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PATENTED JAN. 30, 1906.

J. W. McKNIGHT.
INSPIRATOR AND MIXER FOR GAS BURNERS.
APPLICATION FILED AUG. 4, 1904.

Fig. 1.

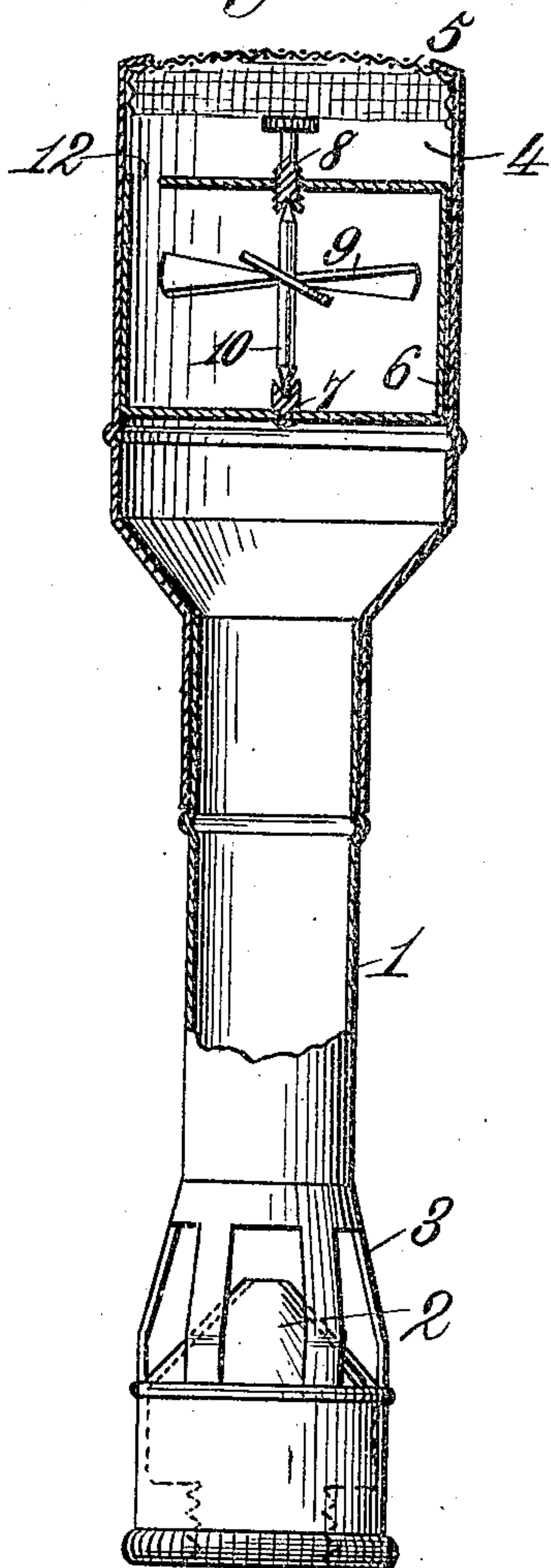


Fig. 2.

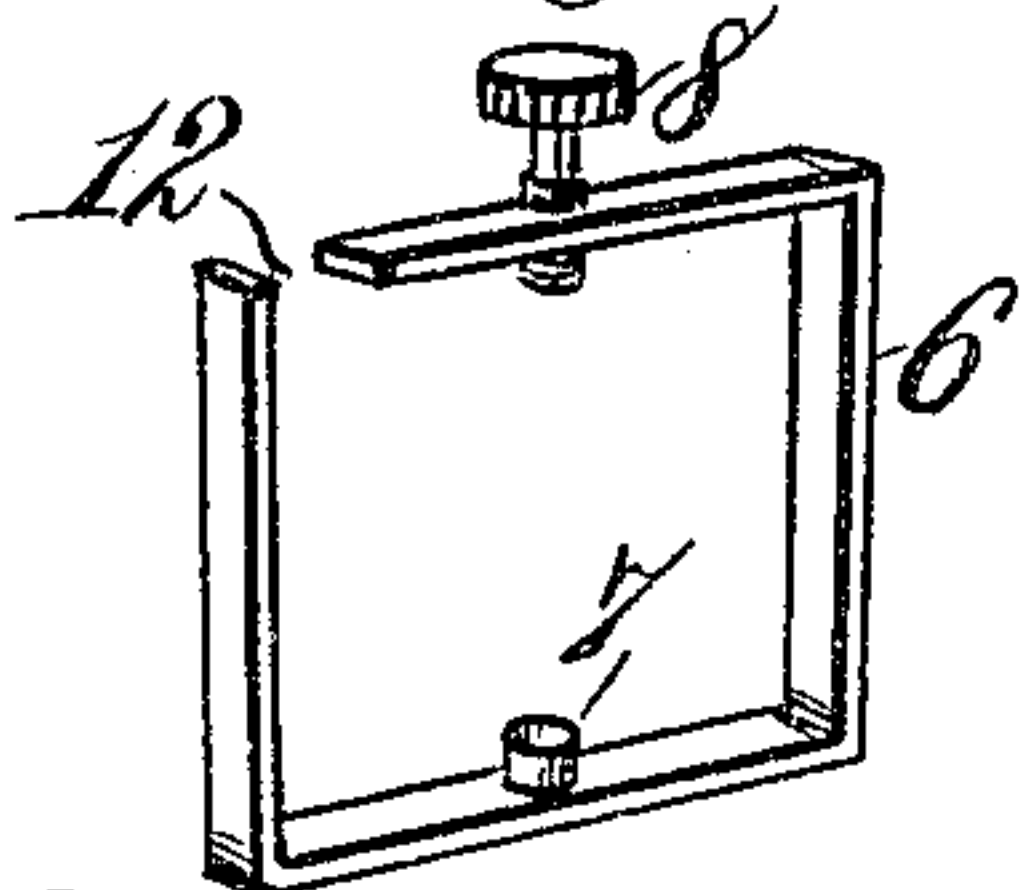
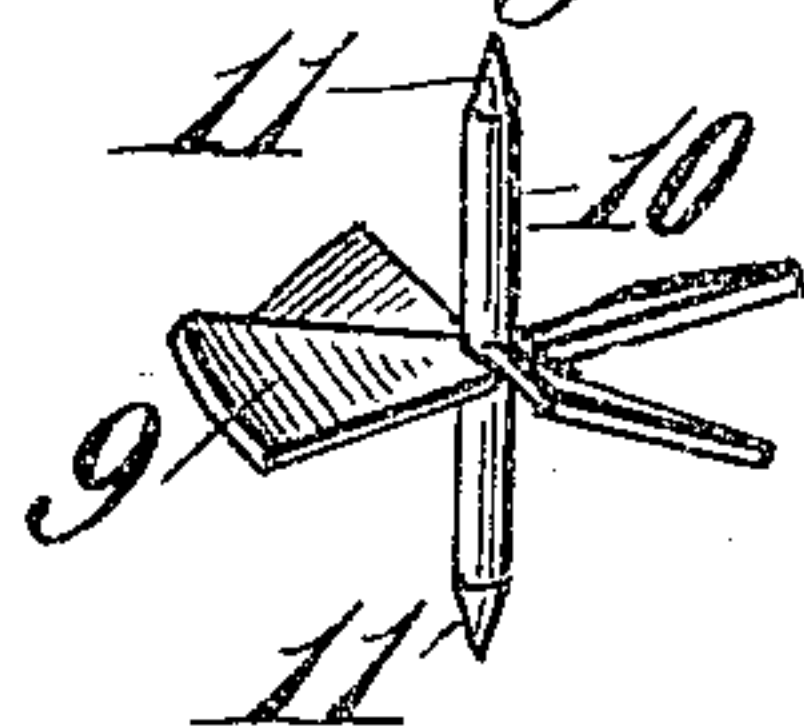


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN WESLEY McKNIGHT, OF HANOVER, PENNSYLVANIA, ASSIGNOR TO
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INSPIRATOR AND MIXER FOR GAS-BURNERS.

No. 810,968.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed August 4, 1904. Serial No. 219,540.

To all whom it may concern:

Be it known that I, JOHN WESLEY McKNIGHT, a citizen of the United States, residing at Hanover, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Inspirators and Mixers for Gas-Burners; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to Bunsen burners, and has for its object to provide the burner with an inspirator for drawing air into the burner-tube and mixing it with the gas, so that more complete combustion will be formed and the heat intensified, whereby a mantle, if employed, will be brought into a state of greater incandescence, said inspirator comprising a fan mounted in an adjustable frame which can be expanded or contracted so as to fit it to the tube in which it may be placed; and it has, further, for its object to provide a construction whereby any wear in the bearings of the fan or inspirator can be readily taken up, and also a construction in which the fan can be readily removed and replaced by another if its efficiency from any cause become impaired without the necessity of employing an entirely new structure in all its parts.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, the invention consists in features which will be hereinafter particularly described and then sought to be clearly defined by the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section, in part, through a Bunsen burner and illustrating the application of my invention thereto. Fig. 2 is a perspective of the expansible and contractible frame for supporting the fan, and Fig. 3 is a perspective of the fan with its needle-pointed supporting-post.

In the drawings the numeral 1 designates a Bunsen tube which may be of any approved pattern, provided at its lower portion with the gas-nozzle 2 and with air-inlet openings 3 and at its upper portion provided with the

combustion-chamber 4, having the gauze covering 5.

The inspirator comprises a divided frame 6, formed, preferably, of spring-steel and provided at its lower portion with a needle-point bearing 7 and at its upper portion with a corresponding needle-point bearing 8, one of which—for instance, the bearing 8—may be an adjustable set-screw, and a fan composed of any desired number of blades 9, attached to a post 10, formed at opposite ends with needle-points 11, which fit in the needle-point bearings provided in the frame. By dividing the frame—for instance, as shown at 12—the frame can be expanded or contracted so as to fit within the chamber 4 and bear against the walls thereof and be sustained therein by frictional contact with said walls. This also enables the frame to be readily inserted and withdrawn from the chamber when necessary or desirable for any purpose. Another advantage arising from this construction is that if the needle-points of the post or the bearings for the same become worn the slack or looseness can be taken up by compression of the cross members of the frame or by adjustment of the screw 8. Again, if it becomes necessary to substitute a new fan it can be readily done by spreading the frame or adjusting the screw-bearing so as to separate the bearings and remove the fan and replace it with another, when the bearings can be brought together so as to make a proper fit of the needle-points of the fan-post in the bearings.

The gas in its upward flow impinges against the fan-blades and causes a rapid rotation of the fan, so that a thorough mixture of the gas with the air drawn through the air-openings 3 is caused to take place in the chamber 4, whereby better combustion is formed at the point of location of the wire-gauze 5. This more perfect combustion produces a hotter and shorter flame, and if the burner be provided with a mantle the mantle will be raised to a higher state of incandescence. Any dust or foreign matter that may be drawn into the tube through the openings 3 will be thoroughly mixed with the air and gas in the combustion-chamber and particles of carbonaceous matter thus mixed with the air and gas will be consumed in the combustion, and thus the employment of a gauze below

the fan may be dispensed with, and this will be advantageous, because if such a gauze be employed it is liable to become clogged by particles of foreign matter drawn into the tube, and thus the efficiency of the tube would be more or less impaired.

This device can be used on gas-burners for either heating or illuminating purposes, and by reason of the fine adjustment obtained for the post of the fan and the ability to maintain such adjustment by taking up wear in the bearings a more rapid rotation of the fan is provided for and a more thorough mixing and distribution of the air and gas effected, so that more complete combustion is obtained and superior results attained.

While I have described the preferred details of construction of the features of the invention, yet it is obvious that changes may be made in the details and essential features of my invention be retained.

Having described my invention and set forth its merits, what I claim is—

1. The inspirator and mixer for gas-burners comprising a frame having parts thereof adjustable toward and from each other by which the size of the frame is varied, and a fan supported in the frame, substantially as described.

2. The inspirator and mixer for gas-burners comprising a spring-metal frame divided to render it capable of expansion and contraction with relation to size, provided with needle-point bearings, and a fan having a post

formed with needle-point ends fitting in said bearings, substantially as described.

3. The inspirator and mixer for gas-burners comprising a frame expansible and contractible with relation to size, provided with needle-point bearings, and a fan having a post formed with needle-point ends fitting in said bearings, substantially as described.

4. The inspirator and mixer for gas-burners comprising an elastically-expansible frame adapted to be inserted and removed from a portion of the burner and to be held therein by expansion of the frame, a post carrying fan-blades, and bearings for the ends of the post supported by opposite members of the frame, substantially as described.

5. The inspirator and mixer for gas-burners consisting of a frame capable of insertion and removal from the combustion-chamber of a burner and consisting of an upright portion to bear against the wall of the chamber, and having horizontally - extending oppositely-disposed members provided with needle-point bearings on their inner faces, and a post carrying fan-blades and having its opposite ends tapered and fitting in said needle-point bearings, substantially as described.

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

JOHN WESLEY McKNIGHT.

Witnesses:

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JOHN B. MILLER.