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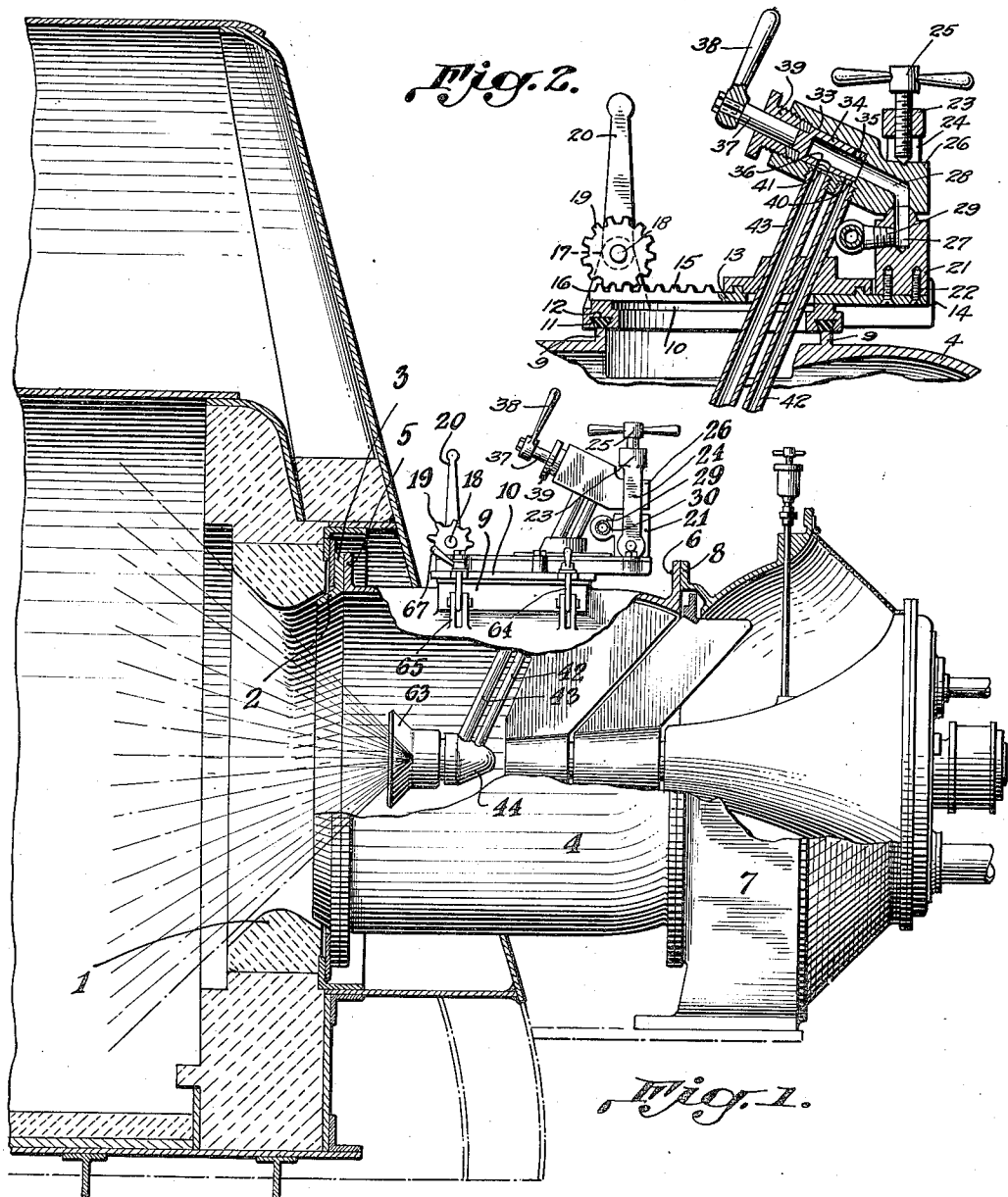
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LIQUID FUEL BURNING EQUIPMENT

Filed Sept. 17, 1935

2 Sheets-Sheet 1



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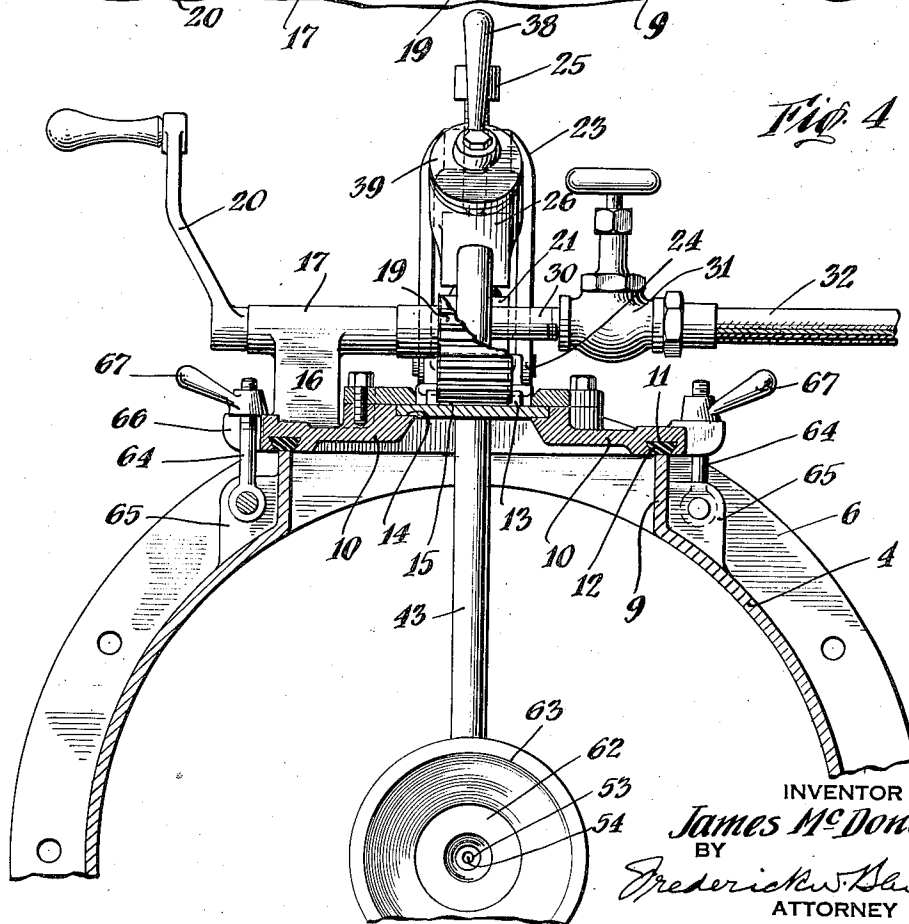
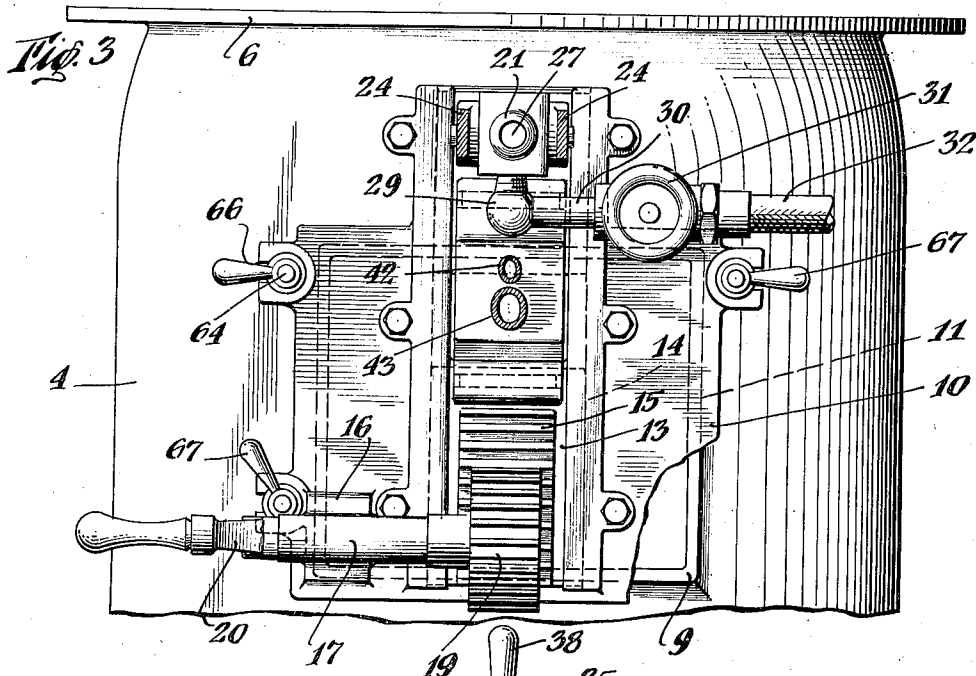
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LIQUID FUEL BURNING EQUIPMENT

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LIQUID FUEL BURNING EQUIPMENT

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Application September 17, 1935, Serial No. 40,906

4 Claims. (Cl. 158—2)

This invention relates to oil burning equipment, particularly for use with locomotive boilers, although also applicable with marine and other boilers, and my improvements in the main are directed to certain novel features wherein the burner assembly is rendered adjustable with relation to the Venturi opening and can also be removed with facility.

Other features and advantages of my invention will hereinafter appear.

In the drawings:—

Figure 1 is a side elevation, partly broken away and partly in section, illustrating my improved oil burning equipment as applied to a locomotive boiler.

Fig. 2 is an enlarged detail view in side sectional elevation, showing the burner assembly and its means of adjustment.

Fig. 3 is a top plan view taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2.

Only the rear end of a locomotive boiler is represented in the drawings, wherein the furnace mouth is indicated at 1 and the usual Venturi ring 2 is shown fitted in said mouth, said ring having a radial flange 3.

A housing 4, constituting an air register, is provided at its inner end with a radial flange 5 which butts against and is secured to the flange 3.

Also the housing 4 has a radial flange 6 at its outer end, and a blower, indicated at 7, is provided with a flange 8 adapted to abut against and be secured to flange 6.

The housing or register is provided with an opening in its upper portion, said opening having a surrounding, upstanding ledge or wall 9, and a cover plate 10 for said opening is recessed as at 11 to fit over and engage wall 9, suitable packing 12 being employed to effect a tight joint.

A panel 13 is slidably mounted at its sides in guideways 14 that are provided in the cover plate 10, said panel bearing a rack 15 on its upper surface and being capable of sliding movement to and from the furnace mouth. This panel 13 carries the burner assembly and enables the fuel atomizer to be adjusted axially with relation to the furnace mouth.

A bracket 16, carried by the cover plate 10, has a bearing 17 in which is journaled a shaft 18 that carries a gear 19 which is in mesh with rack 15, said shaft being operable by a hand crank 20 for rotating gear 19 and thus causing the panel 13

bearing the burner assembly to be shifted in either direction.

The support for the burner assembly comprises a lower block 21 which is secured upon panel 13 as by screws 22, and an upper block 23 which has yoke arms 24 that straddle block 21; also a hand screw 25, threaded through block 23 and adapted to bear against an intermediate block 26 to bind it and block 21 together. Blocks 21 and 26 have respective concave and convex meeting surfaces to provide liquid tight seats, and they have the aligned passageways 27, 28 for the flow of fuel which enters passageway 27 through a hollow plug 29 that is screwed into block 21 to effect a junction with said passageway 27. Liquid fuel enters plug 29 through a pipe 30 under control of a valve 31, as received from a source of supply (not shown) through a flexible tube 32.

The block 26 is provided with a tapered opening 33, which constitutes a valve chamber, in which is revolutely fitted a hollow tapered valve 34, said valve having the ports 35, 36, and being open at its restricted end for communication with the passageway 28. The stem 37 of valve 34 has an operating handle 38, and a stuffing box 39, around stem 37, engages the outer portion of opening 33 to render the valve chamber liquid tight.

The wall of the valve chamber in block 29 is pierced with longitudinally aligned orifices 40, 41, in which are fitted, as by screw threads, the like ends of respective tubes 42, 43 which are respectively of different interior diameters.

The opposite ends of tubes 42, 43 are fitted respectively in a block-like, hollow member 44 which constitutes the delivery portion of the burner assembly, said member including a recessed chamber 45 in which is fitted a tube 46, and a larger, annular chamber 47 that surrounds tube 46.

The fuel supply tube 42 communicates with chamber 45 and the tube 43 communicates with chamber 47.

Tube 46 is provided, at its outer end, with a radial flange 48, whose inner perimeter is bevelled in order that it may find a seat upon the correspondingly bevelled outer perimeter of member 44, said flange forming the outward boundary of chamber 47, and being pierced with a series of orifices 49 for liquid passage.

Also the outward face of flange 48, (including the end of tube 46) is provided with tangential grooves 50 which extend from the orifices 49 to the interior of tube 46.

An interiorly threaded, sleeve-like member 51 is slidably fitted in the outer end portion of tube

46, and is permitted limited movement therein, its extent of sliding motion being limited inwardly by a shoulder formed in tube 46 at the junction of the larger and smaller interior diameters of said tube, and being limited outwardly by an atomizer plate 53 that has a central orifice 54 and which lies against the inner face of flange 48.

The inward end of sleeve 51 is of conoidal form and it will be noted that atomizer plate 53, which is of suitable thickness, is provided on its inward surface with a dished or concave clearance of which orifice 54 forms the centre, and that the conoidal portion of sleeve 51 centers in and closes orifice 54.

A clamping nut 62 is shown as screwed upon member 44 and extended over the plate 53, and a flame cone 63 may be fitted upon and secured to said clamping nut.

The cover plate 10 is removably secured to the housing by means of bolts 64 that are pivotally carried by lugs 65 which extend from said housing, said bolts being adapted to be swung into and out of recesses 66 formed in said cover plate, and wing nuts 67 are applied to the bolts to hold the cover plate tightly upon the housing. Thus the cover plate, together with the slidable panel bearing the burner assembly can be quickly removed by merely releasing the bolts.

It is to be understood that by means of the sliding panel the burner, which is angled downwardly toward the furnace mouth, can be shifted axially for any desired adjustment to obtain the best available position for efficient combustion of the atomized fuel.

The advantages of this arrangement are that any of the propeller type of fans at present on the market can be used, whereas a hollow shaft fan with turbine or motor has to be special, requiring a larger shaft, and the fan and part of the register to be hinged to swing open for renewal of flame cones, &c.

Variations within the spirit and scope of my

invention are equally comprehended by the foregoing disclosure.

I claim:—

1. In combination, a boiler furnace having an opening, an air register extending outwardly from said furnace opening, a burner assembly including atomizing means, longitudinally movable means on said register carrying said burner assembly for shifting the burner assembly to and from the furnace opening, and rack and gear means for actuating said movable means.

2. The combination with a boiler furnace having an opening, an air register extending outwardly from said furnace opening, said register having an opening in its upper surface, of a 15 removable cover for said register opening, guideways in said cover, and a panel slidable in said guideways, a burner assembly carried by said panel including atomizing means projected toward the furnace opening, and rack and gear means 20 adapted to shift said panel for adjusting said burner assembly longitudinally with respect to said furnace opening.

3. In combination, a boiler furnace having an opening, an air register extending outwardly from said furnace opening also having an opening, a slidable panel closing said register opening, a burner assembly borne by said panel and means for sliding said panel whereby said burner assembly may be longitudinally retracted or advanced relative to the furnace opening.

4. The combination with a boiler furnace having an opening and an air register extending outwardly from said furnace opening, said register having an opening in its upper surface, a 35 panel slidably arranged over said register opening, a burner assembly carried by said panel including atomizing means projected toward the furnace opening and means for sliding said panel for adjusting said burner assembly longitudinally with respect to said furnace opening.

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