Sept. 15, 1931. J. L. JONES 1,822,992

INSPIRATOR

Filed Sept. 11, 1928

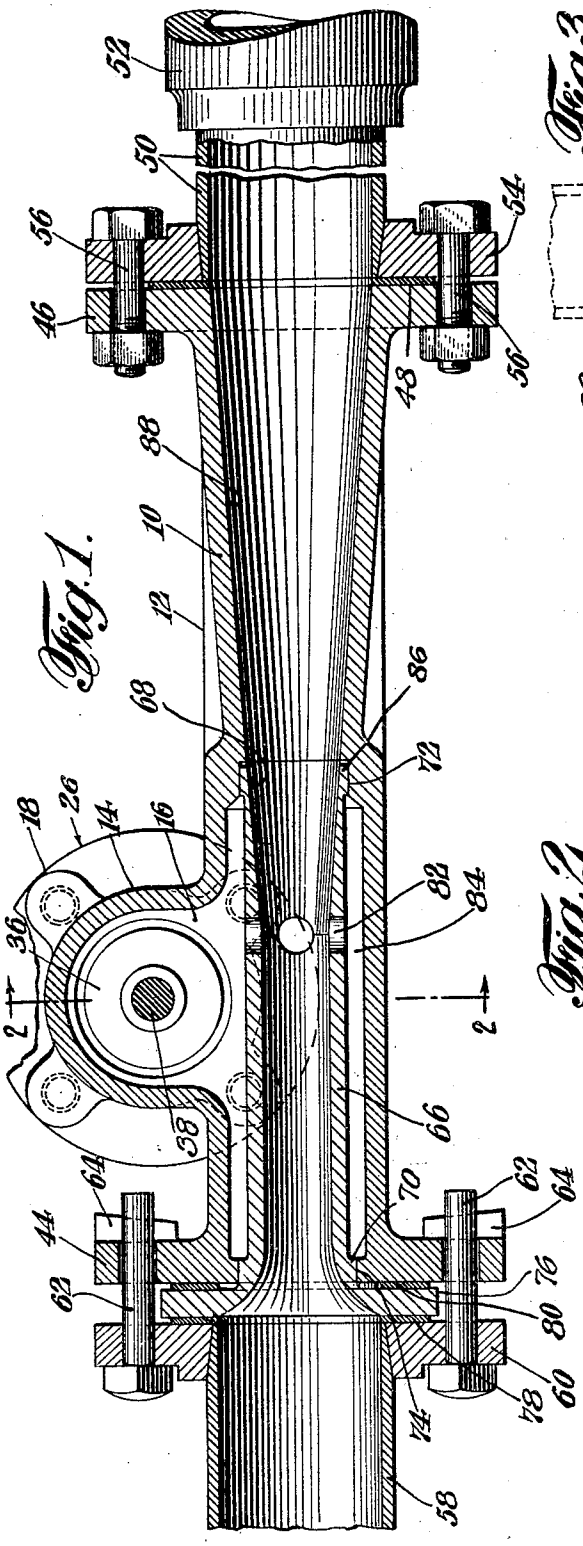

Fig. 1.

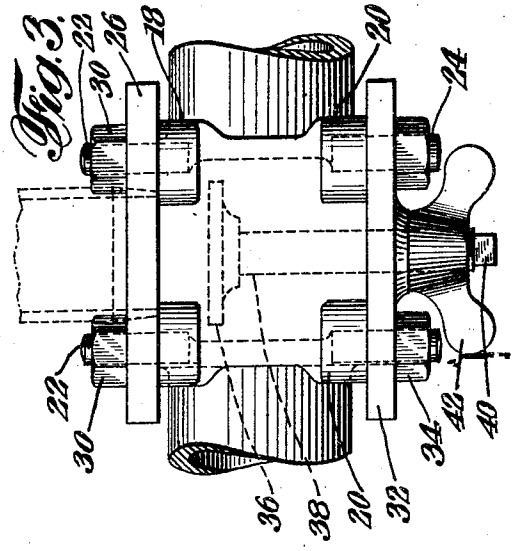

Fig. 3.

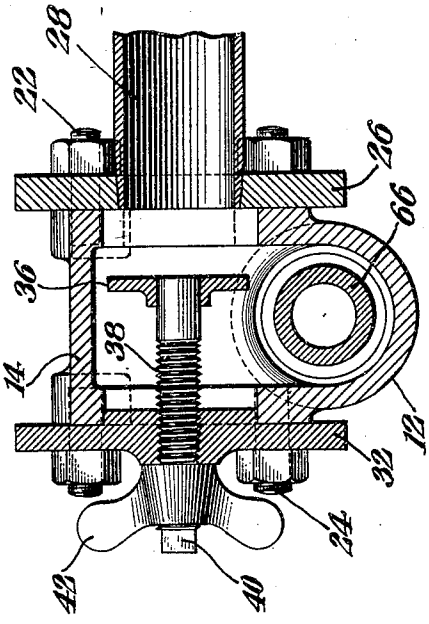

Fig. 2

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UNITED STATES PATENT OFFICE

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INSPIRATOR

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This invention relates to detail features of improvement in the design of inspirators and aims to provide an improved construction which will enable the device to be readily disconnected from the burner and fuel and air supply pipes and the burner with which it is normally connected, without the necessity of disturbing or unscrewing numerous threaded pipe connections.

The inspirators of the same general type to which my invention is applied have heretofore been provided with screw threaded openings for connecting with the burner and the fuel and air pipes. Such old inspirators can be removed for cleaning or repair only with great difficulty and such removal involves the unscrewing and dismantling of the burner and much of the supply piping, all of which must be replaced and made gas-tight before the apparatus can be put in use. This is a laborious, costly and inefficient procedure which my improved construction eliminates.

My invention will be apparent from the following specification when read in connection with the accompanying drawings and the features of novelty will be defined with particularity in the appended claims. In the drawings:—

Fig. 1 is a central longitudinal section illustrating an embodiment of my invention;

Fig. 2 is a section on line 2—2 thereof;

Fig. 3 is a partial plan of Fig. 1.

Referring in detail to the drawings, 10 represents my improved inspirator as a whole which comprises a hollow shell-like casing 12 having an integral extension 14 forming a gas or fuel inlet chamber 16. Flange ears 18 and 20 extend radially from the extension and carry studs 22 and 24. The studs 22 pass through holes in a flange 26 formed on a gas or fuel supply pipe or conduit 28 and nuts 30 serve to detachably clamp the inspirator to said gas supply pipe or conduit.

Opposite the flange 26, the chamber 16 is closed by a member 32 which is held in place by the studs 24 and nuts 34 carried thereby. The member 32 forms a detachable mounting for a valve 36. The valve has a screw threaded stem 38 which has a squared head 40 for coaction with a key or wrench. By screwing the valve stem 38 in or out, the admission of fuel to the inspirator can be accurately controlled. A thumb nut 42 serves as a lock-nut to hold the valve in its adjusted position.

At its opposite extremities, the inspirator casing is formed with integral annular flanges as shown at 44 and 46. Seated on one face of the flange 46 is a gasket 48. A pipe 50 leading to a burner 52 carries a flange 54 which is detachably clamped to the inspirator by the bolts 56 passing through matched holes in the flanges 46 and 54.

Air is supplied to the inspirator under low pressure through a pipe 58 having a bolt flange 60. The inspirator is detachably secured to the pipe 58 by bolts 62 which pass through holes in the flange 44. These bolts are provided with wedge-keys 64 to permit of quick detachment.

The inspirator as shown includes an inner tube 66 having bearing portions 68 and 70 which engage seats 72 and 74 provided in the casing.

At one end the tube has a flange 76 located between the flanges 60 and 44 and clamped in position by the bolts 62. Gaskets 78 and 80 are interposed as shown to provide a gas-tight joint.

The tube 66 has ports 82 which open into a chamber 84 which communicates with the gas inlet chamber 16. The end 86 of the tube bore flares outwardly to match the flare of the Venturi portion 88 of the inspirator as shown.

In operation, air flowing through the tube draws gas from the chambers 16 and 84 and the two mix within the portion 88 and flow to the burner 52 as an explosive gaseous mixture in the well known manner. The particular feature of my improvement resides in the design of the device whereby the inspirator proper can be detached from the burner and the fuel and air supply pipe without unscrewing, dismantling and otherwise disturbing other equipment. The flanged construction shown and described greatly facilitates the installation and removal of the device, it merely being necessary to remove the

clamp bolts 62 and 56 and nuts 30 in order to detach the device from the supply pipes and the burner.

I am aware that Patent 1,574,107 granted to Arthur W. Peters discloses a burner in Fig. 5, whose component parts are substantially the same as the component parts of my burner. However, in the Peters' burner the parts cannot be separated without unscrewing and dismantling supply pipes and other parts, which dismantling operations interfere materially with the efficient operation of the furnaces using such burners.

It is highly important that inspirators be removed easily and quickly to prevent as much discomfort to workmen as possible, for the device is frequently used in extremely hot locations and the pipes and other accessories are much too hot to be handled comfortably. Again the so-called shut-down time for equipment that is provided with such inspirators as herein described is a very important item of overhead cost and it is a most important consideration to have such "shut-down time" reduced to a minimum.

The detailed improvements of design, which I have invented materially decrease the time required for removing, inspecting, replacing or renewing burners or parts thereof and my invention relates chiefly to improved details of construction, as recited in the claims, which facilitate the easy and quick removal of parts without disturbing other parts of the equipment.

What I claim is:—

1. An inspirator for mixing and proportioning gases comprisng a member forming part of a gas chamber, a Venturi tube passing through said gas chamber, said tube being provided with openings for the passage of gas from said chamber into said tube, a gas supply pipe communicating with said chamber, a valve and valve stem for regulating the flow of gas from said gas supply pipe to said chamber, a mounting for said valve and stem, said mounting engaging said member and forming a closure for one end of said chamber, the mounting being removable so that the valve assembly can be removed without disturbing any connections or other parts of the inspirator.

2. An inspirator for mixing and proportioning gases comprising a member forming part of a gas chamber, a gas supply pipe connected to said member, a valve for regulating the flow of gas from said gas supply pipe to said chamber, a Venturi tube extending through said chamber, said tube having openings therein communicating with said chamber, bearing seats formed in said member, said tube having portions which slidingly engage said bearing seats, an annular flange formed integrally on one end of said tube, a flange adapted to coact therewith formed on said member, an air supply pipe having a flange adapted to coact with the flange on said tube and detachable means for clamping the flange of the Venturi tube between the flange of said member and the flange of said air supply pipe.

3. An inspirator embracing the particular feature of a casing member forming part of a gas supply chamber having flange connections and a valve for regulating the gas supply, said valve being carried by a mounting detachably secured to said casing member said valve and mounting being removable as a unit.

4. An inspirator including a casing member forming a gas chamber, a Venturi tube extending through said chamber and making a sliding fit with bearing seats formed within said casing member, said Venturi tube having a flange formed integrally on one end thereof, an air supply pipe, flanges formed on said air supply pipe and said casing member and means for detachably clamping the flange on said tube between the flanges on said casing member and said air pipe substantially as described.

In witness whereof, I have hereunto signed my name.

JOHN L. JONES.