

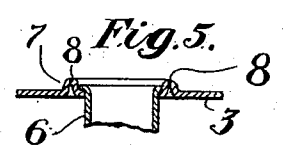
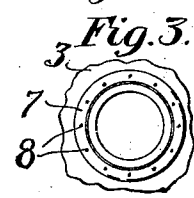
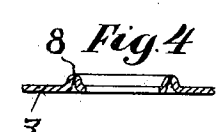
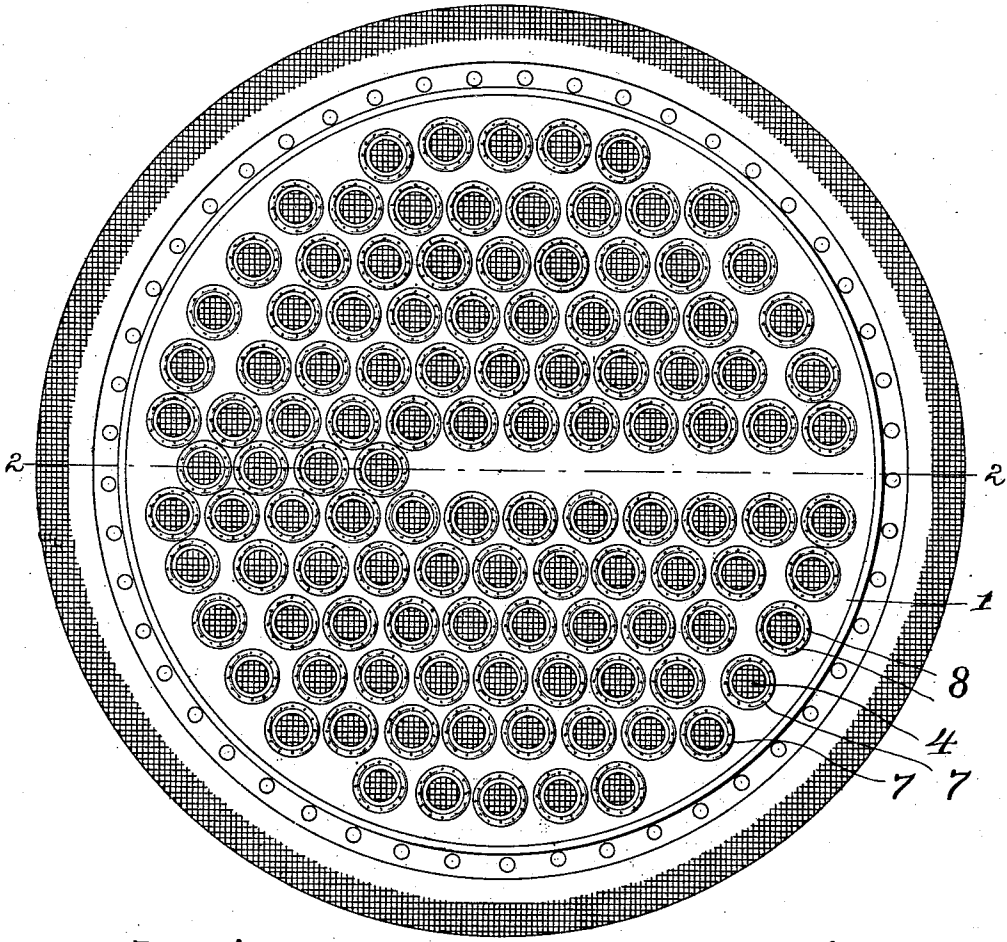
No. 685,230.

Patented Oct. 22, 1901.

J. C. SPEIRS.
HYDROCARBON BURNER.
(Application filed Aug. 17, 1900.)

(No Model.)

Fig. 1.



Witnesses:
M. S. Lippitt.
E. Batchelder

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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. 685,230, dated October 22, 1901.

Application filed August 17, 1900. Serial No. 27,169. (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 for automobile-boilers or the like of the type shown in the patent to Stanley and Stanley, No. 637,137. These burners are composed of a flat casing constituting a mixing-chamber, into which is injected a jet of hydrocarbon vapor. This vapor is mixed with air in the chamber and issues from the upper side of the chamber through numerous small holes in the top wall surrounding vertical air tubes or flues. The burner is made up of a plurality of individual burners, each having a central air-flue and a ring or annulus of minute gas or vapor perforations, the mixing-chamber being common to all of the individual burners. The walls of these burners are usually made of thin malleable metal, such as sheet iron or steel, and a difficulty attending their use has been the occurrence of "back-burning," this being due to a reversal of the normal draft through the flues of the boiler, which causes the flame more or less to enter the burner and overheat the same. Under these conditions the top plate will often warp and destroy the burner or impair its efficiency.

The object of my present invention is to prevent the overheating and warping of the top plate of the burner, and this I accomplish by a novel construction of said top plate, as hereinafter described and claimed.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top plan view of the type of burner to which my invention applies. 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 of 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 holes in the bottom and top sheets 2 3. Hydrocarbon vapor injected in the form of a jet into the casing 1 through an aperture 9 in the side wall thereof and drawing a current of air in with it becomes intermixed with said 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. The jets from the perforations 8 mix with air from the air-flues 4 a short distance above the top of the burner and combustion ensues.

5 is a protective grating covering the lower ends of the flues 4. Surrounding the several flues 4 are a series of raised annular beads or corrugations 7 7, formed in the top sheet 3 and having the perforations 8 formed in them. These corrugations are a novel feature, serving to stiffen the top sheet and improve the combustion; but I do not herein claim this improvement, as it forms the subject of a co-pending application, Serial No. 6,401, filed by me February 24, 1900. It has been the common practice to make the top sheet 3 of malleable iron or steel. When back-burning occurs, this sheet is liable to become overheated and warped, with resulting deleterious effects upon the burner. The warping is not accompanied by actual fusion of the iron or steel, but is the result of a softening which the iron or steel undergoes prior to fusion. If a metal which retains its rigidity at a higher temperature than the iron or steel be employed as a constituent of the top plate 3, the overheating and warping of the burner plate or sheet will be prevented. Such a metal is nickel, which is comparatively cheap and abundant and can be easily associated with a base metal, such as iron or steel, to produce the desired results.

My invention can be easily and cheaply carried out by nickel-plating the iron or steel top sheet 3 of the burner by any of the well-known plating processes, such as that of electrolytic deposition, with a coating of sufficient thickness and rigidity to act as a supporting-sheet for the base metal. Either or both surfaces of the plate may be treated in this manner. The effect is increased if both surfaces are treated. I do not confine myself to this manner of associating nickel or equivalent metal with the base metal of the plate, although it is the best method now known to me of carrying out the invention, nor is my invention confined to hydrocarbon-burners of the exact type illustrated and described, but will include other burners of the same general character and subject to the undesirable effects which I have specified. Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all the forms in which it may be made or all the modes of its use, what I

claim, and desire to secure by Letters Patent, is—

1. A hydrocarbon-burner having a relatively thin extensive top sheet, provided with numerous individual burners, and made mainly of a base metal, such as iron or steel, associated with a supporting-sheet of another metal such as nickel, which retains its rigidity at a higher temperature than the base metal, for the purpose specified.

2. A hydrocarbon-burner having a relatively thin extensive top sheet, provided with numerous individual burners, and made mainly of a base metal, such as iron or steel, electrolytically plated with a supporting-sheet of another metal, such as nickel, which retains its rigidity at a higher temperature than the base metal, for the purpose specified.

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

JOHN C. SPEIRS.

Witnesses:

E. BATCHELDER,
H. L. ROBBINS.