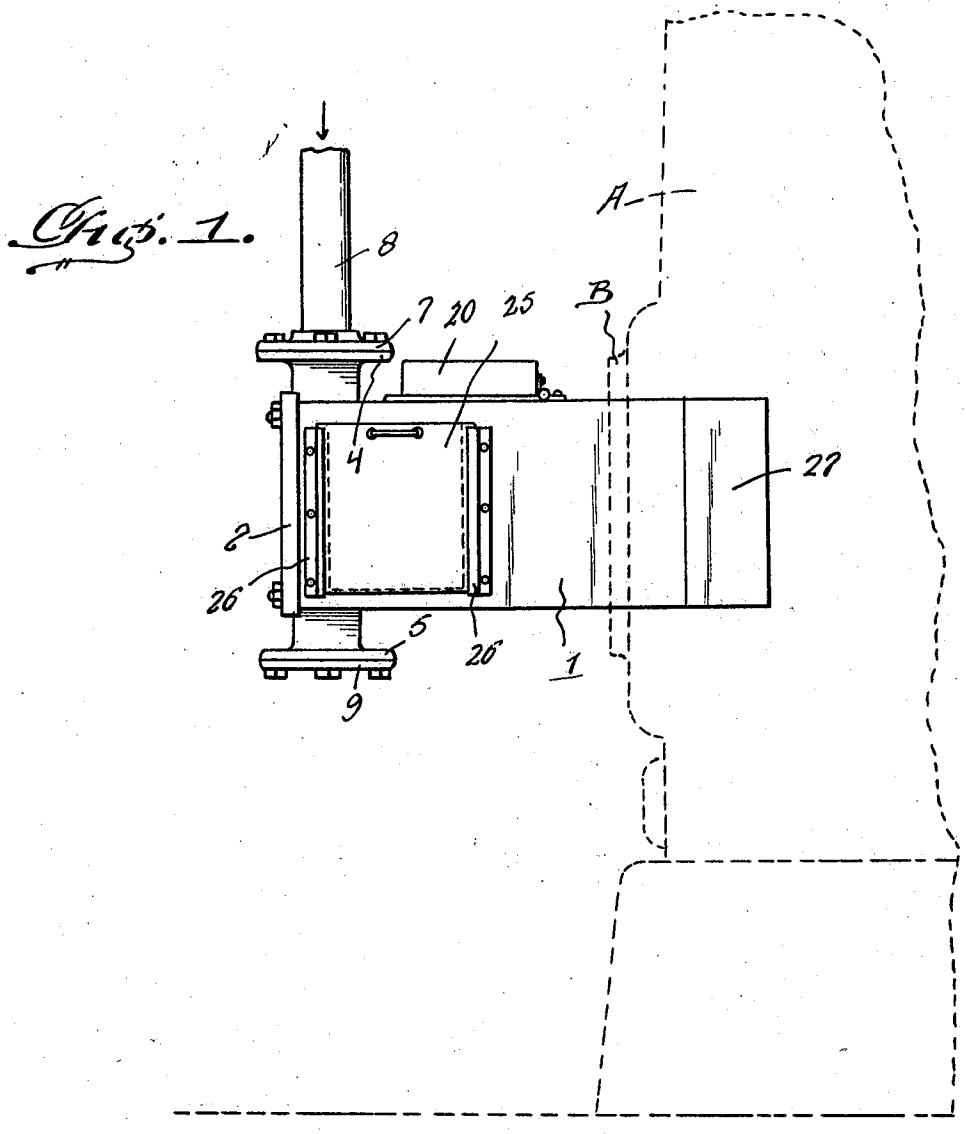
Nov. 19, 1929. J. M. MAXWELL 1,736,207

SECTIONAL GAS BURNER

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Fig. 1.



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Fig. 2.

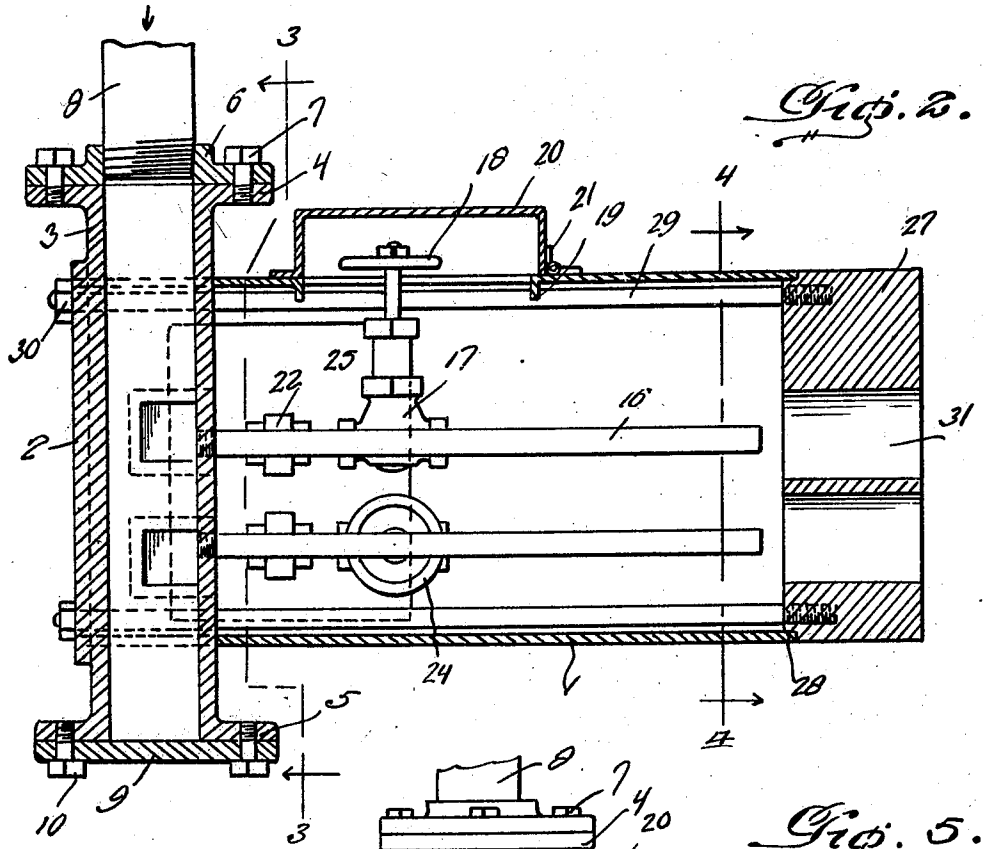
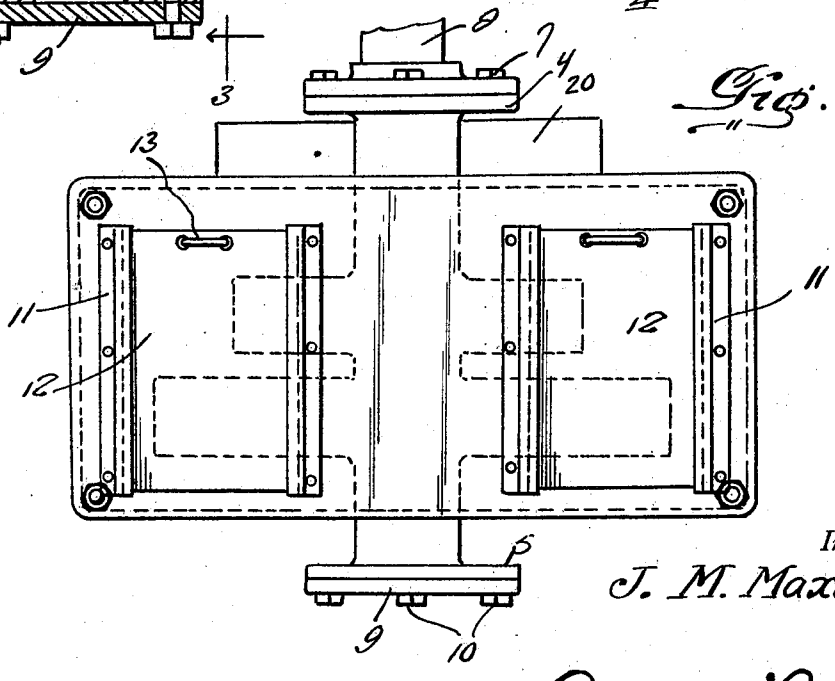


Fig. 5.



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Fig. 3.

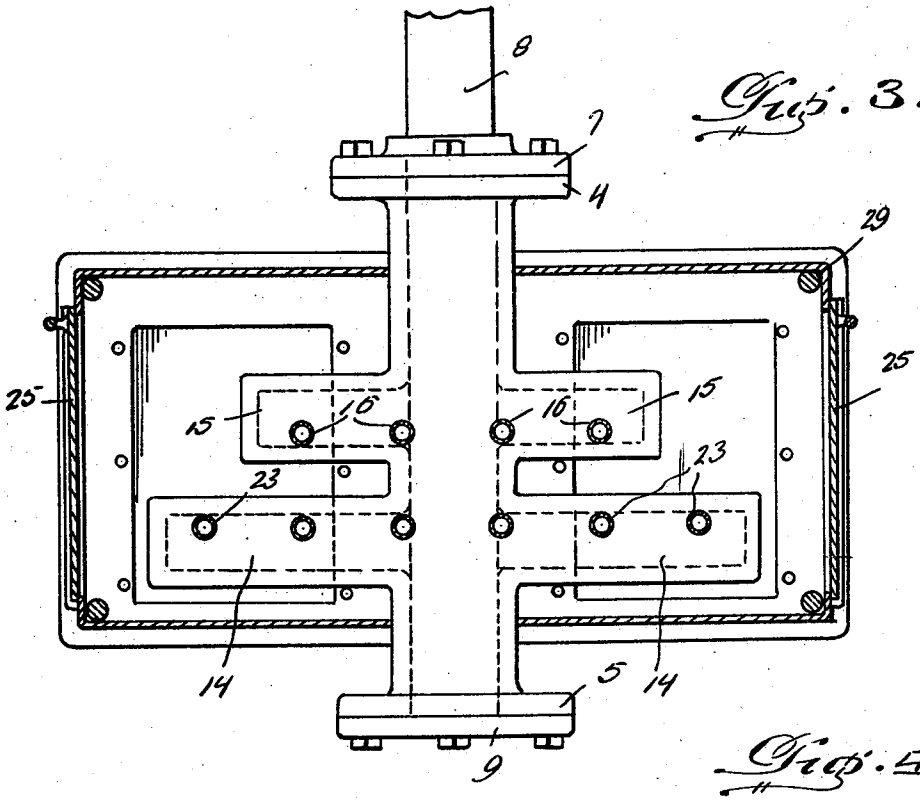
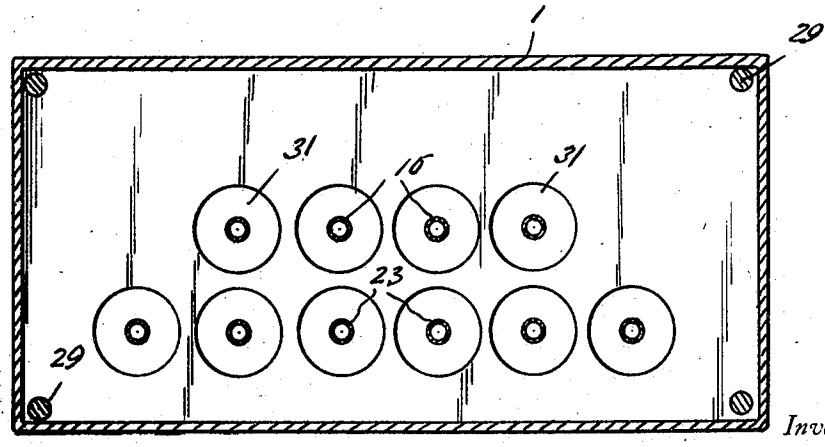


Fig. 4.



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UNITED STATES PATENT OFFICE

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SECTIONAL GAS BURNER

Application filed May 1, 1928. Serial No. 274,203.

My invention pertains to improvements in gas burners for furnaces wherein the same relates to the type of burner which may be employed in conjunction with conventional coal burning furnaces, the same being further adapted in construction whereby several of the units may be conveniently connected together for increasing the power of the burner.

I am well aware that there are numerous structures of this type now in existence, but because of certain disadvantages in the operation of these devices, I have provided an improvement in this class of burners which will be far more practical than those of conventional use.

The main object of my improved burner resides in providing means whereby the incoming gas will be more effectively distributed to the several jets, and wherein means are present for the proper control of the several jets.

Another object resides in the specific structure of the burner housing, wherein the same is provided with closures which will allow ready access to the interior thereof, for regulating the jets or for the purpose of repairing the parts of the same.

A further object resides in the fact that my improved burner is constructed in a unit detachable from the gas supply pipe, and with which one or more units may be associated for increasing power.

Still a further object is evident upon further consideration of my burner, in that a better draft will be obtained, due to the particular arrangement of the battery of jets.

Obviously a better mixture of air and gas is possible by reason of the above arrangement.

Other very novel objects and advantages of my improved burner, will become apparent, as the same is better comprehended from the specification and claims to follow.

In the drawing:—

Figure 1 represents a side elevation of the burner unit, this view disclosing the manner in which the same is associated with the conventional furnace.

Fig. 2 is a longitudinal vertical detail sectional view.

Fig. 3 discloses a vertical sectional view taken substantialy on the line 3—3 of Fig. 2.

Fig. 4 is also representative of a vertical sectional view, taken substantially on the line 4—4 of Fig. 2, and looking in the direction of the arrows, and

Fig. 5 represents an elevation of the outer end of the burner.

Now for a more specific disclosure of my improved burner, I refer to the drawings in which like numerals designate like parts. For the purpose of disclosing the manner in which the burner is employed, in association with the usual furnace structure, I represent in Fig. 1, by dotted line construction, the structure of the furnace at A, and the usual door at B. My burner structure is adapted for partial projection through this door, in a manner clearly shown in that figure.

My structure includes a substantially rectangular shaped housing 1, both ends of which are opened. The outer end of the housing is provided with a cover plate 2, which has secured to its inner intermediate portion, a manifold 3 secured by welding or other means, said gas pipe extending above and below the top and bottom edges of the cover plate, in the manner shown in Fig. 2.

The upper and lower ends of this supply pipe are flared outwardly to provide flanges 4 and 5 respectively. The upper flange 4 of the manifold has an internally threaded ring 6 secured thereto by bolts 7, and threaded into which is the lower threaded end of the gas supply pipe 8. The lower flange 5 has a discular plate 9 secured thereto by bolts 10, which plate may be removed when it is desired to add another unit. The cover plate is provided at each side of the manifold with substantially large openings, the vertical edges of these openings having secured and being provided at their outer sides with flanged guide plates 11.

These plates are secured to the under side of the cover and adjacent the vertical edges of the opening by suitable bolts, screws, welding or any other means. Each pair of opposed guide plates are adapted to slidably

receive the closure plate 12. These closure plates are provided with suitable handles 13, by which the closures may be elevated for gaining access to the interior of the housing.

The manifold per se, is provided adjacent the bottom of the housing with laterally extending branches 14—14, while immediately above these branch extensions, is a second pair of branch pipes 15—15 of shorter extent than the lower branches. These branch pipes project at opposite sides of the manifold pipe in substantial horizontal alinement.

Each of the upper branch pipes is provided with a pair of jet pipes 16, which extend for a substantial distance through the housing in a manner shown in Fig. 2. The outer jet pipes are provided with control valves 17, the handle portions of which project upwardly through a substantially rectangularly shaped opening in the top of the housing. This opening is formed with a depending flange 19 at its head portion, and a hood cover 20, hingedly connected to the top of the housing at 21 is adapted for disposition over this opening, and which may be opened for gaining access to the interior of the housing for actuating the valve.

Suitable coupling sleeves 22 are employed, whereby the valve body may be removed without the necessity of unscrewing the jet pipe having these valves, from the manifold. The lower branch pipes 14, are each provided with a plurality of jet pipes 23, which extend horizontally for a substantial distance within the housing, and in parallelism with the jet pipe of the upper branches.

The end jet pipes of the lower branches 14, are also provided with control valves 24, which are accessible through each side of the housing, by elevating closure plates 25, in slidable association with the flanged plate 26 in like manner to the closures 12, at the outer end of the housing.

The inner open end of the housing is provided with a jet block 27, having its inner edge grooved at 28 to receive the inner end of the housing. Stay bolts 29 arranged preferably at the four corners of the housing, are threaded at each end portion, one of the threaded end portions of each bolt being threadable into the block at its inner side, while the opposite end of each stay bolt extends through the cover plate 2 at the opposite end of the housing, and upon which the nut 30 is threaded for tight engagement against the plate.

The jet block is formed with a plurality of openings 31. These openings are alined in complement with the several jet pipes, the ends of the jet pipes terminating slightly inwardly from the inner end of the block openings 31.

It will thus be seen that when the housing is properly disposed through the opening B of the usual furnace structure, gas may be fed under pressure through the supply pipes 8 and into the manifold pipe 3. The pressure of the gas will pass downwardly through the manifold, until it engages and compresses against the plates 9 at the bottom thereof. At this stage, the gas backs upwardly, passing into the branch pipes 14 and 15 respectively. As a result of this gas movement, the same discharges through the jet pipes 16 and 23 respectively. The gas in passing from the ends of the jets draws air from the interior of the housing, and mixes during its passage through the opening in the jet block.

The end jet of both the upper and lower branch pipes of the manifold, are regulatable by the control valves 17 and 24 respectively. When these valves are in closed position, only the intermediate jets are being employed. However, when it is desired to increase the power, these valves may be opened or regulated as desired.

The sliding closures at the side of the housings, are adapted to be opened to increase the air supply to the flame, the sides allowing access to the interior of the casing, whereby the lower valve may be operated.

The plate 9 secured to the bottom flange 5 of the manifold pipe is removable, whereby another similar burner unit may be secured thereto if desired. The manner in which the jet pipes are arranged laterally projecting from the branch pipes, and not directly from the vertical extent of the manifold, allows the gas to bank therein, and distribute equally into the branch pipe.

It is now thought that the novel gas burner has been sufficiently described, whereby one skilled in the art will comprehend its nature and construction to the extent of reproducing the same to actual use.

Having thus described my invention, what I claim as new is:—

1. In a gas burner for furnaces, a housing open at both ends, a removable cover plate at one end of the housing, a manifold secured to said removable cover, jet pipes extending from said manifold and terminating inwardly from the opposite open end of the housing, and a jet block at the inner open end of the housing having openings therein complementary to the respective jet pipes.

2. In a gas burner for furnaces, a housing open at both ends, a cover plate at one end of the housing, a manifold secured to said plate, jet pipes extending from said manifold and terminating inwardly from the opposite open end of the housing, a jet block at the inner open end of the housing having openings therein complementary to the respective jet pipes, and means for removably securing the cover plate and jet block in secured position in the open ends of the housing.

3. In a gas burner for furnaces, a housing open at both ends, a cover plate at one end

of the housing, a manifold secured to the inner side of the cover plate, said manifold being provided with branch pipes extending laterally therefrom, jet pipes projecting horizontally from the branch pipes through the housing and terminating inwardly from the opposite open end of the housing.

4. In a gas burner for furnaces, a housing open at both ends, a cover plate at the outer open end of the housing, a manifold secured the inner side of the cover plate, said manifold being provided with branch pipes extending laterally therefrom, jet pipes projecting horizontally from the branch pipes through the housing and terminating inwardly from the opposite open end of the housing, a substantially thick block at the inner end of the housing, said block being formed with openings complementary to the jet pipes, and elongated members for connecting the cover plate and block to opposite ends of the housing.

5. In a gas burner for furnaces, a housing open at both ends, a cover plate at the outer open end of the housing, a manifold secured to the inner side of the cover plate, said manifold being provided with branch pipes extending laterally therefrom, jet pipes projecting horizontally from the branch pipes through the housing and terminating inwardly from the opposite open end of the housing, a substantially thick block at the inner end of the housing, said block being formed with openings complementary to the jet pipes, elongated members for connecting the cover plate and block to opposite ends of the housing, and means associated with the bottom of said manifold, whereby another burner unit may be connected for use in conjunction with the foregoing burner construction.

In testimony whereof I affix my signature.

JOSEPH M. MAXWELL.