

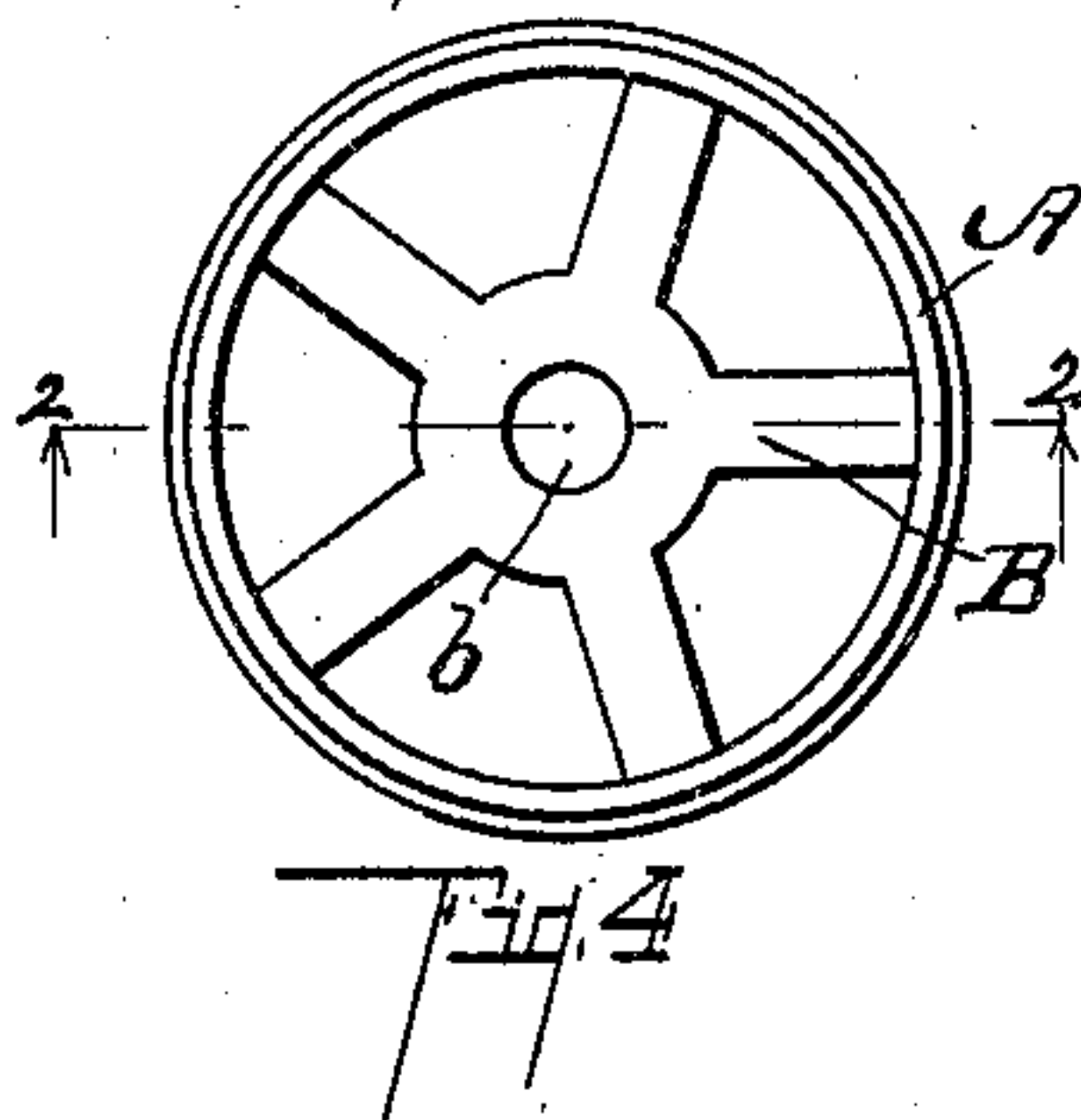
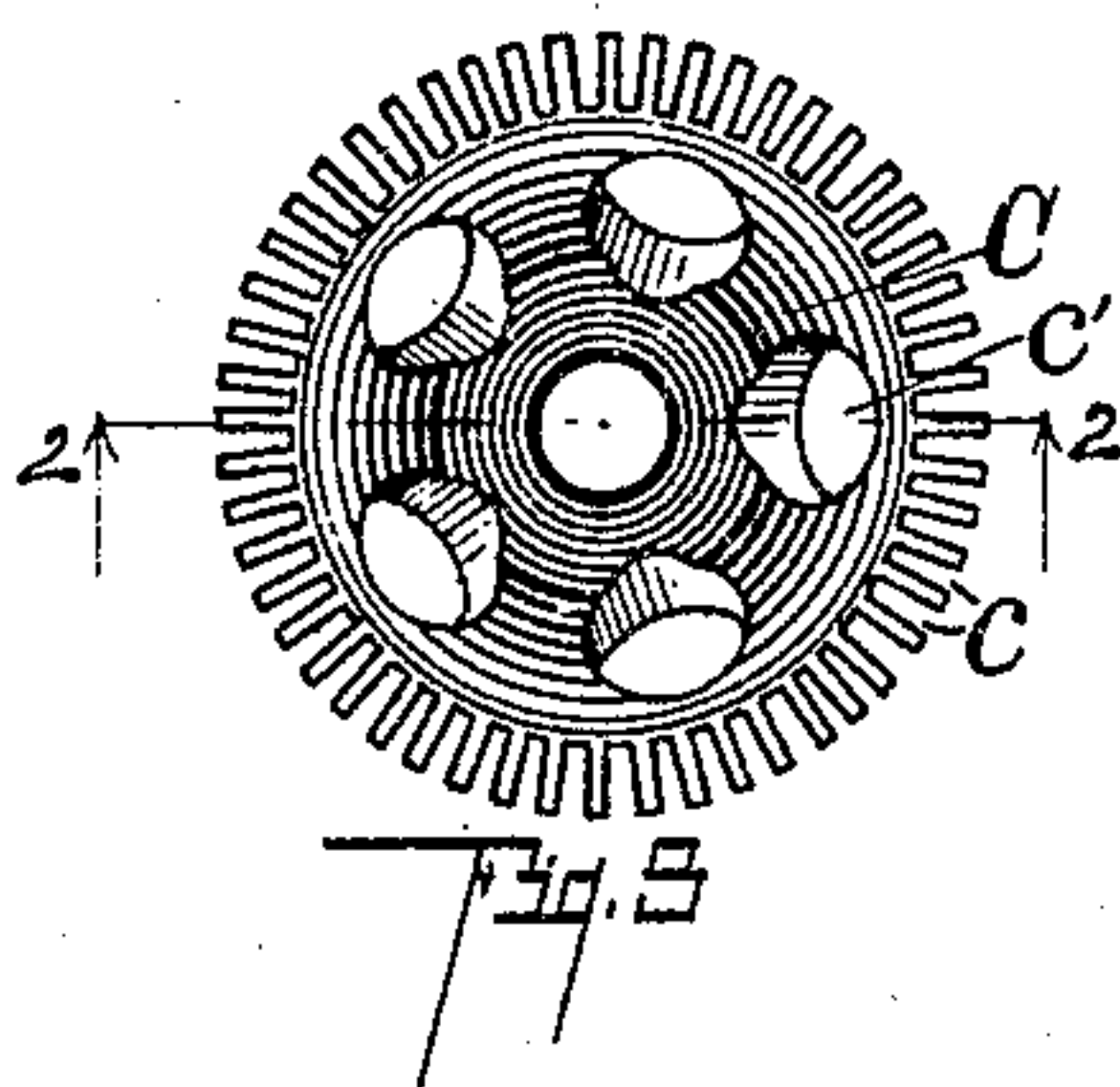
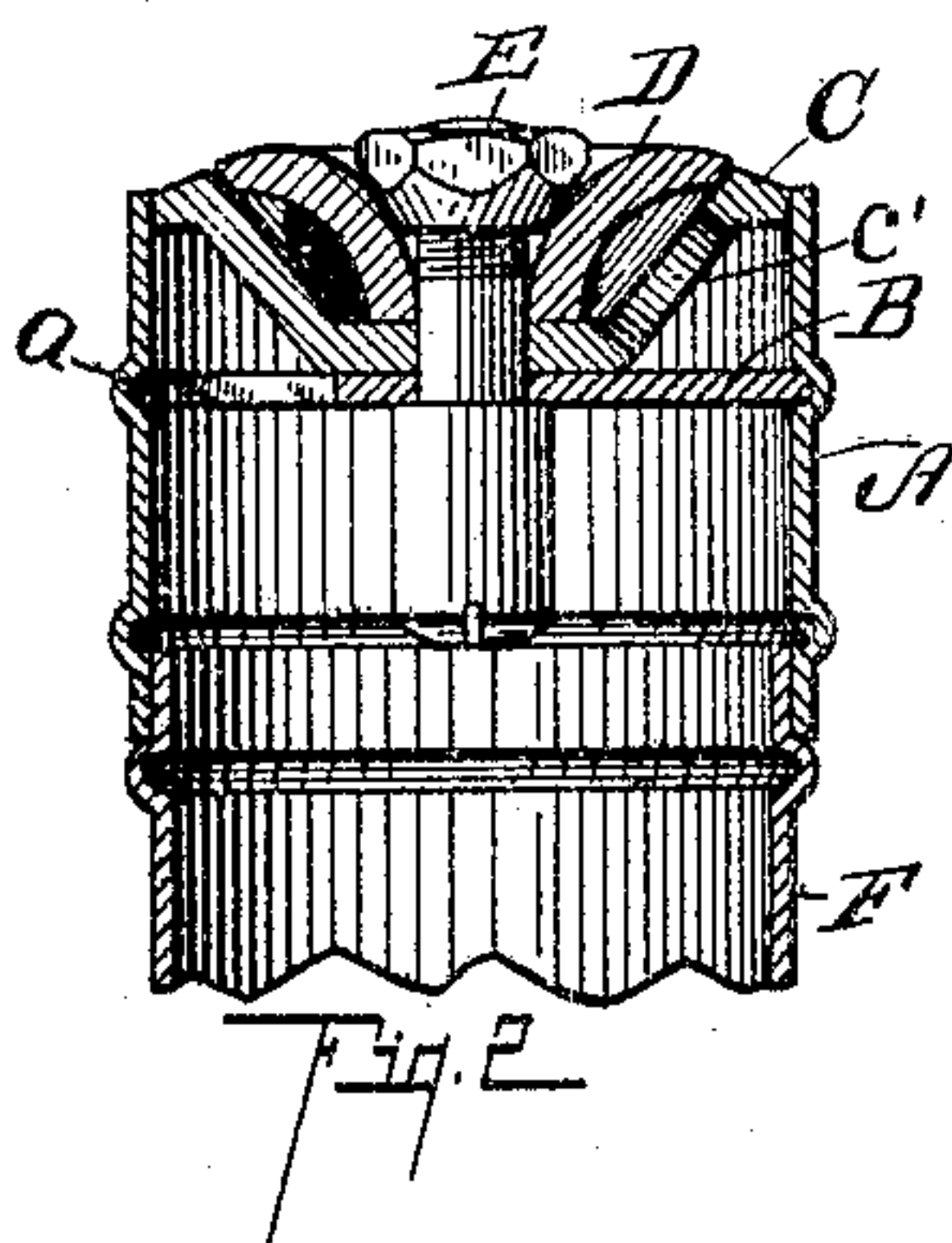
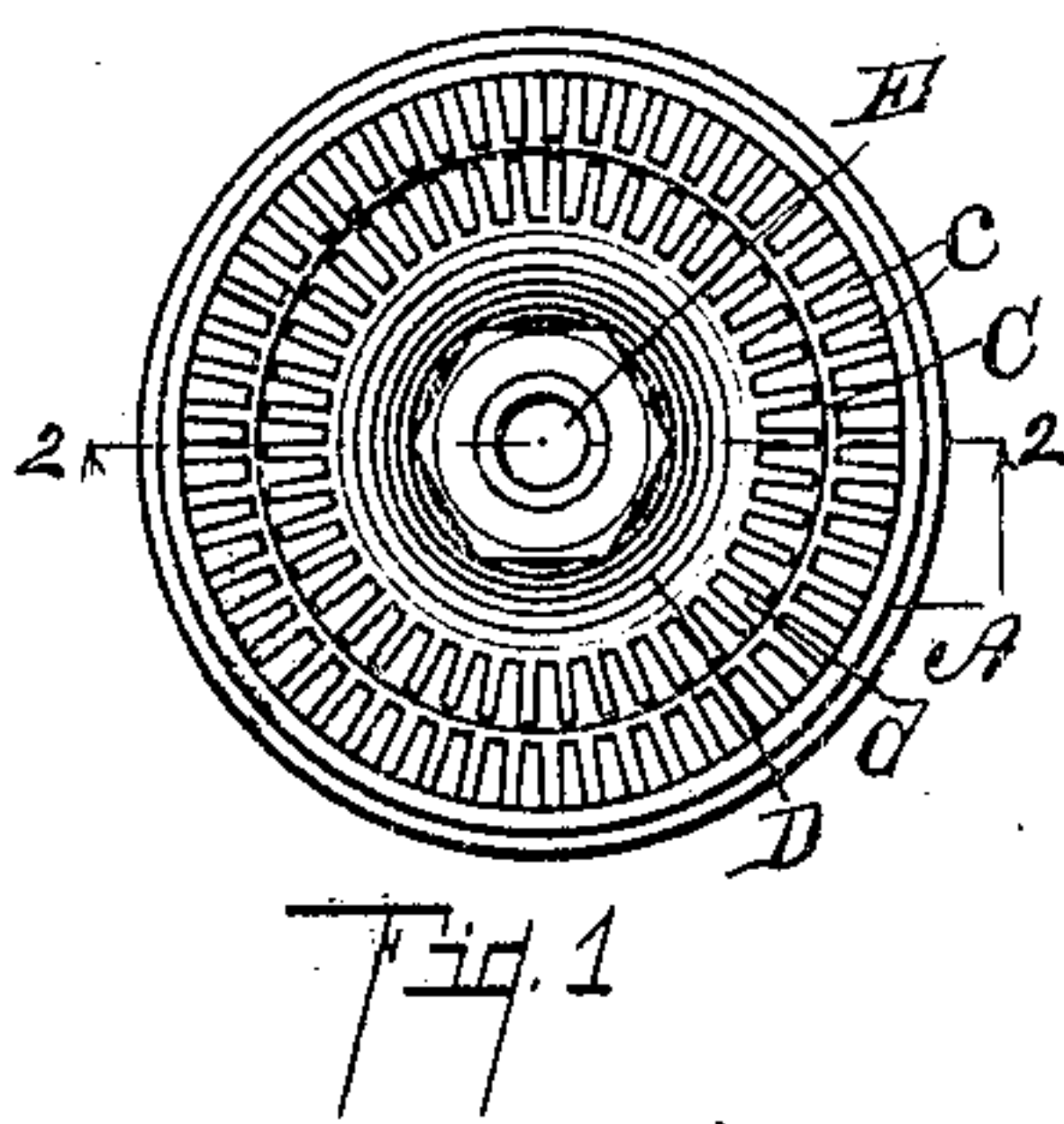
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PATENTED JULY 11, 1905.

A. H. HUMPHREY.

GAS BURNER.

APPLICATION FILED NOV. 14, 1904.



Witnesses:

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# UNITED STATES PATENT OFFICE.

ALFRED H. HUMPHREY, OF KALAMAZOO, MICHIGAN.

## GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 794,225, dated July 11, 1905.

Application filed November 14, 1904. Serial No. 232,650.

*To all whom it may concern:*

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

This invention relates to improvements in burners.

It relates particularly to heads or tips therefor, and is particularly adapted for use in incandescent gas-burners, although desirable for use in other relations.

The objects of the invention are, first, to provide an improved head or tip for incandescent gas-burners by which the gas is delivered in a manner adapted to secure the most desirable results; second, to provide an improved burner head or tip in which back firing or flashing is overcome; third, to provide an improved burner head or tip which is economical in structure and very durable in use.

Further objects and objects relating to structural details 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 embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of my improved burner-head. Fig. 2 is a vertical sectional view taken on a line corresponding to lines 2 2 of Figs. 1, 3, and 4 looking in the direction of the little arrows at the ends of the section-lines. Fig. 3 is a plan view of the tip member C, which is of peculiar structure. Fig. 4 is a plan view of my improved burner-head with the tip members C and D removed.

In the drawings similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawing, I provide a tubular casing A. This is

preferably separable from the burner-tube F, but might be formed integral therewith, if desired. Arranged within the casing A toward its upper end is a spider B, having a centrally-located hole therethrough. The spider B is preferably secured in position by engaging its arms in the annular groove *a*, formed in the casing. The outer tip member C rests upon the spider and is supported thereby. The tip member C is cup-like in shape and is provided with a plurality of perforations *c'* therein and an outwardly-projecting flange-like rim having radial slits therein. This tip member C fits within the casing A, forming a plurality of jet-orifices *c* around the same. The slits or serrations are formed by sawkerfs in the flange or rim of the tip member C.

Arranged within the outer tip member C is an inner member D. This inner member is also cup-shaped. It has a flaring rim with radial slits or serrations forming a plurality of jet-orifices *d*. The flaring shape of this tip member deflects the gas passing through the jet-orifices outwardly at an angle to the jets delivered from the jet-orifices *c* of the outer member C. This deflects the jets by the orifices *c* outwardly into contact with the mantle. It also has further advantages of carrying the gas delivered by the jet-orifices *d* outwardly into contact with the air for more perfect combustion.

The tip members C and D are secured in position by a bolt E, which is arranged through the spider and through the tip members. This bolt is provided with a longitudinal hole to receive the mantle-support. A nut E, adapted to fit within the tip member D, is provided for the bolt. The parts are thus secured together in a manner which enables their ready assembling and permits their being readily disassembled should occasion require.

By thus forming the parts I am enabled to construct them of comparatively heavy material, so that they readily withstand the effects of the intense heat to which they are subjected in use. While they are formed of comparatively heavy material, the passage of the gas therethrough is obstructed a minimum amount only, so that it is delivered with



practically full force. By thus forming and arranging the parts I am enabled to avoid the use of wire screens or other separate devices for preventing back firing or back lighting, the same being prevented by my improved burner-tip. This, as stated, retards the flow of gas only a minimum amount.

I have illustrated and described my improved gas-burner in the form preferred by me, which I believe to be the most practical form. I am aware, however, that it is capable of considerable structural variation without departing from my invention.

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

1. In a gas-burner, the combination of a tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on said spider; an inner flaring cup-shaped member having a serrated flange, arranged in said outer member said inner member projecting slightly above said outer member; a bolt having a longitudinal hole therein adapted to receive a mantle-support, arranged through said spider and tip members for securing them in position; and a nut for said bolt arranged in said inner member, for the purpose specified.

2. In a gas-burner, the combination of a tubular casing having an annular groove therein; a spider arranged in said groove; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on said spider; an inner cup-shaped member having a serrated flange, arranged in said outer member, said inner member projecting slightly above said outer member; a bolt having a longitudinal hole therein adapted to receive a mantle-support, arranged through said spider and tip members for securing them in position; and a nut for said bolt arranged in said inner member, for the purpose specified.

3. In a gas-burner, the combination of a tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on said spider; an inner cup-shaped member having a serrated flange, arranged in said outer member, said inner member projecting slightly above said outer member; a bolt having a longitudinal hole therein adapted to receive a mantle-support, arranged through said spider and tip members for securing them in position; and a nut for said bolt, arranged in said inner member, for the purpose specified.

4. In a gas-burner, the combination of a

tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on said spider; an inner flaring cup-shaped member having a serrated flange, arranged in said outer member, said inner member projecting slightly above said outer member, for the purpose specified.

5. In a gas-burner, the combination of a tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on said spider; an inner cup-shaped member having a serrated flange, arranged in said outer member, said inner member projecting slightly above said outer member, for the purpose specified.

6. In a gas-burner, the combination of a tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange resting on said spider; an inner flaring cup-shaped member having a serrated flange, arranged in said outer member; a bolt having a longitudinal hole therein adapted to receive a mantle-support, arranged through said spider and tip members for securing them in position; and a nut for said bolt arranged in said inner member, for the purpose specified.

7. In a gas-burner, the combination of a tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on said spider; an inner cup-shaped member having a serrated flange, arranged in said outer member; a bolt having a longitudinal hole therein adapted to receive a mantle-support, arranged through said spider and tip members for securing them in position; and a nut for said bolt arranged in said inner member, for the purpose specified.

8. In a gas-burner, the combination of a tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on said spider; an inner flaring cup-shaped member having a serrated flange, arranged in said outer member, for the purpose specified.

9. In a gas-burner, the combination of a tubular casing; a spider arranged in said casing; a tip for said casing, consisting of an outer cup-shaped member having perforations therein and having an outwardly-projecting serrated rim-like flange, resting on



said spider; an inner cup-shaped member having a serrated flange arranged in said outer member, for the purpose specified.

10. In a gas-burner, the combination of a casing; a tip therefor consisting of an outer cup-shaped member having openings there-through and having an outwardly-projecting serrated rim forming a plurality of jet-orifices; an inner flaring cup-shaped member, having an outwardly-projecting serrated rim, arranged in said outer member, said inner member projecting slightly above said outer member, forming a plurality of outwardly-directed jet-orifices, for the purpose specified.

11. In a gas-burner, the combination of a casing; a tip therefor consisting of an outer cup-shaped member having openings there-through and having an outwardly-projecting serrated rim forming a plurality of jet-orifices; an inner member, having an outwardly-projecting serrated rim, arranged in said outer member, said inner member projecting slightly above said outer member forming a plurality of outwardly-directed jet-orifices, for the purpose specified.

12. In a gas-burner, the combination of a casing; a tip therefor consisting of an outer cup-shaped member having openings there-through and having an outwardly-projecting serrated rim forming a plurality of jet-orifices; an inner flaring cup-shaped member, having an outwardly-projecting serrated rim, arranged in said outer member, for the purpose specified.

13. In a gas-burner, the combination of a

casing; a tip therefor consisting of an outer cup-shaped member having openings there-through and having an outwardly-projecting serrated rim forming a plurality of jet-orifices and an inner member, having an outwardly-projecting serrated rim, arranged in said outer member, for the purpose specified.

14. In a gas-burner, the combination of a casing; a tip therefor consisting of an outer cup-shaped member having openings there-through and having outwardly-projecting serrated rim, said rim having a plurality of jet-orifices therein; and an inner member having an outwardly-projecting rim, arranged in said outer member, the rim of said inner member having a plurality of outwardly-directed jet-orifices therein, for the purpose specified.

15. In a gas-burner, the combination of a casing; a tip therefor consisting of an outer cup-shaped member having openings there-through and having an outwardly-projecting rim, said rim having a plurality of jet-orifices therein; and an inner member having an outwardly-projecting rim, arranged in said outer member, the rim of said inner member having a plurality of jet-orifices therein, for the purpose specified.

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

ALFRED H. HUMPHREY. [L. s.]

Witnesses:

AMELIA J. ALBER,  
OTIS A. EARL.