

J. NICHOLSON.
HYDROCARBON BURNER.
APPLICATION FILED JAN. 3, 1916.

1,189,992.

Patented July 4, 1916.

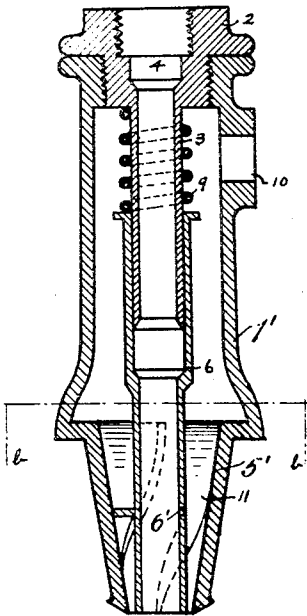


Fig. 3.

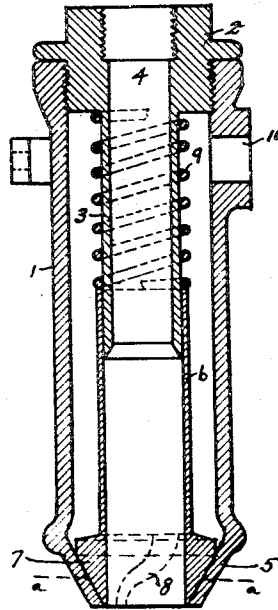


Fig. 1.

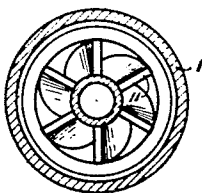


Fig. 4.

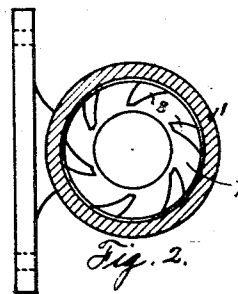


Fig. 2.

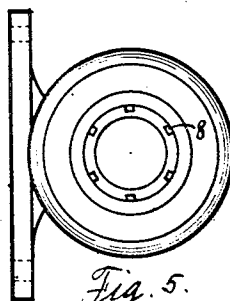


Fig. 5.

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HYDROCARBON-BURNER.

1,189,992.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN NICHOLSON, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

This invention relates to new and useful improvements in a hydro-carbon burner.

The object of the invention is to provide a burner constructed so as to admit a forced draft of steam or air which is discharged through the nozzle and creates a suction, thereby assisting the flow of fuel from the fuel reservoir and from said nozzle and thoroughly mixing the same with said air or steam; the passages through the nozzle are formed spiraled, as will be hereinafter explained, and they impart a whirling or a spiraled motion to the mixture discharged through the nozzle, thereby breaking up and atomizing the fuel so that it will readily burn. The burner is, therefore, specially adapted for the purpose of burning heavy crude oil.

With the above and other objects in view the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal sectional view of the preferred form of the burner, Fig. 2 is a transverse sectional view taken on the line *a—*a** of Fig. 1, Fig. 3 is a longitudinal sectional view of a modified form of burner, Fig. 4 is a transverse sectional view taken on the line *b—*b** of Fig. 3, Fig. 5 is an end view of the nozzle as shown in Fig. 1.

Referring now more particularly to the drawings wherein like numerals of reference designate similar parts in each of the figures the numeral 1 refers to a draft nozzle, which is substantially cylindrical in form and which is screwed onto the nipple 2 and is mounted upon the support 1'. Within this nozzle and integral with the nipple is the hollow stem 3, concentric with the nozzle, and in alinement with the central fluid passageway 4 of the nipple 2. This stem extends toward the discharge end of the nozzle 1 and in length is approximately one-half of the length of said nozzle. The discharge

end or tip 5 of the nozzle is tapered or contracted, as shown and fitting over the free end of the stem 3, so as to form a slip-joint therewith, is the sleeve 6, whose free end extends within the discharge tip 5, and as shown in Fig. 1 is enlarged forming an annular conical shaped nose which fits perfectly against the opposing wall of the discharge tip 5 so as to form a steam tight joint. The periphery of this nose 7 is provided with spiraled grooves 8 through which the steam or air is forced and by means of which a whirling motion is imparted thereto. A coil spring 9 surrounds the stem 3 and is interposed between the nipple 2 and the sleeve 6 and forms a resilient cushion for said sleeve and normally holds the nose 7 firmly against the discharge tip 5, but which permits said sleeve to be forced back, thus enlarging the passageway between said nose and discharge tip.

The draft of steam or air is admitted into the nozzle 1 through the inlet 10 and is driven through the discharge tip passing through the spiraled grooves 8 and creating a suction through the fuel passageway formed of the stem 3 and the sleeve 6. The fuel is admitted, under pressure, from a suitable fuel reservoir, not shown, through the nipple 2 and passes through the stem 3 and the sleeve 6 and is discharged from the free end of the latter and immediately mingled with and atomized by the whirling body of air or steam discharged through the spiraled grooves 8 so that all of the particles of the fuel will be broken up and atomized so as to be readily combustible when discharged into the combustion chamber. It is obvious that the spiraled grooves 8 may be formed in the inner wall of the discharge tip 5 instead of in the periphery of the nose 7 if it is so desired, without changing the results.

In the form shown in Fig. 3 the discharge tip 5' is somewhat elongated and the sleeve 6' is provided with a plurality of spiraled flanges as 11, which are integral therewith and whose free edges fit closely against the discharge tip, said flanges extending from end to end of said discharge tip and imparting a spiraled or whirling motion to the air or steam driven therethrough with the same result as hereinbefore specified.

The sleeve 6 Fig. 3 is mounted upon the resilient cushion 9 so that in case the discharge tip should become choked the sleeve

may be forced back so as to permit the cleansing thereof and for the purpose of providing an easy method of removing and replacing the parts. This cushion also operates to hold
5 the nose 7 firmly against the discharge end of the nozzle, causing it to fit perfectly therewith and form a steam tight joint.

What I claim is:

1. A burner including a nozzle having a
10 tapering free end, a fuel pipe formed of telescoping sections, extending therethrough, one of said sections being fixed and the other connected to the fixed section by means of a slip joint, a resilient cushion upon which
15 the movable section rests, an enlarged annular conical shaped nose carried by the free end of the movable section and fitting closely against the tapering end of the nozzle and being provided with peripheral spiraled
20 grooves.

2. A burner including a nozzle having a tapering free end, a fuel pipe formed of telescoping sections, extending therethrough, one of said sections being fixed and the other
25 being movable and connected to the fixed section by means of a slip joint, a resilient cushion upon which the movable section rests and an enlarged nose carried by the free end of the movable section and fitting
30 within the tapering end of the nozzle and provided with peripheral spiraled grooves for imparting a spiraled motion to the fluid discharged from said nozzle.

In testimony whereof I have signed my name to this specification in the presence of
35 two subscribing witnesses.

JOHN NICHOLSON.

Witnesses:

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