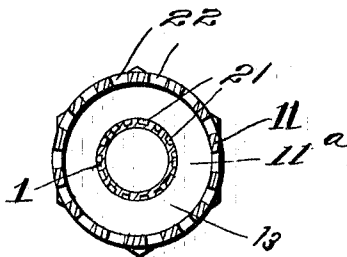
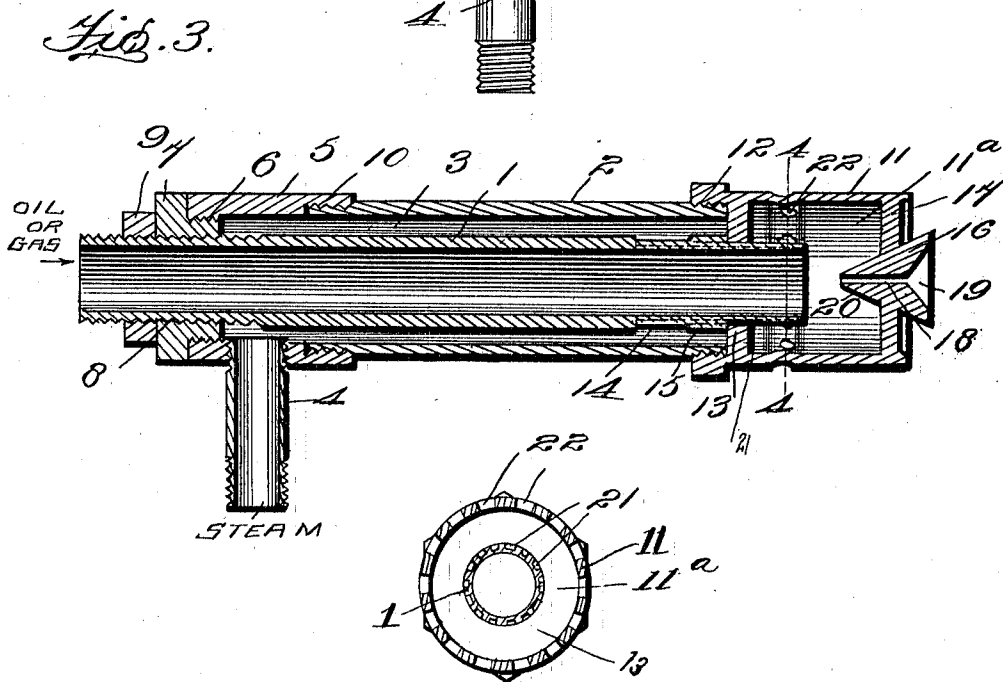
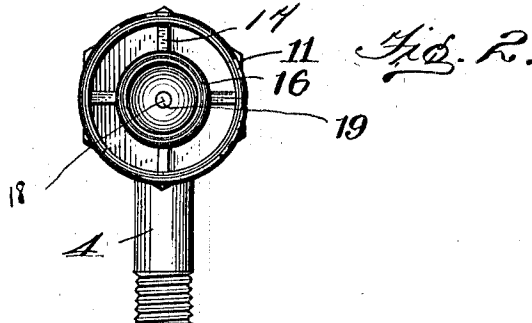
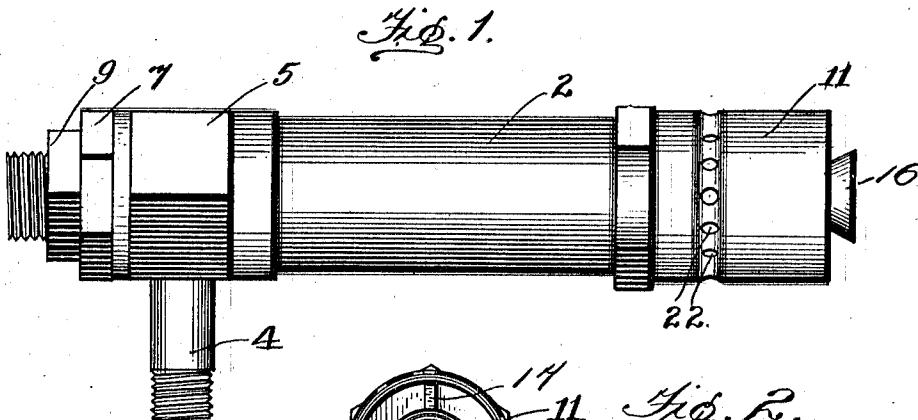


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LIQUID OR GASEOUS FUEL BURNER.

APPLICATION FILED AUG. 22, 1911. RENEWED SEPT. 20, 1912.

1,059,237.

Patented Apr. 15, 1913.



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UNITED STATES PATENT OFFICE.

HEBER CLARK VANDAVEER, OF HARRIS COUNTY, AND GUY EVERETT STROY, OF GALVESTON COUNTY, TEXAS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO VANDAVEER CLAY PRODUCTS COMPANY, OF HOUSTON, TEXAS, A CORPORATION OF TEXAS.

LIQUID OR GASEOUS FUEL BURNER.

1,059,237.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed August 22, 1911, Serial No. 645,366. Renewed September 20, 1912. Serial No. 721,518.

To all whom it may concern:

Be it known that we, HEBER CLARK VANDAVEER and GUY E. STROY, citizens of the United States, HERER CLARK VANDAVEER
5 formerly residing at Athens, in the county of Henderson and State of Texas, but now of Harris county, Texas, and GUY E. STROY of Galveston county, Texas, have invented certain new and useful Improvements in
10 Liquid or Gaseous Fuel Burners; and we 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
15 same.

The present invention relates to liquid or gaseous fuel burners, and proposes to construct a device of that character whereby to effect a more intimate admixture of the
20 fuel and air than is now obtained, and one wherein the liquid or gaseous fuel is caused, through impact, to be disintegrated or finely divided at the time of co-mingling with the air, to the end of securing the maximum
25 efficiency in the resultant heating flame.

The invention has for its further purpose to provide a device of the character in question which is of simple design, one which may be readily taken apart or assembled,
30 and which may be manufactured at comparatively small cost.

With these and other objects in view the invention consists in the novel details of construction and combinations of parts more
35 fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the
40 views:—Figure 1 is a side elevational view of the device complete; Fig. 2 is a front end elevational view thereof; Fig. 3 is a central longitudinal sectional view of the same; and Fig. 4 is a transverse sectional view of Fig.
45 3 taken on the line 4—4.

The structure of the burner comprises a central tube or flue 1 adapted to communicate with the source of oil or gas supply which enters the flue in the direction indicated by the arrow in Fig. 3. A sleeve 2
50 surrounds the flue 1 for substantially the entire length thereof, and provides there-

with a cylindrical chamber 3 designed to receive steam which enters through the pipe 4 at one end of said chamber, and for the 55 purpose to be presently explained. The sleeve 2 is secured to the flue 1 through the medium of a section 5 that has screw-threaded connection 6 with a bushing 7, which bushing has direct screw-threaded 60 engagement 8 with the tube 1, as shown in Fig. 3. A jam nut 9 screw-threaded on the tube 1 binds against the bushing 7 and holds the same against loosening. The section 5 has screw-threaded connection 10 with one 65 end of the sleeve 2, and has a portion of its exterior face polygonal sided, as shown in Fig. 1, whereby said section may be secured to the sleeve.

A nozzle 11, providing a fuel mixing chamber 11^a, has screw-threaded engagement 70 12 with the outer end of the sleeve 2, and is constructed with an annular inner collar 13 that receives the outer end of the flue 1 and centers the same with respect to 75 the sleeve 2. The flue 1 is cut away adjacent the collar 13 to provide an annular recess 14 and a shoulder 15 against which the collar 13 abuts (see Fig. 3); and a plurality of slots or grooves 21 are formed in 80 said flue. The slots extend from the recess 14 to the outlet end of the tube and permit the steam in the chamber 3 to pass into the fuel mixing chamber 11^a.

The nozzle 11 is provided with a head or 85 spreader 16, that is designed after the manner of a cone, and which is secured with its apex centrally of the flue outlet by the ribs or spider 17. The spreader 16 is constructed with a central opening 18 that extends there- 90 through and terminates in an outwardly flaring recess 19, the purpose of which will be presently described.

The steam entering the chamber 11^a will have a tendency to produce a partial vacuum 95 in the pipe 1, and the oil issuing therefrom will be formed into a thin sheet or film by reason of the conical surface 20 of the spreader 16. This vortex of oil and steam is now mixed with the streams of atmos- 100 pheric air which are admitted through a plurality of apertures 22 formed in the wall of the nozzle 11 (see Figs. 3 and 4). The final mixture of finely divided oil, steam,

and air passes through the nozzle 11 and in issuing therethrough takes substantially the form of a conical flame, by reason of the spreader 16, and in this manner every particle of fuel is consumed and the maximum efficiency of the flame therefore obtained. The purpose of the flaring opening 19 and the opening 18 leading thereto is to break any vacuum that might possibly be formed at the front of the spreader 16.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of our invention, and therefore we do not wish to be limited to such features except as may be required by the claims.

What we claim is:—

1. In a fuel burner, the combination of a flue adapted to communicate with a source of fuel supply; a sleeve surrounding said flue providing a chamber, and comprising a section having connection with said flue and closing one end of said chamber; a steam supply pipe secured to said sleeve section and communicating with said chamber; a nozzle secured to the sleeve at one end thereof and providing a fuel mixing chamber, said nozzle having an annular inner collar receiving the outlet end of the flue; and a conical head provided with an opening therethrough having a flaring outlet; said head projecting within the mixing chamber, centrally of the flue outlet, providing means to finely divide the fuel issuing through the flue, and said opening and flar-

ing outlet adapted to prevent a vacuum at the nozzle outlet, substantially as described.

2. In a liquid fuel burner, the combination of a flue adapted to communicate with a source of liquid fuel supply; a sleeve surrounding said flue and providing a cylindrical chamber therewith, said sleeve having a section provided with screw threads; a bushing having screw-threaded engagement with the sleeve and the flue and closing one end of said cylindrical chamber; a steam supply pipe secured to said sleeve section and communicating with said chamber; a nozzle secured to one end of the sleeve providing a fuel mixing chamber, and having an annular inner collar receiving the outlet end of the flue and closing the other end of the steam chamber, said nozzle having a plurality of air inlet openings; said flue provided with channels affording communication between said steam and mixing chambers; and a conical head provided with an opening therethrough having a flaring outlet; said head projecting within the mixing chamber, centrally of the flue outlet, and providing means to finely divide the fuel issuing through said flue and said opening and outlet adapted to prevent a vacuum at the nozzle outlet, substantially as described.

In testimony whereof, we affix our signatures, in presence of two witnesses.

HEBER CLARK VANDAVEER.

GUY EVERETT STOY.

Witnesses:

JOE W. KENFIELD,

AUGUST HUDEMAN.

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