A. H. HUMPHREY.

GAS BURNER.

APPLICATION FILED DEC. 30, 1916.

1,245,347.

Patented Nov. 6, 1917.

2 SHEETS—SHEET 1.

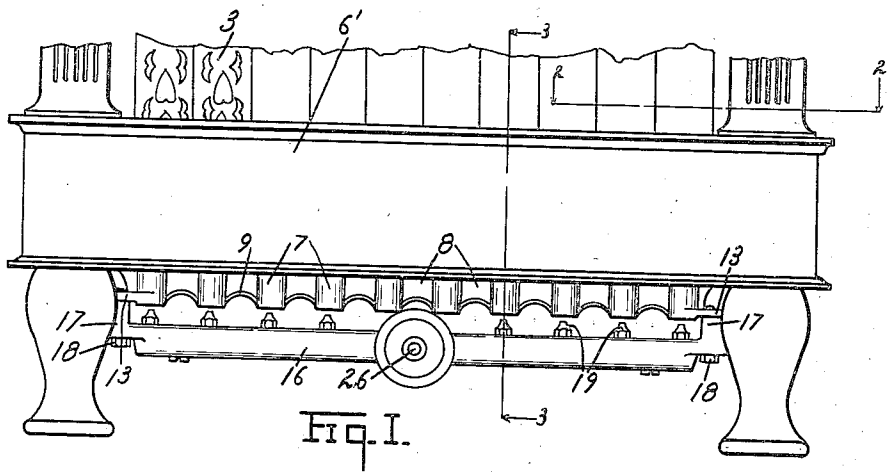

FIG. I.

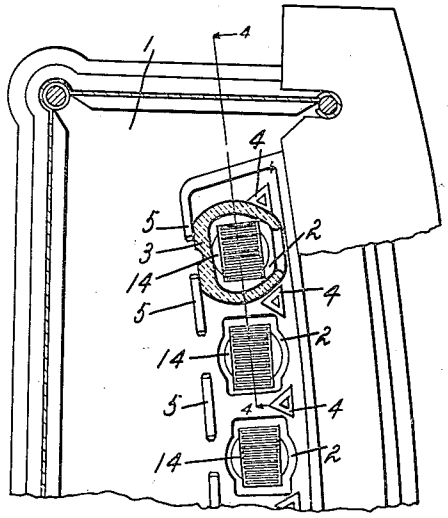

FIG. II.

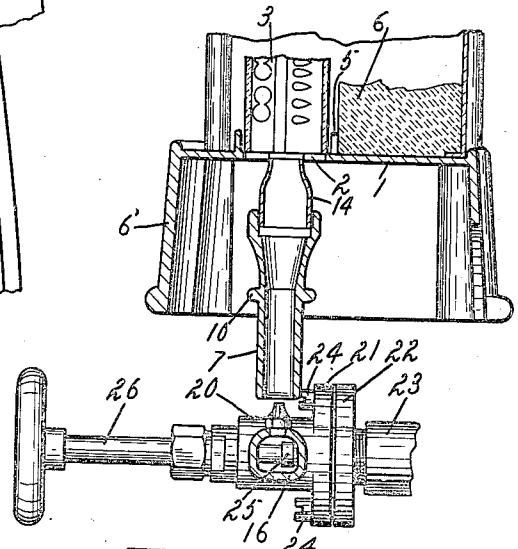

FIG. III.

WITNESSES:

Luther Blake

Lenn Gilman

INVENTOR.

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ATTORNEYS.

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2 SHEETS—SHEET 2.

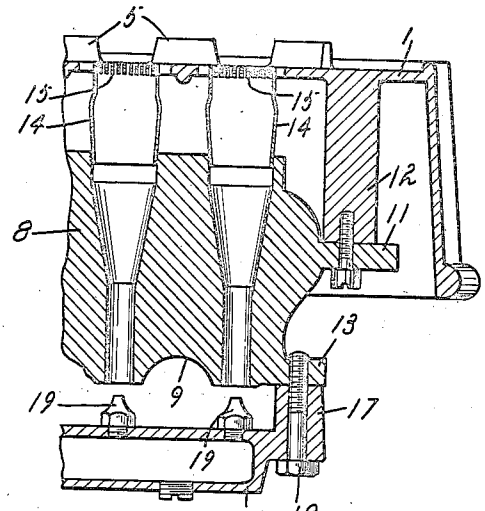

FIG. IV.

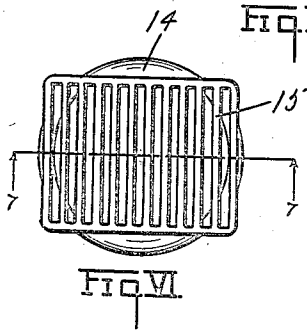

FIG. VI.

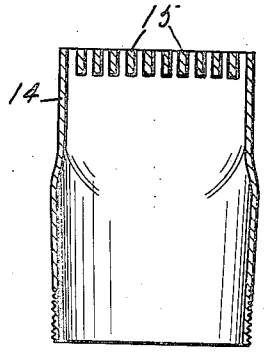

FIG. VII.

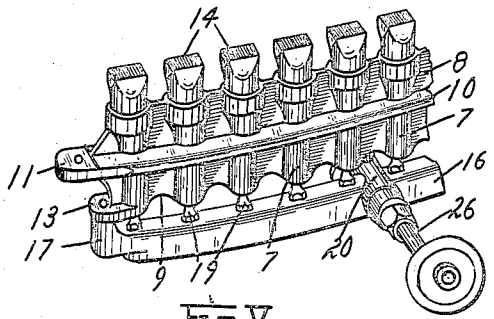

FIG. V.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ALFRED H. HUMPHREY, OF NEW YORK, N. Y.

GAS-BURNER.

1,245,347. Specification of Letters Patent. Patented Nov. 6, 1917.

Application filed December 30, 1916. Serial No. 139,810.

To all whom it may concern:

Be it known that I, ALFRED H. HUMPHREY, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention relates to improvements in gas burners.

The main objects of this invention are:

First, to provide an improved multiple gas burner or a gas burner having a plurality of tips which is very efficient and especially adapted for gas heating stoves.

Second, to provide an improved gas burner which is especially desirable for use in gas heating stoves having radiating elements.

Third, to provide an improved gas burner in which the combustion of the gas is very complete.

Fourth, to provide an improved gas burner having a multiplicity of tips in which the several tips burn with substantial uniformity.

Further objects, and objects relating to details of construction and operation will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawings forming a part of this specification, in which:

Figure I is a detail front elevation of a gas heating stove embodying the features of my invention.

Fig. II is a detail horizontal section on a line corresponding to line 2—2 of Fig. I.

Fig. III is a detail vertical section on line corresponding to line 3—3 of Fig. I.

Fig. IV is a detail longitudinal section on line corresponding to line 4—4 of Fig. II.

Fig. V is a detail perspective view of a portion of the burner proper removed from the stove.

Fig. VI is a plan view of one of the burner tips.

Fig. VII is a vertical section of one of the burner tips on a line corresponding to line 7—7 of Fig. VI.

In the drawing, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the stove structure illustrated is an embodiment of certain features of my improved gas stove illustrated and described in my application for Letters Patent filed May 18, 1916, Serial No. 98,337. I have illustrated only such parts of a gas stove as I deemed desirable to show my present invention in a practical embodiment which is the form in which I have put it into practice.

The base 1 is provided with burner openings 2 above which are the tubular radiating elements 3. The radiating elements 3 are supported in position over the burner openings 2 by means of the lugs 4 and 5, see Fig. II. The fire back 6 is positioned behind the lugs 5. The walls of the casing are mounted upon this base but as the details of the wall forms no part of this invention and are a part of my application I do not describe the same in further detail herein.

The base 1 is provided with a skirt 6′ in which the upper portion of the burner is disposed.

My improved burner comprises a plurality of burner tubes 7 formed as an integral casting, the tubes being connected by the vertical centrally disposed web 8. This web preferably extends from the top to the bottom of the tubes, being preferably recessed at 9 between the tubes. The tubes and web are also provided with the longitudinal side flanges 10, which are in the preferred embodiment disposed centrally and extend at each end to provide burner supporting ears 11. These ears 11 are secured to the depending burner supports 12 of the base, see Fig. IV. The burner body is also provided with projecting manifold supporting ears 13 at each end.

The burner tubes 8 are preferably expanded in their upper portions, the expansion being above the flanges 10. The burner tips 14 which are formed of sheet metal are threaded into the burner tubes. The upper ends of these burner tips are preferably squared as illustrated and provided with cross bars 15. These tips are formed by inserting the bars in slits in the ends of the tubes.

While this particular form of burner tip is very desirable for use in this connection I do not illustrate or describe the same with

further detail herein as it is made the subject matter of my application for Letters Patent filed June 10, 1916, Serial No. 102,905, my present improvements being an adaptation of the invention of that application.

The manifold 16 is provided with upwardly projecting bosses 17 at its ends which rest against the under sides of the manifold supporting ears 13 and are secured thereto by the screws 18, see Fig. IV. The manifold is thus supported in a spaced relation to the lower end of the burner tubes so that there is an unobstructed space permitting free and unobstructed circulation of air to all of the tubes. The manifold is provided with nozzles 19 which are disposed to deliver centrally to the burner tubes. These nozzles may be removed without dismounting the manifold which is advantageous as it permits the cleaning of any nozzle that may happen to become clogged without disturbing any other nozzle.

The manifold is provided with a valve casing 20 which is disposed centrally and transversely of the manifold, the valve casing being formed integrally with the manifold. In its rear end the valve casing has a flanged coupling member 21 to which the coupling 22 of the supply pipe 23 is secured by means of the screws 24. The valve 25 for the manifold seats rearwardly and its stem 26 projects outwardly at the front of and centrally below the base. This brings the valve in convenient position for manipulation and does not unbalance or distort the appearance of the structure.

My improved burner is very efficient, the flames being exceedingly hot and do not "stream" or "flash" up but the gas burns close to the ends of the tips. The burner formed as illustrated and described serves as an effective radiating means so that it does not become unduly heated notwithstanding the plurality of burners and large amount of heat given off therefrom. I find in practice that in gas stoves of this type, that is, employing radiating elements, it is quite difficult to heat the elements to uniform incandescence and that my improved burner is highly efficient for that purpose.

The positioning of the tips so that their upper surface is flush with the upper face of the base also has its advantages in securing the best results.

The arrangement of the manifold and burners as I have described secures uniformity in the delivery of the gas and the several burner tips burn with substantially uniform flames which is another feature of distinct advantage and a great improvement over any prior structure which has come to the applicant's attention.

My improved burner has the further advantage of being comparatively simple and economical in structure and there are no parts which are likely to be gotten out of adjustment by the user or an unskilled workman.

I have illustrated my improvements in the form in which I have embodied the same in practice. I have not atempted to illustrate certain forms or adaptations thereof as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a structure of the class described, the combination of a base provided with burner openings and a skirt and with burner supports depending within the skirt, radiating elements mounted on said base above said burner openings, an integral burner body comprising a plurality of burner tubes united by a vertical web and having centrally disposed horizontal side flanges extended at each end to provide supporting ears secured to said burner supports so that the burner is supported within said skirt, said body also having manifold attaching ears projecting below said supporting ears, a gas delivery manifold provided with gas delivery nozzles and having upwardly projecting bosses at its ends disposed on the under side of said manifold attaching ears and secured thereto so that there is an unobstructed space between said manifold and burner body permitting unobstructed circulation of air and the removal and insertion of said nozzles, said manifold having an integrally formed valve casing disposed centrally and transversely thereof, said valve casing having a supply pipe coupling member at its rear end, an inlet valve provided with a stem projecting at the front of said manifold below said base, and burner tips mounted in the upper ends of said burner tubes with the ends of the tips in the burner openings of said base plate.

2. In a structure of the class described, the combination with a base provided with burner openings and a skirt and with burner supports depending within the skirt, radiating elements mounted on said base above said burner openings, an integral burner body comprising a plurality of burner tubes united by a vertical web and having centrally disposed horizontal side flanges extended at each end to provide supporting ears secured to said burner supports so that the burner is supported within said skirt, said body also having manifold attaching ears projecting below said supporting ears, a gas delivery manifold provided with gas delivery nozzles and having upwardly projecting bosses at its ends disposed on the under side of said manifold attaching ears

and secured thereto so that there is an unobstructed space between said manifold and burner body permitting unobstructed circulation of air and the removal and insertion of said nozzles, and burner tips mounted in the upper ends of said burner tubes with the ends of the tips in the burner openings of said base plate.

3. In a structure of the class described, the combination of a base provided with burner openings and a skirt, radiating elements mounted on said base above said burner openings, an integral burner body comprising a plurality of burner tubes united by a vertical web mounted on said base within said skirt, a gas delivery manifold provided with gas delivery nozzles mounted on said body so that the nozzles deliver to the tubes and there is an unobstructed space between said manifold and burner body permitting unobstructed circulation of air, said manifold having an integrally formed valve casing disposed centrally and transversely thereof, said valve casing having a supply pipe coupling member at its rear end, an inlet valve provided with a stem projecting at the front of said manifold below said base, and burner tips mounted in the upper ends of said burner tubes.

4. In a structure of the class described, the combination of a base provided with burner openings and a skirt, radiating elements mounted on said base above said burner openings, an integral burner body comprising a plurality of burner tubes united by a vertical web mounted on said base within said skirt, a gas delivery manifold provided with gas delivery nozzles mounted on said body so that the nozzles deliver to the tubes and there is an unobstructed space between said manifold and burner body permitting unobstructed circulation of air, and burner tips mounted in the upper ends of said burner tubes.

5. In a gas burner, the combination of an integral burner body comprising a plurality of burner tubes united by a vertical web and having centrally disposed horizontal side flanges, said flanges being extended at each end to provide burner supporting ears, said body also having manifold attaching ears projecting below said supporting ears, a gas delivery manifold provided with delivery nozzles and having upwardly projecting bosses at its ends disposed on the under side of said manifold attaching ears and secured thereto so that the manifold is supported in a spaced relation to the lower ends of the burner tubes with the nozzles delivering thereto, the space between the manifold and body being unobstructed permitting free circulation of air and the removal and insertion of said nozzles, said manifold having an integrally formed valve casing disposed centrally and transversely thereof, and provided with a supply pipe coupling member at its rear end, an inlet valve provided with a stem projecting at the front of said manifold, and burner tips of sheet metal mounted in the upper ends of said burner tubes.

6. In a gas burner, the combination of an integral burner body comprising a plurality of burner tubes united by a vertical web and having centrally disposed horizontal side flanges, said flanges being extended at each end to provide burner supporting ears, said body also having manifold attaching ears projecting below said supporting ears, a gas delivery manifold provided with delivery nozzles and having upwardly projecting bosses at its ends disposed on the under side of said manifold attaching ears and secured thereto so that the manifold is supported in a spaced relation to the lower ends of the burner tubes with the nozzles delivering thereto, the space between the manifold and body being unobstructed permitting free circulation of air and the removal and insertion of said nozzles, and burner tips of sheet metal mounted in the upper ends of said burner tubes.

7. In a gas burner, the combination of an integral burner body comprising a plurality of burner tubes united by a vertical web and provided with supporting and manifold attaching ears, a gas delivery manifold provided with delivery nozzles secured to said manifold attaching ears so that the manifold is supported in a spaced relation to the lower ends of the burner tubes with the nozzles delivering thereto, said manifold having an integrally formed valve casing disposed centrally and transversely thereof, and provided with a supply pipe coupling member at its rear end, an inlet valve provided with a stem projecting at the front of said manifold, and burner tips of sheet metal mounted in the upper ends of said burner tubes.

8. In a gas burner, the combination of an integral burner body comprising a plurality of burner tubes united by a vertical web and having centrally disposed horizontal side flanges, the portions of said tubes above said flanges being upwardly expanded, a gas delivery manifold provided with delivery nozzles supported in a spaced relation to the lower end of said burner tube with the nozzles delivering thereto, the space between the manifold and the body being unobstructed permitting the free circulation of air and the removal and insertion of said nozzles, and burner tips mounted in the upper ends of said burner tubes.

9. In a gas burner, the combination of an integral burner body comprising a plurality of burner tubes united by a vertical web and having horizontal side flanges extended at the ends of the body to provide supporting

ears, said body having integral manifold attaching ears below said supporting ears, a manifold attached to said manifold attaching ears so that the space between said manifold and body is unobstructed permitting the free circulation of air, burner nozzles mounted on said manifold to deliver to said burner tubes, and burner tips removably mounted on the upper ends of said burner tubes.

10. In a gas burner, the combination of an integral burner body comprising a plurality of burner tubes united by a vertical web having projecting supporting ears at each end and manifold attaching ears below said supporting ears, a manifold mounted on said manifold attaching ears and provided with nozzles delivering to said tubes so that the space between the manifold and the lower edge of the body is unobstructed permitting free circulation of air, and burner tips mounted on the upper ends of said burner tubes.

11. In a gas burner, the combination of an integral cast iron gas burner body comprising a plurality of burner tubes united by a vertical web extending from the top to the bottom thereof, the upper portions of said tubes being expanded upwardly, a gas delivery manifold provided with delivery nozzles disposed in a spaced relation to the lower ends of said burner tubes so that there is a free circulation of air about the same, and burner tips of sheet metal mounted on the upper ends of said burner tubes.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

ALFRED H. HUMPHREY. [L. S.]

Witnesses:
H. E. HUMPHREY,
EVERETT H. HOUSE.