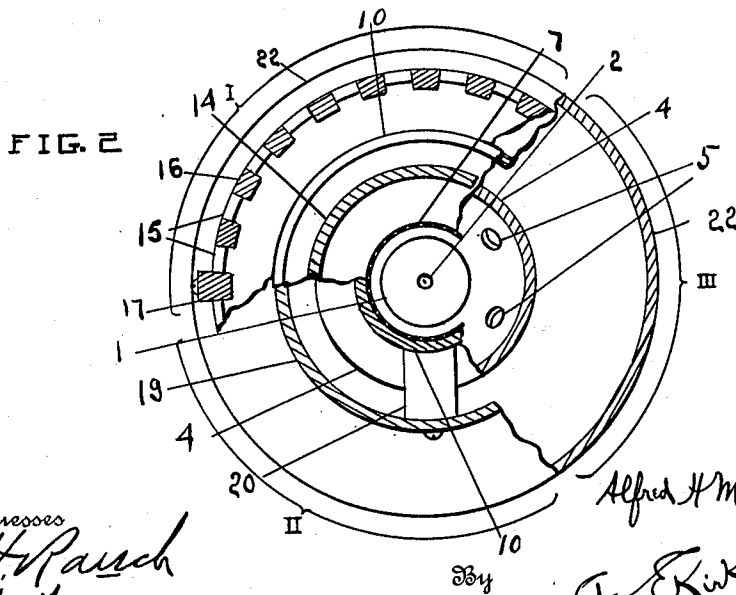
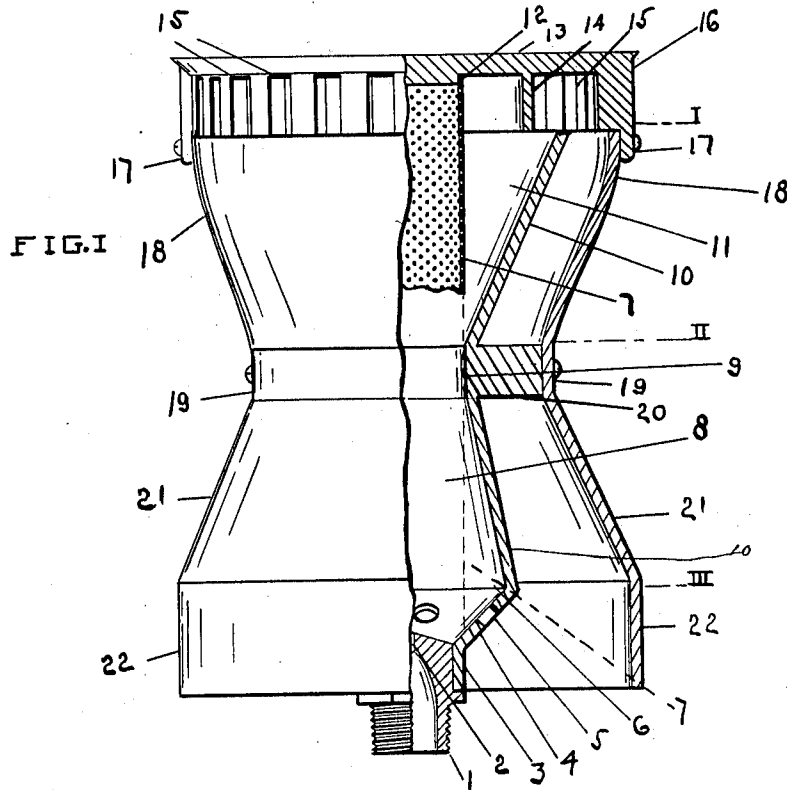


A. H. MERRILL.
BURNER.
APPLICATION FILED NOV. 30, 1910.

1,004,291.

Patented Sept. 26, 1911.



Witnesses
C. H. Rauch
Gladys Jameson

Inventor
Alfred H. Merrill
By Geo. E. Kirk
Attorney

UNITED STATES PATENT OFFICE.

ALFRED H. MERRILL, OF TOLEDO, OHIO.

BURNER.

1,004,291.

Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed November 30, 1910. Serial No. 594,822.

To all whom it may concern:

Be it known that I, ALFRED H. MERRILL, a citizen of the United States, residing at Toledo, Lucas county, Ohio, have invented a new and useful Burner, of which the following is a specification.

This invention relates to a device for mixing substances.

This invention has utility when embodied in a burner for mingling air with gaseous fuel for efficient combustion.

Referring to the drawings: Figure 1 is a side elevation, with parts broken away to show in half section, an embodiment of the invention in a gaseous fuel burner; and Fig. 2 is a plan view on the sections I, II, III, of Fig. 1, as indicated.

The fuel supply or mounting member 1 is provided with the discharge opening, jet, fuel supply or admission passage 2 surrounding which is the burner trunk member 3 mounted on the member 1. This member 3 has a flare portion 4 forming a first air receiving chamber provided with air intake openings 5. These openings 5 are in communication with the air receiving chamber 6 formed by the flare portion 4 of the member 3. This chamber 6 is annular in form, the inner portion of which is formed by the tubular perforate metal screen 7, providing a screened admission opening into chamber 8 from chamber 6. The fuel from opening 2 enters the chamber 8 formed by the screen 7. Air passes through the openings 5 and chamber 6 and into the tubular screen 7 to commingle with the gaseous fuel in chamber 8, the perforations in screen 7 forming air inlet openings to chamber 8. The screen 7 is medially held by contacting with the contracted portion 9 of the surrounding or first housing member 3, which trunk member 3 has a second flaring portion 10 at the upper side of the line of said contact and remote from the side forming the chamber 6, said second flaring portion forming a chamber 11 into which the mixed gaseous fuel and air passes from the upper portion of chamber 8 through the screen 7. These passages of the air through the screen 7 insure a uniform and thorough commingling of the air with the fuel. The stud or boss 12 on the cap member 13 serves to center the tubular screen or gauze member 7 as well as close the top of the chamber 8.

Extending into the chamber 11, is a flange 14, serving to deflect the mixed gaseous fuel

and air for tortuous travel from chamber 8 to the combustion zone openings 15 in the downwardly directed flange 16 of the cap member. This flange 16 of the cap member 13 is provided with ears 17 to mount the cap member on the surrounding second air-passage-providing member 18. This second supply of air is introduced just before the combustion zone is reached. This outer member 18 has a contracted portion 19 mounted on the lugs 20 extending from contracted central portion 9 of the trunk member 3. This outer member has a flaring portion 21 terminating in a petticoat flange 22 providing an intake for this second air supply before or in advance of the air supply entering the intake openings 5. The outer member 18 and cap member 13 comprise the second surrounding housing of the burner.

The construction is such that an adequate fuel supply at low velocity is furnished with two thorough mixings of the fuel with a first air supply and a general mixing with a second air supply just before the combustion zone is reached. The screen 7 at chamber 11 precludes back flash in lighting or operation, while the extension of the outer member 18 to receive its air supply in advance of the supply to the intake 5, is an effectual precaution against any fuel leakage from counter current, fuel pocketing, or reverse flow before arrival at the combustion zone, for any seepage which might occur down the member 18 reenters openings 5 for passage through the burner. The air supply through the member 18 is such as to normally counteract any such loss, due to the extent of this member and consequent draft therein.

In operation the burner serves to bring about complete combustion in a quiet and most efficient manner.

What is claimed and it is desired to secure by Letters Patent is:

1. A burner comprising a tubular screen, a trunk member surrounding the screen and medially contacting therewith, a petticoat member surrounding the trunk member, and a cap for the petticoat member engaging the screen.

2. A burner comprising walls forming a chamber provided with two admission openings, one of said openings being screened, and means containing a discharge passage from said chamber having its discharge spaced from said chamber to form a com-

bustion zone, the walls of a portion of said chamber being perforate to screen the entrance from said chamber into said discharge passage, and an air admission passage into said discharge passage between the screen entrance thereof and the said combustion zone.

3. A burner provided with a tubular screen, and a member surrounding and contacting with said screen intermediate the length of said screen to form of a portion of said screen at one side of said contacting of said surrounding member with said screen an intake section and of a second portion of said screen at the other side of said contacting of said surrounding member with said screen a discharge section, said member forming a passage to said intake section and an outwardly and laterally extending passage from said discharge section of said screen.

4. A burner provided with a member having an opening, an annular perforate element constituting a screen member forming a chamber to which screen member said opening leads, said chamber provided with an additional independent opening thereinto, and a member forming a laterally outwardly directed discharge passage from said chamber and terminating in a combustion zone forming opening spaced from said screen member, there being formed with said passage forming member and leading to the passage therein a second passage spaced from the screen member supplying air to the flow passage between the screen member and the combustion zone.

5. A burner comprising a mounting mem-

ber having therein a fuel supply passage, a first housing member providing therein a first air mixing passage having an air intake opening, a screen to the opposite sides of which screen said passages are in communication, and a second surrounding housing member mounted upon the first member and providing a second independent air mixing passage having an air intake opening extending in advance of the intake for the first air mixing passage, there being provided by said members a common passage from the junction at said screen of said fuel supply passage and said first air mixing passage to which common passage said second independent air mixing passage delivers.

6. A burner comprising a fuel receiving chamber having a perforate wall, a trunk member surrounding said chamber and having therein a passage leading to a portion of said perforate wall, a cap member in connection with said trunk member forming a mixed air and fuel discharge passage from said chamber supplied through a portion of said perforate wall spaced from that portion thereof to which said passage provided by the trunk member leads, and a petticoat member extending in advance of the air admission passage and forming with the trunk member a passage communicating with the discharge passage.

In testimony whereof I affix my signature in the presence of two witnesses.

ALFRED H. MERRILL.

Witnesses:

C. H. RAUCH,
GEO. E. KIRK.