

Oct. 19, 1926.

H. R. CORWIN

1,603,906

VACUUM FLUID BURNER

Filed August 27, 1925

2 Sheets-Sheet 1

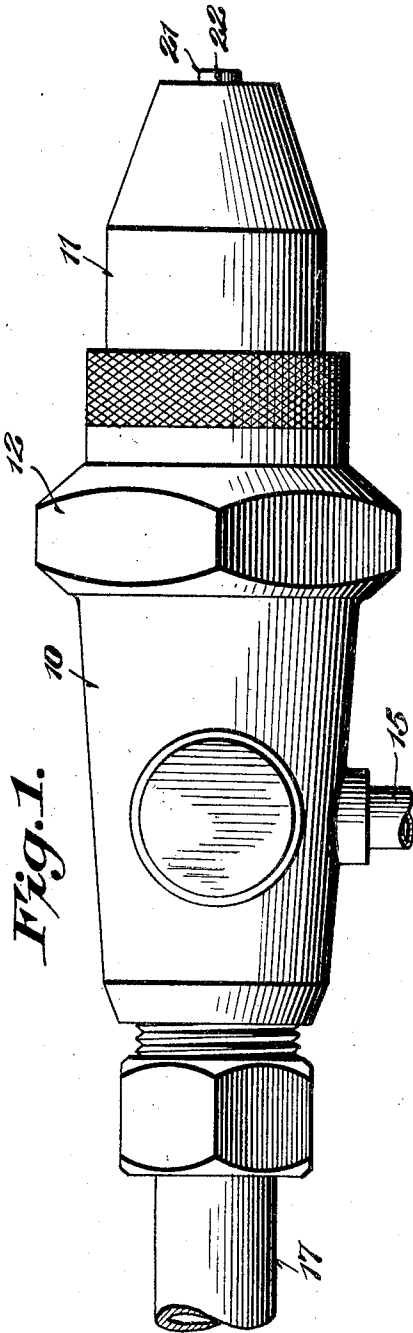


Fig. 1.

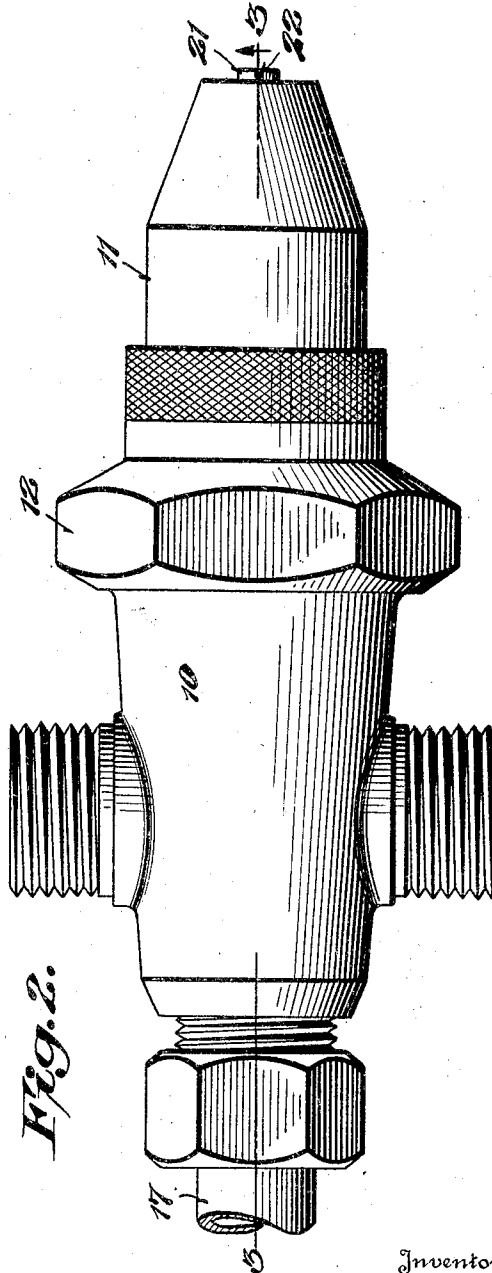


Fig. 2.

WITNESS:-

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2 Sheets-Sheet 2

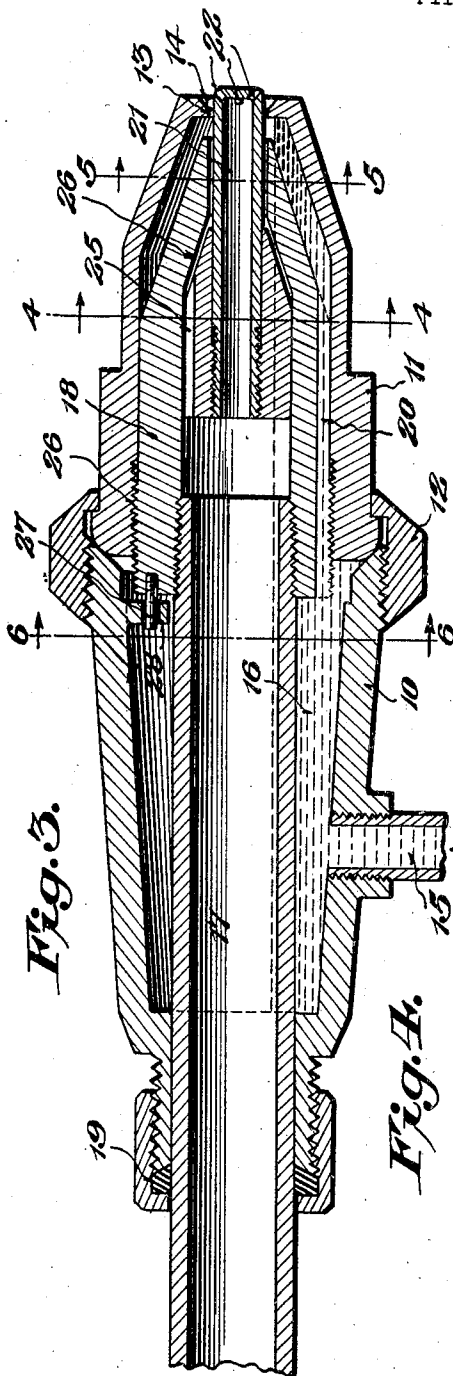


Fig. 3.

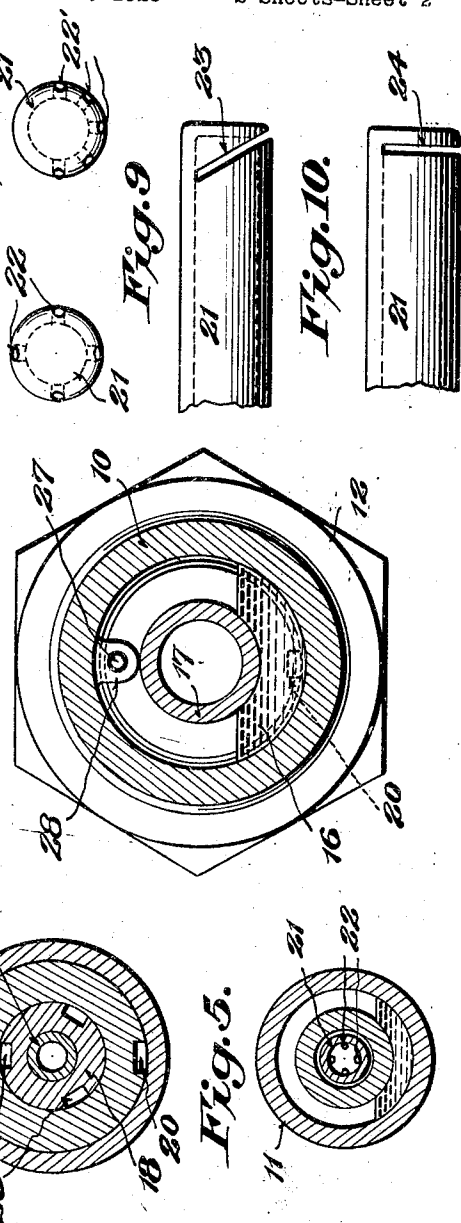
Fig. 4.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.



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UNITED STATES PATENT OFFICE.

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VACUUM FLUID BURNER.

Application filed August 27, 1925. Serial No. 52,816.

This invention relates to burners adapted for the use of hydrocarbon, alcohol and other inflammable fluids mixed with air, and is an improvement upon the burner disclosed in application numbered 722,091, filed by me June 24, 1924, and allowed March 10, 1925, and which has since become, on September 22, 1925, Patent Number 1,554,788.

Like the burner just mentioned, the burner disclosed in the present application has for an object to provide a vacuum fluid burner, or a burner wherein the air and fluid mixture is discharged by the creation of a partial vacuum within the burner, the construction being such that the liquid is evenly distributed over the entire inner wall of the burner and thus thoroughly broken up and separated for proper mixture with the air.

Another object of the present invention is to improve the nozzle structure of the burner by arranging the air passages in such manner as to insure proper vacuum formation, together with means to adjust the nozzle and reduce or intensify the heat in accordance with the use to which the burner is put.

Another object of the invention is the provision of a burner nozzle having a removable air discharge nozzle so as to provide means for the substitution of air discharge nozzles of different types to further regulate the character of the flame.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is a plan view of a burner constructed in accordance with the invention.

Figure 2 is a side view of the same.

Figure 3 is a section on the line 3—3 of Figure 2.

Figures 4, 5 and 6 are sections taken respectively on the lines 4—4, 5—5 and 6—6 of Figure 3.

Figure 7 is an end view of the discharge end of the air nozzle.

Figure 8 is a like view of another form of air nozzle.

Figures 9 and 10 are fragmentary side views of still further forms of air nozzles.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates the burner shell which comprises

threadedly connected sections, one of said sections forming an outer fuel discharge nozzle 11 and being secured in place by means of a coupling 12.

The discharge nozzle 11 is tapered at its outer end and is provided with an opening 13 having an outwardly flared wall 14. The shell 10 is in communication with one end of an oil supply pipe 15 and this shell forms an oil chamber 16.

One wall of the oil chamber is formed by an air supply pipe 17 which extends into the shell 10 and which has secured to its inner end an air discharge nozzle 18. The pipe 17 extends from the end of the shell 10 and this end of the shell is provided with a packing gland 19.

The nozzle 18 is also tapered at its outer end and is spaced from the tapered outer end of the nozzle 11, this space forming a continuation of the oil chamber 16 and having communication with said chamber through an oil passage 20. Extending from the tapered end of the nozzle 18 is a tubular member 21 whose inner end is threadedly engaged with the nozzle 18 so as to permit of its removal and the substitution of a different tubular member. The outer end of this tubular member is closed and is provided with discharge openings which, as shown in Figures 3 and 7 extend radially outward at an angle corresponding substantially to the flared wall 14 of the opening 13, as indicated at 22. The openings 22 are radially spaced around the circumference of the outer end of the tubular member 21 and if desired these openings may be spaced around one half of the circumference of the tubular member as indicated at 22' in Figure 8.

If desired the outer end of the tubular member may be provided with an inclined slot 23 as shown in Figure 7, or the slot may extend substantially at right angles with respect to the axial center of the tubular member as shown at 24 in Figure 10. The burner 18 is provided with longitudinally disposed spaced air passages 25 which have their inner ends in communication with an annular air passage 26, one wall of this last mentioned passage being formed by the outer cylindrical face of the tubular member 21, so that this passage opens into the oil chamber.

From the foregoing description and accompanying drawings it will be apparent

that the burner may include various types of discharge openings so as to regulate the character and shape of the flame, while the nozzle 18 may be adjusted with respect to the nozzle 11 due to the threaded engagement 26 between these nozzles, the purpose being to regulate the intensity of the flame in accordance with the use of the burner. The nozzles are held in their adjusted positions by means of a stud or pin 27 which extends from the nozzle 18 into an apertured lug 28 carried by the shell 10.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:—

1. A burner comprising a shell adapted to be supplied with a liquid, a nozzle at one end thereof, said nozzle comprising an outer fuel discharge nozzle having an opening in one end thereof, an inner air discharge nozzle having its outer end extending within the opening of the fuel discharge nozzle and spaced from the walls of said opening and provided with discharge ports, said air nozzle having a central passage and circumferentially spaced longitudinally disposed passages around the central passage and means to adjust the air nozzle relative to the fuel discharge nozzle.

2. A burner comprising a shell defining an oil chamber, a nozzle at one end thereof, said nozzle comprising an outer fuel discharge nozzle having an opening in one end and an inner air nozzle, said inner nozzle including an inner tubular member provided with a closed outer end and having discharge ports in its outer closed end, said end extending into and being spaced from the walls of the opening in the fuel discharge nozzle and said air nozzle being fur-

ther provided with longitudinally disposed air passages opening into the oil chamber and means to adjustably secure the inner nozzle to the outer nozzle to regulate the position of the outer end of the air nozzle with respect to the opening in the fuel discharge nozzle.

3. A burner comprising a shell defining an oil chamber, a nozzle at one end thereof, said nozzle comprising an outer fuel discharge nozzle having an opening in one end and an inner air nozzle, said inner nozzle including an inner tubular member provided with a closed outer end and having angularly disposed discharge ports in its outer closed end, said end extending into and being spaced from the walls of the opening in the fuel discharge nozzle and said air nozzle being further provided with longitudinally disposed air passages opening into the oil chamber and means to adjustably secure the inner nozzle to the outer nozzle to regulate the position of the outer end of the air nozzle with respect to the openings in the fuel discharge nozzle.

4. A burner comprising a shell having an oil chamber, a nozzle at one end thereof, said nozzle comprising an outer fuel discharge nozzle having an opening in one end and an inner air nozzle, said inner nozzle including an inner removable tubular member provided with a closed outer end and having discharge ports in its outer closed end, said ports extending into and being spaced from the walls of the opening in the fuel discharge nozzles and said air nozzle being further provided with longitudinally disposed air passages opening into the oil chamber and means to adjustably secure the inner nozzle to the outer nozzle to regulate the position of the outer end of the air nozzle with respect to the openings in the fuel discharge nozzle.

In testimony whereof I affix my signature.
HOWARD R. CORWIN.