

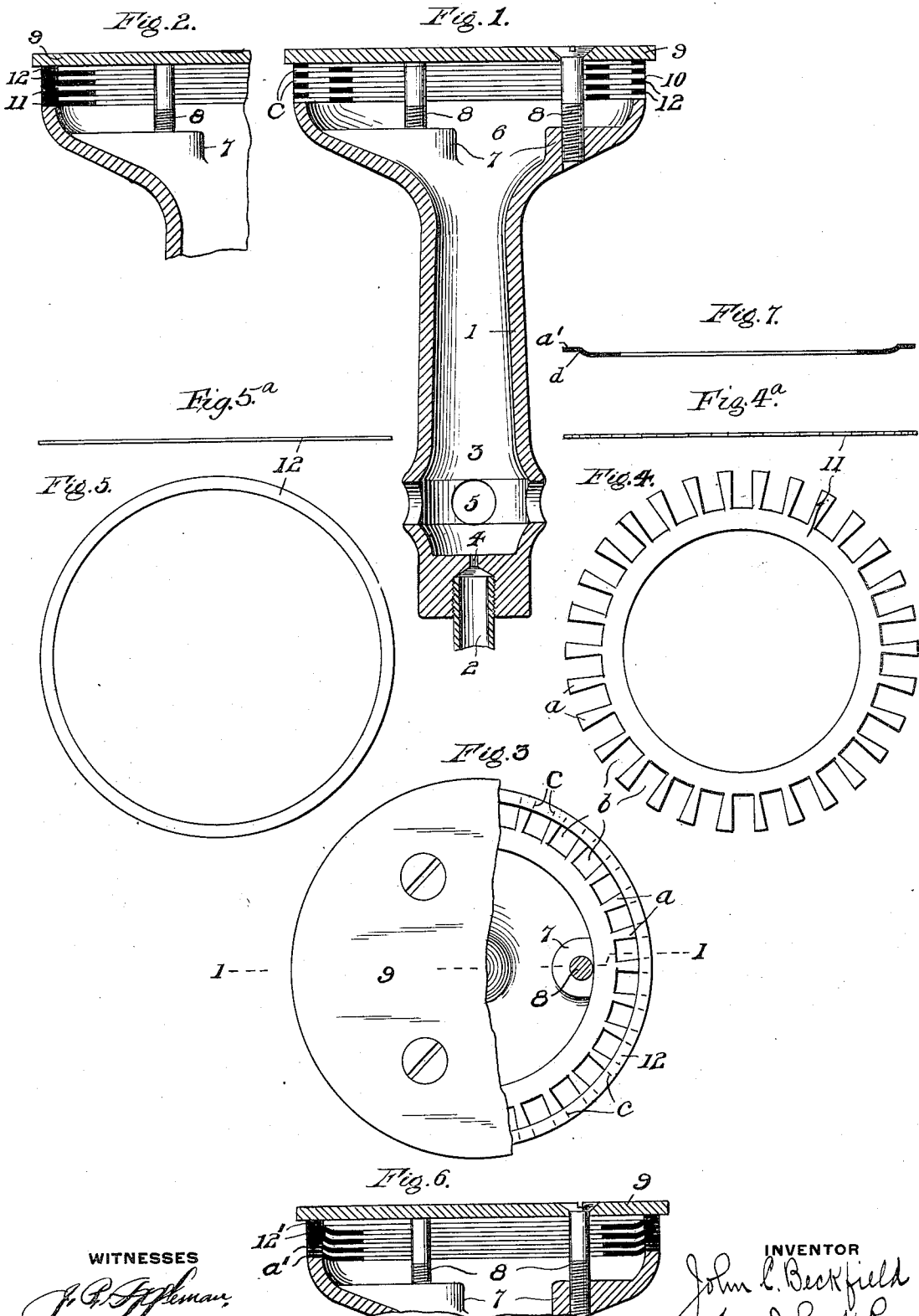
J. C. BECKFIELD.

FUEL GAS BURNER.

APPLICATION FILED NOV. 30, 1908.

1,016,869.

Patented Feb. 6, 1912.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN C. BECKFIELD, OF PITTSBURGH, PENNSYLVANIA.

FUEL-GAS BURNER.

1,016,869.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN C. BECKFIELD, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Fuel-Gas Burners, of which improvement the following is a specification.

My invention relates to improvements in fuel gas burners.

The object of the invention is to produce a burner of this type in which maximum efficiency is secured at a minimum of cost. In the construction of burners of this general character, it is of the utmost importance to break the combustible gas into a great number of attenuated streams or jets in order to attain the greatest efficiency in the combustion thereof, and to accomplish this purpose, it is usual to form in the top or side walls of the burner numerous small holes or perforations for the emission of the gas and at which points the gas is ignited. The methods heretofore used to form these holes, viz., drilling or casting the same in the burner, not only consumed time and labor but were ineffectual for the reason that it is extremely difficult to form the holes or perforations of requisite size and with sufficient accuracy to prevent flashing back in the mixer or in sufficient number and sufficiently close to produce good results, much less the best results.

One of the principal advantages of my improved burner is that holes or perforations of the required number, size, and location (which may be varied in number dependent upon the composition of the gas without alteration of the parts composing the burner) to produce maximum efficiency, are produced without drilling as heretofore. I accomplish this object by means of the device hereinafter described, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a vertical central section of my improved burner; Fig. 2 is a section similar to Fig. 1, but taken through the projections *a*. Fig. 3 is a plan view of the burner, the top being partly broken away; Fig. 4 shows a plan view of one of the annular members which constitute the perforated portion of the burner. Fig. 4^a is a side elevation of the same. Fig. 5 shows a plan view of one of the narrow partition rings interposed between each of said annular members. Fig.

5^a is a side elevation of the same. Fig. 6 is a section of the upper portion of the burner, showing a preferred form of said annular member; and Fig. 7 is a sectional elevation of a preferred form of one of the annular members.

Referring to said drawings, 1 is the stem of the burner, the lower end of which is provided with a connection 2, which communicates with the chamber or channel 3 of said stem by means of the gas admission orifice 4. The lower end of the chamber or channel 3 is preferably enlarged, as shown, and is provided with a number of orifices 5 for the admission of air to mix or admix with the gas admitted through the orifice 4. The upper portion of said stem is considerably enlarged, forming a circular chamber 6, when the device is assembled, as shown in Fig. 1. The inner wall of said chamber is provided with a number of projections 7 in which screw-holes are formed for the reception of the screws 8, 8 which secure the top 9 and the annular portion 10 to the stem or main part of the burner, and the said screws being so disposed that their outer surfaces or outside contact with the inner surfaces or annular part 10, thereby constituting guides to prevent lateral movement of said annular part. The said annular portion 10 comprises a series of superposed rings 11 and 12, the rings 11 having projections or fingers *a* at uniform intervals around the periphery thereof, forming notches or spaces *b*, the rings 12 being narrow plain rings as shown in Fig. 5, which, when interposed between the rings 11 form numerous gas emission openings *c, c*, which communicate with the interior chamber 6 of the burner through the spaces *b*.

It is obvious that the rings 11, 12, may be secured together in any suitable manner to form an annulus or ring of considerable depth or thickness and in which the gas emission orifices will be formed as heretofore specified and that the annulus when so formed can be secured between the body portion of the burner and the cap, as heretofore specified, by means of the screws 8. It is also obvious that the burner need not be circular and that consequently the rings or members 11, 12, need not be circular, as they may be formed circular or oblong, dependent upon the configuration of the body of the burner. The rings are capable of being easily and quickly stamped out of sheet steel

or metal and when assembled as herein specified and shown produce a burner having the requisite number of perforations with absolute accuracy as to the size and location so as to produce the best possible results.

In Figs. 6 and 7 are shown the preferred form of rings 11, the fingers a' thereof being above the plane of the remaining portion forming the shoulder d which engages against the edges of the ring 12 when assembled and prevents lateral movement and consequent displacement of the rings which might occur through contraction and expansion.

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

1. A fuel gas burner having a mixer for gas and air, and comprising a body portion, a cap to close the top thereof, and an annular portion interposed between the body portion and the cap and secured therebetween, the said annular portion comprising a series of narrow plain rings and a series of rings, peripheries of which are provided at regular intervals with radially projecting fingers, the said plain rings being alternately disposed between the rings having fingers.

2. A fuel gas burner comprising a hollow chamber formed to receive a combustible gas, and a cap adapted to close the same, the portion of the wall of said chamber between the cap and the lower portion thereof comprising a series of superposed thin metallic members, the edge of each alternate one of said series of members having inwardly extending slots formed between fingers, each of which is provided with a shoulder, and the other series of members being plain and

seated upon the first mentioned members between the shoulder and the outer edge thereof, whereby series of gas emission openings are formed, and the said members are held against displacement by expansion and contraction.

3. A fuel gas burner comprising a hollow chamber adapted to receive gas and air, a cap to close the same, the upper portion of the wall of said chamber comprising a series of superposed thin metallic members, the edge of every alternate one of which is provided with slots, the edges of the members interposed therebetween being uninterrupted, whereby gas emission orifices are formed in the upper portion of the wall of said chamber.

4. A fuel gas burner comprising a hollow chamber adapted to receive gas and air, a cap to close the same, the upper portion of the wall of said chamber comprising a series of thin metallic members superposed between the lower portion of said chamber and said cap and secured therebetween, the edge of every alternate member of said series being provided with projections, the projections being out of horizontal alinement with the remaining portion of said members, and the remaining members of the series being plain metallic members interposed between said members having projections, whereby gas emission orifices are formed.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN C. BECKFIELD.

In the presence of—

CLARENCE A. WILLIAMS,
J. P. APPLEMAN.