No. 613,131. Patented Oct. 25, 1898.

F. E. FEERON.

OIL BURNER.

(Application filed Mar. 8, 1898.)

(No Model.)

FIG. 1.

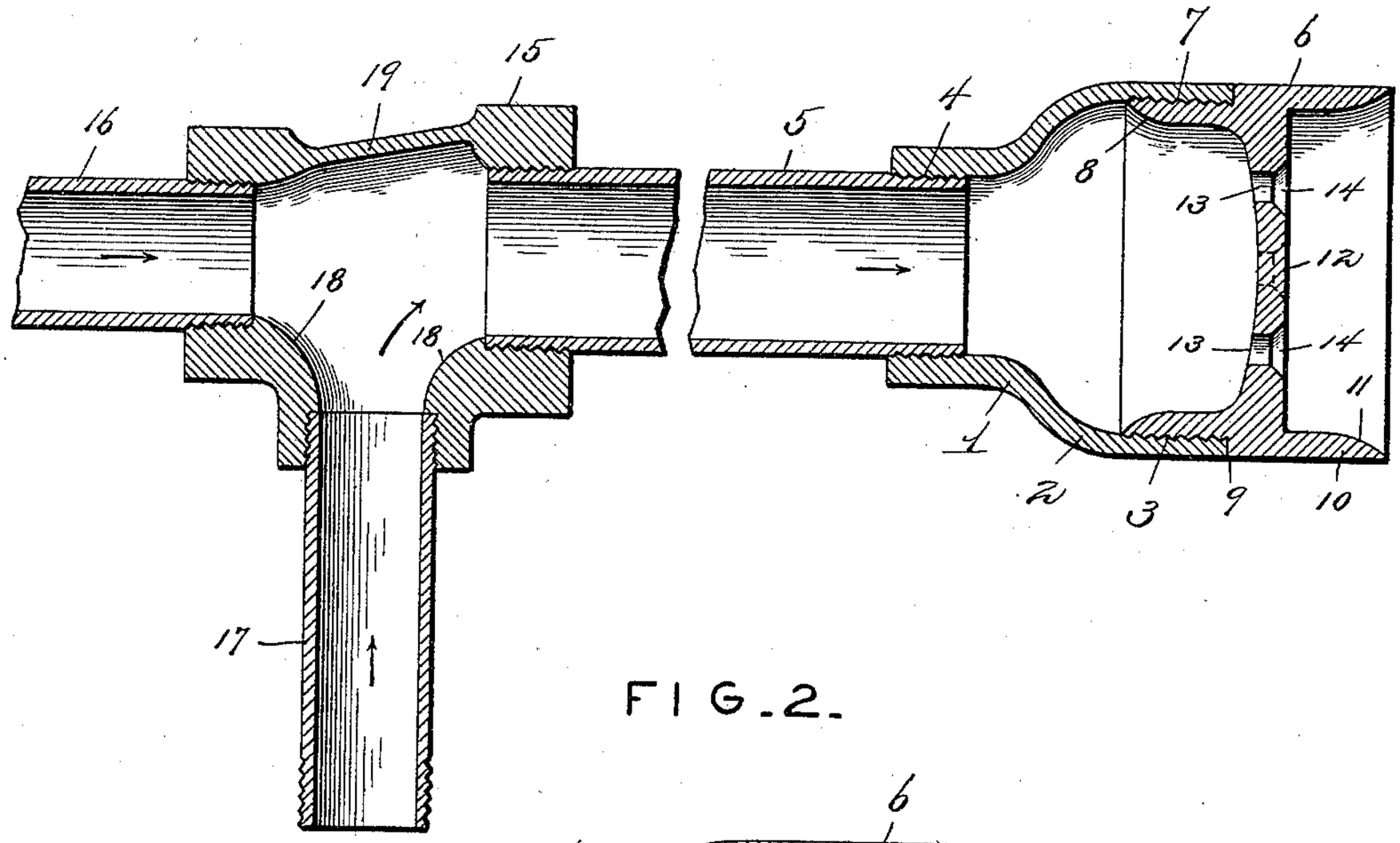


FIG. 2.

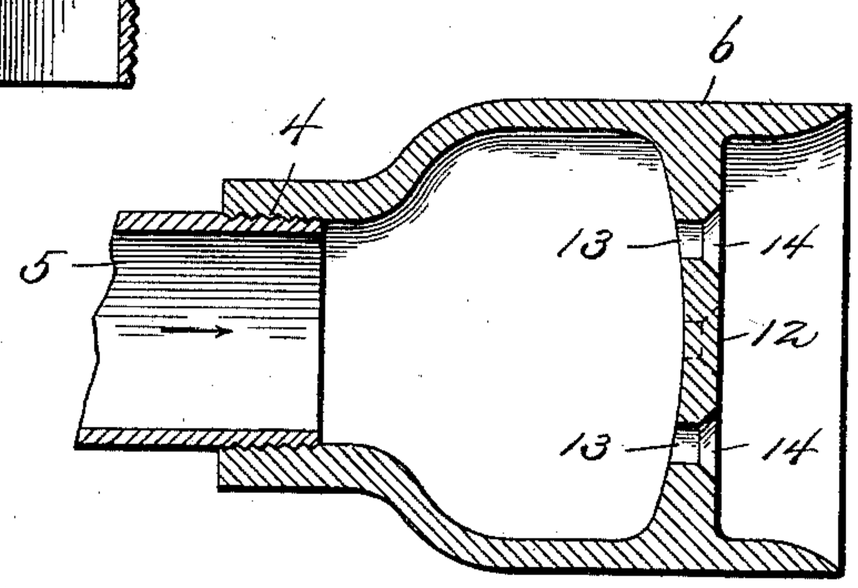
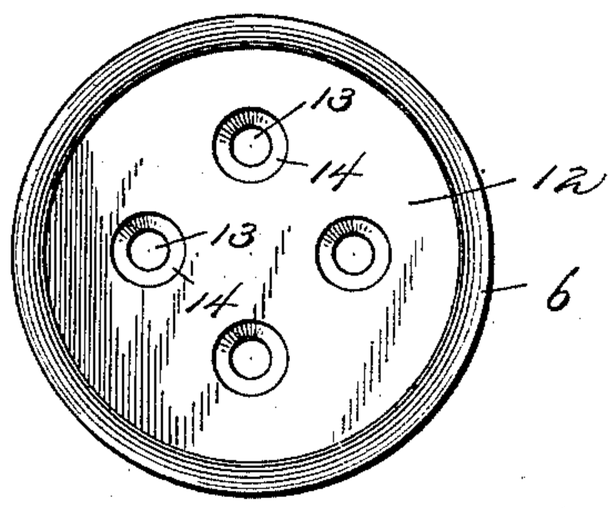


FIG. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

FRANK E. FEERON, OF SPARROW'S POINT, MARYLAND.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 613,131, dated October 25, 1898.

Application filed March 8, 1898. Serial No. 673,099. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. FEERON, a citizen of the United States, residing at Sparrow's Point, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Oil-Burners; and I do hereby 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.

This invention relates to oil-burners, and has for its object to provide an economic burner which is particularly adapted to the coarser and heavier oils in their crude state and which will effect a thorough commingling of steam or air with the oil and also a thorough agitation and distribution of the oil as it passes from the burner, thus ejecting the oil in a thoroughly-comminuted spray, the condition of the spray being influenced and controlled and regulated by the specific shape of the burner-nozzle employed in connection with the burner.

The detailed objects and advantages of the invention will be pointed out in the course of the subjoined description.

The invention consists in an oil-burner embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully set forth, illustrated in the drawings, and incorporated in the claims hereto appended.

In the accompanying drawings, Figure 1 is a longitudinal section through the improved burner. Fig. 2 is a similar view showing a burner of simplified form. Fig. 3 in an end elevation of the burner-nozzle.

Similar numerals of reference designate corresponding parts in all the views.

In burners for crude oil heretofore constructed great difficulty has been experienced in securing a free flow of the oil to the burner proper or nozzle, and this difficulty has been experienced by reason of the introduction in the body of the burner or the pipes leading to the nozzle of injectors or tubes for introducing steam or air jets to the body of the burner before reaching the nozzle.

It is the object of this invention to simplify and improve crude-oil burners, so that no matter how heavy or thick the oil may be the free flow of the same to the burner will not be interfered with.

Referring to the drawings, 1 designates the body of the burner, which has an expanded forward end 2, internally threaded, as indicated at 3, and a reduced inner end 4, which is internally threaded to receive the contiguous end of a pipe 5, through which the oil passes to the burner.

6 designates the improved nozzle, the inner end of which is reduced and screw-threaded, as indicated at 7, to fit tightly within the larger end of the burner 1, the inside of the reduced part 7 being beveled or chamfered off, as indicated at 8, to prevent any interruption in the flow of the oil through the nozzle. By reducing the nozzle 6, as indicated, a shoulder 9 is formed, designed to abut tightly against the end of the burner 1. The outer end of the nozzle 6 comprises an annular flange 10, the inner surface of which is convex, as at 11, and thus forming a flaring mouth for the purpose of facilitating the spreading of the spray as it leaves the nozzle.

At an intermediate point the nozzle 6 is provided with a diaphragm or web 12, and the latter is provided with a plurality of openings 13, through which the oil passes and by means of which the body of oil is broken up before leaving the nozzle. The openings 13 at their forward ends are beveled or flared, as indicated at 14, for the purpose of diffusing, spreading, or distributing the jets of oil as they leave said openings and enter the space comprised within the flange 11. By flaring said openings the cleaning thereof is also greatly facilitated. The cleaning of the openings 13 and the nozzle is also rendered much easier by making the nozzle detachable from the body of the burner, and as the oil does not ignite until it has proceeded a considerable distance—say six or eight inches from the nozzle—the nozzle can be removed by hand, if necessary, as it remains in a comparatively cool state.

The inner end of the pipe 5 is externally threaded, adapting it to be screwed into a T-coupling 15 in longitudinal alinement with a steam or air pipe 16, which screws into the opposite end of the T-coupling.

17 designates the oil-supply pipe, which en-

ters laterally into the T-coupling, the oil thus being introduced in a plane at right angles to that in which the steam or air is injected. The pipes 16 and 17 are both provided at suitable points with valves (not shown) whereby the amount of oil, steam, or air admitted to the burner may be regulated. The inner walls of the T-coupling 15 are curved, as represented at 18, so as not to interfere with the flow of the oil, and the wall 19 of the T-coupling directly opposite the entrance-point of the pipe 17 is made oblique, as shown, the inclination of said wall providing a larger space adjacent to the entrance-point of the pipe 5 than at the point where the pipe 16 enters. The wall 19 thus acts as a deflecting agent for insuring the passage of the oil into the pipe 5 after leaving the pipe 17.

Instead of making the nozzle 6 separate from the burner 1 both of said parts may be formed integrally, as shown in Fig. 2, for the sake of cheapness in construction; but the form shown in Fig. 1 is preferred, as it greatly facilitates the cleaning of the nozzle.

The oil enters through the pipe 17 into the coupling 15, which forms a mixing-chamber, and after having entered said chamber the oil is acted upon by the incoming steam or air and caused to pass, together with the steam or air, through the pipe 5 to the burner, the oil being thus thoroughly commingled and mixed with steam or air, as the case may be. It will of course be understood that the oil, as well as the steam or air, is forced into the mixing-chamber under pressure. Upon reaching the burner the oil is broken up by the diaphragm or web 12 and caused to pass in independent jets through the openings 13, the jets expanding as they leave said openings and combining in a thoroughly-comminuted spray.

I do not desire to be limited to the provision of any particular number of openings 13 in the diaphragm, nor to the special configuration of burner illustrated in the drawings, nor to the precise form of T-coupling 15, as it will be understood that these parts may be varied in form and proportion without departing from the principle or sacrificing any of the advantages of the invention.

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

1. In an oil-burner, the combination with the body of the burner, of a nozzle having a threaded connection therewith and provided with an annular flange at its forward end having a convex inner surface forming a flaring mouth, and a diaphragm or web located at an intermediate point within the nozzle and provided with a plurality of openings having flaring outer ends, substantially as and for the purpose described.

2. In an oil-burner, the combination with the body of the burner, of a removable nozzle provided intermediate its ends with a diaphragm or web having a plurality of openings, the outer ends of which are enlarged or flared, substantially as and for the purpose specified.

3. The combination with an oil-burner, of a web or diaphragm extending across the interior of the burner intermediate its ends and provided with a plurality of openings, the forward or discharge ends of which are enlarged or flared, substantially as described.

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

FRANK E. FEERON.

Witnesses:
REXFORD M. SMITH,
WM. L. FORD.