W. R. BUNCH.

OIL BURNER.

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1,331,558.

Patented Feb. 24, 1920.

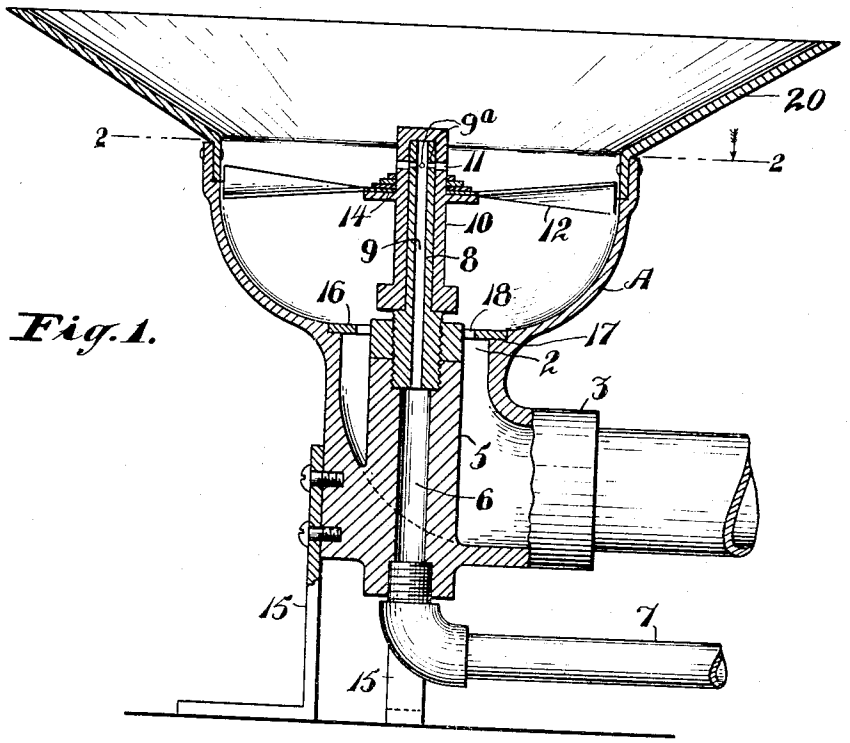


Fig. 1.

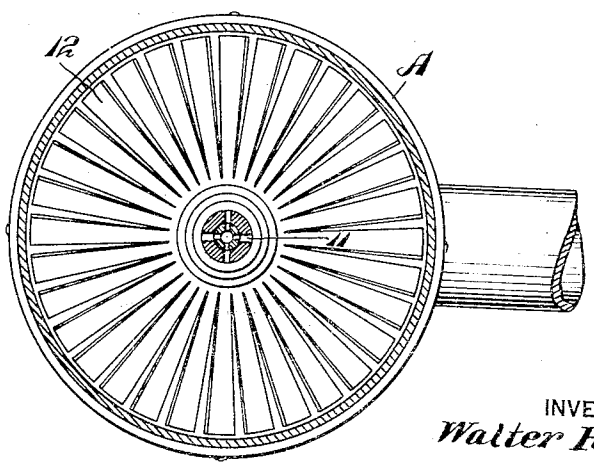


Fig. 2.

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WALTER R. BUNCH, OF RIVERSIDE, CALIFORNIA, ASSIGNOR OF THREE-FOURTHS TO EMIL B. DREYFUS, OF SAN FRANCISCO, CALIFORNIA.

OIL-BURNER.

1,331,558 Specification of Letters Patent. Patented Feb. 24, 1920.

Application filed January 3, 1919. Serial No. 269,476.

To all whom it may concern:

Be it known that I, WALTER R. BUNCH, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

This invention relates to oil burners, and particularly to oil burners of the rotary type in which atomization of the oil is obtained by centrifugal action.

One of the objects of the present invention is to provide a simple, substantial, easily-operated oil burner which is so constructed that the fuel delivered to the burner will be atomized by centrifugal action and then projected and further atomized by means of an air blast. Another object of the invention is to provide a novel form of rotor for centrifugally atomizing the oil and in conjunction therewith a fan for transmitting rotary movement thereto. Another object of the invention is to provide means for regulating the volume of air admitted, said means also adapted to direct the air so that a thorough atomization and mixture of oil and air is obtained before combustion takes place. Further objects will hereinafter appear.

The invention consists of the parts and the construction, combination and arrangement of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings in which—

Figure 1 is a central vertical section of the burner.

Fig. 2 is a plan view of the same on the line 2—2 of Fig. 1.

Referring to the drawings in detail, A indicates a bowl-shaped casing, in the lower portion of which is formed a central air inlet opening 2. Formed integral with the casing is an elbow member 3 through which the air is admitted, said elbow being connected with any suitable source of air supply, as a fan or blower not here shown. Extending upwardly into the casing and centrally positioned with relation to the casting and the inlet opening 2 is a standard 5. This standard is in this instance formed integral with the elbow 3, but may be suitably secured thereto, if desired. Formed interior of the standard is a passage 6 and connected with the lower end of the standard is a pipe 7 which delivers oil thereto from a suitable source of supply not here shown. Adapted to be screwed into the upper end of the standard is a vertical bearing member 8 in which is formed a central oil duct 9 which forms a communication or extension of the passage 6.

Turnably mounted on the vertical bearing member 8 is a rotary atomizer, which, in this instance, consists of an inverted cup 10 provided with perforations 11 at the upper end. The cup member is provided for the purpose of centrifugally atomizing and projecting the oil delivered thereto. It is therefore mounted to rotate about the vertical member 8 and oil delivered to the upper end of the cup will therefore project through the radial openings 11 as will hereinafter be described. For the purpose of imparting rotary movement to the atomizer a fan 12 has been provided. This fan is secured to the cup in any suitable manner, or, as shown at 14, it is mounted directly above the air inlet opening 2 as it can readily be seen that an air blast discharging upwardly through the opening 2 will impart the rotary movement required.

A burner constructed as here shown may be employed for a variety of purposes. It is adapted for installation in practically any standard form of furnace box and may therefore be supported in any suitable manner desired. I have, however, in the present instance shown bracket members 15 secured at their upper ends to the elbow section 3. These bracket members form feet for the support of the burner casing and the air and oil pipes communicating therewith.

In actual practice, with a burner installed, it is only necessary to start the blower and to turn on the oil. The oil entering through pipe 7, generally under a slight pressure obtained by gravity flow, passes upwardly through the passage 6 and the oil duct 9, then passes through perforations 9^a formed in the upper end of the vertical bearing member in direct alinement with the perforations 11. The oil is thus finally centrifugally discharged through these openings as the cup and fan are rotated at a high speed, due to the action of the air blast passing upwardly through the casing.

Actual experience has shown that almost perfect combustion and high temperatures may be obtained with a burner constructed as here shown. This is due to the fact that

the oil is first centrifugally atomized and is then further atomized by being projected radially into an air blast which is traveling thereto. This air blast when striking the already finely divided oil particles will not only assist in further atomizing the oil, but it will also combine with the oil particles, thus forming a homogeneous mixture before combustion takes place.

One of the important features of the present invention is the provision of a removable circular plate 16. This plate is adapted to be placed in an annular seat 17 formed in the casing directly above the inlet opening 2. The disk, as shown, is provided with a central opening 18 through which the air discharges. This is of great importance as it directs the air against the fan at a point where the most efficient action may be obtained and it furthermore provides a means for regulating the volume of air admitted. The importance of regulating the volume of air admitted should be obvious, as different furnace installations require greater or smaller volumes of air to support combustion, and similarly require smaller or greater amounts of oil. It is therefore possible to manufacture a standard size burner in the present instance, as it may be adjusted to suit a great variety of installations, that is, if a comparatively small fire is required a disk 16 is inserted in which the opening 18 is so reduced that a comparatively small amount of air will be admitted. The oil supply is similarly reduced, thereby producing a small fire. Again, if a larger volume of fire and air is required, it is only necessary to increase the oil feed and to insert a disk in which the opening 18 is enlarged. A mixture of air and fuel best suited for the installation may thus be obtained without resorting to the necessity of varying the size of the burner or the several parts employed.

Another important feature of the invention is the positioning of the standard 5. By referring to Figs. 1 and 2 it will be seen that the standard is placed absolutely in a central position with relation to the elbow, the inlet opening 2 and the disk 16. Air entering through the elbow will therefore become equally distributed and will discharge in an even unbroken annular column when passing through the opening 18. The fire projected by the centrifugal atomizer will therefore be even and circular in shape and the height or radius of the flame may be regulated by increasing or decreasing the force of the air blast.

The widely divergent extension flange 20 serves, in conjunction with the centrifugal action of the propeller, to spread and equalize the projected flame.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An oil burner comprising a circular bowl having a divergent distributing rim, a standard extending vertically into the bottom of the bowl, means to supply an air blast around the standard and into the bottom of the bowl, an oil passage and conduit through the center of the standard, radial discharge openings at the top of the conduit, a sleeve cap having discharge openings turnable about the conduit, a propeller mounted upon the cap and revoluble by the air blast, a removable disk-shaped member having a central opening formed therein, and an annular recess formed in the bottom of the bowl for the reception of the disk.

2. An oil burner including a standard having a central, vertical stem with an axial passage connected at the bottom with an oil supply, an extension with a conduit connecting with the first named stem and having discharge openings at the top, a sleeve journaled and turnable about the extension having radial openings co-acting with the openings of the conduit, a propeller fixed to and revoluble with the sleeve, a bowl-shaped receiver, the top of which is substantially above the propeller and level with the conduit discharge openings, a flaring divergent mixing member extension from the upper edge of the bowl, an air blast conductor surrounding the standard and opening into the bottom of the bowl and acting to revolve the propeller to mix and distribute the oil and air, a removable disk-shaped member having a central opening formed therein, and an annular recess formed in the bottom of the bowl for the reception of the disk.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WALTER R. BUNCH.

Witnesses:
L. A. BLICKENSTAFF,
H. J. VANIMAN.