

No. 678,624.

J. C. MCKALLIP.
GAS BURNER.

Patented July 16, 1901.

(No Model.)

(Application filed Nov. 5, 1900.)

2 Sheets—Sheet 1.

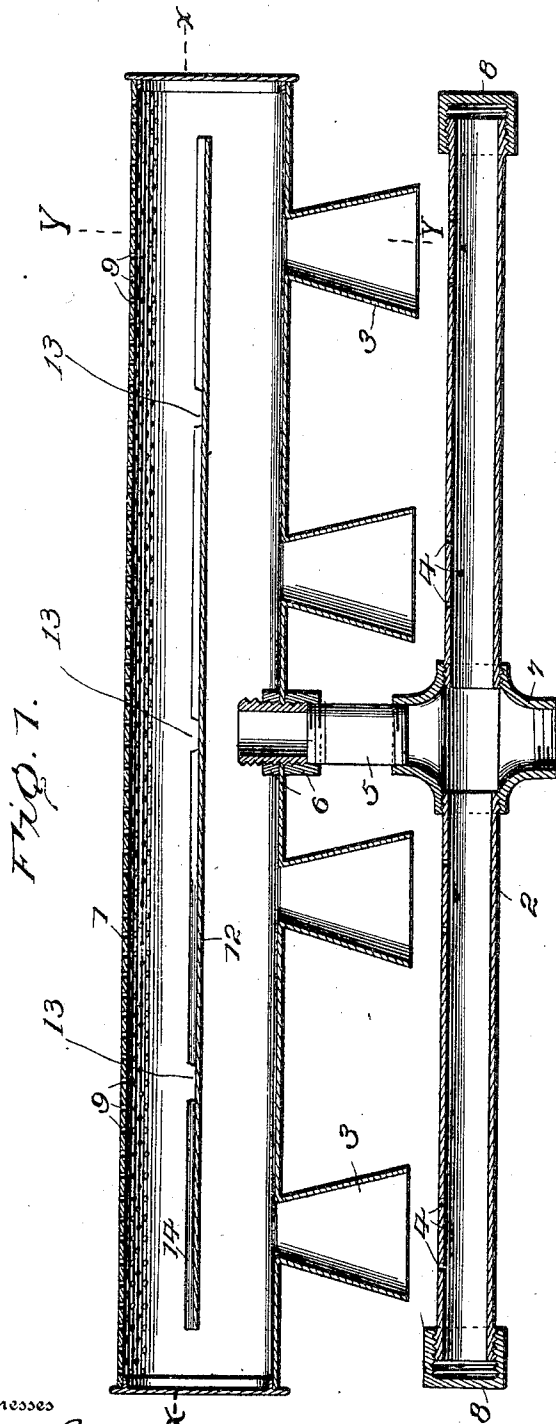


Fig. 1.

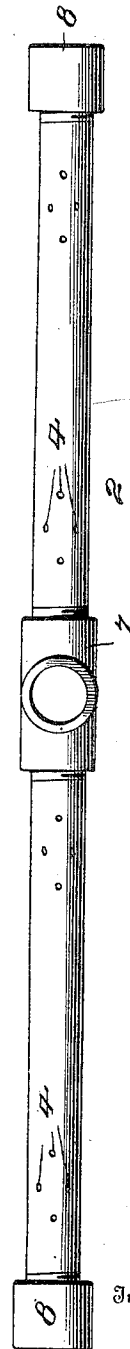


Fig. 3.

Witnesses

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FIG. 2.

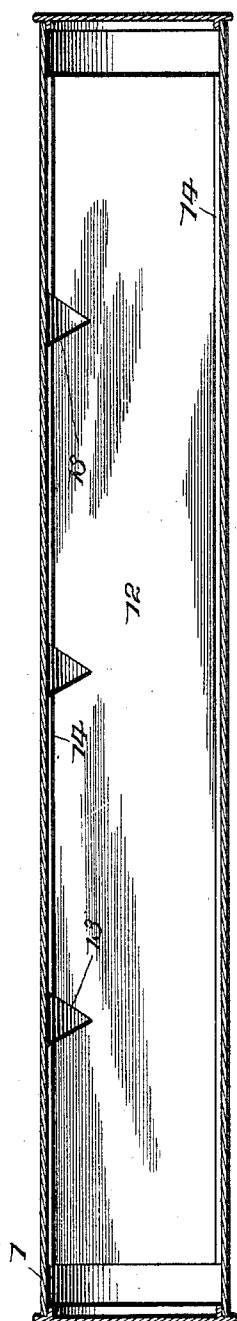


FIG. 5.

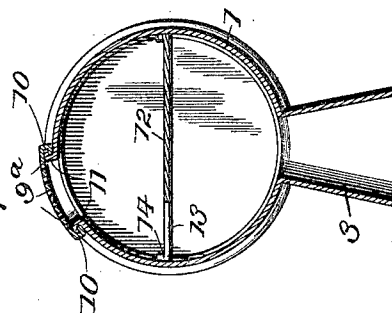
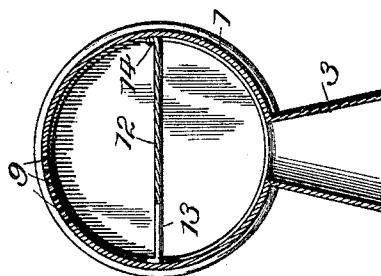


FIG. 4.



Witnesses

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JOHN C. MCKALLIP, OF ATHENS, OHIO.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 678,624, dated July 16, 1901.

Application filed November 5, 1900. Serial No. 35,516. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. MCKALLIP, a citizen of the United States, residing at Athens, in the county of Athens and State of Ohio, have invented certain new and useful Improvements in Gas-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to burners chiefly designed for use in connection with asbestos backs and gas heating-stoves and wherever it is required to have a burner with an extended flame for heating purposes.

The invention consists, essentially, of a distributing-tube having groups of minute openings at intervals in its length for the escape of the gas, a flame-tube paralleling the distributing-tube and longitudinally divided by a spreader, and mixing-chambers projected from the flame-tube and located opposite the respective groups of openings of the distributing-tube.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are necessarily susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of a burner embodying the invention. Fig. 2 is a horizontal section on the line X X of Fig. 1. Fig. 3 is a top plan view of the distributing-tube. Fig. 4 is a vertical transverse section on the line Y Y of Fig. 1. Fig. 5 is a transverse section of the preferred construction of flame-tube.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The burner comprises, essentially, the flame-tube 1, a distributing-tube 2, and a series of mixing-chambers 3 pendent from the flame-tube at intervals in its length and located opposite groups of minute openings 4,

formed in the top side of the distributing-tube 2. The tubes 1 and 2 are adjustably connected to admit of the distance between the mixing-chambers and the distributing-tube being varied to regulate the admission of air to temper and commingle with the gas in its passage to the flame-tube for combustion. As shown, a coupling 5 connects the tubes 1 and 2 and has screw-thread connection with each. A pair of clamp-nuts 6 are fitted to the upper threaded end of the coupling 5 and are located so as to embrace the lower portion of the flame-tube and by backing one of the nuts and advancing the other the distance between the two tubes can be varied so as to increase or decrease the air-passage between the mixing-chambers 3 and the distributing-tube 2.

The distributing-tube 2 may be of any suitable construction, and, as illustrated, is composed of two lengths of gas-pipe connected at their inner ends by means of a cross-T 7, and which are closed at their outer ends by caps 8. The minute openings 4 are formed in groups at intervals in the top side of the distributing-tube 2 and the openings of each group may be disposed in any desired manner found most advantageous, and, as illustrated in Fig. 3, they are arranged in the form of a diamond, although this is not essential. The distributing-tube is connected with a supply-pipe (not shown) by means of the pendent branch of the cross-T 7, and the coupling 5 is attached to the vertical branch.

The flame-tube 1 is of comparatively large diameter and a longitudinal portion is reticulated or made foraminous to provide a multiplicity of escape-openings for the gas, so as to provide a continuous flame the entire length of the burner. The perforations of the foraminous part 9 may be formed in the body of the flame-tube or in a separate strip attached thereto, the latter construction enabling the part to be renewed when burned or otherwise rendered not fit for further executive service. As shown in Fig. 5, the perforated strip 9^a has its longitudinal edge portions recurved, as shown at 10, to receive the correspondingly-bent edges 11 of the body portion of the flame-tube bordering upon the longitudinal opening and closed by the perforated strip 9^a. The bent edge portions 10

and 11 of the parts 1 and 9^a interlock and are so formed as to permit of the strip 9^a being readily removed and substituted by a new one when required. The perforated portion of the burner is located preferably to one side of a medial line, whereby the flame is best adapted to be directed against a fire-back of asbestos, mineral wool, or other refractory material for distributing the heat to the best possible advantage. The mixing-chambers are located at intervals in the length of the flame-tube and correspond in number and position with the groups of minute openings 4 and are preferably of frusto-conical form, their flaring ends being adjacent to the distributing-tube 2, so as to receive the jets of gas and collect the air, forming an admixture therefor. These mixing-chambers are adjustable toward and from the distributing-tube preferably by means of the adjustable connection between the flame-tube and the distributing-tube, so as to make provision for admitting a greater or less quantity of air to mix with the gas, so as to secure perfect combustion and prevent the giving off of any free carbon when the burner is in active operation.

A spreader 12 is located within the flame-tube and consists of a baffle-plate disposed medially of the flame-tube and having its longitudinal edges touching the sides thereof at diametrically opposite points. This spreader or baffle-plate 12 terminates a short distance from the closed ends of the flame-tube to admit of the gas passing therearound to the perforated portion of the flame-tube, where it is consumed. Notches 13 are formed in the longitudinal edge portion of the spreader midway of adjacent mixing-chambers and provide escapes for the gas at points between the extremities of the spreader. This construction admits of the gas being evenly distributed throughout the length of the flame-tube, and as a result a uniform flame is produced when the gas is consumed. The spreader has its longitudinal edge portions bent upward, as shown at 14, to stiffen and strengthen it longitudinally and also to provide an extended bearing-surface between the edges of the spreader and the sides of the flame-tube. These flanges 14 also serve to prevent warping and buckling of the spreader under varying changes of heat and cold. An important feature in the use of the burner is absence of the usual noise and the intense heat derived from a given amount of gas.

Having thus described the invention, what is claimed as new is—

1. A burner for consuming gas consisting of a flame-tube having a side perforate portion, a distributing-tube paralleling the flame-tube and provided at intervals in its length with groups of minute openings for the escape of gas, and mixing-chambers secured to the

flame-tube and located opposite the respective groups of openings of the distributing-tube, substantially as set forth.

2. In a burner of the character described, a flame-tube having a perforate side portion, a distributing-tube provided at intervals in its length with groups of minute openings for the escape of gas, mixing-chambers carried by the flame-tube and located opposite the respective groups of openings of the distributing-tube, and a coupling adjustably connecting the flame-tube and distributing-tube and providing for adjustment of the mixing-chambers toward and from the said distributing-tube, substantially as specified.

3. In a burner of the character described, a flame-tube provided at one side with an outlet and having a series of gas-inlets at intervals in the length of its lowermost portion, and a spreader located within the flame-tube intermediate of the outlet and gas-inlets and having a space at its ends and passages between its ends about midway of adjacent gas-inlets, substantially as set forth.

4. In a burner of the character described, a flame-tube having an outlet at one side and a series of gas-inlets at intervals in the length of its lowermost portion, a spreader located within the flame-tube and terminating short of the closed ends of said flame-tube and having notches at intervals in its edge to provide escapes between adjacent gas-inlets, substantially as specified.

5. In a burner of the character described, a flame-tube having a longitudinal opening in a side and having the edge portions of the tube bordering upon the opening rebent, and a perforate strip adapted to close the opening in the side of the flame-tube and having its longitudinal edges recurved to interlock with the bent edges of the flame-tube, substantially as set forth.

6. The herein-described burner comprising a distributing-tube having groups of minute openings at intervals in its length and composed of corresponding tubes and a connecting cross-T, a flame-tube having a longitudinal perforate side portion, a coupling adjustably connecting the flame-tube with the distributing-tube, a series of mixing-chambers of frusto-conical form attached to the flame-tube and located opposite the respective groups of openings of the distributing-tube, and a spreader arranged about medially of the flame-tube and having passages around its ends and at points between its ends midway of adjacent mixing-chambers, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. MCKALLIP. [L. S.]

Witnesses:

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H. E. DICKASON.