(No Model.) 2 Sheets—Sheet 1

G. C. ROBERTS.

HYDROCARBON BURNER.

No. 588,658. Patented Aug. 24, 1897.

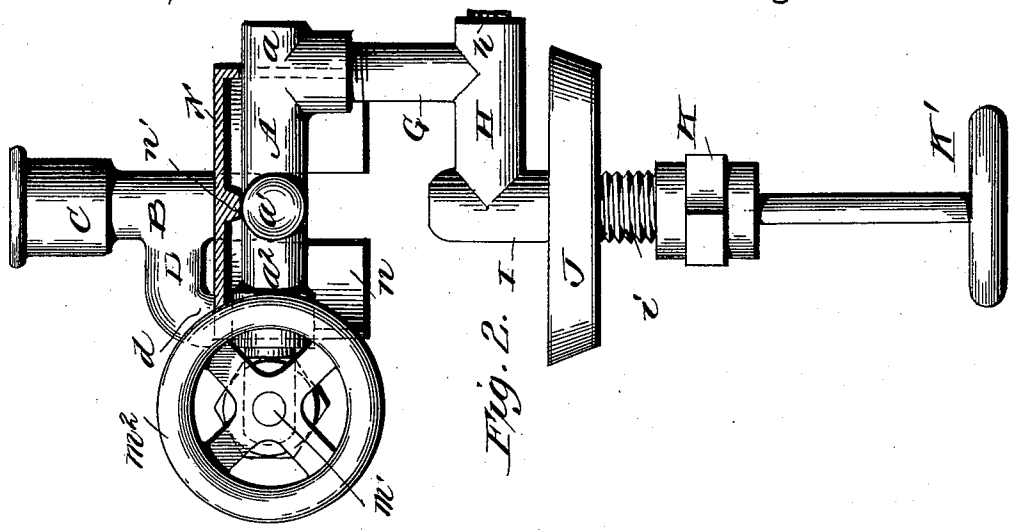


Fig. 2.

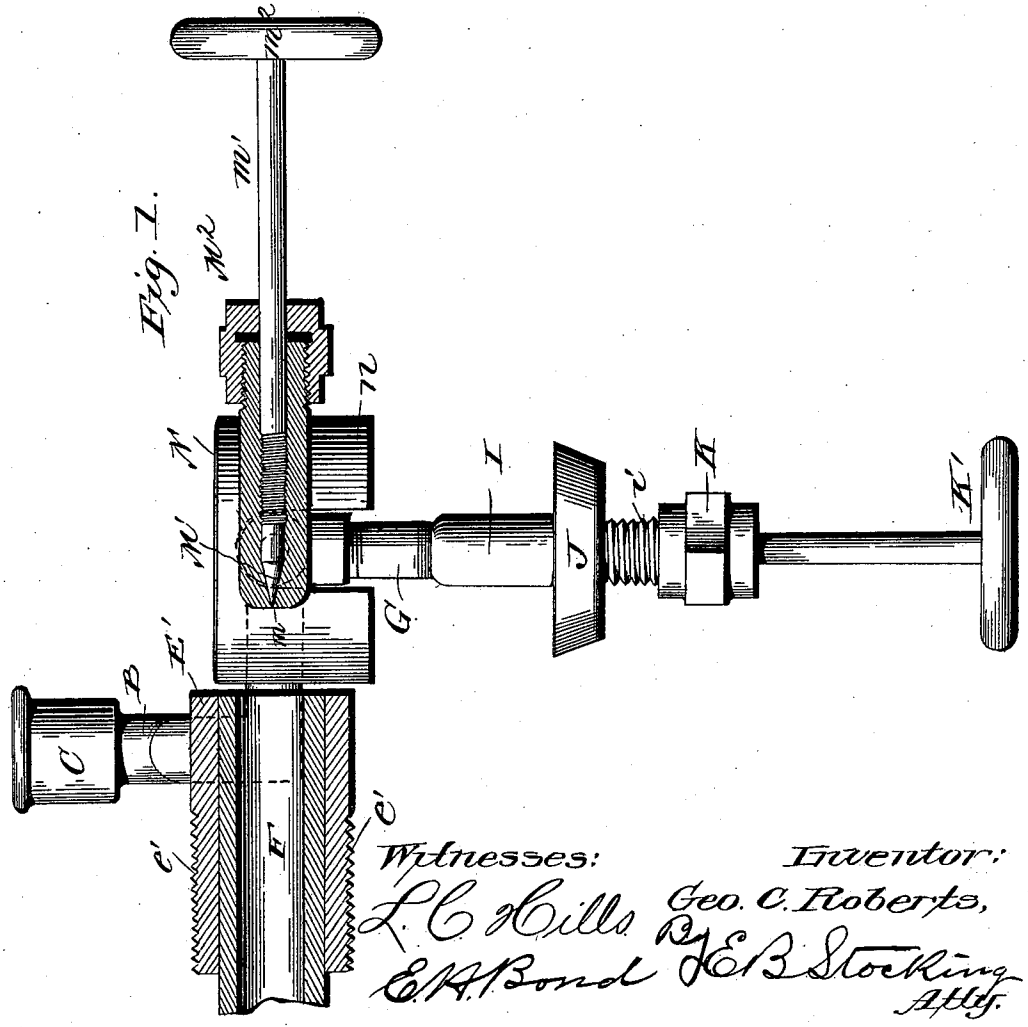


Fig. 1.

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E. A. Bond

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By E. B. Stocking
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

G. C. ROBERTS.

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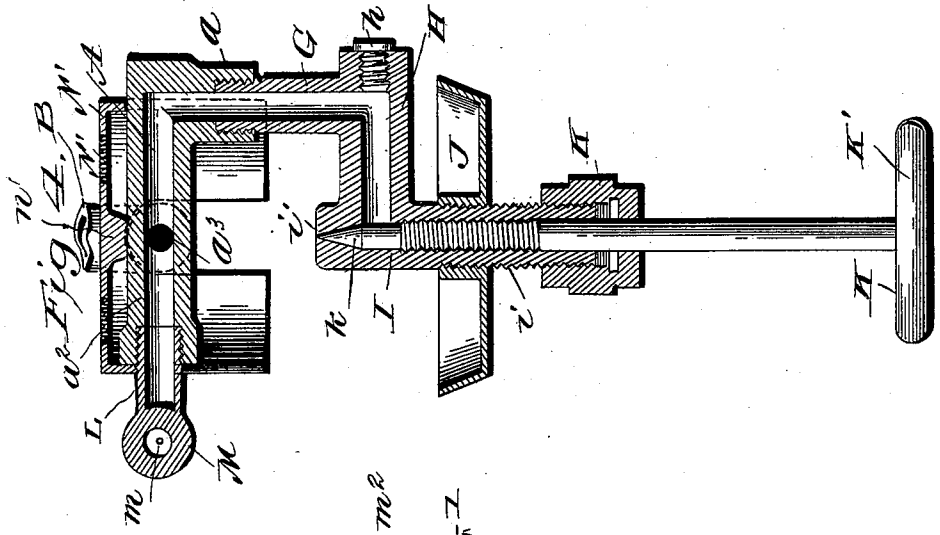


Fig. 4.

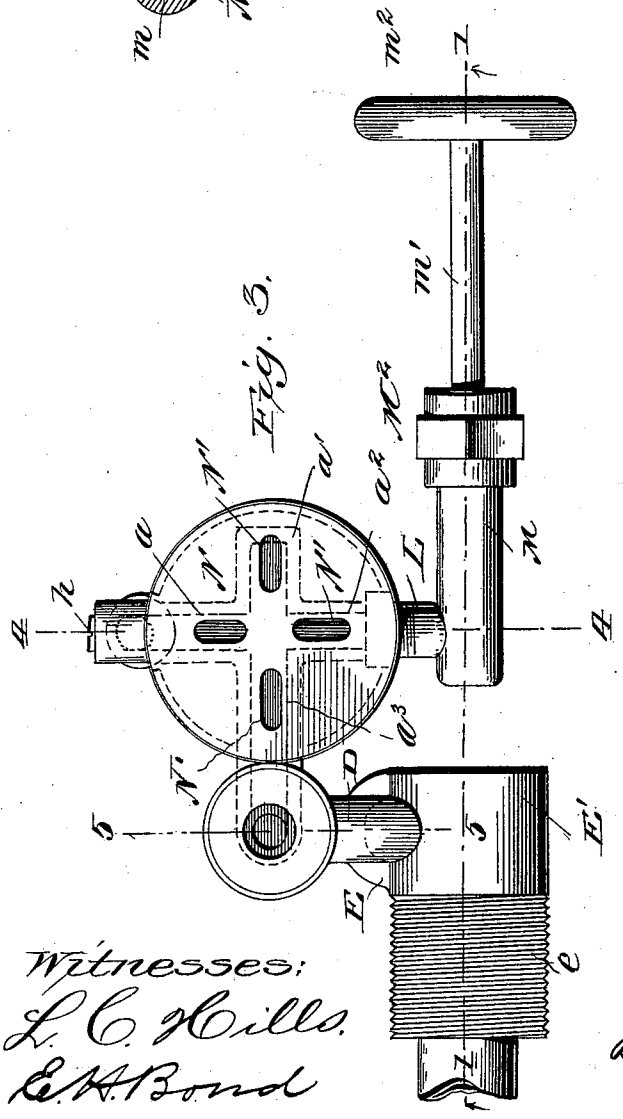


Fig. 3.

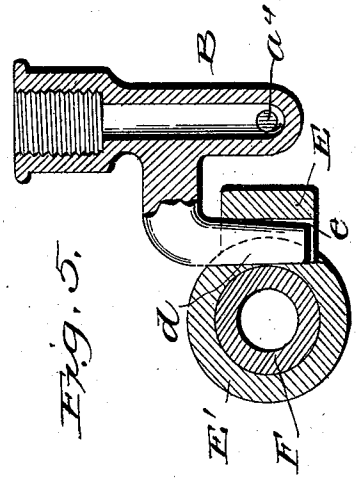


Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE C. ROBERTS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE TROY LAUNDRY MACHINERY COMPANY, LIMITED, OF SAME PLACE.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 588,658, dated August 24, 1897.

Application filed November 7, 1896. Serial No. 611,375. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. ROBERTS, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in hydrocarbon-burners; and it has for its objects, among others, to provide a generating-chamber having an extended surface and to locate the burner-tube in the same horizontal plane with the generator-chamber, connecting the same by a lateral branch and so mounting the whole that it may be readily detached when desired and the tank removed from the burner when necessary that the same shall be refilled.

The principal use to which the improvement is to be applied is for heating the rolls of ironing-machines and others in which the body to be heated is comparatively long and extends from a point near the heating-burner to quite a distance from said point. Under these circumstances the heating-burner is required to project a strong jet of air and gas for quite a distance, and it therefore is necessary to so arrange the generator and the generator-burner and to construct the former as to its capacity that the heating-burner may be capable of fully performing the extra duties put upon it by reason of the character of the device which is to be heated thereby. The construction and arrangement of the parts mentioned and a suitable connection to a fuel-supply are also demanded which shall permit of the separation of said parts, including the fuel-reservoir, from the burner proper, as the latter is more permanently connected with the part to be heated thereby.

In the use to which this burner is intended to be applied—to wit, primarily, ironing-machines—great care has to be exercised against soiling collars, cuffs, or other articles being ironed. For that reason the entire burner, excepting the combustion-tube, should, together with the supply-tank, be absolutely disconnected from the machine when the tank is to be filled or the exterior of the generating-chamber is to be cleaned of the ever-accumulating soot which is produced by burners of this class. It is also desirable that the generating-chamber and its adjuncts should be removed from the combustion-tube when this tube is to be cleaned or repaired.

I dispose the needle-valves at right angles to each other, being arranged one horizontally and the other vertically.

A guard or shield is provided over the generator-chamber and over the cup, so as to concentrate the flame and heat, bringing it in direct contact with the four branches of the generator-chamber, the latter being in the form of a cross.

I aim to make the device as simple and compact as possible, and yet produce the most beneficial results.

Other objects and advantages of the invention will hereinafter appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a vertical longitudinal section on the line 1 1 of Fig. 3, looking in the direction of the arrows, with parts shown in elevation. Fig. 2 is a view at right angles to Fig. 1 in elevation and with the shield shown in section. Fig. 3 is a plan. Fig. 4 is a vertical cross-section on the line 4 4 of Fig. 3, and Fig. 5 is a vertical cross-section on the line 5 5 of Fig. 3.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the generator-chamber, which is in this instance in the form of a cross, having four branches $a\ a'\ a^2\ a^3$, as indicated best by dotted lines in Fig. 3. The longitudinal branch a^3 has an upward extension B, provided with the interiorly-threaded nipple C, designed for connection with the supply-tank. (Not shown.) Extending laterally from this extension B is the lug D, terminating in the vertical tapered portion *d*, which is designed to be detachably engaged in an opening *e* in a lug E, extending laterally from the

nipple E′, which is screw-threaded, as seen at e', and designed for attachment or connection to any desired part, in this instance being shown as supporting a burner-tube F and a roll, which may be that of an ironing-machine or other device in connection with which the burner is to be employed—for example, as shown in my application of August 29, 1896, Serial No. 604,283—the screw-threads e' being adapted to engage in a screw-threaded bearing in such machine, but which is not herein illustrated. The other end of the branch a^3 is provided with a plug a^4, (indicated in Fig. 5,) which permits of cleaning the same when occasion requires.

The branch a is internally threaded at its lower end to receive the vertical pipe or tube G, as indicated best in Fig. 4, which communicates with the lateral branch or tube H, the other end of which is provided with a screw-plug h, (indicated in Fig. 4,) to permit of ready cleaning thereof when desired, and this lateral branch communicates with the vertical tube I, which is exteriorly threaded, as seen at i, and upon this threaded portion the cup J is engaged, and upon its lower end is the stuffing-box K, through which works the needle-valve k, having suitable knob or handle K′, and serving to close or govern the passage through the opening i' at the upper end of the tube I.

The branch a^2 of the generator-chamber is interiorly threaded at its outer end and receives the threaded nipple L, which carries the tube M, which may be in parallelism with the casting E′ and its pipe F, or it may be disposed at an angle thereto, as may be preferred. A needle-valve M′ controls the outlet m of this tube and is provided with a stem m', having suitable handle or knob m^2, and working through the stuffing-box m^2, which is adjustably mounted upon the other screw-threaded end of the said tube M, as indicated in Figs. 1 and 3.

N is a shield having depending flange n with openings to receive or embrace the branches a a^2 a^3 of the generating-chamber, and closing down over the end of the branch a', as indicated. (See Fig. 3.) This renders the cap N easily removable for access to the parts beneath. This shield serves to confine and concentrate the flame beneath the several branches of the generator-chamber, and is provided with openings N′ upon the upper face thereof to allow for the escape of the smoke, as will be understood from Fig. 3. This shield is provided upon the under side of its top with a lug or projection n', which rests upon the top of the generating-chamber at the junction of its four branches and serves to hold the same slightly above the upper face of the branches, so as to provide a space between the same and the top, forming a chamber, so that the flame may entirely surround the branches, and thus tend to more quickly heat the same.

The operation will be apparent. The device is started in the usual way, the needle-valve k being turned to admit sufficient amount of the oil into the cup J, which is ignited, and after this has been done the needle-valves are adjusted so that the oil is supplied in the proper quantity, and the vapor generated in the generating-chamber is conducted through the opening m in the tube M, and air is mixed therewith, and this enters the burner-tube F.

The needle-valves being disposed at right angles to each other, one vertically and the other horizontally, places them in position where they can be more easily manipulated, and the disposition of the various parts renders the device as a whole most compact in its nature, and most satisfactory results are attained.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a hydrocarbon-burner, a generating-chamber, a heating-burner jet-valve directly connected therewith and in the same horizontal plane, a generating-burner connected with said chamber in a plane at an angle thereto, and a supply-pipe directly connected with said chamber and provided with a burner-supporting device, whereby the entire generator and its supply-tank may be removably connected in operative position with a coöperating combustion or burner tube, substantially as specified.

2. In a hydrocarbon-burner, a generating-chamber formed with four communicating branches with one of which is connected a supply-tube having a bracket for supporting said generating-chamber and its adjuncts and another of its branches provided or communicating with a needle-valve constituting a heating-burner, and a generating needle-valve arranged beneath said chamber and connecting with the chamber at a point opposite the heating needle-valve, substantially as specified.

3. In a hydrocarbon-burner, the combination with a generating-chamber comprising horizontal branches, of a shield having a depending flange with openings corresponding to said branches and removably supported by said chamber, substantially as specified.

4. In a hydrocarbon-burner, the combination with a generating-chamber having horizontal branches, of a shield having a depending flange with openings corresponding to said branches, a central projection and openings in the top of the shield, substantially as specified.

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

GEORGE C. ROBERTS.

Witnesses:

WILLIAM H. CRONSTHITE,

GEO. MCCARTHY.