(No Model.)

# R. HENDERSON.

## FUEL GAS BURNER.

No. 594,251. Patented Nov. 23, 1897.

*Fig. 1.*

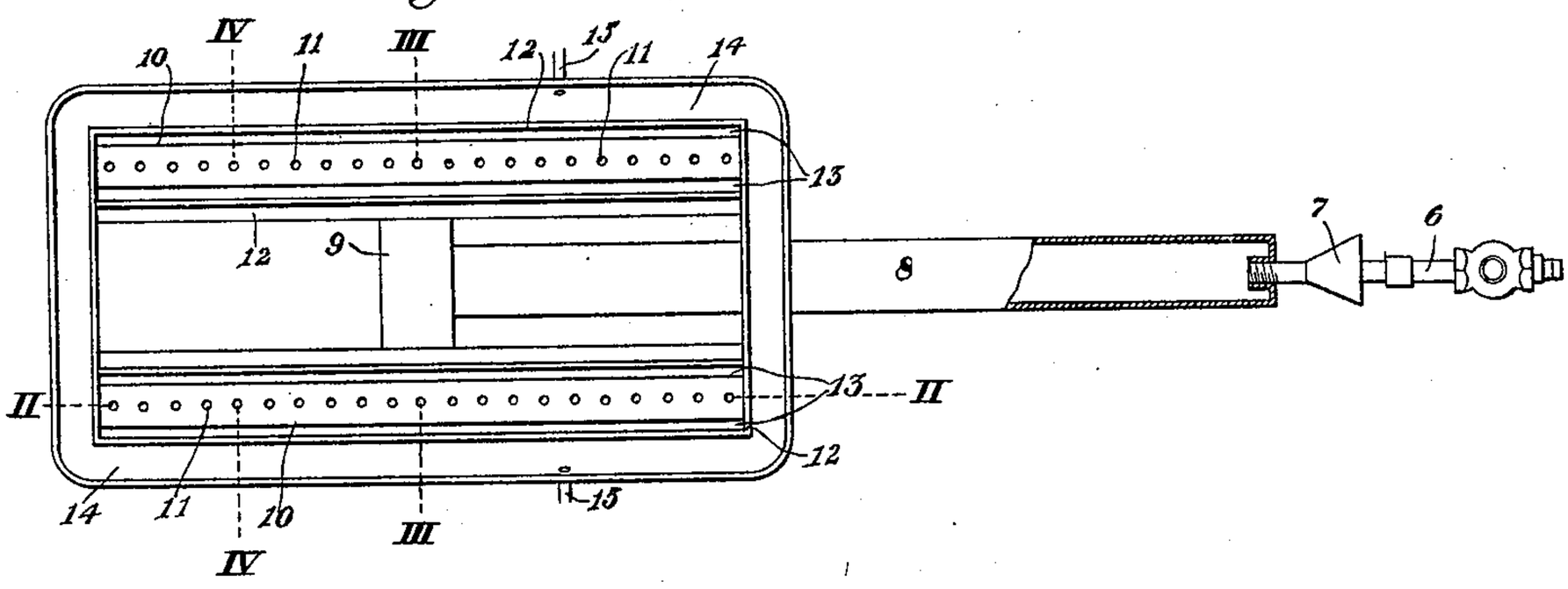



*Fig. 2.*

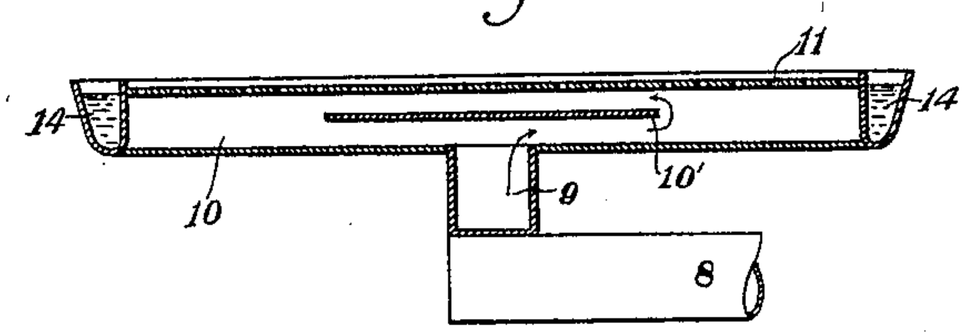



*Fig. 4*

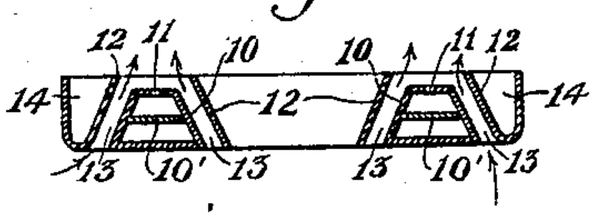
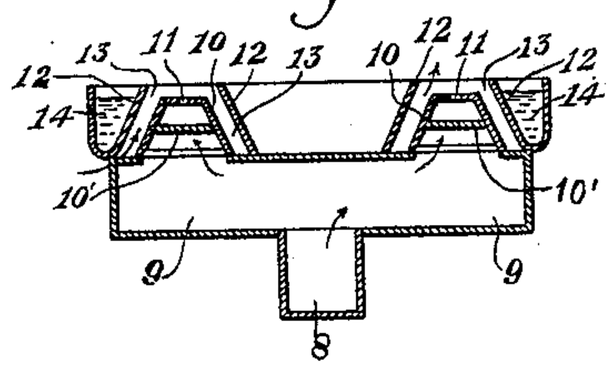



*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

ROBERT HENDERSON, OF PITTSBURG, PENNSYLVANIA.

## FUEL-GAS BURNER.

SPECIFICATION forming part of Letters Patent No. 594,251, dated November 23, 1897.

Application filed January 26, 1897. Serial No. 620,838. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT HENDERSON, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Fuel-Gas Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this application, in which—

Figure 1 is a plan view of the burner and feed-pipe. Fig. 2 is a longitudinal vertical section taken on the line II II of Fig. 1. Fig. 3 is a cross-section taken on the line III III of Fig. 1. Fig. 4 is a similar section taken on the line IV IV of Fig. 1.

My invention consists of an improvement in fuel-gas burners for domestic use, and it is designed to produce a high degree of heat from a limited amount of gas with entire freedom from disagreeable odor or injurious products of combustion and in a cheap and economical manner.

It is a well-known fact that in the combustion of fuel-gas, such as what is commonly known as "natural gas," the best results are secured by a thorough admixture with a sufficient quantity of air, and I have designed my improved burner so as to secure the best results in the following manner:

A gas-pipe 6, furnished with a suitable valve, introduces gas into a "mixer" 7, into which the outside air is drawn, from which a mixture of gas and air emerges into a mixing-pipe 8 of sufficient diameter and length to give the gas ample opportunity to expand and become thoroughly mixed with the air. At the other end of the mixing-pipe it communicates with a cross branch pipe 9, upon the top of which are located the burner-chambers 10, provided with a row of jet-holes 11, the gas being free to pass through the mixing-pipe 8 into the cross branch pipe 9 and upwardly into the burner-chamber 10, from which it escapes in combustion through the vent-holes 11.

It is obvious that the cross branch pipe 9 may be dispensed with and the burner-chambers located on top of the mixing-chamber 9, such construction being applicable when but one burner-chamber is employed or when the burner-chambers are located at right angles to the mixing-chamber.

The burner-chamber 10 being of considerable length I have inserted across the middle a horizontal baffle-plate 10′ above the opening leading from the pipe 9 and extending for a short distance toward each end. By this means the gas is distributed more equally to the vent-holes, resulting in a more even flame.

The burner-chambers are preferably made wider at the bottom than at the top and taper upwardly. At each side are located partitions 12, slanting inwardly and approximately parallel with the sides of the burner, with an intervening space 13, and the draft due to the combustion of the gas will induce a supply of fresh air upwardly through such space 13, as indicated by the arrows, thereby aiding and perfecting the combustion of the gas.

It is obvious that the number of the burner-chambers may be varied to suit different requirements of use, as one or any number greater than two can be used equally well, and I have shown the present burner composed in pairs for convenience of construction.

For the purpose of supplying moisture of evaporation I have provided around the burners the water-reservoirs 14, made in any convenient manner, as by extending the outer partition 12 so as to form a gutter. If desired, however, the reservoir may be left separate and attached in any suitable manner. A convenient pipe 15 for filling extends to the outside of the reservoir.

The advantages of my improved fuel-gas burner will be appreciated by those skilled in the art to which it appertains, as by its use I am enabled to secure a greater heat at a lower cost for gas, inasmuch as by the copious supply of air I am enabled to consume all of the fuel qualities of the gas.

The cost of the apparatus is very low, and it is easy to install and operate, while being very economical of space, as it may be suspended in the air above the floor.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A fuel-gas burner having upwardly and inwardly tapering sides and perforations in the top, a surrounding outer wall forming a closure for the ends of the burner-chamber, said wall being parallel with the sides of the burner-chamber, an air-space being formed

between said wall and the sides of the burner, said wall being turned up to form a continuous water-trough, substantially as set forth.

2. A fuel-gas burner comprising a series of perforated burner-chambers, means for supplying gas and air to said chambers, a surrounding outer wall forming a closure for the ends of the burner-chambers, said wall being parallel with the sides of the burner-chambers, and inner partitions also parallel with the inner sides of the burner-chambers, air-spaces being formed between the outer sides of the burner-chambers and the surrounding outer wall and between the inner sides of the burner-chambers and the partitions, the outer wall being turned up to form a continuous water-trough, substantially as set forth.

In testimony whereof I have hereunto set my hand this 11th day of December, 1896.

ROBERT HENDERSON.

Witnesses:
PETER J. EDWARDS,
C. M. CLARKE.