June 10, 1924. 1,496,790

W. F. STEWART

BURNER

Filed Jan. 20, 1923

Fig. 1.

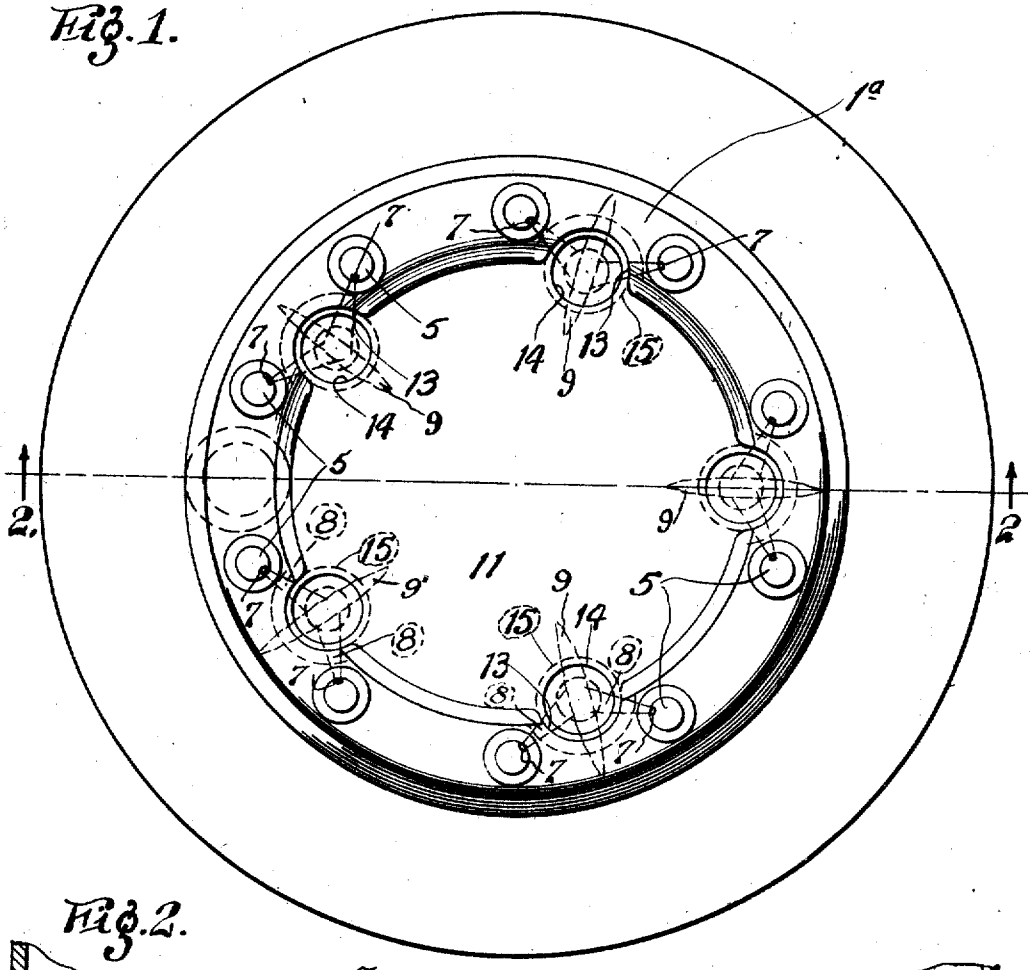
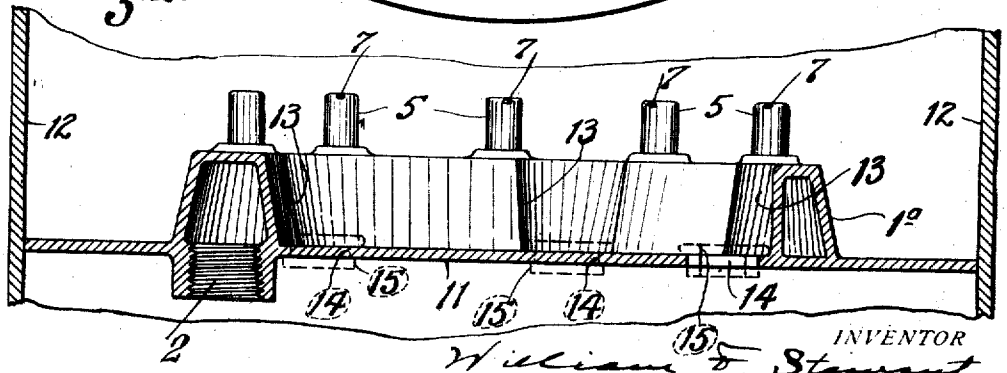


Fig. 2.



INVENTOR
William F. Stewart,
by Cameron & Cameron,
His ATTORNEYS.

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UNITED STATES PATENT OFFICE.

WILLIAM F. STEWART, OF ST. LOUIS, MISSOURI.

BURNER.

Application filed January 20, 1923. Serial No. 613,858.

To all whom it may concern:

Be it known that I, WILLIAM F. STEWART, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Burners, of which the following is a specification.

My invention relates to gas burners and has for its principal objects to devise a burner that will be free from the danger of back firing, that will have a plurality of flames whose position may be varied and that is simple in construction and easy to manufacture.

The invention consists principally in providing the burner supply pipe with a plurality of burner tips arranged in pairs, each tip having a gas outlet and the two tips of each pair being disposed so that the streams of gas therefrom converge and in disposing a bottom plate beneath said burners, said plate having an opening beneath each pair of burners. The invention further consists in the burner hereinafter described and claimed.

In the accompanying drawing,

Fig. 1 is a top plan view of a burner embodying my invention, and

Fig. 2 is a sectional view on the line 2—2 in Fig. 1.

The burner ring 1ª is provided with a bottom plate 11 that is secured to the side walls 12 of a heater, thus making a closed combustion chamber. The burner ring is provided with a threaded opening 2 adapted to receive the threaded end of a fuel supply pipe.

The burner pipe is provided along its top with a plurality of holes in each of which is disposed the end of a hollow burner tip 5, preferably of metal. Through the closed end of each tip 5 extends an inclined hole 7 that opens into the central bore of the burner tip which communicates with the interior of the burner pipe. In practice the hole is inclined at an angle of about forty-five degrees.

The burner tips are preferably arranged in pairs and the two burner tips of each pair are disposed so that straight lines drawn through the respective openings thereof would converge. Thus, the streams of gas 8 coming from the two burner tips converge as indicated in Fig. 1 and unite to form a single flame 9. The streams striking against each other flatten out crosswise of the direction in which they were flowing and the united stream flows in a substantially vertical direction. The flow of the streams of gas creates a flow of air, so that sufficient air is mixed with the gas to form a proper heating flame.

The burner tips may be turned and their angular position changed so that the point at which the streams of gas therefrom meet varies and, consequently, the location and disposition of the flame may be adjusted. As shown in Fig. 1, the openings of most of the burner tips are disposed along a circle having the center of the burner pipe as a center. Thus the flame of each pair of burner tips will be disposed directly above the burner pipe, extending crosswise thereof. By adjusting the burner tips of any pair, the flame of such pair of tips may be moved inward or outward with reference to the burner pipe. Thus, the series of flames may be varied in numerous ways. They may be arranged in a circle smaller than the burner pipe, of the same size as the burner pipe, or larger than the burner pipe, or they may be arranged irregularly, some being disposed directly above the burner pipe and others being to one side or the other thereof.

The burner ring 1ª is preferably indented or recessed between the two tips 5 of each pair, and at the bottom of each of these recesses 13, the burner plate is provided with a hole 14. Each hole is preferably provided with a removable bushing 15 or nut, so that the size of the opening may be adjusted.

The angular position of the burner tips is preferably adjusted so that the flame of each pair of tips is disposed directly over one of the openings in the bottom plate. Thus a draft of air is supplied directly to the flame. If desired, however, the tips may be adjusted so that the flames are moved away from the holes, and still sufficient air will be drawn through the holes to provide the oxygen necessary for the flames.

The herein described burner tips are simple and inexpensive to manufacture, and if a mistake is made in the size, location or angle of inclination of the fuel opening, the resulting loss is slight, whereas if the openings were made directly in the burner pipe, the whole burner would have to be scrapped if one hole were improperly made. Furthermore, it is very difficult to make burner pipes of even thickness throughout and to locate openings accurately therein. In the present burner, it is not necessary that the

burner pipe be accurately formed, and as above stated, it is a comparatively simple matter to form the burner tips accurately.

The adjustability of the several flames of the burner is an important advantage of the present construction.

Obviously, numerous changes may be made without departing from the invention; and I do not wish to be limited to the precise construction shown.

What I claim is:

1. A burner ring connected with a fuel supply, a plurality of pairs of burner tips mounted in holes provided therefor in said burner ring, each of said tips having a fuel outlet, the tips of a pair being disposed so that the streams of fuel therefrom converge, a bottom plate and side walls secured to said plate, said plate having a plurality of openings, each disposed beneath the flame of a pair of burner tips.

2. A burner ring connected with a fuel supply, a plurality of pairs of burner tips mounted in holes provided therefor in said burner ring, each of said tips having a fuel outlet, the tips of a pair being disposed so that the streams of fuel therefrom converge, a bottom plate and side walls secured to said plate, said plate having a plurality of openings, each disposed beneath the flame of a pair of burner tips, and means for adjusting the size of the openings.

3. A burner ring connected with a fuel supply, a plurality of pairs of burner tips mounted in holes provided therefor in said burner ring, each of said tips having a fuel outlet, the tips of a pair being disposed so that the streams of fuel therefrom converge, a bottom plate integral with said burner ring and side walls secured to said plate, said plate having a plurality of openings, each disposed beneath the flame of a pair of burner tips.

Signed at St. Louis, Missouri, this 17th day of January, 1923.

WILLIAM F. STEWART.