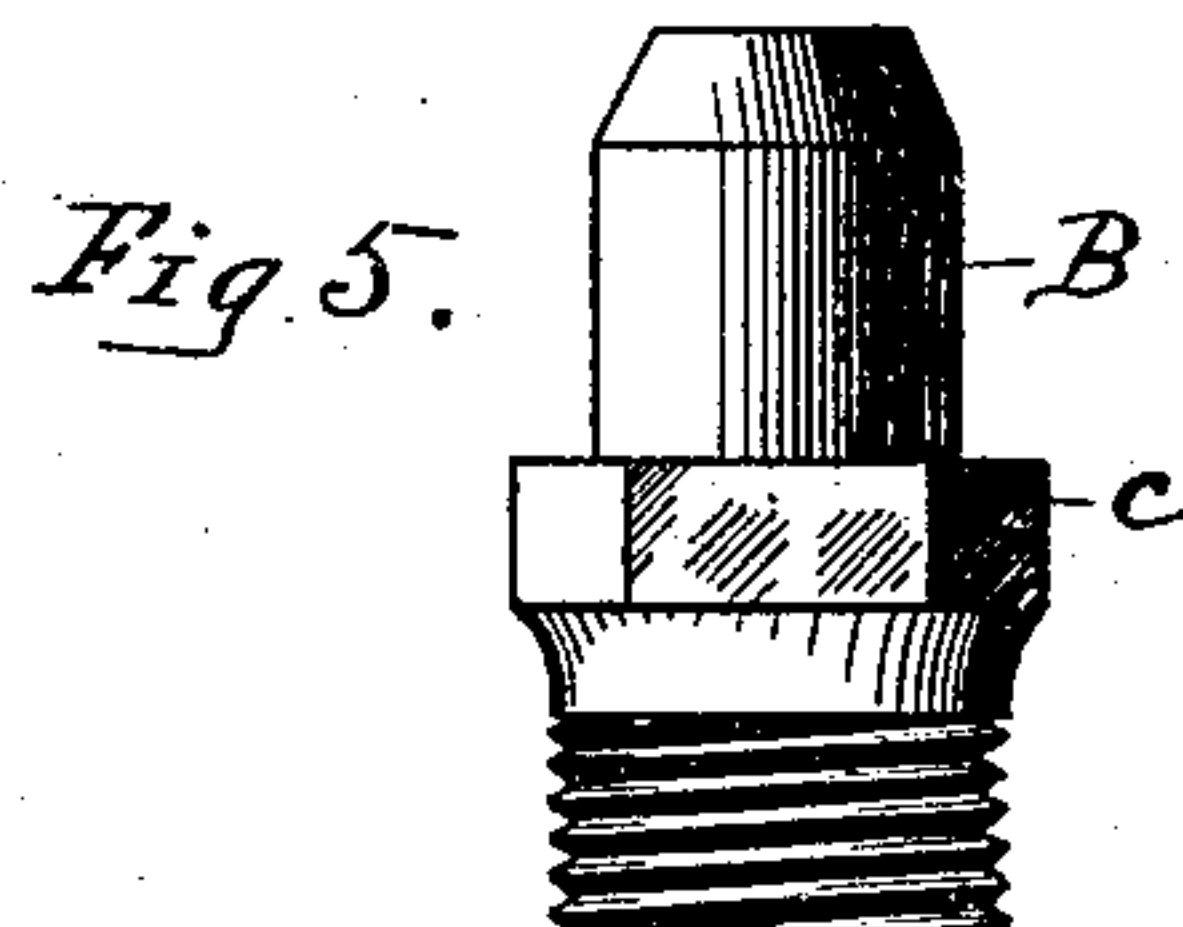
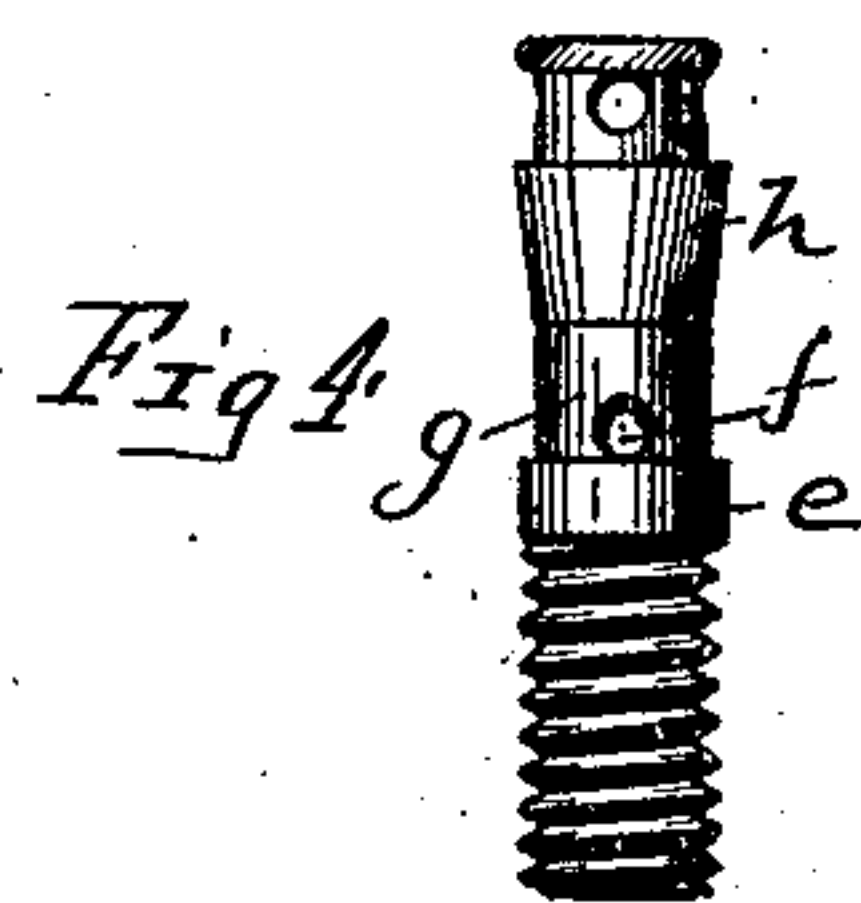
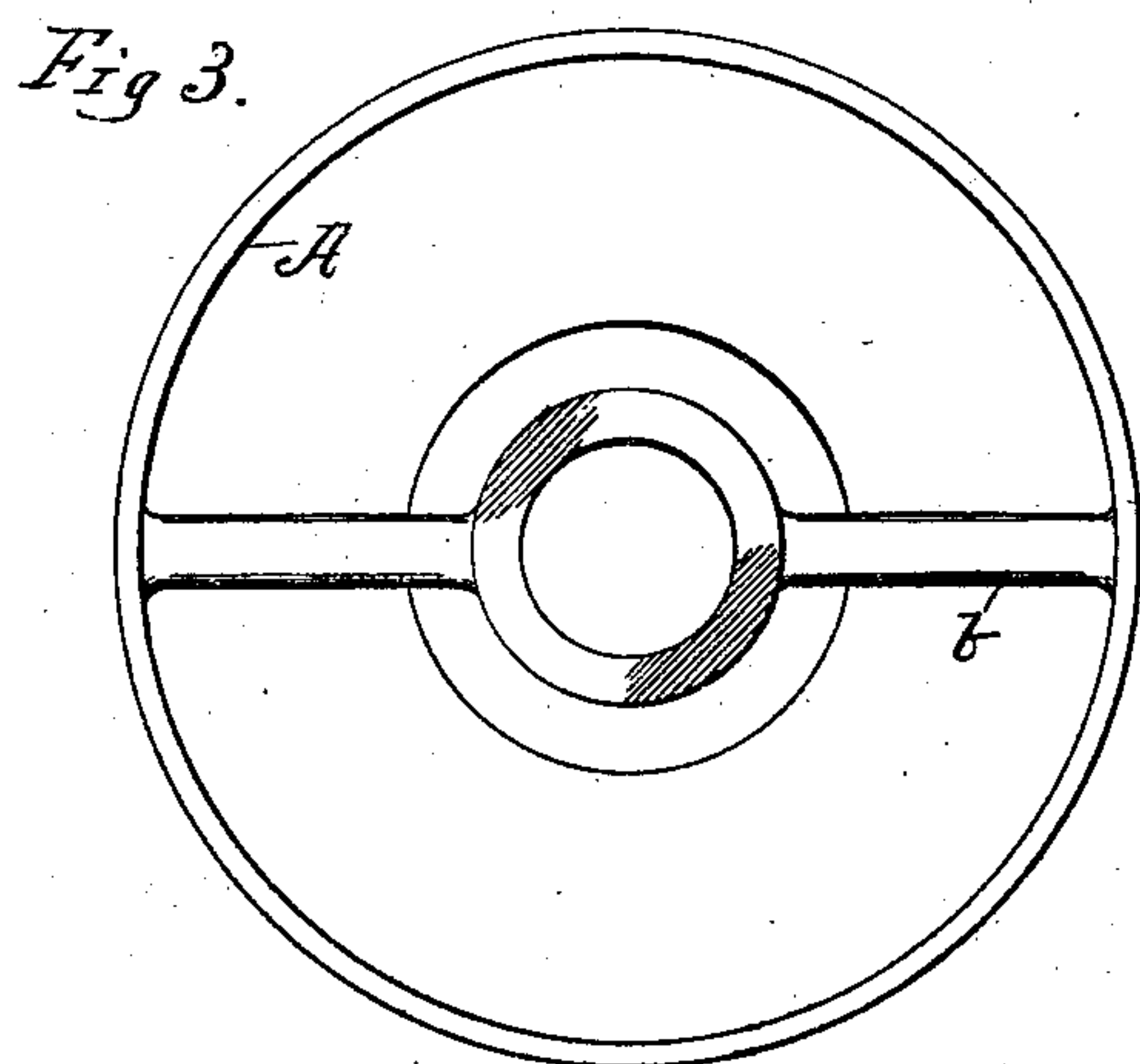
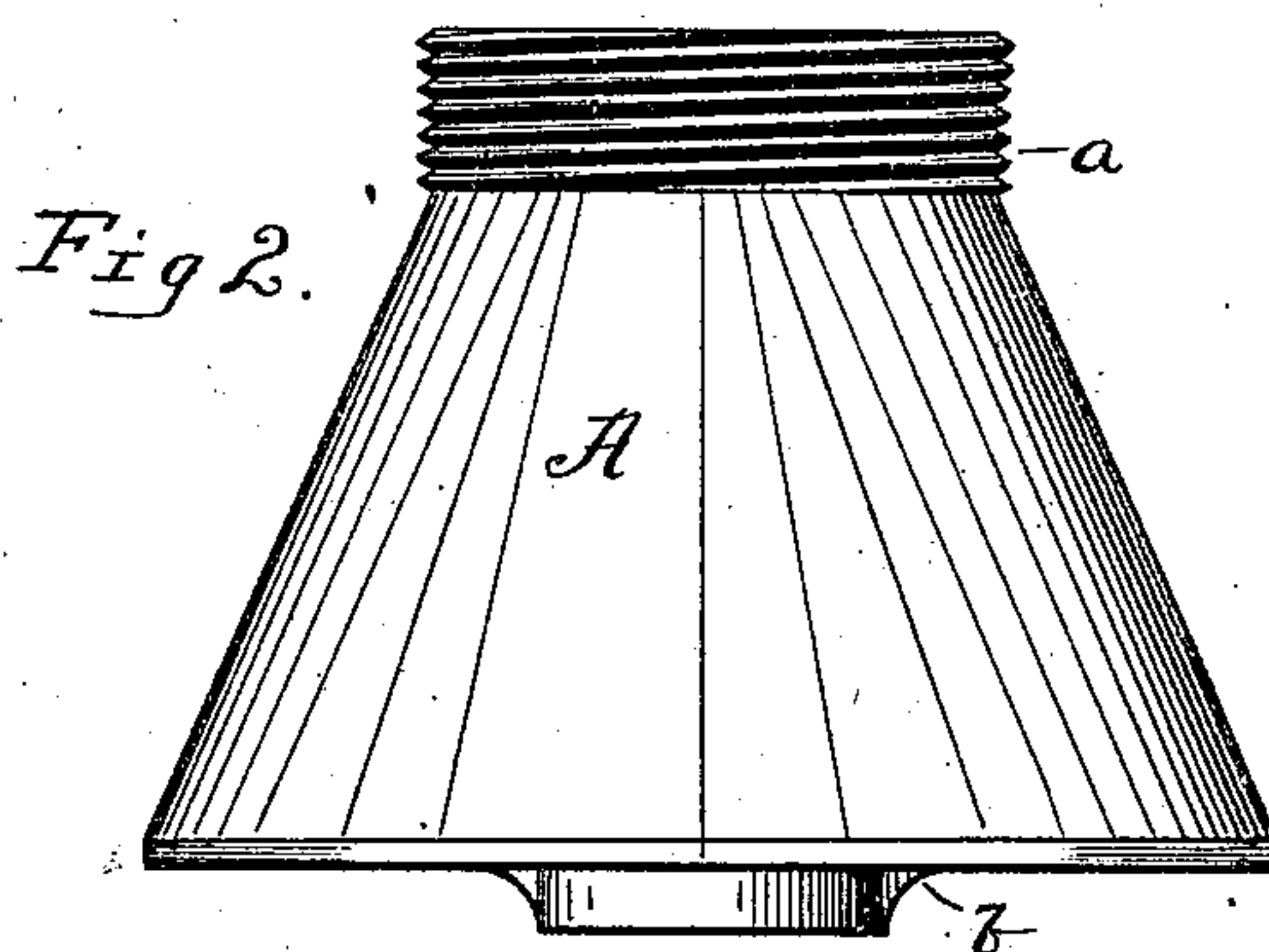
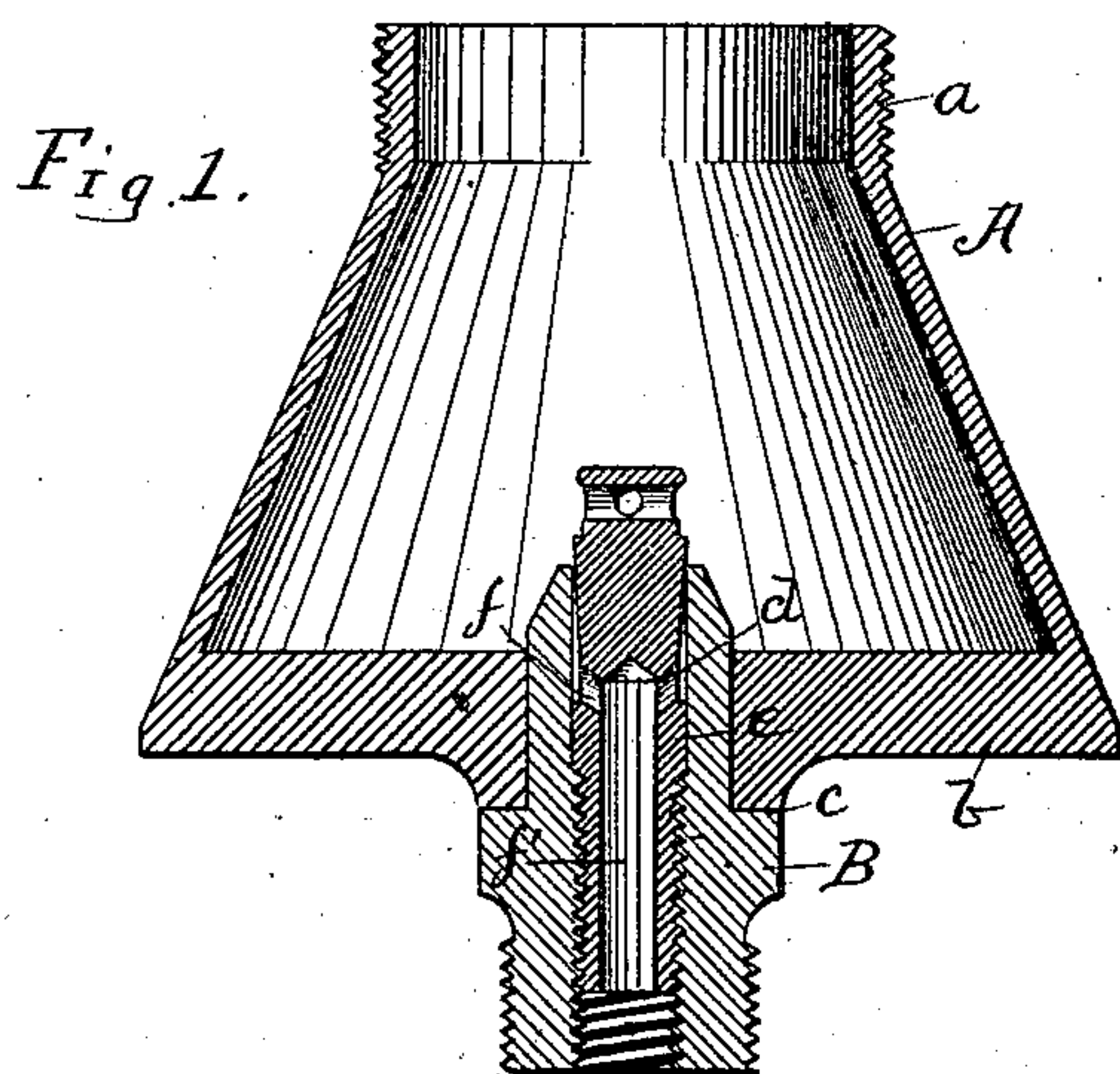


(No Model.)

G. J. ROBERTS.
GAS MIXER.

No. 502,531.

Patented Aug. 1, 1893.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE J. ROBERTS, OF DAYTON, OHIO.

GAS-MIXER.

SPECIFICATION forming part of Letters Patent No. 502,531, dated August 1, 1893.

Application filed March 6, 1893. Serial No. 464,847. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. ROBERTS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Gas-Mixers; 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in gas mixers.

The object of the invention is to produce a mixer wherein a perfect adjustment of the parts through which the gas is discharged to the mixing point is had, and thereby a greater or less quantity is emitted with a minimum degree of resistance in either case.

The peculiarities of my invention will be set forth in the specification.

For a detailed description, reference is had to the drawings forming a part of this specification, the same letters denoting the same parts therein.

Figure 1. is a vertical longitudinal section of my improved gas mixer. Fig. 2. is a side elevation of the same; Fig. 3. a plan view of the funnel, with the adjustable nozzle removed; Fig. 4. a detached detail view of the plug or valve; Fig. 5. a detached detail view of the nozzle.

A description of the specific parts is as follows: A denotes an inclosing part or casting formed after the fashion of a bell or inverted funnel, having at its diverging end screw-threads *a* adapted to engage with similar threads on the pipe leading to the place of consumption and at the other end, a transverse bar *b* integral therewith. This bar is provided with a central circular opening adapted to receive vertically the nozzle B and to abut against the flanged part *c* of said nozzle. This nozzle is provided with screw threads on its lower extremity designed to engage with the pipe leading from the main or reservoir of supply. This nozzle is, as is usually the case with all gas nozzles, the port of discharge, but its construction is adapted to the

purposes of my invention, and is therefore thought to be dissimilar to other devices for similar purposes. There is a central longitudinal opening *d* in this nozzle, a portion of which is tapped to receive the plug *e*, and partially screwthreaded to engage with the screwthreads on the lower end of the plug. The screw threads on these parts may be dispensed with, and the longitudinal surface of said plug, and the opening in the nozzle, be made smooth; making these parts, however, adapted to engage by means of screwthreads, as shown, is thought to be preferable, as all liability of the plug becoming displaced is avoided. The plug *e* is constructed just above the screw threads, with a smooth portion or ring, that retains the widest diameter of the plug, and which engages snugly with the inner surface of the nozzle, so that any vibration or lateral movement of the plug, that would have the effect of closing some portion of the outlet, is prevented; the plug by this means is kept always in a true central position. Said plug is also provided with a transverse opening *f*, and a vertical central opening *f'* leading from the lower extremity of said plug and registering with the opening *f*. The diameter of the plug as shown at *g* is less than the portions that engage with the nozzle, the object being to allow desirable space for the gas to circulate in and radiate from, as it is discharged through the transverse opening *f*. Alluding now to another essential feature of this plug;—extending from the part *g*, it will be noted, is a cone-like or beveled portion *h* on an incline to the inner sides of the nozzle which acts as a valve to regulate the discharge of gas through the plug as indicated; this valve can be so minutely adjusted as to allow the discharge of gas to be such only as is necessary for consumption and that can be properly mixed in the inverted funnel, with a proper percentage of air without at the same time reducing, uniformly, the entire space between the inclined portion of the plug and the straight sides of the nozzle. The discharge, it will be understood, is regulated by screwing the plug *e* with the fingers, into the nozzle B, which decreases the orifice between the upper circumference of said nozzle, by bringing the cone or beveled portion

h, of the plug, farther into the central opening in the nozzle; by unscrewing the said plug the opposite effect is produced, to-wit, an enlargement of the orifice, and a greater discharge of gas. It has been found by practical experimental tests that an article of gas affording a perfect combustion and the greatest amount of heat, is obtainable by greatly reducing the supply of gas at the mixer.

10 The operation of my improvement is as follows: The plug *e* being adjusted so as to make the opening between the nozzle and the cone *h* sufficient to supply the requisite amount of gas; the gas is circumferentially radiated

15 around said cone and flows from the circular opening between the cone and nozzle in a cylindrical column, creating a greater current, and carrying a greater amount of air with it into the funnel or mixing point, than

20 could be conveyed with a smaller solid stream; or a flow that entered the mixing point through a channel of uniform size. The effect of my invention is to form the gas into a thin sheet, cylindrical in form, which breaks after it

25 leaves the nozzle a short distance, and becomes thoroughly mixed with the air, thus insuring perfect mixing of the gas with the greatest amount of air it is possible for the gas to mix with, and retain an efficient com-

30 bustible quality.

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

1. In a gas mixer, the combination with the inclosing part A, of the nozzle B with the annular flange *c* upon which the part A is supported, and a central opening of uniform diameter, the plug *e*, provided with a smooth part or ring on its median portion that retains the widest diameter of the plug, and an inclined or beveled portion, substantially as

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2. In combination with the part A, the nozzle B provided with an annular flange *c* to support said part A, and a central opening of uniform diameter and partially screw threaded, the plug *e* with external screw threads to engage with those in the nozzle, an enlarged part or ring on the median portion of said plug which is adapted to engage with the inner surface of the nozzle and thereby prevent

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any lateral movement of the plug, said plug also having the diameter as at *g* and the beveled part as at *h*, substantially as herein described.

In testimony whereof I affix my signature in

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presence of two witnesses.

GEORGE J. ROBERTS.

Witnesses:

R. JAY MCCARTY,

WILLIAM B. SULLIVAN.