

No. 795,763.

PATENTED JULY 25, 1905.

E. E. GARRISON.
OIL BURNER.

APPLICATION FILED DEC. 9, 1904.

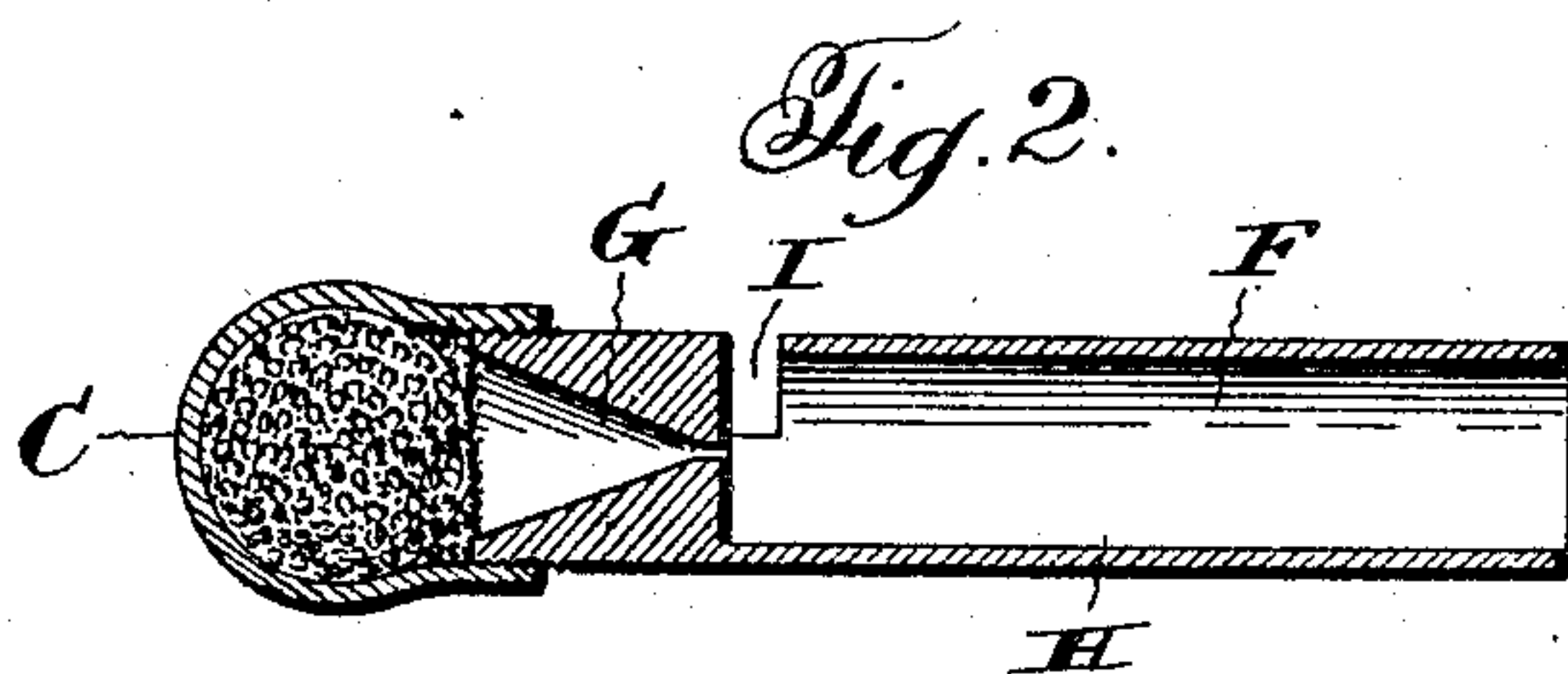
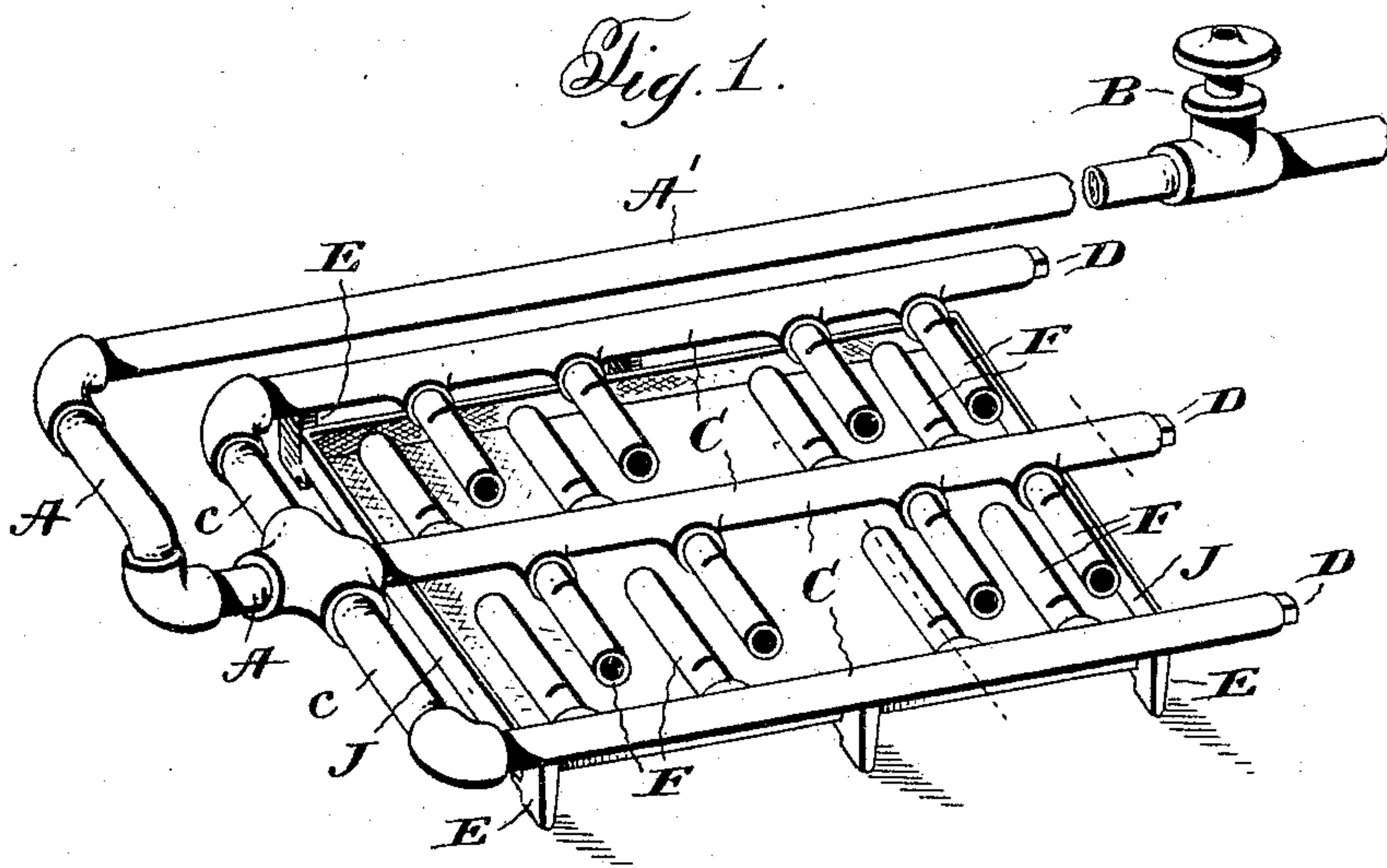


Fig. 3.

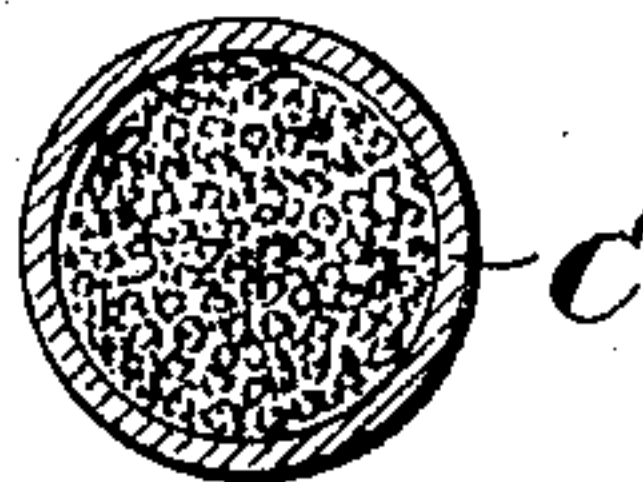
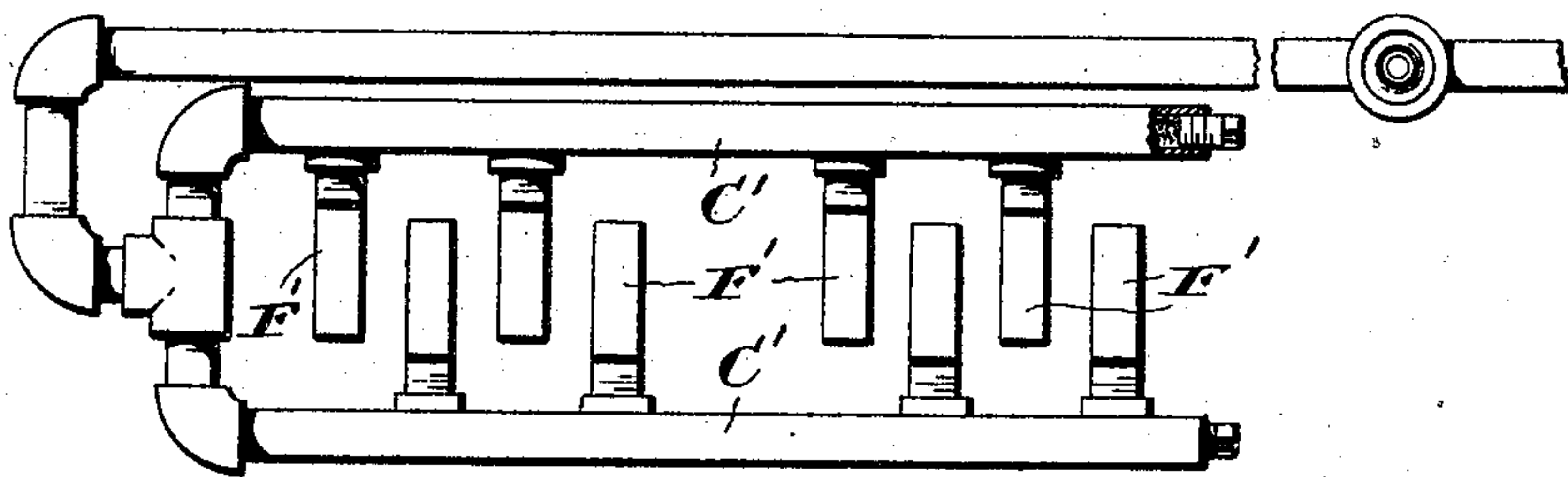


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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OIL-BURNER.

No. 795,763.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EUGENE E. GARRISON, a citizen of the United States, residing at Auburn, in the county of Dekalb and State of Indiana, have invented certain new and useful Improvements in Oil-Burners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in oil-burners, and has for its object the provision of a burner of this type for use in furnaces and stoves, though susceptible of application for other uses, as will be apparent to those skilled in the art.

Novel characteristics of the invention reside in the provision of parallel branch pipes or feeding-tubes provided with oppositely-disposed and alternately-arranged discharge-nozzles or burner-tips, each of a length to effect an impingement of its flame or the direct heat-rays thereof upon the branch pipe or feed-tube arranged transversely to and in front of the same.

The invention also comprehends the disposition of a common supply-pipe for the branch pipes in juxtaposition to one of said pipes whereby the oil in the former will receive an initial heating and partial vaporization prior to its entrance into the branch pipes.

The invention further embraces a novel type of nozzle or burner-tip formed with a substantially conical interior at one end thereof converging inwardly whereby a forced jet of vapor will be delivered therefrom and through the forward relatively enlarged portion or mixing-chamber of the nozzle, said forward portion having an inlet for air at a point adjacent to the point of discharge of the jet through the conical inner end.

Novel details in the construction and arrangement of the several parts of the device will be apparent from the detailed description hereinafter when read in connection with the accompanying drawings, forming part hereof, and wherein several convenient embodiments of the invention are illustrated.

In the drawings, Figure 1 is a perspective view of one embodiment of the invention; Fig. 2, a longitudinal sectional view through one of the nozzles or burner-tips; Fig. 3, a transverse section of one of branch pipes, and

Fig. 4 a plan view of another embodiment of the invention.

Referring more specifically to the drawings, and first particularly to Figs. 1, 2, and 3, A designates a common supply-pipe for the oil leading from a supply-tank or similar storage means (not shown) located at a point within convenient access to the burner or stove within which the same may be mounted, the feed through the supply-pipe being controlled through the medium of a valve, (represented at B.) Leading from this common supply-pipe are a plurality of branch pipes C, three being illustrated, although it is obvious that any desired number may be employed, according to the use to which the device is put. The branch pipes just referred to are arranged in parallel planes, the intermediate one being in longitudinal alinement with the end of the supply-pipe A, and the outer ones being offset a desired distance therefrom by means of short bends or connection-pipes c. All of the branch pipes have free communication with the supply-pipe at their connected ends while their free ends are closed by threaded plugs D, adapted to be readily removed to facilitate cleaning of the branches should they become unduly clogged. To support the device within the fire pot or chamber of a stove or furnace, I provide each of the branches C with supporting-feet E, one arranged near each end of the respective branches. F represents a series of oppositely-disposed alternately-arranged discharge-nozzles or burner-tips arranged as shown and of such length as to effect an impingement of the flame or direct heat-rays of each upon the branch pipe arranged transversely to and in front of the same, it being noted that in the present instance these nozzles project from both sides of the intermediate branch at alternate points while others project inwardly from the outer branches toward said intermediate branch and alternate with the nozzles on the latter. By this arrangement all of the branch or feed tubes are subjected to intense heat and a thorough vaporization of the oil therein maintained. As before suggested, the nozzles are of peculiar construction, which I have found greatly enhances the efficiency of the device. Upon an inspection of the sectional view of one of the nozzles or tips, Fig. 2, it will be seen that the inner end of the same is threaded into a complementary aperture in the branch pipe C, to which it is secured, thus affording a detachable connec-

tion, permitting removal of the nozzle and the substitution of another should it become worn out or damaged. The interior of the inner end of the nozzle (indicated at G) is of substantially conical formation, converging inwardly toward the exit end of the nozzle, adapted to create a relatively fine forced jet of the oil through its apex and through the forward portion H of the nozzle, the latter being somewhat enlarged and constituting a mixing-chamber for the vaporized oil and air admitted thereinto through a slot I in the wall thereof arranged at a point adjacent to the point of discharge of the jet from the conical portion G. This secures a good combustible mixture. The supply-pipe A is formed so as to run parallel with or overlap one of the branches C and near the same, whereby it may also be heated by the burners or nozzles which face said branch to secure an initial heating of the oil as it is fed through the supply-pipe. This is represented at A'. It is desirable that a means be provided for heating the supply-pipe and vaporizing-tubes when starting the burner, and for this purpose I arrange a trough J therebeneath lined with asbestos, into which a small quantity of oil may be deposited and ignited to create a preliminary heating-flame of comparatively short duration, but sufficient to start the vaporization of the oil in the branches, after which the heat incident to the ignition of the burner-tips or nozzles will effect the continuance of such vaporization as before pointed out. The branch pipes C, as also the supply-pipe A, in so far as that portion of the latter adjacent to said branch pipes is concerned, are filled with gravel or the like, through which the oil seeps and a too rapid flow of the oil prevented.

In the form of burner disclosed in Fig. 4 the intermediate branch C is dispensed with, together with the nozzles or tips carried thereby, the other branches being represented as C' in this instance and the nozzles or tips at F', these nozzles or tips alternating with each other after the same fashion described and shown in connection with the first embodiment of the invention hereinbefore referred to. In all other respects the device being now considered is similar to the other.

It is to be understood that changes and alterations in the forms of the burner herein disclosed may be made, and still other embodiments of the invention resorted to without departing from the spirit of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a burner of the character described, a supply-pipe, separated oppositely-disposed branches extending therefrom, and inwardly-directed burner-tips or nozzles on said branches, the tips on the respective branches alternating with those on the opposite branch and being in line with said opposite branch

whereby the flame therefrom will be directed toward the same to vaporize the oil in the branches.

2. In a burner of the character described, a supply-pipe, separated oppositely-disposed branches extending therefrom, and inwardly-directed burner-tips or nozzles on said branches, the tips on the respective branches facing and being in line with the opposite branch whereby the flame therefrom will be directed toward the same to vaporize the oil in the branches, said supply-pipe having a portion arranged in juxtaposition to one of said branches and also under the influence of the flame from the nozzles facing the same to constitute a preliminary heater for the oil previous to its delivery to the branches.

3. In a burner of the character described, a supply-pipe, separated oppositely-disposed branches extending therefrom, and inwardly-directed burner-tips or nozzles on said branches, the tips on the respective branches facing and being in line with the opposite branch whereby the flame therefrom will be directed toward the same to vaporize the oil in the branches, said supply-pipe having a portion running parallel with and close to one of said branches and also under the influence of the flame from the nozzles facing the same to constitute a preliminary heater for the oil previous to its delivery to the branches.

4. In a burner of the character described, a supply-pipe, three separated oppositely-disposed branches extending therefrom, inwardly-directed burner-tips on the outer branches, and similar tips or nozzles on the opposite sides of the intermediate branch, the tips on the respective branches facing and being in line with an opposite branch whereby the flame therefrom will be directed toward the same and vaporize the oil in the branches.

5. In a burner of the character described, a supply-pipe, three separated oppositely-disposed branches extending therefrom, inwardly-directed burner-tips on the outer branches, and similar tips or nozzles on the opposite sides of the intermediate branch, the tips on the respective branches alternating with those of an opposite branch and being in line with said opposite branch whereby the flame therefrom will be directed toward the same to vaporize the oil in the branches.

6. In a burner of the character described, a supply-pipe, separated oppositely-disposed branches extending therefrom, and inwardly-directed burner-tips or nozzles on said branches, the outlet end of the respective tips or nozzles overlapping and being arranged in line with said opposite branches whereby the flame therefrom will be directed toward the same to vaporize the oil in said branches.

7. In a burner of the character described, a supply-pipe, separated oppositely-disposed branches extending therefrom, inwardly-di-

rected burner-tips or nozzles on said branches, the tips on the respective branches facing the opposite branch whereby the flame therefrom will be directed toward the same to vaporize the oil in the branches, and supporting-feet at the ends of the device.

8. In a burner of the character described, a supply-pipe, separated oppositely-disposed branches extending therefrom, and inwardly-directed burner-tips or nozzles on said branches, the outlet end of the respective tips

or nozzles being arranged in line with said opposite branches whereby the flame therefrom will impinge against the respective branches and vaporize the oil therein.

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

EUGENE E. GARRISON.

Witnesses:

GEO. A. BISHOP, Jr.,
BERT W. BEIDLERS.