May 26, 1931. H. HERRENBRUCK 1,806,800

GAS BURNER AND SUPPORT THEREFOR

Original Filed Aug. 3, 1928 3 Sheets-Sheet 1

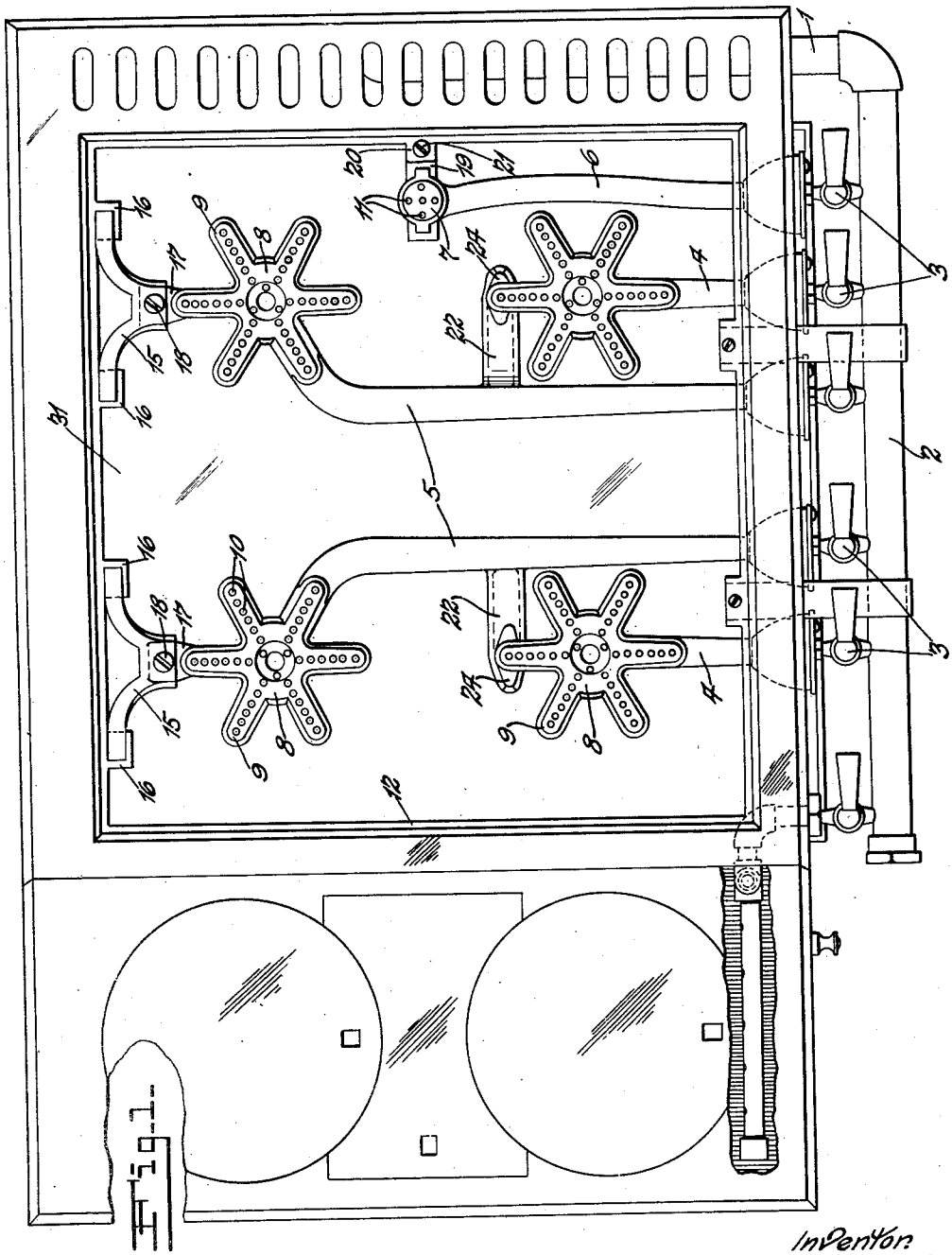


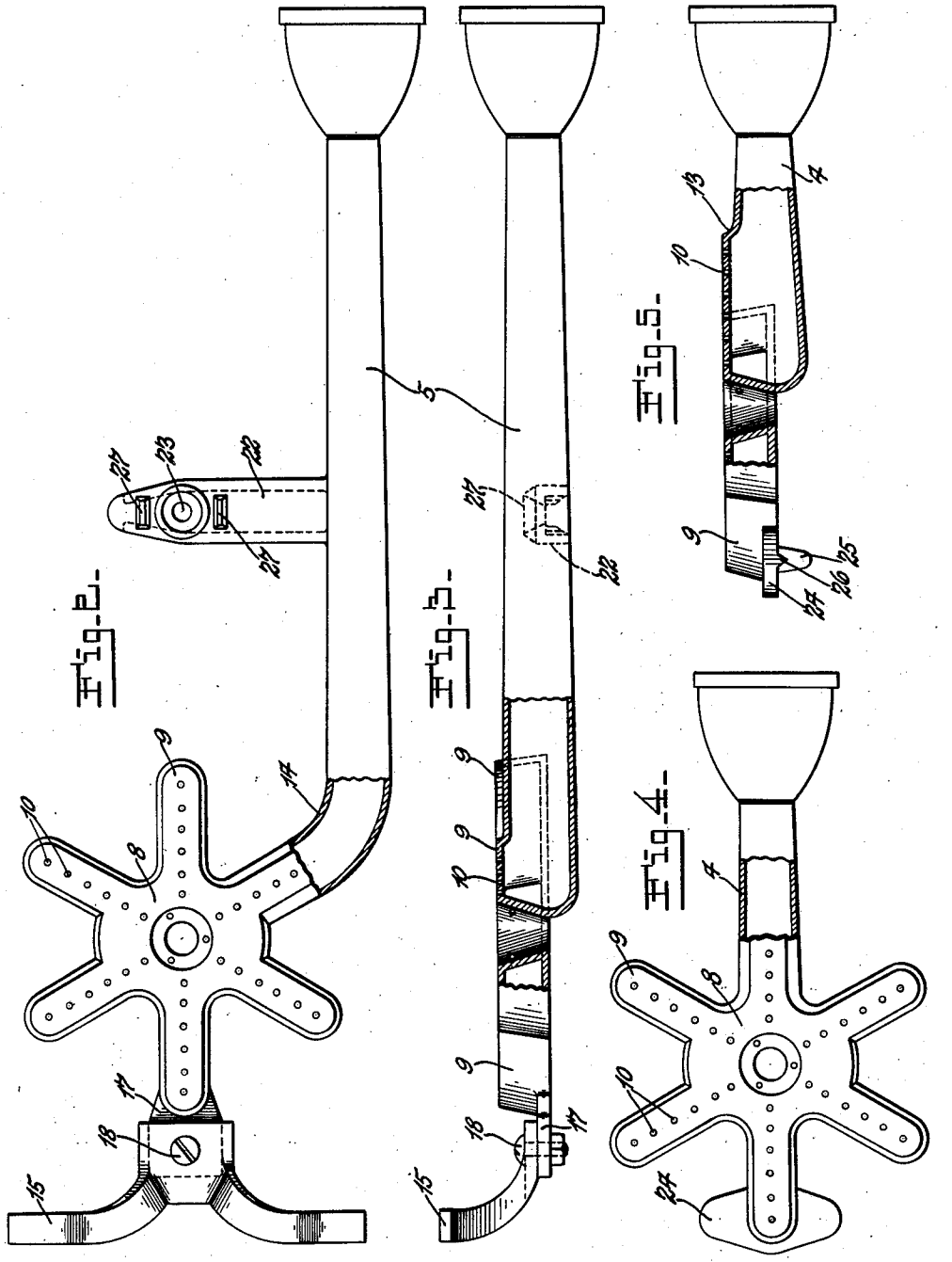
Fig. 1.

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GAS BURNER AND SUPPORT THEREFOR

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GAS BURNER AND SUPPORT THEREFOR

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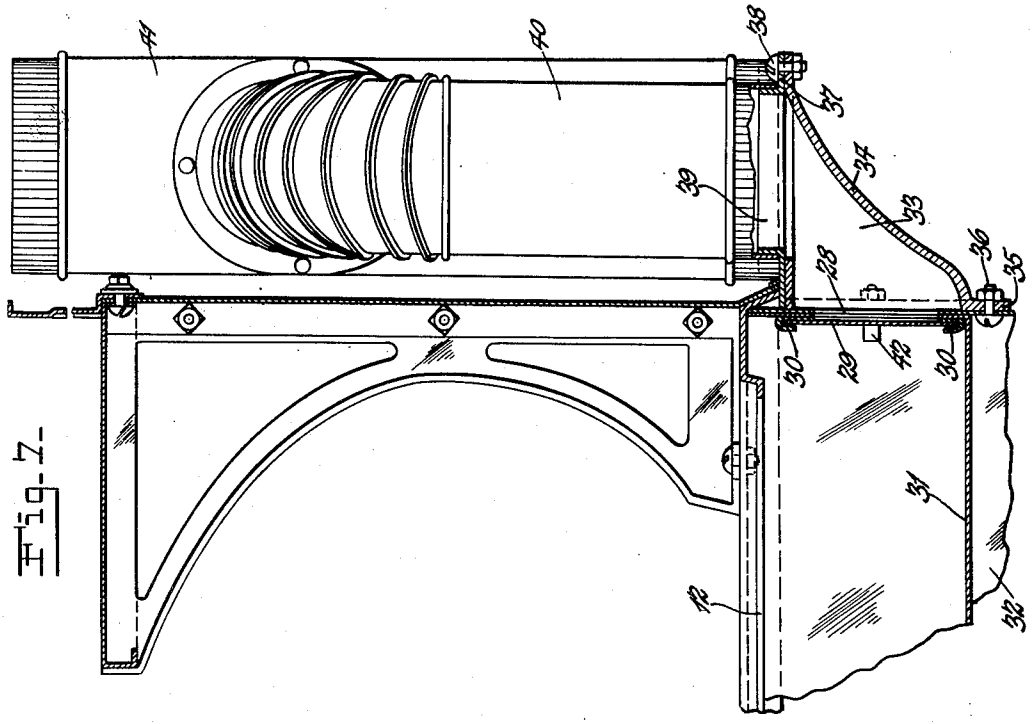


Fig. 7.

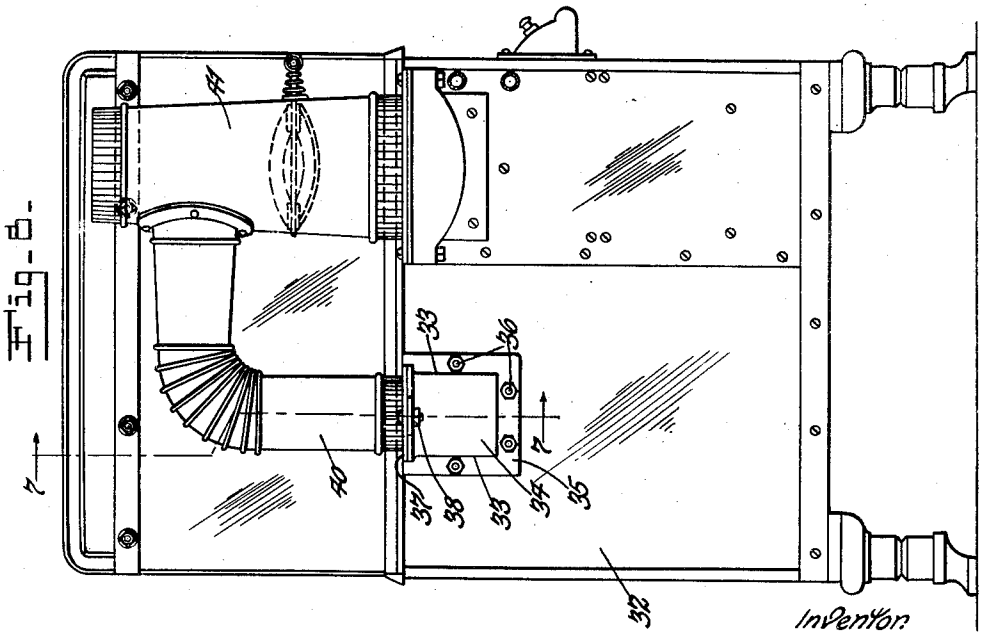


Fig. 6.

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UNITED STATES PATENT OFFICE

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GAS BURNER AND SUPPORT THEREFOR

Original application filed August 3, 1928, Serial No. 297,178. Divided and this application filed April 8, 1929. Serial No. 353,454.

This invention relates to gas burners and supports therefor, and has special reference to burners for use in cooking ranges and stoves.

Objects of the invention are to provide pipes of improved construction for conducting the gas from the manifold to the burners, and improved means for supporting the burners in one position for natural gas and in another position for manufactured gas.

Other objects will appear from the following description, reference being made to the drawings in which

Fig. 1 is a plan view of a stove having my improved burners and burner supports mounted therein.

Figs. 2 and 3 are top plan and side elevation views, respectively, of one of the rear burners at the top of the stove, portions of the pipes and one of the burner arms being shown in section.

Figs. 4 and 5 are top plan and side elevation views, respectively, of one of the front burners at the top of the stove, a portion of the pipe and one of the burner arms being shown in section.

Fig. 6 is a rear elevation of a stove embodying the present invention showing the outlet for the fumes.

Fig. 7 is an enlarged sectional view approximately on the line 7—7 of Fig. 6.

The subject matter of the present invention is divided from my prior application for stove, filed August 3, 1928, Serial No. 297,178.

A gas supply pipe 1 opens into a manifold 2 at the front of the stove and has valve devices 3 for controlling and regulating the passage of gas from the manifold 2 to the pipes 4 leading to the front burners, to the pipes 5 leading to the rear burners, and to the pipe 6 leading to the burner 7. The burners which are in connection with the pipes 4 and 5 each consists of a central hollow annular portion 8 and a series of radial arms 9 opening from the annular portion 8. The annular portion 8 and the arms 9 have through their upper walls numerous gas outlet openings 10. The burner 7 is a hollow chamber having through its upper wall a number of gas outlet openings 11. These burners are all mounted in a proper order and relationship in a burner box frame 12 which is equipped with a suitable grid (not shown) when manufactured gas is the fuel used; and is equipped with a top plate having openings over the respective burners, and lids for the respective openings (not shown) when natural gas is the fuel used. Appropriate forms of grids for use on stoves burning manufactured gas and appropriate forms of top plates for use on stoves burning natural gas are known and are not shown in the drawings.

Each pipe 4 is of increasing horizontal diameter from its front end to its union with one of the arms 9. Said pipe 4 is integrally united with and opens into the end and the under side of the arm 9. The inside horizontal diameter of the pipe 4 at its union with the arm 9 is the same as the inside diameter of the arm 9 with which it is connected and said arm with which said pipe 4 is connected is approximately of the same horizontal inside diameter as the remaining arms 9 of the burner. The lower portion of the wall of the pipe 4 continues to incline downwardly (Fig. 5) away from the upper wall of the burner arm 9 so that the vertical diameter of the arm 9 into which the pipe 4 opens increases from the end inwardly. The upper wall of the pipe 4 is a very slight distance below the upper wall of the arm 9 at their union, the connection being effected by a curved portion 13. Thus the pipe 4 together with the burner arm 9 with which it is connected forms an enlarged chamber, the horizontal diameter of which is the same as the horizontal diameter of the united portions of the pipe 4 and the burner arm 9, and the vertical diameter of which chamber is greater than the vertical diameter of the pipe 4. Moreover the vertical diameter of the chamber 9 increases from its outer end toward its inner end. This construction obtains a superior mixture of air and gas by combustion of which greater heat is obtained than is obtained by the use of other types of burners with which I am familiar.

In their construction and their connection with the arms 9 of the respective burners the

pipes 5 are quite similar to the construction and connection of the pipes 4 with the burner arms 9. That is to say, the pipes 5 open into the ends and under sides of the arms 9 with which said pipes are connected, being of the same inside horizontal diameter as the arms 9 and of greater vertical diameter. The lower walls of the pipes 5 continue to incline downwardly away from the upper walls of the arms 9, thus forming an enlarged chamber having a vertical diameter greater than the vertical diameter of the pipe 5 and greater than any of the remaining burner arms 9. These pipes 5 are provided with curved extensions 14 at their inner ends so that the burners in connection with the pipes 4 may be made in front of the burners in connection with the pipes 5. In this arrangement the pipes 5 are between the pipes 4.

When manufactured gas is to be used as a fuel the burners are supported in a higher position in the burner box when natural gas is used as a fuel. The support for each of the rear burners comprises a bifurcated supporting bracket element 15, the ends of the arms of which are removably seated in depressed portions of lugs 16 projecting from the inner side of the rear portion of the burner box frame 12. Each of the rear burners has an integral projection 17 from its rear arm for attachment with the adjacent supporting bracket 15 to which it is secured by a stove bolt 18. When natural gas is to be used as a fuel the projection 17 is fastened on the under side of the supporting bracket 15; and when manufactured gas is to be burned as a fuel the projection 17 is fastened on the upper side of the supporting bracket 15, thereby supporting the burners at a higher altitude in the burner box frame when manufactured gas is burned as a fuel than when natural gas is burned as a fuel.

The support for the burner 7 comprises an arm 19 which is fastened on a lug 20 projecting from the adjacent side of the burner box frame 12 and secured thereto by a stove bolt 21. When natural gas is to be burned as a fuel the arm 19 is fastened on the under side of the supporting lug 20; and when manufactured gas is to be burned as a fuel said arm 19 is fastened on the upper side of the supporting lug 20, thereby supporting the burner 7 at a higher altitude in the burner box than when manufactured gas is burned as a fuel.

The pipes 5 support the front burners. Each pipe 5 has an arm 22 projecting laterally and provided with a hole 23. The rear arm of each of the front burners is formed with a flange 24 and with a depending lug 25. The lug 25 is for engagement in the hole 23. Rib 26 is integral with the under side of the flange 24 and seats upon spaced lugs 27 on the upper side of the arm 22. The front ends of the pipes 4 and 5 are raised or lowered as the inner ends of said pipes are raised or lowered to adapt the burners for use of manufactured or natural gas. The specific means for supporting the front ends of these pipes in different altitudes conforming to the positions of the burners is not shown, as said specific supporting means for the front ends of said pipes is no part of the present invention. It will be understood, however, that the positions of the pipes 4 and their burners are controlled by the positions of the pipes 5.

The rear wall of the burner box has an outlet opening 28. A plate 29 is mounted for sliding movements in guides 30 and is capable of movements in said guides to positions to open and to close the opening 28. When natural gas is burned as a fuel the opening 28 should be kept open in order to permit the fumes to pass out and this condition may be maintained by keeping the plate 29 in open position. However, when manufactured gas is used, it may be unnecessary to keep the plate 29 in open position all of the time.

This outlet opening 28 is above the wall 31 which forms the top wall of an oven 32 and the bottom wall of the burner box. A connection for a stove pipe is provided, the same comprising a pair of side walls 33, a rear wall 34 and a flange 35. The flange 35 is attached to the rear wall of the stove by bolts 36 so that said walls 33 and 34 form a passage to receive the gas fumes discharged from the burner box through the opening 28. A ring 37 is fastened to the upper end of the part comprising the walls 33 and 34 by a bolt 38 and is provided with an upwardly extended flange 39 on which the lower end of the stove pipe 40 is telescoped. The stove pipe 40 seats upon the ring 37 and opens into a main stove pipe 41 which, in the embodiment shown, constitutes a smoke outlet from another part of the stove.

The plate 29 is freely movable to open and to closed positions along the guides 30 and is formed with a handle 42 whereby it may be conveniently moved from one position to another. Accordingly, my invention is well designed to use natural gas or manufactured gas as fuels.

From the foregoing it must be apparent that I have produced a new and improved type of burner capable of satisfactory use in burning either natural gas or manufactured gas as fuels. These burners are assembled in a novel relationship to each other and to the cooperating stove structure. This stove in which these burners are embodied is easily capable of adjustment to burn either kind of fuel. The construction and arrangement may be varied within equivalent limits without departure from the nature and principle of the invention.

I claim:—

1. In a gas stove, a hollow burner compris-

ing hollow radial arms, in combination with a pipe for conducting gas to said burner, said pipe being of increasing diameter from its outer end to integral connection with one of the arms of said burner at the inner end of said pipe, the inside horizontal diameter of the pipe at its connection with said arm being equal to the inside horizontal diameter of the arm and the vertical diameter of the pipe at its connection with said arm being greater than the vertical diameter of the remaining arms of the burner, the upper wall of the pipe at its connection with said burner arm being slightly below the plane of the upper wall of said burner arm and the lower wall of the pipe inclining downwardly and inwardly throughout nearly the entire length of the burner arm.

2. In a gas stove, a hollow burner comprising hollow radial arms of approximately the same horizontal diameter, in combination with a pipe for conducting gas to said burner, said pipe being of increasing diameter from its outer end to integral connection with one of the arms of said burner at the inner end of said pipe, the inside horizontal diameter of said pipe at the union thereof with said arm of said burner being approximately the same as the inside horizontal diameter of said arm.

HERMAN HERRENBRUCK.