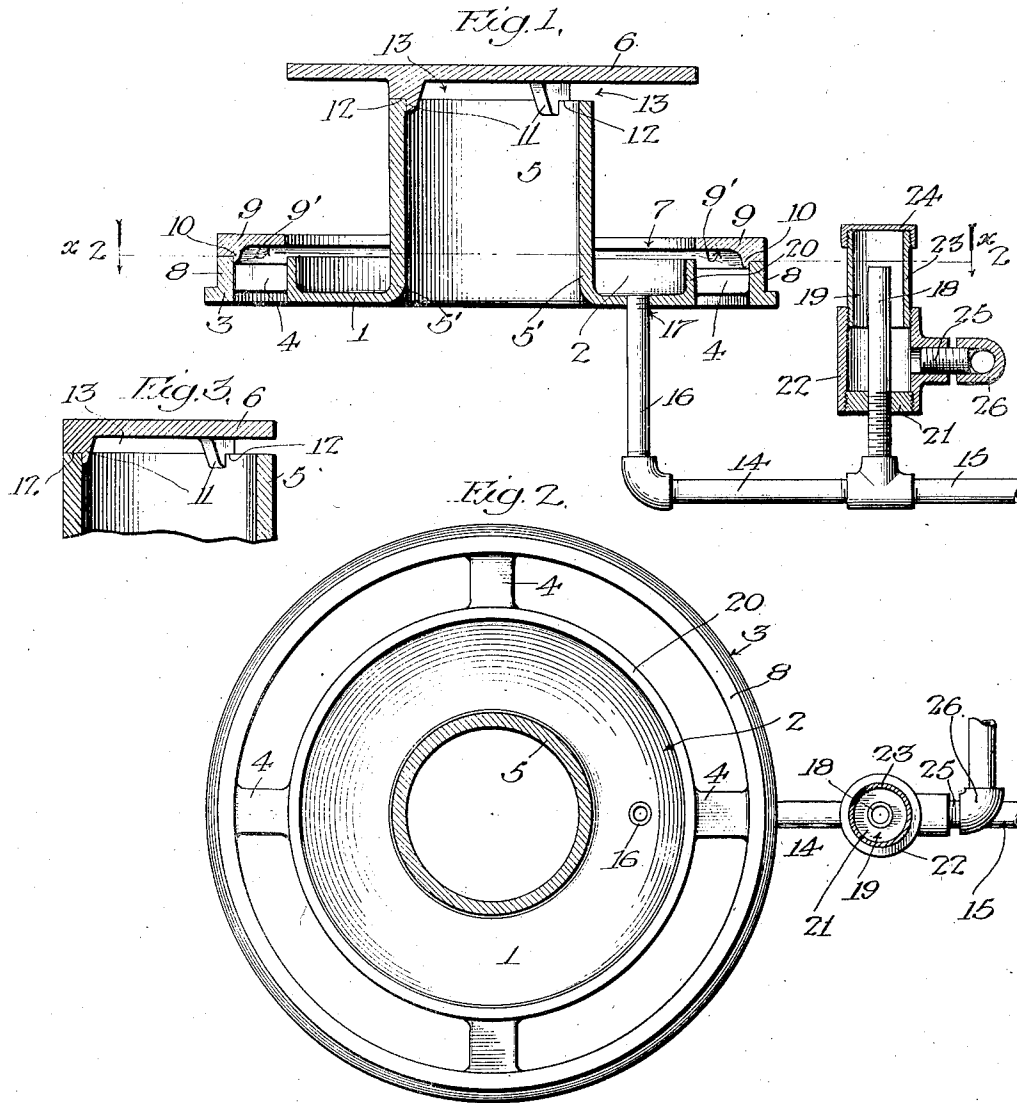


R. C. CASAD.
OIL BURNER.

APPLICATION FILED DEC. 2, 1909. RENEWED AUG. 26, 1912.

1,058,947.

Patented Apr. 15, 1913.



Witnesses:
Lute S. Allen
Louis W. Gratz

Inventor:
Roland C. Casad,
by Townsend & Hackley
his attys.

UNITED STATES PATENT OFFICE.

ROLAND C. CASAD, OF COVINA, CALIFORNIA.

OIL-BURNER.

1,058,947.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed December 2, 1909, Serial No. 531,100. Renewed August 26, 1912. Serial No. 717,224.

To all whom it may concern:

Be it known that I, ROLAND C. CASAD, a citizen of the United States, residing at Covina, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Oil-Burners, of which the following is a specification.

My improvement is designed to burn the unrefined products of distillation from asphaltum base oils such as the oils found in California and Texas, and is particularly adaptable to burn those distillates of comparatively low gravity, known as stove or engine distillates. These oils have relatively low burning qualities and require very strong draft in order to create combustion.

One object of my invention is to provide a burner which will produce in its operation a plurality of movements of the air supplied or admitted to the oil and flame during combustion in order that a sufficient amount of oxygen may be brought into contact and form a union therewith to cause the oil to burn with the greatest efficiency.

Another object is to provide means in an oil burner to admit a sufficient amount of air to the oil at the point of gasification and primary combustion, and to admit a further amount of air to the burning gases above the point of gasification.

Another object of my invention is to provide means whereby the heating of the burner after combustion has been carried on for a considerable length of time, will not interfere with the supply of air to the flame.

A further object of my invention is to provide in an oil burner, overflow means to prevent the oil cup from overflowing into the stove or furnace in the event the flame should be extinguished.

Other objects and advantages of my invention will appear from the following specification.

I have discovered that in burning a liquid hydrocarbon oil of low gravity in burners ordinarily in use that at the first starting of the same, sufficient air is admitted to the flame to produce complete combustion, but as the heat increases and the metal of the burner becomes heated to a considerable temperature, the air becomes rarefied by its contact with the hot metal of the burner

thereby preventing sufficient oxygen to pass through the burner to come into the combustion zone to mingle with the gases to cause their perfect burning.

My invention primarily consists in providing means whereby sufficient air will be admitted to the burning fuel irrespective of the temperature of the burner.

The accompanying drawings illustrate my invention.

Figure 1 is a vertical section of the burner. Fig. 2 is a section on line x^2-x^2 in Fig. 1. Fig. 3 is a partial section showing a modified form of the top plate for the burner.

1 indicates the base of the burner formed by the annular oil pan 2 and ring 3. The oil pan and ring being connected by spiders 4, 4. The inner wall 5' of the oil pan extends upwardly forming an air flue 5. Such flue rises above the circular oil pan to a sufficient height to prevent the air rising upwardly therethrough and flowing outwardly from under the plate 6 to mingle with the burning gases rising from the oil pan 2, until the same have met and mingled with the air which rises upwardly through the annular opening 7 between the outer rim of the oil pan 2, and the ring 3 which is directed inwardly toward the central air flue 5 and over the oil contained in the circular oil pan 2. The ring 3 rises above the base and forms a flange 8 upon which rests a deflector ring 9. Such ring 9 is provided upon its lower face with inwardly curved surface 9' against which the inflowing air strikes and is deflected inwardly toward the flue 5 and over the oil contained in the oil pan. The deflector ring 9 is provided with a chime 10 adapted to be seated over the flange 8 to form a tight joint therebetween. The plate 6 is provided with lugs or legs 11, 11 having shoulders 12, 12 adapted to rest upon the top of the flue walls 5' to hold the plate above such flue to form the space 13 so that the air rising through the center of the burner through flue 5 will be deflected outwardly around the edge of such plate.

14 is a combination feed and overflow pipe arranged to receive a suitable supply of oil from a pipe 15. 16 is a vertical member of the pipe 14 arranged to communicate with the bottom of the oil pan through a suitably

tapped hole 17. 18 is a vertical pipe branching from pipe 14 and leading into a chamber 19, to a point slightly above the elevation of the end of the pipe 16 tapped into the oil pan and below the height of the rim 20 of the oil pan. The chamber 19 consists of a collar 21 mounted on and carried by the vertical pipe 18. Such collar being screw threaded externally and tee coupling 22 is screwed thereupon with the vertical pipe 18 extending through such tee. A thimble 23 is screwed into the other end of the tee and a cap 24 is screwed upon the end of the thimble. A nipple 25 and elbow 26 connect the tee with a suitable conduit to convey any oil overflowing into the chamber 19 to point of safety. In operation oil is supplied to the pan 2 by means of the pipes 14 and 16. When sufficient oil has been allowed to enter the same the oil is ignited. Air rises through the opening 7 and is deflected inwardly over the oil pan by striking against the curved face 9' of the ring 9. The air immediately surrounding the burner will mingle with the gases generated in the oil pan and will assist in their combustion. The walls of the flue 5 when heated will cause an upward current of air therethrough which will flow outwardly through the space formed between the plate 6 and the top of the flue, which will mix with the gases and furnish sufficient oxygen to complete their combustion.

The area of the flue 5 forms an important feature in the carrying out of my invention as the same is required to be sufficiently large enough to supply a quantity of air through the space 13 when the burner is thoroughly heated, for if such flue is contracted below the area necessary to supply or carry sufficient oxygen in expanded form to materially assist in the final combustion, the flame from the burning gases will be smoky and will deposit soot, but I have discovered that when a large enough flue is employed to carry the expanded air and the air is discharged outwardly around the top of the flue and into the upper portion of the flame that complete combustion takes place and no soot is deposited therefrom.

By arranging the ring 9 with the deflecting face 9' to project inwardly from the outer ring 8 of the burner to a point directly over the outer rim 20 of the oil pan and spacing the same above such rim to form the opening 7, I am enabled to direct the air inwardly toward the walls of the flue and over the oil in the pan, thereby forcing the air into the gases rising from the oil body and effecting a perfect mixture therewith. The flames rising upward around the flue meet with and are mingled with the air issuing from the flue beneath the plate 6. The air issuing from the flue 5 beneath the plate 6 is forced out horizontally across the

upward path of the flame and is intermixed therewith, and on account of the volume of air rising through flue 5 and issuing from under plate 6 perfect combustion of the gases is accomplished.

In the form of plate as shown in Fig. 1, the edges thereof project to a considerable distance. This I find to be an effective arrangement as such edge intercepts and deflects the rising gases and flame, and enforces the mixture of the air therewith. This form is especially desirable when burning oils of the lowest gravity. When a light oil is being burned in the burner, I have found that a plate having no projection outside of the diameter of the flue, such as the plate shown in Fig. 3, may be used to good advantage as by the use of such light oils the necessity of final mixing of the air from beneath the plate and the gases rising from the oil pan may be dispensed with and depend upon the expanding air issuing from the flue to mix with the gases to complete their combustion.

It will be understood that by the arrangement of the opening 7, I secure a flow of air inwardly to a common center or a compressing action thereof which first acts upon the gases, and by my arrangement of the plate above the flue and the space formed thereby, I produce an expanding action of the air, and I desire it to be understood that these two actions of the air admitted into the gases and flame combine together to form a perfect mixture of the air and gases to complete their combustion. In the event of the flame being extinguished from any cause while oil is being supplied to the burner, the oil will rise in the pan to the height of the pipe 18, and overflow into the chamber 19 from whence it will be led to any suitable point of safety through the outlet nipple 25.

What I claim is:

1. In an oil burner, an annular oil pan, the inner wall of which is extended upwardly to form an air flue, a deflector surrounding said oil pan and provided with a flange extending inwardly toward the rim of the oil pan and above the level of said rim to deflect a current of air inwardly over the oil pan from all directions said oil pan extending wholly beneath the opening within said flange, and a deflector extending above said air flue and projecting over the oil pan above the level of the first named deflector to deflect the air ascending through the air flue in a current moving outwardly in all directions over the oil pan and over the current of air from the first named deflector.

2. An oil burner, comprising a base formed with an annular oil pan, a ring surrounding said oil pan, spider means connecting said ring and oil pan, the inner wall of the oil pan being extended upwardly to form an air flue

and terminating above the level of the rim
of the oil pan, an annular deflector remov-
ably supported on the aforesaid ring and
formed with an inwardly extending flange
5 extending adjacent to the rim of the oil pan
and above the level thereof the wall of said
oil pan being beneath the opening within
said flange, and a deflector plate removably
supported on the top of the aforesaid air
10 flue and spaced therefrom to allow air to

pass from the air flue below said deflector
plate in an outwardly moving current.

In testimony whereof, I have hereunto set
my hand at Los Angeles, California this
24th day of November 1909.

ROLAND C. CASAD.

In presence of—

F. M. TOWNSEND,

FRANK L. A. GRAHAM.
