

(No Model.)

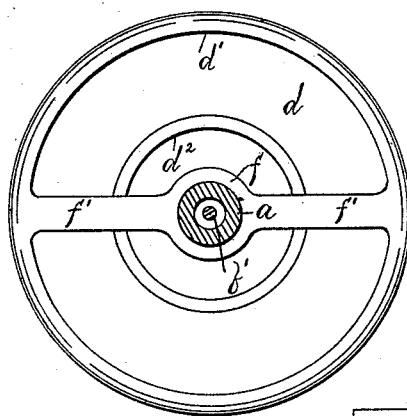
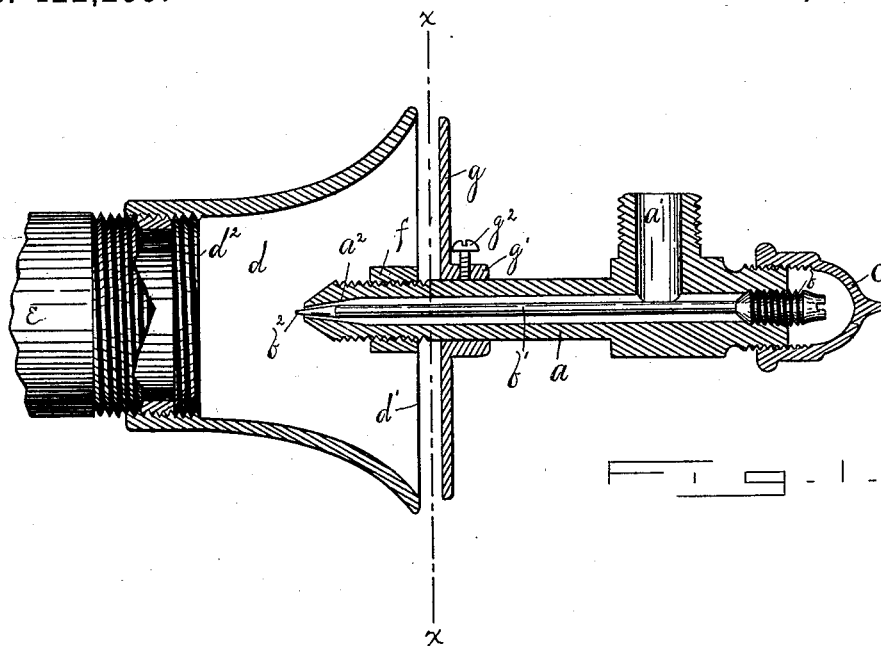
2 Sheets—Sheet 1.

J. W. DANFORTH & R. W. CLARK.

GAS AND AIR MIXER.

No. 422,299.

Patented Feb. 25, 1890.



Witnesses:  
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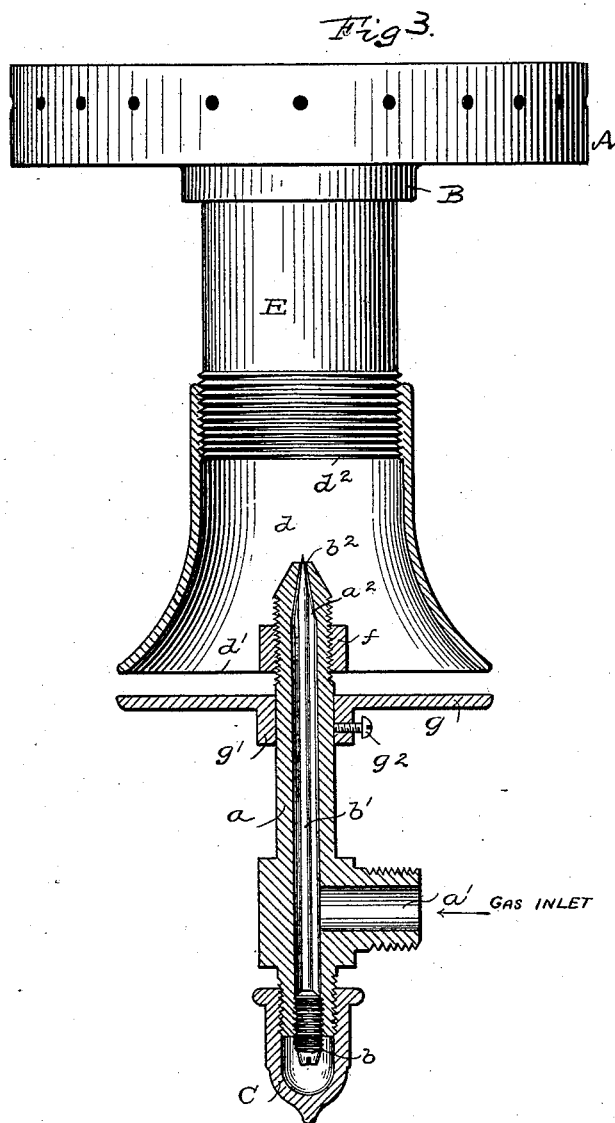
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# UNITED STATES PATENT OFFICE.

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## GAS AND AIR MIXER.

SPECIFICATION forming part of Letters Patent No. 422,299, dated February 25, 1890.

Application filed March 12, 1887. Serial No. 230,709. (No model.)

### *To all whom it may concern:*

Be it known that we, JOHN W. DANFORTH and ROBERT W. CLARK, both citizens of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Gas and Air Mixers, of which the following is a specification.

The object of our invention is to provide means whereby the amount of air and gas can both be regulated independently without interfering with the action of the other, and also a means whereby a finer adjustment of the gas is provided for and whereby the gas-adjusting device is protected from outside interference, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal central section cutting through all except the pointed gas-regulating device. Fig. 2 is a section through line X X, Fig. 1. Fig. 3 represents a central sectional view of our improved device connected to a sunflower-burner.

This improvement consists of a hollow case having a flaring chamber *d*, and a smaller end *d*<sup>2</sup>, provided with an interior screw-thread adapted to receive the pipe *e*, leading to the burner, which burner is not shown in the drawings, as it is not a part of this invention. Extending centrally across the flaring mouth-piece, just over the chamber *d*, is a cross piece or brace *f' f'*, all these pieces being formed in one piece. In the center of the brace *f' f'*, projecting inwardly from the cross piece or brace, is a central collar or hub *f'*. This collar is screw-threaded on the inside of the opening through it, so as to adapt it to receive the screw-threaded end of the tube *a*, into which it is thus rigidly secured, which tube when in place, as shown, extends to a central point within the chamber *d*, the tapering end *a*<sup>2</sup> extending into said chamber. On the tubular portion is an inlet portion *a'*, connected at right angles to the tube *a*, and through which the gas passes to the main tube. The opening through this tube *a* extends down to near the end of the tube of the same diameter and then contracts with a comparatively short taper to a smaller opening. The opposite end of this opening is provided with an interior

screw-thread adapted to receive the screw-head *b* of the needle-pointed bar *b'*. This pointed bar *b'* is provided with a pointed end *b*<sup>2</sup> of a sharper taper than the opening through which it passes, so that when it is adjusted in far enough to close the contracted opening of the tube *a* the closed portion is close to the end of the tapering portion *a*<sup>2</sup>, thereby leaving an open space all around the tapering cavity above the point of contact at the end *a*<sup>2</sup>. This construction is important, because the gas has a more free and finer outlet, as the opening is always an annular space at the end of the tube *a*. The screw-head *b* is provided with the usual cross-slot to receive a screw-driver for turning it and adjusting the bar *b'*. Over the head *b* is a screw-cap *C* to protect the bar *b'* from outside interference when adjusted.

On the tubular portion *a* is mounted a circular disk *g*, adapted to be moved to or from the flaring mouth-piece of the chamber *d*. It is provided with a collar *g'* and a set-screw *g*<sup>2</sup>, for securing it at any point to which it may be adjusted.

The object of the disk *g* is to provide means for adjusting the amount of air admitted, which may be done independently of the adjustment of the tapering pointed bar *b'*, so that when the bar is adjusted properly the quantity of air can be nicely adjusted without in any way disturbing the rest of the device.

We claim as our invention—

1. In a gas and air mixer, the combination, with a flaring open-mouthed case having a cross-brace *f' f'* across the mouth of the same, and a central collar or hub *f*, of a tubular portion *a*, rigidly secured to the collar *f*, and provided with a cap *C*, covering the gas-adjusting device, a disk *g*, mounted on the tube *a* so as to be adjustable to or from the flaring mouth-piece, and a set-screw for securing it at any point when adjusted, a rod *b'*, provided with a tapering point *b*<sup>2</sup>, and with a screw-threaded head *b*, adapted to screw into the top of the opening through the tube *a* for adjusting the bar *b'*, the tapering point *b*<sup>2</sup> of which projects through the opening in the portion *a*<sup>2</sup>, substantially as and for the purposes described.

2. In a gas and air mixer, a flaring-mouthed case having a cross-brace extending across the mouth of the same, and provided with a

central supporting-collar, in combination with  
a tubular portion *a*, rigidly secured to the  
cross-brace so that its tapering end projects  
into the chamber *d*, the opening through said  
5 tube extending through to near the portion *a*<sup>2</sup>  
of the same diameter and then tapering to a  
smaller opening at the outlet, an adjusting-  
disk *g*, mounted on the portion *a*, a screw-cap  
C at its opposite end, and a gas-adjusting bar  
10 *b'*, provided with a screw-head *b*, engaging  
with a screw in the opening in the tubular  
portion *a*, and provided with a tapering end

*b*<sup>2</sup>, having a finer taper than the opening in  
which it passes, substantially as and for the  
purposes described.

In testimony whereof we have signed our  
names to this specification in the presence of  
two subscribing witnesses.

JOHN W. DANFORTH.  
ROBERT W. CLARK.

Witnesses:

ALBERT E. SCHAAF,  
W. T. MILLER.