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J. S. ZINK

2,124,940

COMBINATION OIL AND GAS BURNER

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Fig. 1.

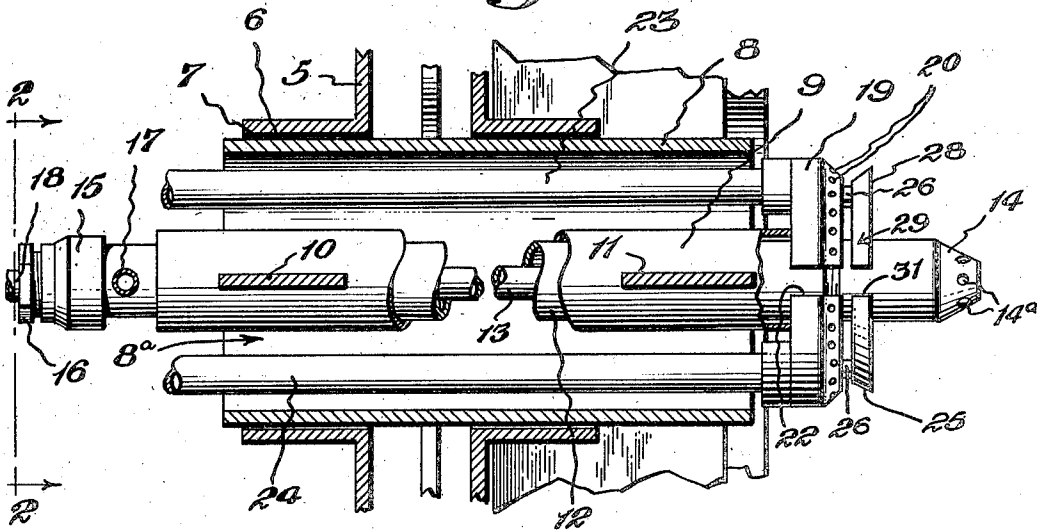


Fig. 2.

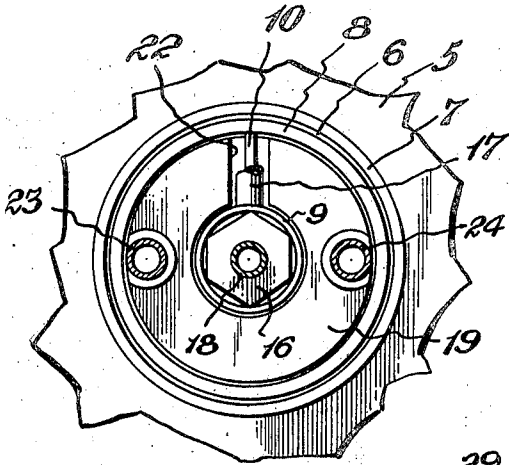


Fig. 3.

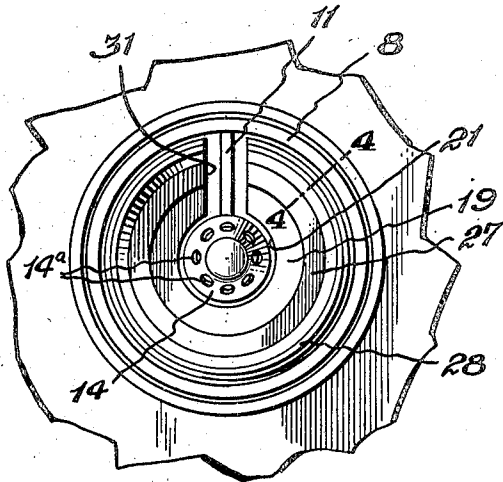
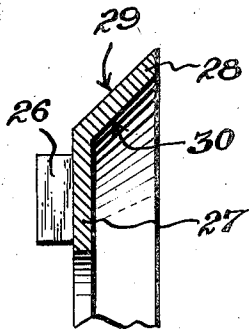


Fig. 4.



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UNITED STATES PATENT OFFICE

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COMBINATION OIL AND GAS BURNER

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Application November 8, 1937, Serial No. 173,491

5 Claims. (Cl. 158—11)

This invention relates to a combination oil and gas burner and more particularly to improvements in burners of the type disclosed in my prior applications Serial No. 108,101, dated October 28, 1936, and Serial No. 120,073, dated January 11, 1937. In the accompanying drawing and the following detail description I have shown and described the improvements as applied to the combination burner disclosed in said application Serial No. 120,073.

The primary purpose of the invention is to provide such a combination oil and gas burner with a baffle plate so arranged as to:

First, act as a combustion accelerator since it causes the combustion to start immediately at the gas head instead of some inches away as would occur if the baffle plate was not used.

Second, prevent oil from the oil head from slobbering or blowing on to the gas head which would tend to clog the discharge ports of the latter.

Third, protect the gas head from the intense heat of the furnace and thus provide a cooler head.

Fourth, provide a baffle structure which can readily be replaced when necessary or desirable.

With the foregoing objects outlined and with other objects in view which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawing, and more particularly pointed out in the appended claims.

In the drawing:

Fig. 1 is a horizontal median view, partly in section and partly broken away of a burner assembly in accordance with the invention.

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary elevation of the front end of the burner assembly.

Fig. 4 is a sectional view of the baffle plate taken on the line 4—4 of Fig. 3.

Referring to the drawing, the burner assembly comprises a mounting plate 5 having a central opening 6 surrounded by a collar 7. An elongated conduit 8 extends through the opening 6 and is slidable in collar 7 which acts as a bearing or support for said conduit.

A second elongated conduit 9, of smaller diameter than conduit 8, extends axially through the conduit 8 and is supported by means of spacer webs 10 and 11, which preferably depend inwardly from the top of conduit 8 radially to the axis thereof, and are rigidly united with the exterior of conduit 9, which is somewhat longer than

the conduit 8 and extends beyond each end thereof. By this arrangement of conduits 8 and 9, a substantially annular space or passageway 8a is provided between the conduits.

An oil burner of the type well-known in the burner art and consisting of a steam pipe 12, surrounding and spaced from an oil pipe 13, is joined to the latter at the burner end to form a burner head 14 having fuel emission ports 14a. The pipe 12 is slidably mounted in the conduit 9 so that the burner head 14, which extends beyond the inner end of the conduit, may be adjusted horizontally relatively to the conduit 9. At the end opposite the burner head 14, a closure is effected between the steam pipe 12 and oil pipe 13 by means of a collar 15, and a threaded bushing 16, the latter being screwed into the collar. The steam and oil supply pipes 17 and 18, respectively, are connected to their respective burner pipes 12 and 13, and are so arranged as to connect therewith in the same vertical plane as the spacer webs 10 and 11, i. e., spacer webs 10 and 11, steam supply pipe 17 and oil supply pipe 18 are all in the same vertical plane at right angles to the horizontal axis of the conduits 8 and 9.

The gas burner consists of a hollow torus shaped head 19 having a series of gas emission ports 20 arranged in the front thereof for discharge of a gaseous fuel from the interior of the burner head. The outside diameter of head 19 is slightly less than the inside diameter of the conduit 8 to permit the head 19 to be slidably inserted or removed through said conduit. The central opening 21 of the head 19 is of slightly greater diameter than the outside diameter of conduit 9 to allow head 19 to slide along conduit 9 while being inserted or removed through the annular space 8a of conduit 8. Head 19 is split at one point in the circumference thereof to provide a slot 22 parallel to the longitudinal axis of head 19 which permits the latter to pass by the steam and oil supply pipes 17 and 18 and spacer webs 10 and 11 when being inserted through the annular space 8a to its operating position which, longitudinally, is between the furnace end of the conduit 8 and the furnace end of conduit 9. Conduit 9 acts as a support for head 19, and a pair of gas supply pipes 23, 24 are connected to the back of the head at opposite sides of slot 22 to furnish a gaseous fuel to said burner head. By this arrangement, each of the pipes is at one side of the plane of the webs 10 and 11 so that they will not be interfered with by the webs or pipes 17 and 18 when the gas burner assembly is inserted or removed independently of the oil burner as-

sembly. By such assembly of the parts as above described, it will be clear that the oil and gas burning portions of the combination burner are entirely independent of each other, and may be separately removed from the combination structure or replaced without interference with each other. It will also be noted that the oil and gas burning portions of the combination burner are supported independently of each other; the oil burning portion being supported within conduit 9, and the gas burning portion being supported by the exterior of said conduit. Thus removal of either portion will not leave the other unsupported.

The burner assembly may be mounted on the wall of a furnace by any suitable means such as disclosed in my above-mentioned applications.

In accordance with the present invention a baffle 25 is fixedly mounted on the forward end of the gas burner head 19. It may be rigidly secured to said head by any suitable means. For example, it may be provided with spaced lugs 26 which are welded to the head 19, and these lugs will space the baffle from the forward end of said head.

The baffle may be of any suitable shape, but I prefer to make it of a vertically disposed substantially annular planar ring 27 having a substantially frusto-conical rim 28 which forms a substantially frusto-conical external surface 29 confronting the ports 20 of the head so that the jets of gas issuing from such ports will be deflected outwardly away from the axis of the conduit 9. The rim of the baffle also forms an internal substantially frusto-conical surface 30, which when the oil burner head 14 is close to the gas burner head, acts to divert oil slobbering or blown from the head 14 and to direct it forwardly and away from the ports 20 of the gas burner head 19.

It will be observed that the baffle is arranged between the heads 14 and 19 and has a slot 31 coinciding with the slot 22, in order to clear the webs 10 and 11 and the pipes 17 and 18 when the gas burner head is inserted or removed.

It will be manifest from the foregoing that the baffle will function as a combustion accelerator, as it causes the combustion to start immediately at the gas head instead of some inches away. Furthermore, it protects the gas head from the intense heat of the furnace and thereby keeps the head in cooler condition than it would be if the baffle was not present.

While I have disclosed what I consider to be a preferred embodiment of the invention in such manner that the same may be readily understood by those skilled in the art, I am aware that changes may be made in the details without departing from the spirit of the invention as expressed in the claims.

What I claim and desire to secure by Letters Patent is:

1. A combination oil and gas burner assembly comprising supporting means, oil-conducting means supported by the supporting means, an oil burner head connected to the forward end of the oil-conducting means, gas conduit means, a gas burner head connected to the forward end of the last-mentioned means and supported by said supporting means, said gas burner head being of substantially annular form, arranged rearwardly of the oil burner head, and substantially surrounding said oil-conducting means, said gas burner head being provided with a series of gas emission ports arranged in the front thereof, and a substantially annular baffle positioned rearwardly of the oil burner head and forwardly of

the gas burner head, said baffle being arranged immediately forwardly of said ports and shaped to divert gas flowing from said ports forwardly and outwardly away from the oil burner head and to prevent oil discharged from the oil burner head from reaching said gas burner head.

2. A combination oil and gas burner assembly comprising supporting means, oil-conducting means supported by the supporting means, an oil burner head connected to the forward end of the oil-conducting means, gas conduit means, a gas burner head connected to the forward end of the last-mentioned means and supported by said supporting means, said gas burner head being of substantially annular form, arranged rearwardly of the oil burner head, and substantially surrounding said oil-conducting means, said gas burner head being provided with a series of gas emission ports arranged in the front thereof, and a substantially annular baffle positioned rearwardly of the oil burner head and forwardly of the gas burner head, said baffle being arranged immediately forwardly of said ports and shaped to divert gas flowing from said ports forwardly and outwardly away from the oil burner head and to prevent oil discharged from the oil burner head from reaching said gas burner head, said baffle consisting of a substantially planar annular plate provided with a forwardly extending substantially frusto-conical rim.

3. A combination oil and gas burner assembly comprising supporting means, oil-conducting means supported by the supporting means, an oil burner head connected to the forward end of the oil-conducting means, gas conduit means, a gas burner head connected to the forward end of the last-mentioned means and supported by said supporting means, said gas burner head being of substantially annular form, arranged rearwardly of the oil burner head, and substantially surrounding said oil-conducting means, said gas burner head being provided with a series of gas emission ports arranged in the front thereof, and a substantially annular baffle positioned rearwardly of the oil burner head and forwardly of the gas burner head, said baffle being arranged immediately forwardly of said ports and shaped to divert gas flowing from said ports forwardly and outwardly away from the oil burner head and to prevent oil discharged from the oil burner head from reaching said gas burner head, said baffle being rigidly secured to the gas burner head and consisting of a substantially planar annular plate provided with a forwardly extending substantially frusto-conical rim.

4. In a combination oil and gas burner assembly, a substantially annular gas burner head provided with gas emission means arranged in the front thereof, an oil burner head arranged forwardly of the gas burner head and positioned axially of the latter, and a substantially annular baffle arranged between said heads and positioned in front of said gas emission means, said baffle being shaped to divert gas flowing from said means forwardly and outwardly away from the oil burner head and to prevent oil discharged from the oil burner head from reaching said gas burner head.

5. A combination oil and gas burner comprising supporting means, an oil conveying conduit supported by said means, an oil burner head connected to the discharge end of said oil-conveying conduit, a gas burner head through which the oil-conveying conduit extends, said heads being arranged in close proximity to one another, with the

oil burner head normally projecting beyond the gas burner head, gas-conveying conduit means connected to said gas burner head for furnishing gaseous fuel to the latter, said gas burner head and gas-conveying conduit means being supported 5 by the supporting means and being removable from the latter while the oil burner is in operation without disturbing the latter, and a baffle rigidly

secured to the gas burner head and arranged between the heads, said baffle being shaped to divert gas flowing from the gas burner forwardly and outwardly away from the oil burner head and to prevent oil discharged from the oil burner head 5 from reaching said gas burner head.

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