J. NICHOLSON.

HYDROCARBON BURNER.

APPLICATION FILED MAY 7, 1918.

1,280,073. Patented Sept. 24, 1918.

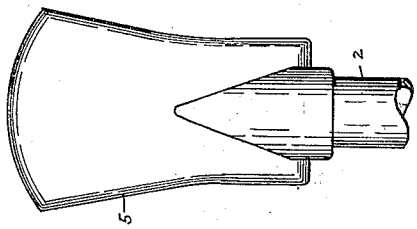



Fig. 2.

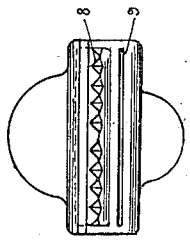



Fig. 6.

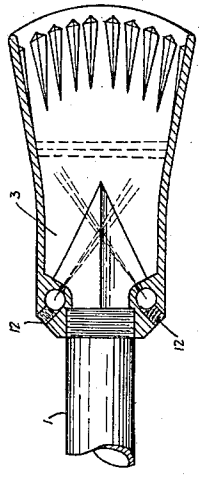



Fig. 3.

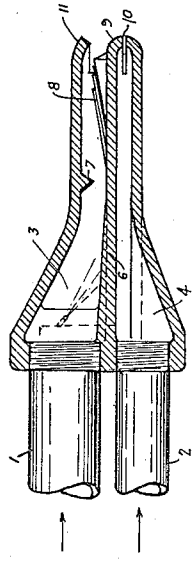



Fig. 4.

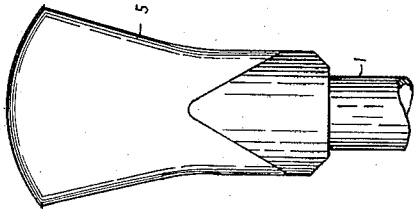



Fig. 1.

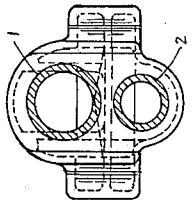



Fig. 5.

John Nicholson INVENTOR

BY Hardway & Cathey

ATTORNEY

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

# UNITED STATES PATENT OFFICE.

JOHN NICHOLSON, OF HOUSTON, TEXAS.

## HYDROCARBON-BURNER.

1,280,073. Specification of Letters Patent. Patented Sept. 24, 1918.

Application filed May 7, 1918. Serial No. 233,026.

*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 hydrocarbon burner.

The object of the invention is to provide a burner of the character described which is especially designed for atomizing hydrocarbon, preparatory to burning the same, and is adapted for use in utilizing a low gravity oil or other heavy substances as fuel for locomotives, stationary boilers, kilns, heating furnaces and the like.

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

Figures 1 and 2, are top and bottom views, respectively, showing the general contour of the burner.

Fig. 3, is a horizontal sectional view, taken through the oil chamber.

Fig. 4, is a vertical, sectional view, showing both steam and oil chambers, and

Figs. 5 and 6, show back and front views, respectively, of the burner.

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 an oil inlet pipe and the numeral 2, refers to a steam inlet pipe said pipes being threaded into the burner and entering the fuel and steam chambers 3 and 4, respectively, of the burner 5. The steam and fuel chambers are separated by a transverse partition 6, and are relatively narrow at the base or outer end of the burner and gradually flare out toward the nozzle end thereof, and the upper wall of the fuel chamber, and likewise the lower wall of the steam chamber converge, gradually contracting said chambers to a point about midway the ends of the burner and said chambers then continue of uniform vertical dimensions to the nozzle end. Depending from the upper wall of the fuel chamber is a transverse baffle 7 whose sides converge downwardly to an apex and beyond said baffle, toward the nozzle end of the burner, the upper side of the partition 6 has a plurality of longitudinal ribs 8, triangular in cross section and gradually enlarging from their inner to their outer ends. These ribs are spaced apart and terminate short of the burner nozzle. The nozzle end of the steam chamber is rounded off at the point 9, and is provided with a transverse slit 10, through which the steam issues in a fanlike sheet, and the nozzle end of the upper wall of the fuel chamber has a slight downward curve forming the deflector 11.

The fuel chamber has two steam inlets 12, 12, at the base thereof, through which the jets of steam are admitted to said chamber at approximately 45° angle. Oil is admitted into the fuel chamber through the pipe 1, and the steam jets mingle with said oil, and break up and evenly distribute the same over the bottom of the said chamber, being deflected toward the bottom of said chamber, by the baffle 7, and beyond said baffle, will be evenly divided by the ribs 8, passing between them and flowing down over the rounded end of the steam chamber. The deflector 11 causes a positive deflection of the fuel downwardly so as to prevent the pressure in the fuel chamber from blowing the fuel over the sheet of steam issuing from the slit 10, and thus forcing said fuel downwardly into said sheet of steam so that the steam and fuel will thoroughly mingle together.

Steam enters the steam chamber 4, through the steam pipe 2, under pressure, the pressure being sufficient to force the steam out through the slit 10, in a fanlike sheet and to catch up the fuel flowing down over the nozzle end of the steam chamber and thoroughly mingle with and vaporize the same.

What I claim is:

1 A burner including a fuel chamber and a steam chamber, fuel and steam conduits entering said respective chambers, the nozzle end of the steam chamber being provided with a transverse slit, and the nozzle end of the fuel chamber having a plurality of longitudinal ribs therein spaced apart triangular in cross section and enlarging from their inner to their outer ends.

2. A burner including a fuel chamber and a steam chamber, fuel and steam conduits entering said respective chambers, the nozzle end of the steam chamber being provided with a transverse slit, the nozzle end of the fuel chamber having a plurality of

longitudinal ribs therein spaced apart, and a transverse baffle depending from the upper wall of the fuel chamber and located behind the said ribs.

3. A burner including a fuel chamber which flares toward its discharge end, the upper wall of said chamber declining toward the lower wall, and the nozzle end thereof being downwardly curved, forming a deflector, longitudinal ribs spaced apart and arranged in the discharge end of the chamber and a transverse baffle depending from the upper wall of the chamber and arranged behind said ribs.

4. A burner including a fuel chamber and a steam chamber, separated by a transverse partition, the nozzle end of the steam chamber being provided with a transverse slit, and the nozzle end of the upper wall of the fuel chamber forming a downwardly curved deflector to deflect the fuel issuing from said burner into the steam issuing from said slit, a baffle depending from the upper wall of the fuel chamber, and means arranged in the nozzle end thereof for separating the fuel issuing from the nozzle thereof.

5. A burner including a fuel chamber and a steam chamber separated by a transverse partition, the nozzle end of the steam chamber having a transverse slit through which steam issues, in a fanlike sheet and the nozzle end of the fuel chamber being formed to direct the fuel issuing therefrom into the steam issuing from said slit, and a steam inlet arranged at each side of the fuel chamber through which jets of steam are admitted into said chamber to mingle with the fuel therein.

6. A burner including a fuel chamber and a steam chamber separated by a transverse partition, the nozzle end of the steam chamber having a transverse slit through which steam issues, in a fanlike sheet and the nozzle end of the fuel chamber being formed to direct the fuel issuing therefrom into the steam issuing from said slit, a steam inlet arranged at each side of the fuel chamber through which jets of steam are admitted into said chamber to mingle with the fuel therein, and a transverse baffle depending from the upper wall of the fuel chamber in front of said steam inlets.

7. A burner including a fuel chamber and a steam chamber separated by a transverse partition, the nozzle end of the steam chamber having a transverse slit through which steam issues, in a fanlike sheet, and the nozzle end of the fuel chamber being formed to direct the fuel issuing therefrom into the steam issuing from said slit, a steam inlet arranged at each side of the fuel chamber through which jets of steam are admitted into said chamber to mingle with the fuel therein, and means arranged in the nozzle end of the fuel chamber for separating the stream of fuel issuing therefrom.

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

JOHN NICHOLSON.

Witnesses:
EVERT PARSONS,
WM. A. CATHEY.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**