

J. C. SPEIRS.
HYDROCARBON BURNER.

(Application filed Feb. 24, 1900.)

(No Model.)

Fig. 1.

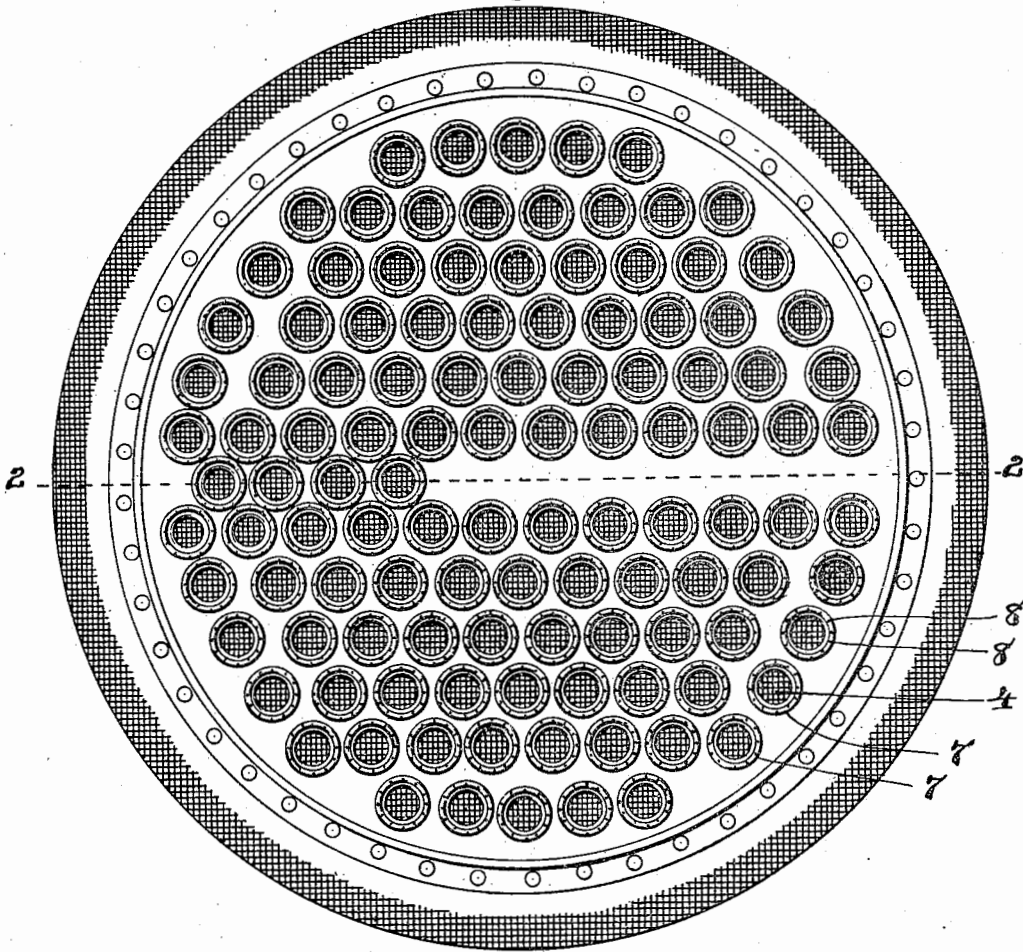
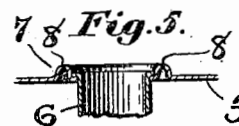
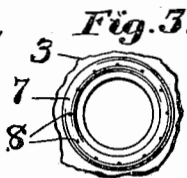
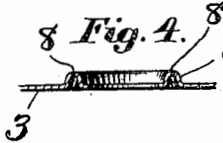
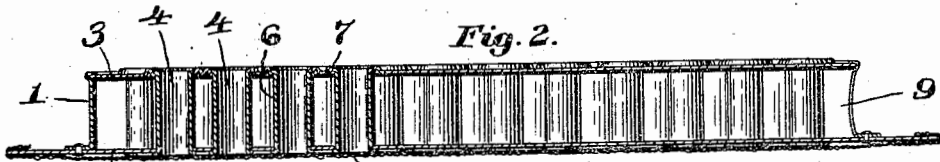


Fig. 2.



Witnesses:
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Inventor:
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 by *Wright, Brown & Smith*
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UNITED STATES PATENT OFFICE.

JOHN C. SPEIRS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE
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HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 677,899, dated July 9, 1901.

Application filed February 24, 1900. Serial No. 6,401. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. SPEIRS, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

This invention relates to hydrocarbon-burners of a type particularly adapted to the heating of boilers, such as those employed on steam-driven, automobile vehicles. These burners commonly employ as fuel the vapor of a hydrocarbon liquid, such as gasolene, which vapor, mixed with air, supports combustion.

My invention has for its object to improve and render more certain the combustion ensuing in burners of this character and to strengthen the burner.

To this end the invention consists in a certain novel feature of construction hereinafter described and claimed.

Of the accompanying drawings, Figure 1 represents a top plan view of a burner embodying my invention. Fig. 2 represents a vertical sectional view thereof, taken on the line 2 2 of Fig. 1. Fig. 3 represents a detail plan view, enlarged, of a part of the top sheet or wall of the burner. Fig. 4 represents a sectional view thereof. Fig. 5 represents a similar sectional view including an air-tube.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, 1 designates a casing of flattened cylindrical form, the interior of which constitutes a mixing-chamber.

2 and 3 designate, respectively, the lower and upper sheets or walls of the casing 1, and 4 4 designate a series of vertical air-flues formed by expanding short cylindrical tubes 6 6 into the walls or sheets 2 and 3.

Hydrocarbon vapor injected in the form of a jet horizontally into the casing 1 through an aperture 9, Fig. 2, and drawing a current of air in with it becomes intermixed with the air in the casing, and the mixture issues through a number of small perforations 8 8, extending through the upper wall 3 and surrounding each air-flue 4 in an annular series. A short distance above the surface of the burner the vapor issuing through the perforations 8 receives an additional admixture of air from the air-flues 4, and combustion ensues.

5 is a protective grating covering the lower ends of the air-flues 4.

Heretofore it has been the practice to make the upper sheet or wall of the casing 1 perfectly flat and to form the perforations 8 in this flat surface. The upper orifices of the air-flues were then of uniform diameter with the whole flue. It has been found in practice that the upward air-currents issuing through these cylindrical orifices have a tendency to spread or diverge to an extent which interferes with combustion and sometimes extinguishes the flame entirely. I have succeeded in overcoming this defect by extending the air-flues a short distance above the termination of the tubes 6 and forming the extensions into flaring orifices for the air-flues. The air-currents issuing through flaring orifices appear to have a more compact cylindrical form than when they issue through cylindrical orifices. A simple and inexpensive method of providing the desired flaring structure of the air-flue orifices is by forming an annular raised bead or ridge 7 around the upper end of each air-tube 6, said ridges being stamped in the metal of the upper sheet or wall 3. The bend in the metal is clearly indicated in Figs. 4 and 5. The perforations 8 8 are made in the crests of the ridges 7 7 and disposed in an annular series around each air-flue, as heretofore. The result of this construction, as ascertained in actual practice, is to improve combustion and render its maintenance more certain than heretofore.

I am aware that it is old in a single burner to provide a raised gas-discharging ring surrounding a flaring air-flue. My invention relates, however, to multiple burners having an extensive top sheet made of relatively thin malleable metal which is liable to warp. The corrugations surrounding the numerous air holes or flues in this sheet, besides serving the purpose above named, increase the stiffness of the sheet and prevent it from warping.

I claim—

1. In a hydrocarbon-burner, a casing constituting a mixing-chamber, a series of tubes traversing said casing and attached to the

upper wall thereof, said tubes acting as air-flues, a series of raised annular beads or ridges surrounding the upper ends of the tubes and formed by bending the metal of the upper
5 wall of the casing, the spaces inclosed by said ridges constituting flaring or widened orifices for the air-flues, and an annular series of perforations in each bead for the escape of the contents of the mixing-chamber.

10 2. In a hydrocarbon-burner, a casing constituting a mixing-chamber and having an extensive top sheet or plate formed of malleable metal and pierced by numerous holes in which are affixed the upper ends of a series
15 of air flues or tubes, said plate having formed in it a series of raised annular corrugations or beads surrounding the respective holes and constituting flaring or widened orifices for the air-flues, the said corrugations being

formed by forcible bending or flexure of the 20 malleable metal, and each having an annular series of perforations for the escape of gas.

3. A hydrocarbon-burner provided with numerous individual burners and having an extensive top sheet or plate common to the 25 individual burners and provided with air-flue openings, said sheet being composed of malleable metal and having a bend or flexure surrounding each air-flue opening, and an annular series of perforations formed in the 30 bend or flexure and surrounding the air-flue opening, for the escape of combustible.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN C. SPEIRS.

Witnesses:

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