

(No Model.)

C. S. DEAN.
GAS BURNER.

No. 485,910.

Patented Nov. 8, 1892.

Fig. 1.

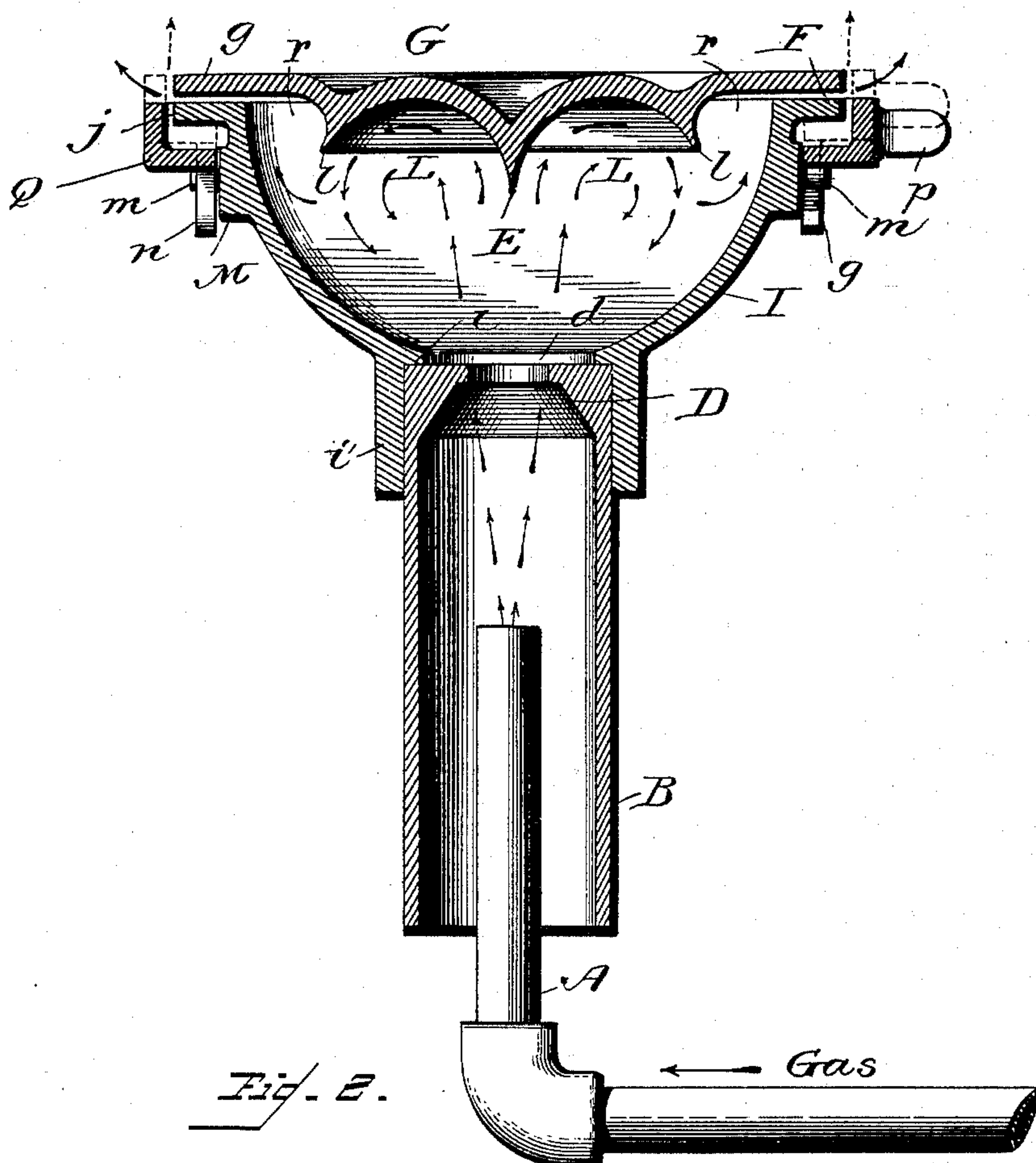
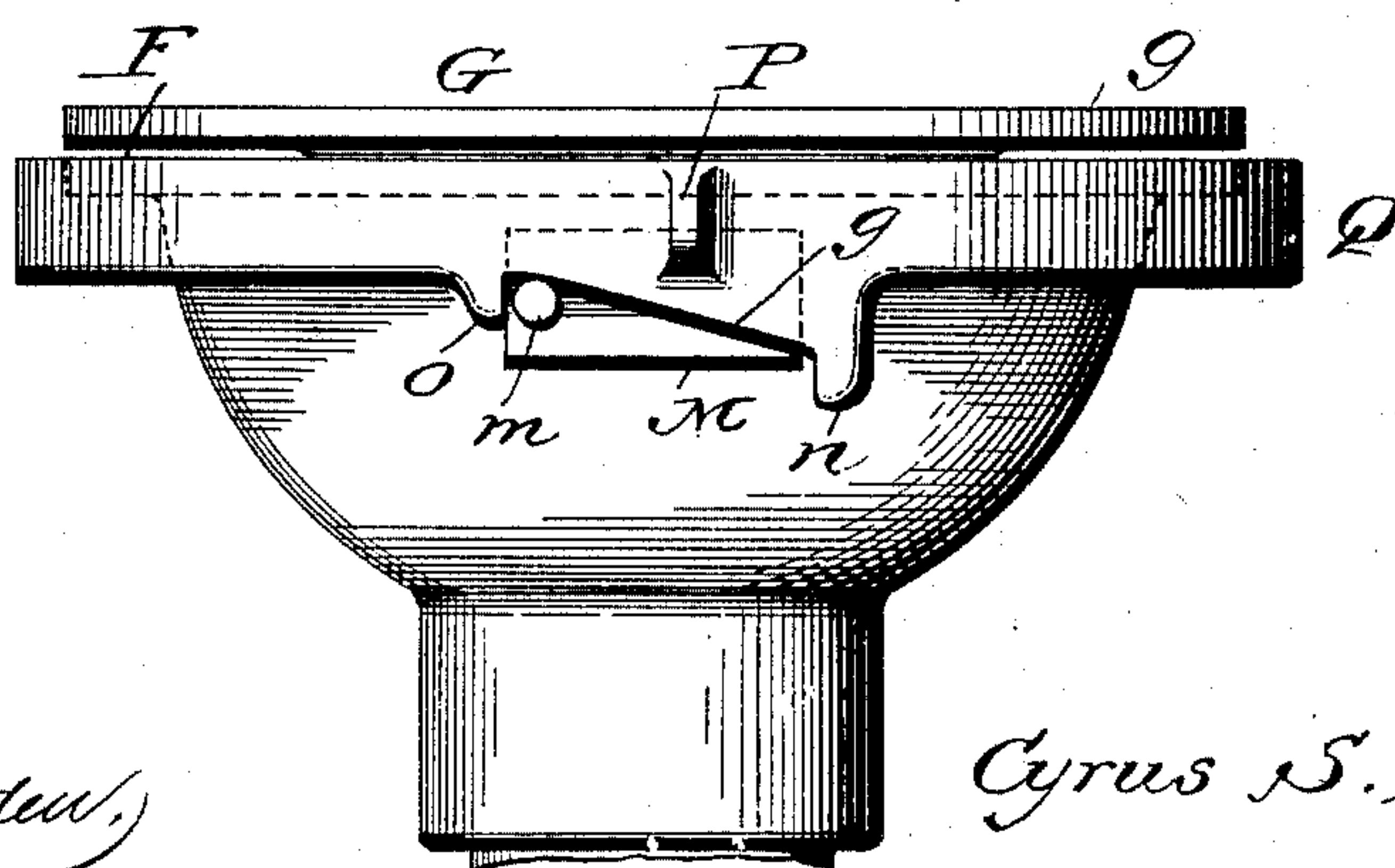


Fig. 2.



Witnesses
"Prof. S. S. Dean."
Van Buren Hillyard.

Inventor
Cyrus S. Dean.

By his Attorneys
R. S. & A. Lacey

UNITED STATES PATENT OFFICE.

CYRUS S. DEAN, OF FORT ERIE, CANADA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO CHARLES O. RANO, OF BUFFALO, NEW YORK.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 485,910, dated November 8, 1892.

Application filed April 30, 1892. Serial No. 431,354. (No model.)

To all whom it may concern:

Be it known that I, CYRUS S. DEAN, a subject of the Queen of Great Britain, residing at Fort Erie, in the county of Welland, Province of Ontario, Canada, 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.

My invention relates to gas-burners of that class which is designed for heating purposes.

The object of the invention is economy in the consumption of the gas, perfect combustion, thorough mixing of the air with the gas, and a steady and uniform flame.

A further object of the invention is to provide simple and effectual means for changing the relative angle of the flame within certain limits in a rapid and convenient manner to spread or contract the flame, as the nature of the requirement may demand.

A still further object of the invention is simplicity in the construction of the burner consistent with efficient service and satisfactory results.

The improvement consists of the novel features, which will be hereinafter more fully described and claimed, and which are shown in the annexed drawings, in which--

Figure 1 is a central vertical section of a burner embodying my invention, the gas-pipe being shown in full lines and the flame-deflecting ring being shown at its highest position in dotted lines. Fig. 2 is a side elevation of the upper portion of the burner, showing the preferred means for effecting a vertical adjustment of the flame-deflecting ring.

The burner proper is composed of the bowl portion I, having the depending tubular stem *i'* and the inner annular shoulder *i* to overlap and rest upon the short pipe B, the cap G, and the gas-pipe A. The bowl portion I is provided at its upper edge with the horizontal flange *j*, between which and the outer portion *g* of the cap G is formed a space F for the escape of the gas to be burned. The cap G is imperforate and sufficiently heavy not to warp or crack, and is centrally provided

on its inner face with an inverted cone E and with an outwardly-flared rib *l*, concentric with the said inverted cone. The sides of the rib and the cone curve symmetrically to form an annular chamber L. An annular space *r* is formed exterior to the rib *l* to supplement the action of the annular chamber L to effect a thorough mixing of the air and the gas. The flame-deflecting ring Q is adapted to encircle the outer edges of the flange *j* and cap G and is large enough to leave an annular space between it and the said edges to permit the free passage of the gas when the said ring is at its highest adjustment, as shown by the dotted lines in Fig. 1. This ring is L-shaped in cross-section, the horizontal portion projecting beneath the flange *j*. To hold the ring in a relatively-fixed position to preserve a uniform space between the vertical portion and the edges of the cap and the flange, projections M are provided on the bowl at proper intervals for the inner edge of the said ring to abut against. Cam portions *q* on the ring are provided in sufficient number to correspond with the number and position of the said projections M and have stops *n* and *o* at the opposite ends of the said cam portions to limit the turning movement of the ring Q relative to the burner. The pins *m*, extended outward from the projections M, support the ring Q and form abutments for the cams *q* to ride upon when turning the said ring Q. To facilitate the turning of the ring, a projection *p* is provided to be struck a light blow on either side by a suitable instrument. The tube B has an opening *d* at its upper end, which is smaller than the bore of the said tube, the inner walls flaring, as at D. The gas-pipe A is inserted within the tube B a proper distance, so that a jet of gas escaping therefrom and flaring, as indicated by the dotted lines in Fig. 1, will touch the edges of the opening *d*. This disposition of the parts has been found to give the best results. The tube B is open at its lower end and about three times as large as the gas-pipe A, so as to admit sufficient air.

In practice, the gas being turned on, the air will be drawn in at the bottom of the tube B and will pass through the opening *d* with the

gas and striking the inverted cone E will be deflected outward, thence downward by the rib *l* and again rising the mixed air and gas will enter the annular chamber *r* and escape
 5 by way of the passage F and be burned. When the flame-deflecting ring is at its lowest position, the flame will spread and occupy an almost-horizontal position. Obviously, to change the angle of the flame, the ring Q is
 10 elevated, as hereinbefore stated, by means of the cams *q* and the pins *m*.

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

15 1. A gas-burner having its cap-plate provided on its inner face with an inverted cone and with an annular rib concentric with the said cone, the sides of the said cone and rib curving symmetrically to form the annular
 20 chamber L, and having the annular space *r* exterior to the said annular rib and within the gas-exit, substantially as described, for the purpose specified.

2. A gas-burner having an imperforate cap-
 25 plate provided on its inner face with a centrally-disposed inverted cone and with a concentric annular rib which curves symmetrically to form the annular chamber L, substantially as and for the purpose described.

30 3. The combination, with a gas-burner having a lateral discharge for the gas, of a ring encircling the said burner and means for moving the said ring vertically to deflect the flame more or less from the horizontal, substantially
 35 as described.

4. The combination, with a gas-burner having a lateral discharge for the gas, of an annular ring surrounding the burner and mutually-coacting pins and cams to effect a vertical adjustment of the said ring to deflect the
 40 flame more or less from the horizontal, substantially as and for the purpose described.

5. The combination, with a gas-burner having a lateral discharge for the gas and having a bowl portion and projections M and pins *m*,
 45 of a flame-deflecting ring encircling the burner and guided in its vertical movements by the said projections M and having cam portions to engage with and ride upon the said pins
 50 and having stops at the ends of the said cam portions to engage with the said pins and limit the movements of the ring in each direction, substantially as set forth.

6. The combination, with a gas-burner having an inverted cone depending from its cap-
 55 plate, of a tube B of uniform diameter, having its upper end contracted and provided with an opening of less diameter than the bore of the said tube and communicating with the gas-burner directly opposite the apex of the
 60 said inverted cone and a gas-pipe of less diameter than the bore of the said tube and inserted within the same to a proper distance, substantially as and for the purposes specified.

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

CYRUS S. DEAN.

Witnesses:

VAN BUREN HILLYARD,
 R. MENTEL.