNITED STATES PATENT OFFICE.

CRANMER S. SHATTUC AND CLARK E. SHATTUC, OF CHICAGO, ILLINOIS.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 708,926, dated September 9, 1902.

Application filed December 26, 1900. Serial No. 41,117. (No model.)

To all whom it may concern:

Be it known that we, CRANMER S. SHATTUC and CLARK E. SHATTUC, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Vapor-Burners, of which the following is a specification.

This invention relates to a certain new and useful improvement in vapor-burners by which the heavier or other grades of hydrocarbon oils can be successfully vaporized and burned, and thus enable them to be used for cooking and heating purposes, and to do this in such a manner as to avoid the production of smoke and smell and at the same time produce an intense heat with a comparatively small consumption of fuel.

The invention aims to construct a burner of the above-referred-to class which shall be extremely simple in its construction, strong, durable, and efficient in its use, and comparatively inexpensive to manufacture; and it consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawings, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, and in which—

Figure 1 is a side elevation, partly in section, of the vapor-burner in accordance with our invention. Fig. 2 is a sectional elevation of a portion of the secondary vapor-burner.

Referring to the drawings by reference-numerals, 1 indicates the generating-chamber, which, as shown, is substantially semispherical in contour, although various forms may be employed. The bottom 2 of the generator 1 is provided with a pair of openings 2' 3. The former has secured therein the upper branch 4 of the oil-supply pipe and the latter the vapor-outlet pipe 5. The bottom 2 projects outwardly from the generator, forming a shoulder or ridge 6 with a beveled edge. The function of shoulder or ridge will be hereinafter described. The lower end of the section 4 is connected to the intermediate branch 7 of the oil-supply pipe by the union 8. The section

7 is in communication with the auxiliary generator 9, connected to the oil-supply by means of the branch 10, the branches 4, 7, and 10 forming the oil-supply pipe. Surrounding the auxiliary generator or arranged below the same and connected thereto in any desirable manner is the oil-cup 11, the function of which will be hereinafter described. The auxiliary generator 9 and cup 11 may be of any preferred construction, but, as shown, are substantially cylindrical. The branch 10 is adapted to extend downwardly from the bottom of the auxiliary generator 9, so that the end of the latter may be fitted with a valve-stem 12, carrying a needle-valve 13, operated by means of the hand-wheel 14'. The valve 13 is adapted to regulate the supply of oil to the generator 1 through the branches 4 and 7. The vapor-outlet pipe 5 for the generator 1 is connected at its lower end to the vapor-reservoir 14, as shown, substantially similar to a pipe-elbow, although other forms of reservoirs may be employed. The free end of the reservoir 14 is closed by means of the plug 15; but this end may be sealed in any preferable manner. The top of the reservoir 14 is formed with a cone-shaped hollow projection 16, forming a valve-chamber for the needle-valve 17, carried by the vertically-arranged stem 18, which extends through the reservoir 14 and is operated by means of the hand-wheel 19. The hollow projection 16 is provided with an outlet-port 20 for the vapor, the needle-valve regulating the flow of vapor to the main burner, hereinafter described, through the port 20. Secured to the reservoir 14 is an exteriorly-screw-threaded coupling 21, having an opening forming a valve-chamber for the needle-valve 22, carried by the horizontally-arranged stem 23, projecting through the reservoir 14 and operated by a suitable hand-wheel. (Not shown.) The valve-chamber of the coupling 21 communicates with a port for supplying vapor from the reservoir 14 to the supply-pipe 25 of the secondary burner, to be hereinafter described, the supply-pipe 25 being connected to the coupling 21, as shown. The valve 22 is adapted to regulate the supply of vapor from the reservoir to the secondary burner through the supply-pipe 25, to which is connected at its free end, as at 27, an upwardly-tapering hol-

low elbow 28, carrying a screw-threaded cap 29, provided with an outlet-port 30 for supplying gas or vapor to the secondary burner.

The reference-numeral 31 denotes a spreader 5 formed of a substantially convex continuous plate, which is suitably secured to the branches 4 5 and provided with an annular flange 32, terminating at its top in a shoulder 32'. The spreader 31 has a centrally-arranged contract- 10 ed opening 33 for the passage of the gas or vapor to the main burner 34. The spreader 31 is formed in a substantially convex manner to leave only space enough between the gener- 15 ator and burner so that the gas will pass around the spreader and be projected through the burner with more force than if the spreader were not employed. If the spreader were not convex, it would leave too much space be- 20 tween the same and the generator and burner and in some instances cause the ignition of the gas within said space. This igniting of the gas within the space mentioned is the ob- 25 jection overcome by constructing the spreader in the manner set forth. The smaller the space between the generator, spreader, and burner the more evenly the gas spreads and the more forcibly it is projected through the 30 burner. As gas passes through the contracted opening 33 of the spreader it strikes the bottom of the generator 1 and rebounds back upon the spreader 31, which, being con- 35 vexed, spreads the gas and causes it to be evenly distributed or projected through the burner 34. The main burner 34 consists of a conical ring of such height that its lower end will rest upon the flange of the spreader 31, and its inner face at the top thereof is formed with a shoulder 35, which engages the shoul- 40 der or ridge 6 of the bottom of the generator. The burner 34 is formed on its inner face with a series of circumferentially-arranged ribs 36, and between each pair of ribs 36 is arranged a series of circumferentially- 45 extending elongated jet openings or passages one above the other, extending from rib to rib. Arranged above the supply-pipe 25 for the secondary burner 37 is a spreader of a similar construction as the spreader 31. The secondary burner 37 is substantially con- 50 vexed in cross-section and is provided on its inner face with a series of ribs 38, and between each pair of ribs 38 is arranged a series of circumferentially-extending elongated jet openings or passages one above the other, 55 extending from rib to rib. The burner 37 is closed at the top, and in this particular is different from the main burner, as the top of the latter surrounds the generating-chamber.

The reference-numeral 39 denotes a hanger 60 for supporting the pipe 25.

The operation of the device is as follows: Oil being supplied to the auxiliary generator 9, the same is vaporized by means of igniting the oil in the cup 11, which is arranged in the 65 manner shown, the vapor passing through the generator 1, reservoir 14, through the opening 33 to the main burner 34, and it is then

ignited, thereby vaporizing the oil in the gen- 70 erator 1, which has been fed thereto by the oil-supply pipe. When the oil has become vaporized in the generator 1, the vapor passes to the reservoir 14, thence through the open- 75 ing 33 in the spreader 31 to the burner 34. The opening in the spreader is of such size that all of the vapor as it leaves the reservoir will pass to the burner 34, where it will be 80 ignited. As the spreader 31 is formed of a continuous plate, with the opening 33 at the top thereof, it will be evident that the vapor will pass from the reservoir to the burner 85 through the opening in the spreader. The flame of the main burner is regulated by the valve 17. The vapor or gas from the reservoir 14 is fed to the secondary burner by means of the supply-pipe 25 and its connections. 90 The flame of the auxiliary burner is regulated by the valve 22. The supply of oil to the generator 1 is regulated by means of the valve 13. By arranging the spreader 31 in the manner shown above the vapor or gas 95 outlet of the reservoir 14 and elbow 28 the vapor or gas is mixed with a suitable quantity of air before passing to the burners, and by arranging the generator 1 above the main burner 34 it will be evident that rapid gen- 100 eration of gas or vapor will take place and that constructing the burners in the manner shown the heat will be expelled, so the same can be utilized for heating purposes.

It is thought the many advantages of our 100 improved construction of vapor-burner can be readily understood from the foregoing description, taken in connection with the accom- 105 panying drawings, and it will be noted that various changes may be made in the details of construction without departing from the general spirit of our invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is— 110

1. In a vapor-burner, a generator, an out- 115 wardly-extending ridge formed integral with the bottom of said generator, a vapor-reservoir arranged below said generator and in commu- 120 nication therewith, a concave spreader interposed between said generator and reser- 125 voir, said spreader having a centrally-arranged opening and further provided with a flange, and a burner mounted upon said flange, provided with a shoulder engaging 130 said rib, and consisting of a conical ring provided with a circumferentially-extending series of rows of jet-passages.

2. In a vapor-burner, the combination with a generator and a vapor-reservoir in commu- 135 nication therewith, of a concave spreader having a centrally-arranged opening and terminating at its bottom with a horizontally- 140 extending flange, and a substantially conical-shaped burner supported upon said flange and engaging at its top with said generator.

3. In a vapor-burner, a concave spreader provided with a flange and a centrally-ar- 145 ranged opening, and a burner supported by

said flange and consisting of a substantially conical-shaped ring formed with a circumferentially-extending-series of rows of jet-openings and having the concavity thereof receive the convexity of the spreader.

5 4. In a vapor-burner, the combination with a generator, a vapor-reservoir in communication therewith, and means for regulating the flow of vapor from said reservoir, of a concave spreader interposed between the generator and reservoir and having a centrally-arranged opening and terminating at its bot-

tom in a horizontally-extending flange, and a burner supported at its bottom upon said flange and connected at its top to the bottom 15 of said generator.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

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Witnesses:

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