Oct. 17, 1950 W. M. SHAW 2,525,960

MULTIPLE HEAD GAS BURNER UNIT

Filed Sept. 19, 1944 2 Sheets-Sheet 1

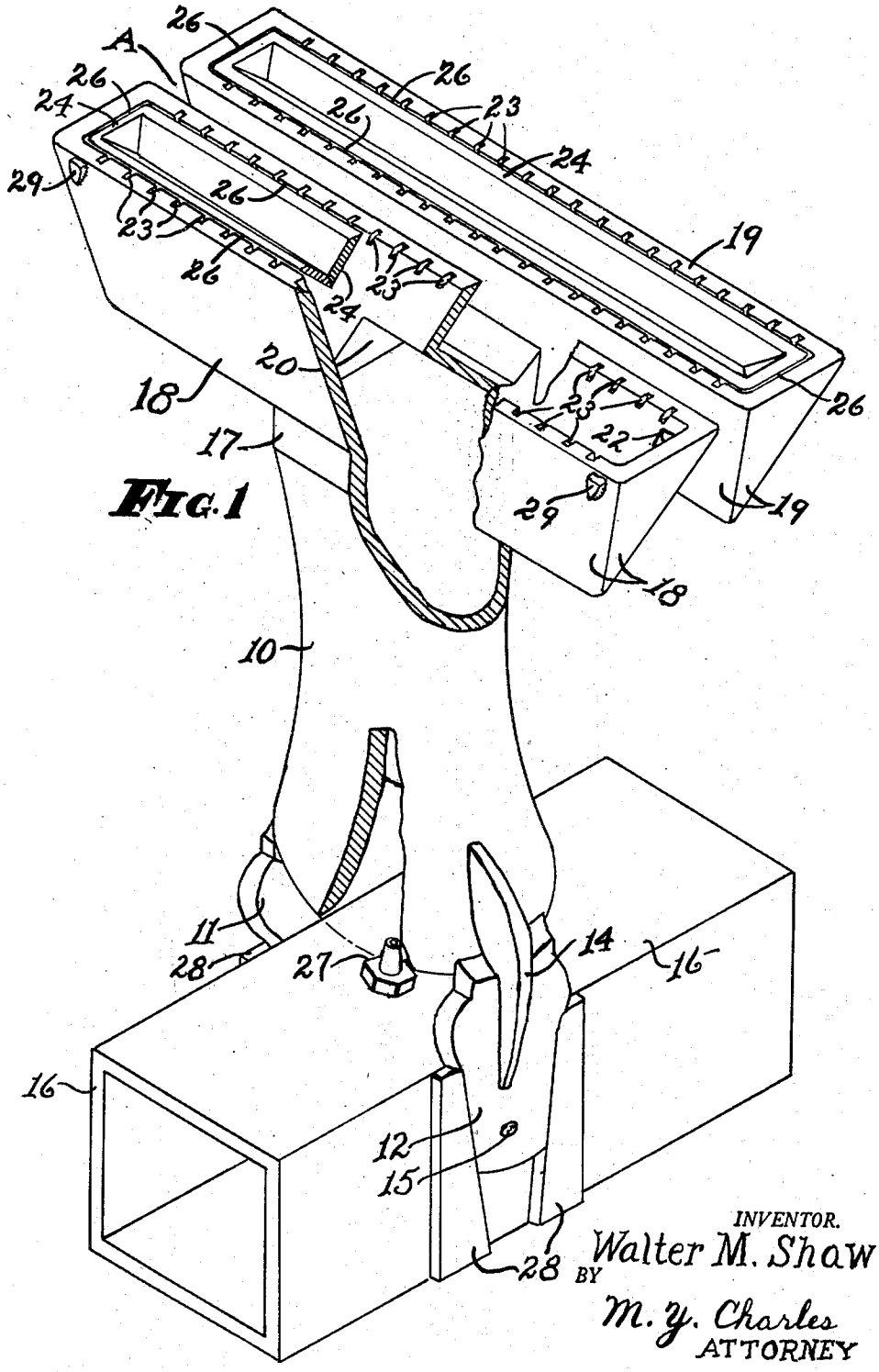


FIG. 1

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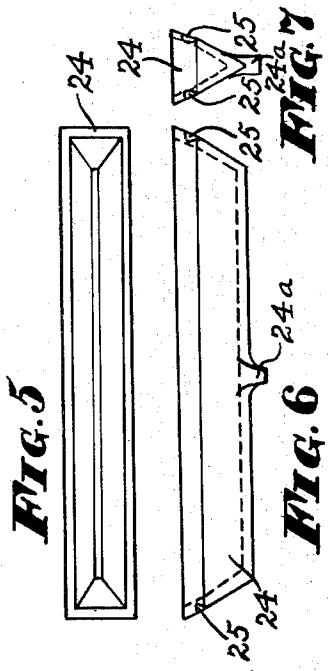


FIG. 7

FIG. 6

FIG. 5

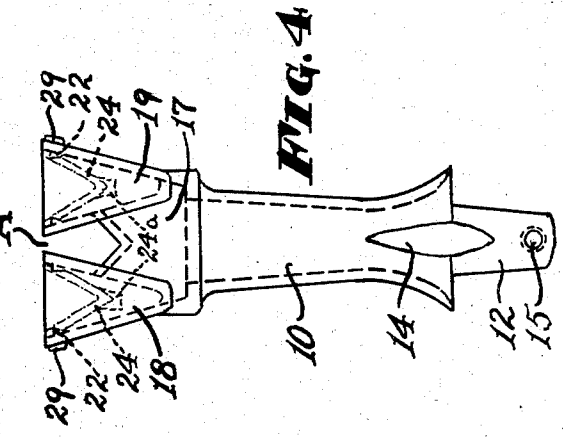


FIG. 4

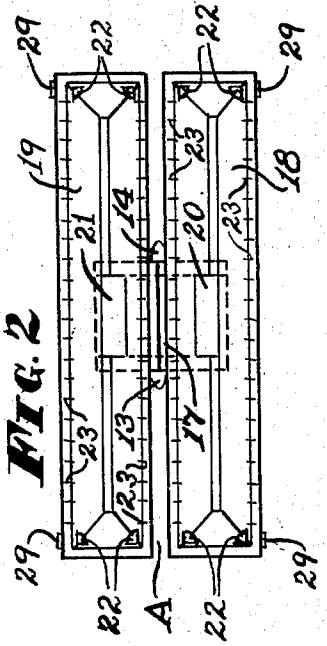


FIG. 2

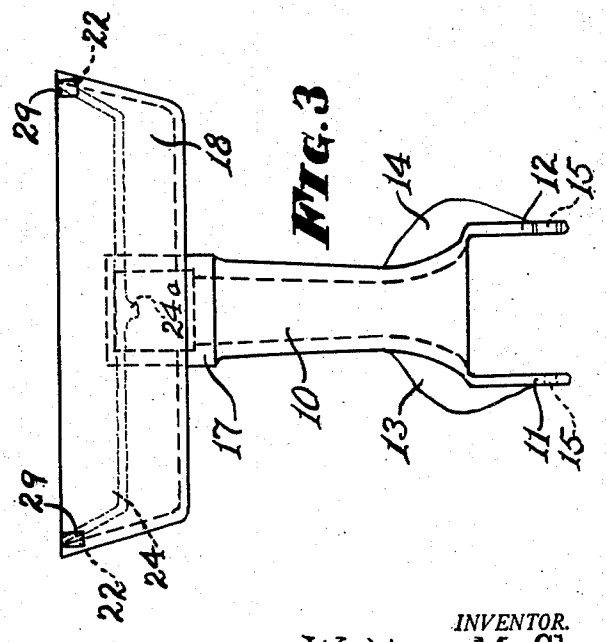


FIG. 3

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UNITED STATES PATENT OFFICE

2,525,960

MULTIPLE HEAD GAS BURNER UNIT

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Application September 19, 1944, Serial No. 554,747

1 Claim. (Cl. 158—104)

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My invention relates to an improvement in low pressure gas burners, and is an improvement over my previous Patent No. 1,732,071, and was issued October 15, 1929.

The object of the present invention is to provide a multiple head burner unit that is formed on a single gaseous fuel supply tube that is detachably set on a fuel manifold and can be readily so set and removed therefrom without the use of tools.

A further object is to provide a burner unit of the kind mentioned, a series of which can be set on a manifold as above mentioned, to build up a large burner having a series of burner head units as above described.

A still further object is to provide a burner of the kind mentioned and having fuel passages therein that are so directed that streams of discharging fuel from the adjacent heads will impinge to provide a better distribution of the flame from the burner.

A still further object is to provide a burner unit, and a built up burner of the kind mentioned in which the burner heads are spaced apart to provide a space therebetween for an ample supply of secondary air between each fuel discharge passage of each burner head.

A still further object is to provide a gas burner of the kind mentioned that is simple and easy to install and assemble, as well as being inexpensive to manufacture and sell.

A still further object is to provide a burner of the kind mentioned in which the individual units can be easily removed and replaced without disturbing the balance of the units. This makes it easy to repair or replace damaged units of the burner with no loss or disturbance of the balance of the burner.

A still further object is to provide a burner of the kind mentioned in which the units are light and not too large which makes it easy to handle the several parts of the burner, this, of course, makes it easy to install and assemble, or make replacements in the burner.

These and other objects of the invention will be more fully described as these descriptions progress.

Now referring to the accompanying drawings; Fig. 1 is a perspective view of one of the burner units mounted on a gaseous fuel supply manifold, parts being broken away for convenience of illustration.

Fig. 2 is a top plan view of one of the burner units, the burner caps being removed therefrom for convenience of illustration.

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Fig. 3 is a side view of one of the burner units shown in Fig. 2.

Fig. 4 is an end view of the burner unit shown in Fig. 3.

Fig. 5 is a top plan view of one of the burner head caps.

Fig. 6 is a side view of the burner head caps shown in Fig. 5.

Fig. 7 is an end view of the burner head cap shown in Fig. 6.

Similar numerals of reference designate the same parts throughout the several figures of the drawings.

In the drawings is shown my improved gas burner unit which has a venturi tube 10, the lower end of which is provided with tapering depending legs 11 and 12 that are diametrically spaced across the bottom end of the venturi tube 10. At 13 and 14 is shown outwardly projecting rib like elements that overlap the juncture of the legs 11 and 12 and the lower end of the venturi to act as a reinforcement for the said elements. The lower ends of the legs 11 and 12 are provided with a hole 15 through which, if desired, screws may be passed and threaded into the gaseous fuel manifold 16 to further secure the burner unit to the manifold 16.

Integrally formed on the upper end of the venturi tube 10 is a box-like element 17 on the top side of which is integrally formed a pair of long, parallel V-shaped, open top burner heads 18 and 19 that have openings 20 and 21 that open from the box-like formation 17 into the lower control portion of each of the burner box head elements 18 and 19.

In each corner of each of the burner box heads 18 and 19 is an inwardly projecting lug 22 for the support of a cover for the burner box head as will later be described.

The upper inside edge of each of the burner box head portions is provided with a series of equally spaced apart notches 23 that will serve as auxiliary gaseous fuel passages as will later be described.

Positioned within the burner box heads 18 and 19 is a burner cap 24 that is V-shaped, the V of the cap 23 being not quite so steep as that of the burner box head as indicated in Figures 1, 3 and 4. The corners of the cap elements 24 are provided with notches 25 to form shoulders that rest on the lugs 22 in the corners of the burner box heads to support the burner cap 24 in such a manner as to leave a space 26 along and between the edges of the cap elements 24 and the edges of the burner box heads 18 and 19 as a fuel ori-

fice that is supplemented by the lateral fuel orifice 23.

On the bottom and at the central portion of the cap elements 24 is a depending element 24a that is designed to act as a spreader for the incoming fuel so that the fuel will be directed toward the ends of the burner box heads as well as supplying the fuel to the central portion of the burner box heads.

Axially positioned beneath the venturi tube 10, and in the manifold 16 is a gas jet 27 that is adapted to receive gaseous fuel from the manifold 16 and discharge the gaseous fuel into the venturi tube 10.

The sides of the manifold 16 are provided with pairs of lugs 28 that have opposing tapering faces adapted to engage the edges of the legs 11 and 12 to rigidly hold the venturi tube 10 plumb and centered over the gas jet 27.

At each upper outside corner of the burner box heads is a boss 29 that acts as a spacer for an adjacent duplicate burner to provide a secondary air passage between the burners that corresponds to the space or passage A between the two burner box heads 18 and 19.

The operation of the burner is as follows: Gaseous fuel from the manifold 16 is fed to and emitted from the gas jet 27 into the venturi tube 10 whereupon air is also drawn into the venturi tube and mixed therein with the gaseous fuel from the jet 27, and the mixed air and gas then passes upwardly through the venturi tube and discharged into the burner box heads 18 and 19 from where the gas and air mixture passes out through the slots 26 and auxiliary slots 23 above which combustion of the fuel takes place. The fuel streams being emitted from the auxiliary passages 23 impinge with the fuel stream being emitted from the corresponding auxiliary passage 23 in the adjacent burner box head. This causes an additional and better distributed amount of flame from the burner.

While the fuel stream from the orifices 23 impinge as and for the purpose above described, it is also true that the fuel streams being emitted from the slots or passages 26 are also emitted at an angle so they also impinge at a point above the point of impingement of the fuel stream from the notches 23, this also provides a better mixture of the fuel and secondary air which increases the efficiency of the burner.

Now having fully shown and described my improved low pressure gas burner, what I claim is:

In a gas burner, a venturi tube having a pair of box-like elements integrally formed on the upper end thereof and communicating therewith, said box-like elements having upwardly diverging end and side walls, the side walls being

of substantially greater length than the end walls, all of said walls terminating in upper surfaces which lie in the same plane, said box-like elements being positioned with a side wall of one adjacent a side wall of the other and with the upper edges of such walls parallel and spaced apart to form an air passage between the box-like elements, a spreader element within each burner box and spaced from the side and end walls thereof to form a fuel passage, each spreader element including upwardly diverging walls, the upper edges of the walls of said spreader elements and box-like elements lying substantially in the same plane, the inner surface of the side walls of each box-like element having a plurality of channels formed therein extending outwardly and upwardly to the upper surfaces of the side walls so that the lower and inner end of each channel will open to the space between the spreader element wall and the corresponding wall of the box-like element and the upper end of the channel will be open to the upper edge of the box-like element at a point spaced from the air passage between the box-like elements so that flames from the channels will be directed outwardly and upwardly from the box-like elements to impinge at a point above the plane of the upper surfaces of the box-like elements, said channels being spaced lengthwise of the side walls of the box-like elements by a distance which is substantially greater than the width of a channel so that air may flow upwardly between the flames issuing from the channels, and means for supplying gaseous fuel to the lower end of said venturi tube for distribution to each of said box-like elements.

WALTER M. SHAW.

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