

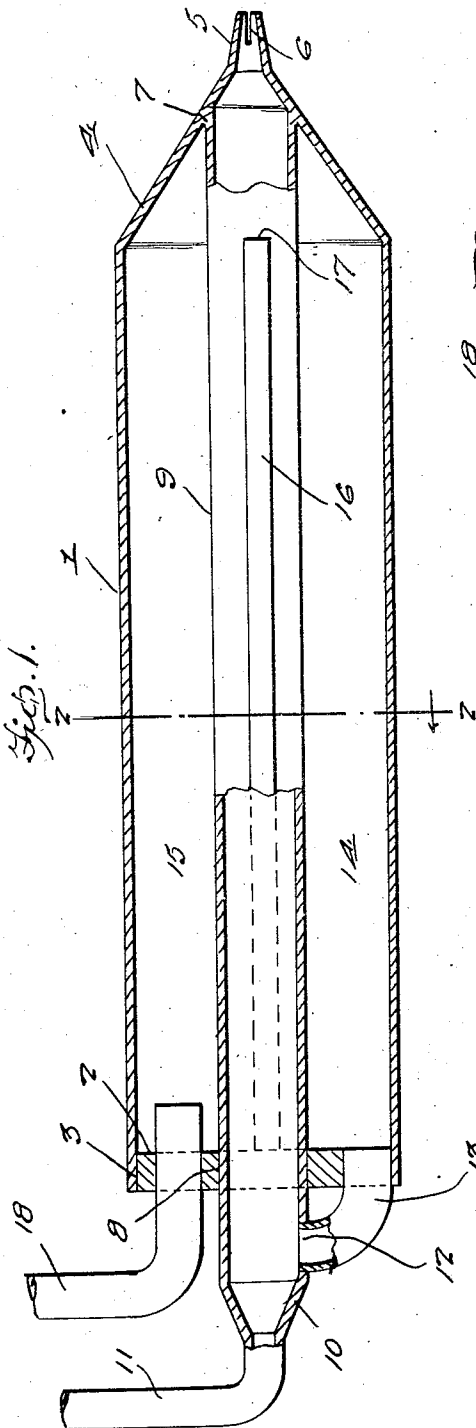
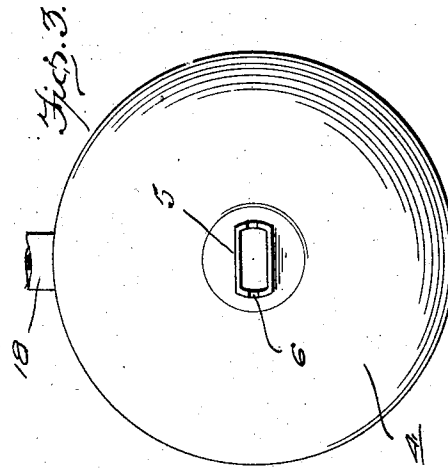
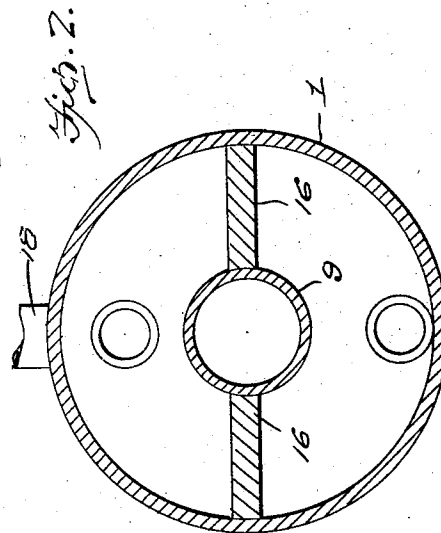
Sept. 21, 1926.

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HYDROCARBON BURNER

Filed Nov. 20, 1925



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UNITED STATES PATENT OFFICE.

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HYDROCARBON BURNER.

Application filed November 20, 1925. Serial No. 70,277.

My present invention pertains to hydrocarbon burners, and contemplates the provision of such a burner which while simple and inexpensive in construction is highly efficient in operation.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter-described and definitely claimed.

In the accompanying drawings, forming part of this specification:—

Figure 1 is a longitudinal sectional view illustrative of the construction constituting the best practical embodiment of my invention of which I am cognizant.

Figure 2 is an enlarged transverse section taken in the plane indicated by the line 2—2 of Figure 1.

Figure 3 is an enlarged front end elevation of the burner.

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

Among other elements the burner comprises a casing body 1, the rear end of which is closed by a disk 2 welded at 3 or otherwise fixed in the rear end of the casing body. At its forward end the said body is provided with a tapered portion 4, terminating in a nozzle 5, which is fashioned as best shown in Figure 3, and is provided in its opposite edge portions with kerfs 6. As will be readily understood the flat character of the nozzle 5, and particularly when the said nozzle is kerfed as designated by 6, the nozzle will have the capacity of spreading the flame as is desirable.

Welded or otherwise appropriately fixed at 7 to the taper portion of the casing body 1 and also welded at 8 or otherwise appropriately secured in the disk 2 is what I designate the steam and oil conducting and heating pipe 9 of the burner. Said pipe 9 occupying the longitudinal center of the burner, communicates at its forward end with the nozzle 5, and extends through the disk 2 and is provided at 10 with a reducer by which it is joined to a pipe 11, designed to lead steam from a source of supply. At the point 12 in rear of the disk 2, a pipe 13 leads from the pipe 9 and through the disk 2 to the lower chamber 14 of the burner, the said chamber 14 and the upper chamber 15 being separate throughout the major portion of the length of the casing body 1, by the pipe 9 in association with partition portions 16, Figures 1 and 2. The forward end

portion of the pipe 13 is, by preference, welded in the disk 2. As will be readily understood by reference to Figure 1, the partition portions 16 extend from the disk 2 forwardly to a point 17, spaced about the distance illustrated to the rear of the nozzle 5. Consequently a passage is afforded for the passage of oil or hydrocarbon from the upper chamber 15 to the lower chamber 14, the said passage being as illustrated in transverse coincidence with the forward taper portion of the casing body 1 which is manifestly desirable because the hydrocarbon takes the course mentioned in close proximity to the point where the combustion of hydrocarbon is taking place. In this way the oil en route between the chamber 15 and the chamber 14 is heated and rendered more volatile, and hence better adapted to be mingled with the steam to form a highly inflammable vapor. In its longitudinal passage toward the rear of the chamber 14, the hydrocarbon is further heated by contact with the exterior of the pipe 9 which is always heated when the burner is in action, and hence the oil will not come into contact with the steam until the oil or hydrocarbon is in an adequately heated or preheated state. I would also have it understood in this connection that in its forward passage longitudinally of the chamber 15 the oil will also be heated to a certain extent.

A pipe 18 is designed to be connected with a suitable source of hydrocarbon supply and to conduct hydrocarbon in to the rear portion of the upper chamber 15 in the casing body 1. By preference the said pipe 18 is carried through and welded in the disk 2 and is preferably, though not necessarily, extended slightly forward of the disk 2 as illustrated.

In the practical use of my novel burner, hydrocarbon is supplied to the burner through the pipe 18, and steam is supplied through the pipe 11, as before described. The hydrocarbon is forced through the tapered end or forward portion of the casing body 1 and around the forward portion of the pipe 9, and then passes rearwardly in the lower chamber 14 to the pipe 13, the hydrocarbon manifestly being heated to a considerable extent while taking the said course. The steam passing through the pipe 9 operates to entrain the hydrocarbon, and after traversing the pipe 9 the commingled steam and hydrocarbon in the form of a

vapor will be discharged through the nozzle 5. Being heated as stated en route between the pipe 18 and the nozzle 5, the hydrocarbon when it reaches the said nozzle 5 will be
 5 practically at ignition point and will afford a steady and hot flame.

My novel burner manifestly is adapted to be used for the firing of boilers or for any other use to which hydrocarbon burners are
 10 ordinarily applicable.

Notwithstanding the capacity of function ascribed to my novel burner, it will be noted that the same is simple and strong in construction and at the same time is compact
 15 and adapted to be operated with but minimum amount of attention.

The construction herein illustrated and described in detail is the best construction of which I am aware. I do not desire, however, to be understood as confining myself to the specific construction and relative arrangement of parts, my invention being defined by my appended claims without the scope of which structural changes and modifications in arrangement may be made without departure from my invention.
 20 25

Having described my invention, what I claim and desire to secure by Letters Patent, is:—

30 1. A hydrocarbon burner comprising a casing body with a forward tapered portion terminating in a flat nozzle having kerfs in its opposite edge portions, the rear end of the casing body being closed, a longitudinal
 35 central tube fixed at its forward end in the taper portion of the body and extending rearwardly through the closed end of the body and adapted to be connected with a source of steam supply, partition portions
 40 located at opposite sides of the longitudinal central pipe and extending from the closed rear end of the body to a point in rear of the forward taper portion of the body, whereby a passage for hydrocarbon is afforded in transverse coincidence with the
 45 taper portion of the body, a pipe adapted to be connected with a source of hydrocarbon supply and extending through the closed end of the body and into the body at one side of the partition portions and a pipe leading
 50 from the rear portion of the body at the opposite side of the partition portions and communicating with the longitudinal central pipe at a point in rear of the casing body.

55 2. A hydrocarbon burner comprising a casing body with a forward tapered portion terminating in a flat nozzle having kerfs in

its opposite edge portions, the rear end of the casing body being closed, a longitudinal
 60 central tube fixed at its forward end in the taper portion of the body and extending rearwardly through the closed end of the body and adapted to be connected with a source of steam supply, partition portions
 65 located at opposite sides of the longitudinal central pipe and extending from the closed rear end of the body to a point in rear of the forward taper portion of the body, whereby a passage for hydrocarbon is afforded in transverse coincidence with the taper portion
 70 of the body, a pipe adapted to be connected with a source of hydrocarbon supply and extending through the closed end of the body and into the body at one side of the partition portions and a pipe leading from
 75 the rear portion of the body at the opposite side of the partition portions and communicating with the longitudinal central pipe at a point in rear of the casing body; the forward end of the longitudinal central pipe
 80 being welded to the taper portion of the body, and the closure at the rear end of the casing body being in the form of a disk welded in the rear end of said body.

3. A hydrocarbon burner comprising a
 85 casing body having a forward taper portion terminating in a nozzle, means in the casing body dividing the same into longitudinal chambers, said means including a longitudinal pipe extending throughout the length of
 90 the body, and also including a portion extending from the rear end of the body to a point spaced in rear of the nozzle, means for supplying hydrocarbon to one of said chambers in the rear portion thereof; and a conduit
 95 leading from the rear portion of the other chamber to the first-named pipe at a point in rear of the casing body.

4. A casing body for use in a hydrocarbon burner, having a tapered forward portion
 100 terminating in a nozzle and also having longitudinal chambers in communication opposite or in transverse coincidence with said taper portion, in combination with a conduit for steam leading through the body and
 105 communicating with the nozzle, means for supplying hydrocarbon to one of the chambers at a point remote from the nozzle, and a conduit for leading hydrocarbon from the other chamber at a point remote from the
 110 nozzle to the first-named conduit.

In testimony whereof I affix my signature.

ALEX. H. FREW, Jr.