Oct. 15, 1929. W. M. SHAW 1,732,071

LOW PRESSURE GAS BURNER

Filed March 19, 1927

FIG. 1

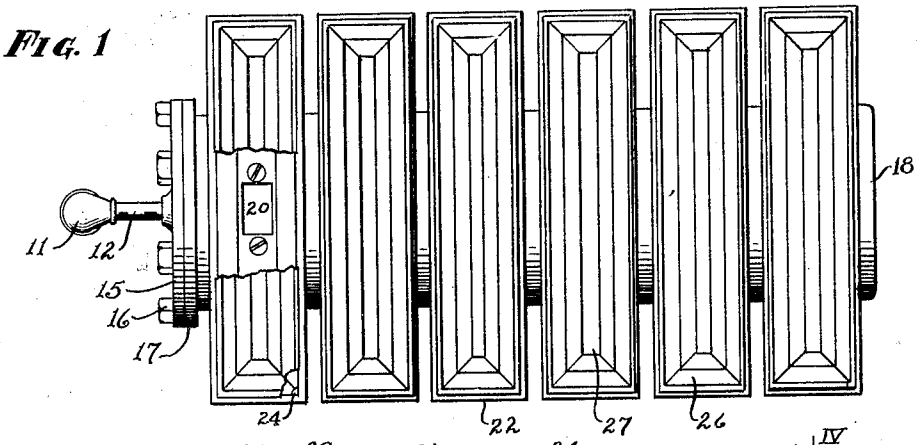
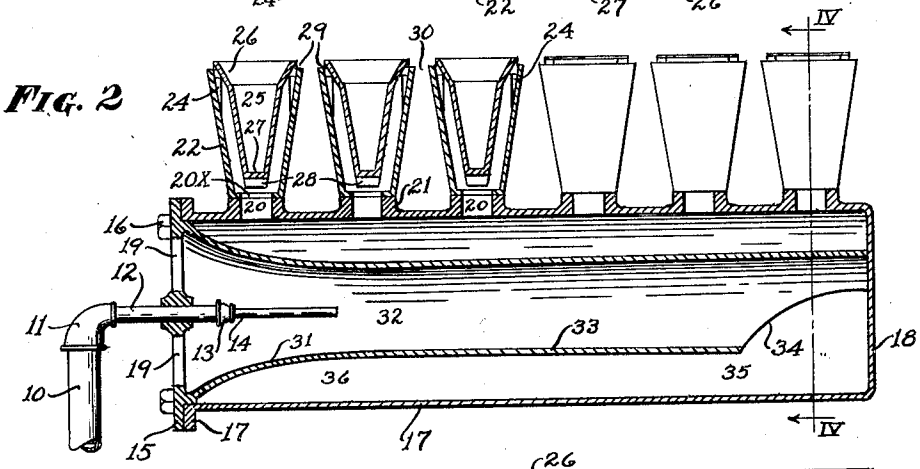


FIG. 2



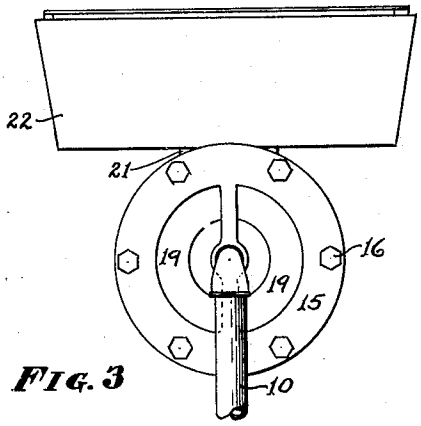


FIG. 3

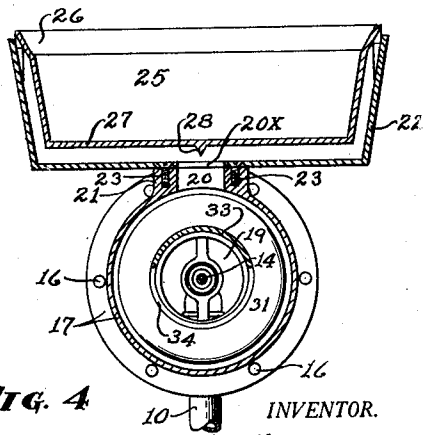


FIG. 4

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Patented Oct. 15, 1929

1,732,071

UNITED STATES PATENT OFFICE

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LOW-PRESSURE GAS BURNER

Application filed March 19, 1927. Serial No. 176,800.

The invention relates to low-pressure gas burners as employed in industrial and residential installations and the like. The present invention relates primarily to that type of burner and for that type of installation as exemplified in my prior Patent No. 1,607,104 and the novelty resides in improved features as applied to burners of that class and which in actual use have been proven to secure results of better combustion and therefore an increased efficiency.

In the drawings, Fig. 1 is a top view of my burner with a section removed for illustration. Fig. 2 represents a side view of elements of the device with parts in section to show the principles of the invention. Fig. 3 is an end view showing the intake elements. Fig. 4 represents a sectional view taken along the line IV—IV, Fig. 2 and looking in the directions of the arrows. Similar numerals of reference indicate corresponding parts throughout all the figures of the drawings.

Referring to the drawings, the gas lead in pipe 10 is provided with the elbow 11, entering pipe 12, reducer 13 and jet 14. The pipe 12 passes through the end plate 15 of an inner barrel 33 bolted at 16 to the peripheral flange of the outer barrel 17. As seen the barrel 17 is longitudinally disposed being closed at the outer end 18. The end plate 16 is provided with air openings 19 through which air enters to mix with low pressure gas admitted within the device at the jet 14 in the customary manner. At spaced intervals in the upper portion of the barrel 18 and in the longitudinal axis thereof are holes 20 which may be rectangular in character. These holes are formed intermediate raised boss elements 21 of the barrel 17. Over each port 20 is positioned a rectangular burner element including a pan 22 having sides slightly flaring as disclosed and a central opening 20^{x} registering above the opening 20. Screws 23 rigidly secure the pan 22 to the boss 21 of an individual unit assembly. Lugs 24 are cast in the corners near the top edges of the pans 22. Within an outwardly and upwardly inclined box 22 is arranged an outwardly and upwardly inclined spreader 25 also of a rectangular shape and having outer flaring edge portions 26 which are supported upon the lugs 24. The spreader 25 has a closed base 27 which has a V-shaped ridge cast on the under side thereof at 28 extending clear across the base 27 as in Fig. 2 which in the view seen in Fig. 4 serves to center over the port 20 in a manner to deflect mixed gaseous currents in an equal amount towards the opposite ends of the rectangular burner assembly. It will be noted that the upper edges of the sides 26 are somewhat raised above the upper edges of the sides 22. The gas escapes through the rectangular orifices 29. It will be noted that the upper side edges of the boxes 22 are spaced apart at 30 to form air conduits.

The essential difference between my present invention and that illustrated in my prior patent, cited, lies in the shape and character of the first mixing chamber. The cast cap 15 is depressed at 31 as a funnel shaped element into which the air admitted through the ports 19 is received and forced to pass through the restricted portion 32 into the tubular inner barrel 33 which extends to a contact at its outer end with the inner wall 18 of the end element of the outer barrel 17. The barrel 33 is cut away at its lower outer end as seen at 34. It will be noted that the barrel 33 is not of constant cross-section, being tapering from the restricted portion 32 outwardly towards the wall 18 of increased diameter in a progressive manner. Thus it will be seen that the spacing 35 between the outer wall 17 and inner wall 33 at a vertical section taken for instance at the right hand portion at 35 would be appreciably less than the spacing of like parts at 36. Making the barrel 33 to tapering enlarge rearwardly and thereby taperingly enlarge the capacity of the gas chamber from the end 18 towards the end 31 does this, it more thoroughly provides for the proper flow of the gas through progressively increasing tubular elements not only while in the inner barrel 33 but also after passing through opening 34 into the outer barrel 17. This permits a better mixing of the air admitted at 19 with gas admitted at 14 and for a better and more even flow of said mixed gaseous elements to all the orifices 20, so that the burner at the left of Fig. 2 would

be equally served as the burner at the right of Fig. 2 which sets closer to the intake 34.

Such modifications may be employed as lie within the scope of the appended claims.

Having fully described my invention, what I now claim as new and desire to secure by Letters Patent is:

1. In a gas burner, the combination of an inner mixing chamber, an outer barrel and a series of rectangular burner boxes formed with outwardly and upwardly flaring inclined walls at all of their sides and having their upper adjacent edges spaced slightly apart to form air conduits, and an outwardly and upwardly inclined spreader within each of said boxes and spaced therefrom, the upper edges of said spreaders being in a plane above the upper edges of the boxes; the inner mixing chamber comprising a single tubular element within the outer barrel, said tubular element having a central restricted portion, a flaring funnel-like portion at one side of the restricted portion and a tubular portion at the other side of the restricted portion, said tubular portion increasing in diameter outwardly from the restricted portion and cut away adjacent the end wall of the tubular outer barrel; and a port for each box leading from the outer barrel.

2. A mixing chamber for gas burners including an inner barrel concentrically arranged within an outer barrel; said outer barrel being of cylindrical cross-section and closed at one end and provided with a plurality of ports in a side wall thereof; said inner barrel being of tubular character having a central restricted portion, a flaring funnel-like portion at one side of the restricted portion and a tubular portion at the other side of the restricted portion, said tubular portion increasing in diameter outwardly from the restricted portion and cut away adjacent an end wall of the outer barrel.

3. In a gas burner, a gas pipe service, a gas jet, a single tubular element facing the jet; said tubular element comprising an inner mixing chamber having a restricted central portion, a flaring funnel-like portion at the side of central portion towards the jet and a tubular portion at the other side of the central portion, said tubular portion increasing in diameter outwardly from the restricted portion and a vent therein; an outer barrel enclosing the inner mixing chamber; air intakes for the funnel-like portion; said funnel-like portion serving as a closure to the outer barrel; a plurality of spaced rectangular ports in the outer barrel along its top edge portion; a box with flared sides and a port in its bottom in registry with a barrel port and a spreader within the box and a rib as a deflector on the base of said spreader positioned at a spaced interval from the port in said box.

In testimony whereof I affix my signature.

WALTER M. SHAW.