

W. H. KELLY & S. B. TAINTER.

OIL BURNER.

APPLICATION FILED MAY 11, 1908.

992,924.

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Fig. 1.

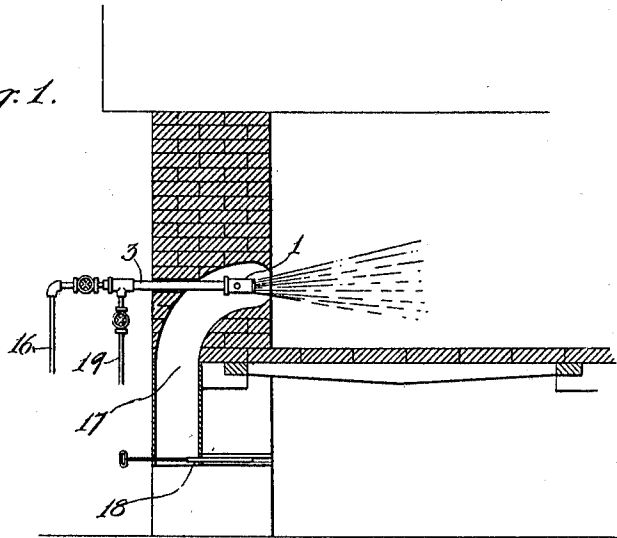


Fig. 3.

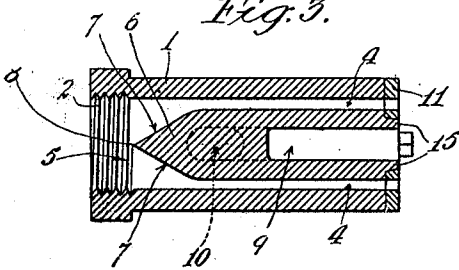


Fig. 2.

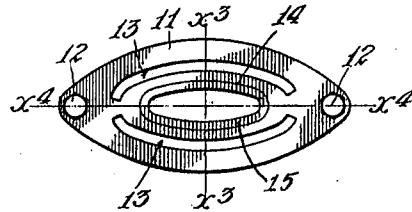
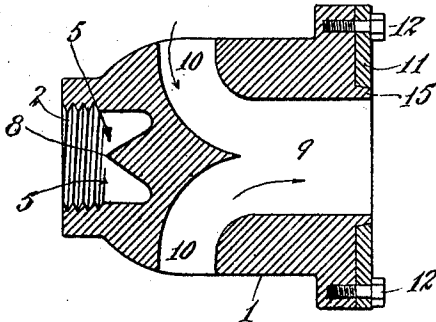


Fig. 4.



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UNITED STATES PATENT OFFICE.

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OIL-BURNER.

992,924.

Specification of Letters Patent.

Patented May 23, 1911.

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To all whom it may concern:

Be it known that we, WILLIAM H. KELLY, of Los Angeles, county of Los Angeles, and State of California, and SILAS B. TAINTER, of Seattle, county of King, and State of Washington, have invented a new and useful Oil-Burner, of which the following is a specification.

This invention relates to an oil burner, and the main object of the invention is to introduce air into the center or interior of the flame as well as to the outside of the flame, and thereby produce a more perfect combustion and larger flame with minimum amount of oil.

The invention relates particularly to a burner which is especially adapted to induct air at ordinary atmospheric pressure by suction of draft.

Referring to the drawings:—Figure 1 is a cross sectional view through a part of the furnace equipped with the burner. Fig. 2 is an elevation of the discharge end of the burner. Fig. 3 is a view on line X³—X³ of Fig. 2. Fig. 4 is a section on line X⁴—X⁴ of Fig. 2.

1 designates the body of the burner which is preferably formed as a single casting, being provided with internal threads 2 at one end for attachment to a supply pipe 3, shown in Fig. 1.

As indicated in Fig. 3, the body portion 1 is provided with oil passage means consisting of two longitudinal ducts 4 which converge toward the supply end of the burner and there unite forming a single chamber 5. The center portion 6 of the burner is formed with tapered walls 7 which meet at a point 8 which serves to divide the fuel into two streams, each stream entering its respective duct 4. As shown in Fig. 4, the body portion 1 is also formed with a central air passage 9 which is located between the two ducts 4 and has lateral passages 10, as shown in Fig. 4, which curve out from the air passage 9 and communicate with the atmosphere. The air passages 9 and 10 are oval in cross section, as shown in Figs. 2 and 3, so that the branch passages 10 do not communicate with ducts 4, but convey the air from outside the burner into the central air passage. The central passage 9 for elastic fluid is embraced by the oil passages 4 leading forwardly from the chamber or oil inlet 5 at the rear end of the burner body, said

oil passages 4 leading divergently from the oil inlet a sufficient distance to provide for the central passage 9, between them and extending longitudinally, parallel to the axis of the burner-outlet and above and below said central passage so as to deliver the steam and oil in longitudinal jets at the outlet of the burner, said jets extending parallel to the axis of the burner-outlet, thereby entraining the air between the jets of steam and oil.

A tip plate 11 is secured by cap screws 12 at the discharge end of the burner, which plate is provided with two segmental oil discharge orifices 13 and a central air discharge orifice 14 as shown in Fig. 2. The orifices 13 register with the ducts 4 and the orifice 14 fits over a flange 15 formed at the mouth of the air passage 9. The object of the tip plate 11 is to prevent the body of the burner from becoming worn away by the oil which issues from and burns at the tip end of the burner. The tip plate 11 when worn may be easily removed and replaced by a new one without necessitating replacement of the entire burner. The flange 15 prevents the oil from working behind the tip plate to the air passage 9 back of the discharge mouth. If the tip plate 11 were to extend clear to the bore of the air passage 9, oil would be apt to creep through the crack and mingle with the air which passes through the passage 9, before the air reaches the flame which would produce imperfect combustion.

In operation the oil with steam or air enters through the chamber 5 and divides into two streams and flows through the ducts 4, issuing at the orifices 13 where it ignites, while the air enters through the branches 10 and flows through passage 9 and issues at the center or interior of the flame, so that the combustion is supported by an ample supply of oxygen both inside and out, thereby producing a greater volume and intensity of flame and economizing the oil, as the combustion throughout the flame is more perfect on account of the effective distribution and mixing of the air.

As shown in Fig. 1, the burner is applied at the end of a steam and oil pipe 3 which is supplied with oil through a pipe 19 and with steam through a pipe 16. 17 is an air passage adapted to conduct air to the outside of the flame, and the passage of air

therethrough may be regulated by a sliding damper 18 located at the lower end of the passage 17.

What we claim is:—

5 1. A burner comprising a body having a central passage for elastic fluid and having an oil inlet at its rear end and provided with oil passage means extending forwardly from said oil inlet to the front of the burner body,
10 said oil passage means embracing the aforesaid central passage, and tip plate means detachably fastened to the front end of the burner body and provided with orifices communicating with the aforesaid passage for
15 elastic fluid and with the passage means for oil.

2. A burner comprising a body having a central passage for elastic fluid and having an oil inlet at its rear end and provided with
20 passages extending forwardly from said oil inlet to the front of the burner body, said passages embracing the aforesaid central passage, and a tip plate detachably fastened to the front end of the burner body and provided with orifices communicating with the
25 aforesaid passages for elastic fluid and oil.

3. A burner comprising a body having a central passage for elastic fluid and having an oil inlet at its rear end and provided with
30 passages extending forwardly from said oil inlet to the front of the burner body, said passages embracing the aforesaid central passage, and a tip plate detachably fastened

to the front end of the burner body and provided with orifices communicating with the
35 aforesaid passages for elastic fluid and oil, the body of the burner having a flange which projects into and forms a lining for the elastic fluid passage in the tip plate.

4. A burner comprising a body having an
40 outlet for elastic fluid centrally disposed at its front end, provided with inlet passages for elastic fluid extending convergently inward and forward from the sides of the burner into said outlet passage, said body
45 being further provided with an oil inlet at its rear end and with passages leading from said oil inlet divergently outward and forward, and extending forwardly from said
50 diverging portions above and below the passage for the elastic fluid, said forwardly leading oil passages extending parallel to the axis of the outlet for elastic fluid above and below said outlet to deliver jets of oil
55 parallel to each other, and to the axis of the outlet for the elastic fluid whereby such elastic fluid is entrained between the parallel jets of oil.

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