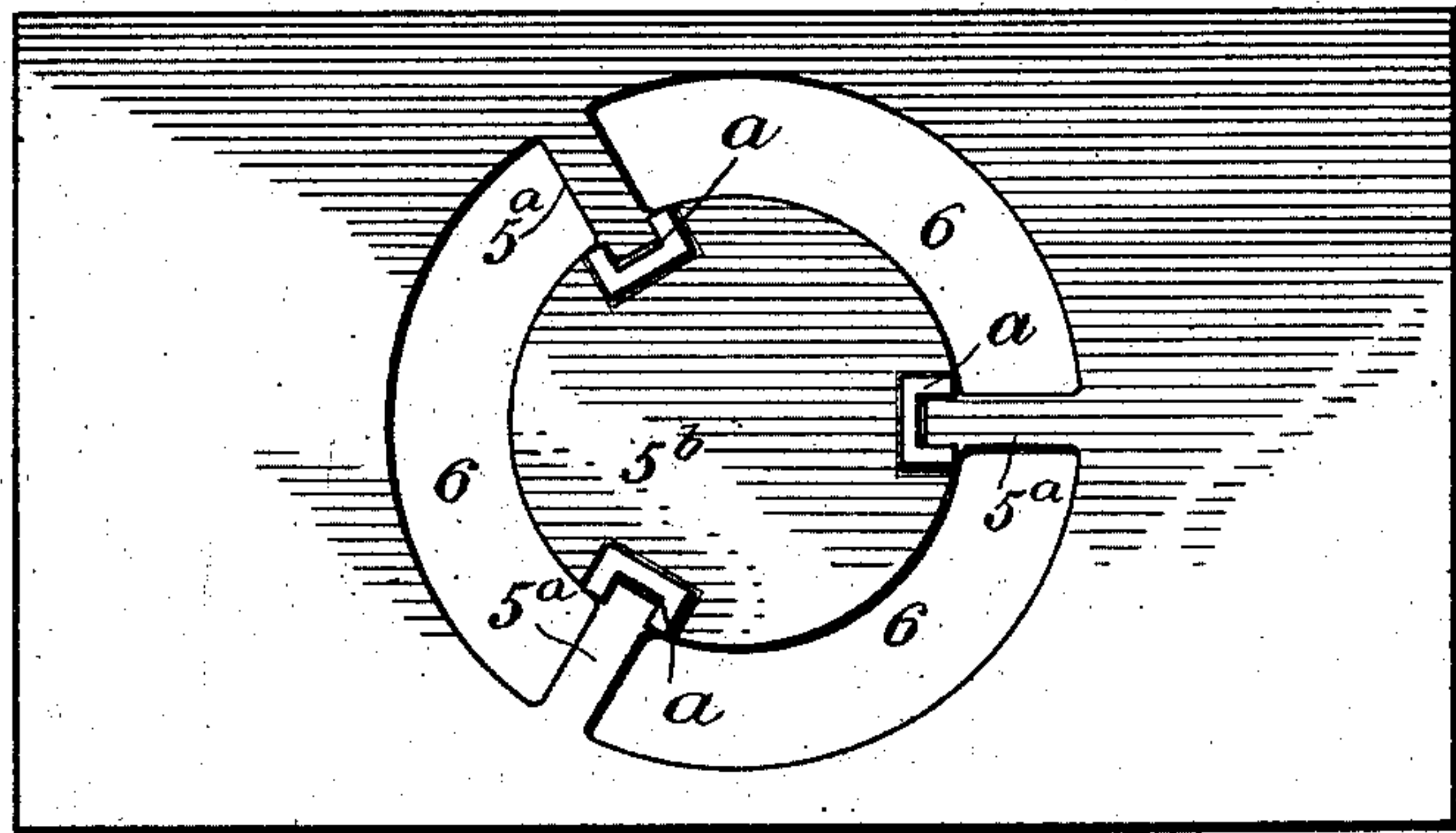
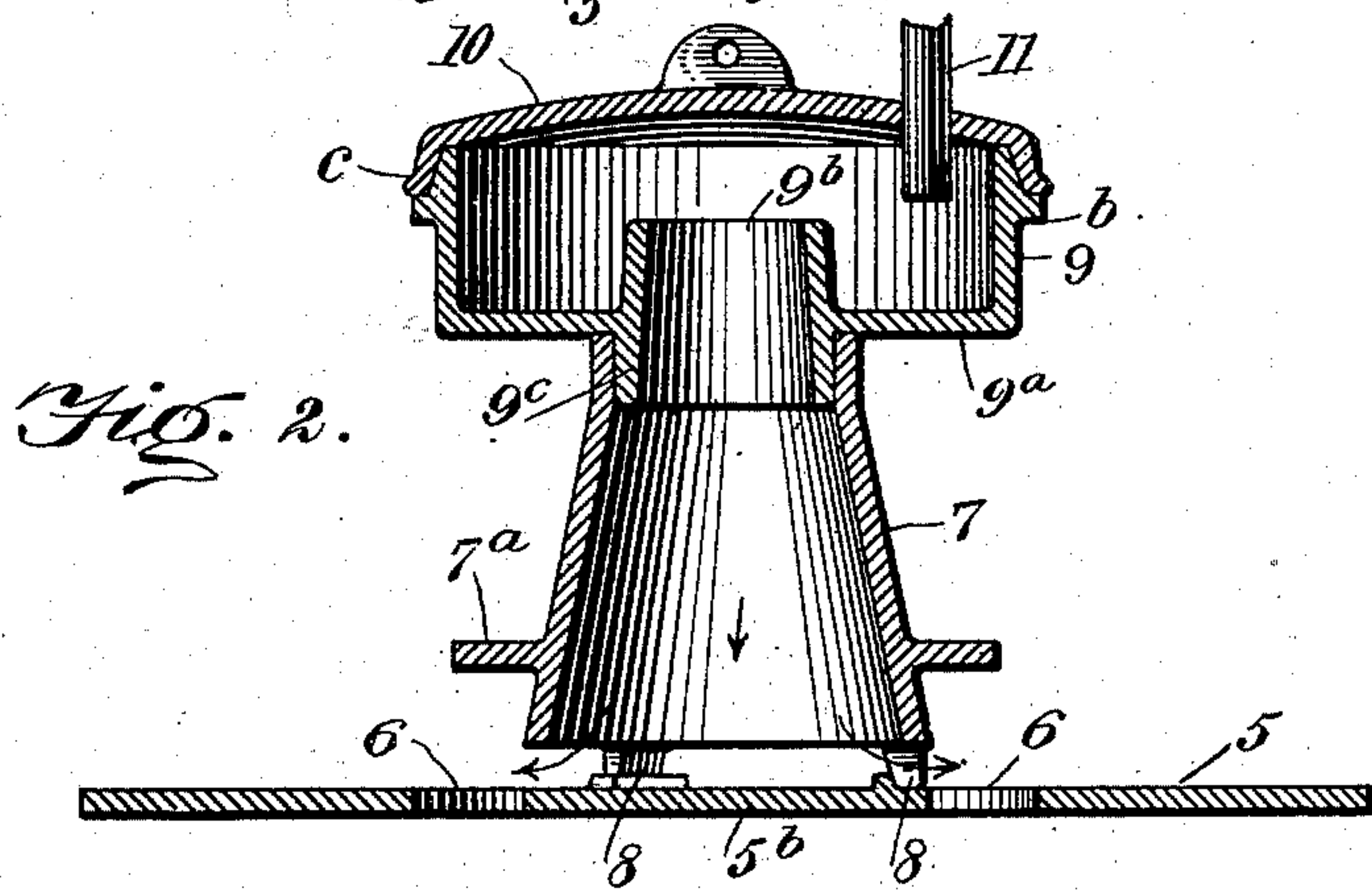
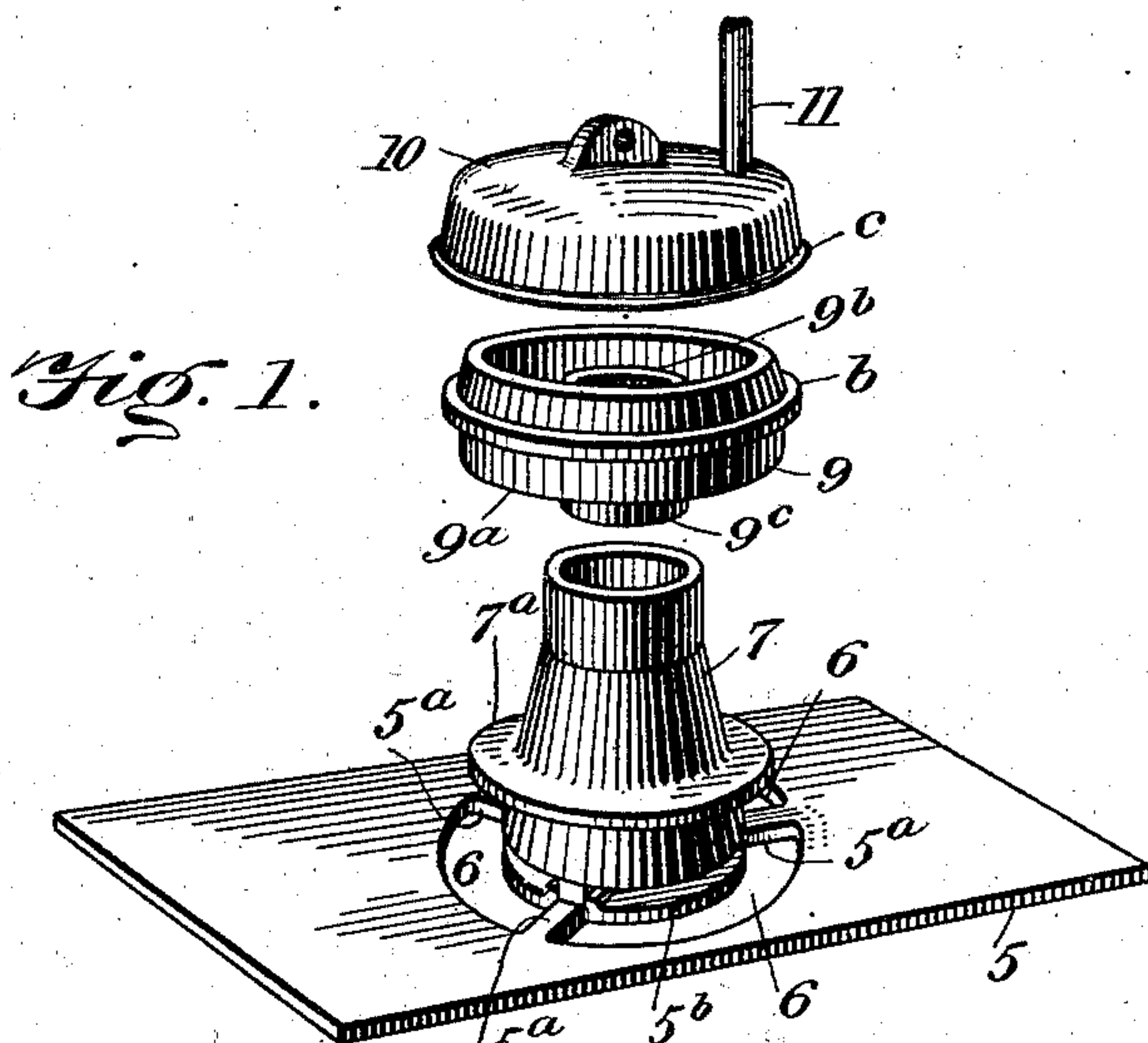


No. 749,685.

PATENTED JAN. 12, 1904.

Q. CRANE & J. RESTINE.
VAPOR GENERATOR AND BURNER.
APPLICATION FILED MAR. 11, 1903.

NO MODEL.



WITNESSES:

H. C. Abbott

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Fig. 3.

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UNITED STATES PATENT OFFICE.

QUINCE CRANE AND JAMES RESTINE, OF SAN DIEGO, CALIFORNIA.

VAPOR GENERATOR AND BURNER.

SPECIFICATION forming part of Letters Patent No. 749,685, dated January 12, 1904.

Application filed March 11, 1903. Serial No. 147,237. (No model.)

To all whom it may concern:

Be it known that we, QUINCE CRANE and JAMES RESTINE, citizens of the United States, and residents of San Diego, in the county of San Diego and State of California, have invented a new and Improved Vapor Generator and Burner, of which the following is a full, clear, and exact description.

This invention relates to a class of vapor generators and burners employed for heating purposes, and has for its object to provide novel features of construction in a device of the character indicated which afford a very simple, inexpensive, practical, and convenient vapor generator and burner that may be placed in the fire-chamber of a heating-stove, a kitchen-range, or a steam-boiler for the generation and combustion of gaseous fuel therein from hydrocarbon liquid.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of detached details comprising the improvement. Fig. 2 is a sectional side view of the generator and burner, showing the parts thereof assembled for service; and Fig. 3 is a plan view of the base-plate.

The improved generator and burner, in brief, comprises a suitable base-plate, a coniform vapor-conductor and deflector thereon, a vapor-generator, a cover-plate therefor, and a hydrocarbon-liquid-supply pipe tapping the cover-plate.

The base-plate 5, which is preferably of cast metal, is flat and may have any suitable peripheral form to permit its convenient introduction within the fire-chamber of a stove, kitchen-range, or steam-boiler, so that the base-plate may seat upon a grate or other support above an air-supplying opening. The base-plate 5, near its center, is apertured at three points in circular form, these curved apertures 6 being spaced apart by the integral webs 5^a, that hold

the center plate 5^b, connected with the main portion of the base-plate.

The burner-body 7, that is coniform, is preferably cast from metal and is so proportioned in diameter at its lower end that the outer edge of said lower end will conform with the inner edges of the spaced segmental apertures 6, above which the burner-body is supported by the short legs 8, that project from the lower edge of said burner-body. In the center plate 5^b, opposite each web-piece 5^a, a shallow recess *a* is formed, wherein the legs 8 are respectively seated, and thus held from lateral movement.

A short distance above the lower edge of the burner-body 7 a circumferential flange 7^a is outwardly projected a suitable distance in a plane parallel with said lower edge to form a flame-deflector, as will be hereinafter more fully explained.

A generator-chamber 9 is mounted upon the open top of the burner-body 7 and consists of a cylindrical cup centrally and circularly apertured in its bottom wall 9^a, having the two border flanges or collars 9^b 9^c projected above and below said bottom, forming defining-walls for the aperture, and the depending collar 9^c enters the top of the burner-body 7 when the chamber 9 seats on it. A bead *b* is formed on the outer side of the chamber 9 near its upper edge, and above said bead the outer surface of the chamber is rendered coniform.

A cover-plate 10 for the generator-chamber 9 is provided and is preferably cast from metal and, as shown, consists of a dished cap-piece that is of proper area to cover the open top of the chamber 9, and upon its edge a depending flange *c* is formed that flares sufficiently to adapt it to fit vapor-tight upon the upper end of the generator-chamber 9, and the free lower edge of the flange *c* may seat tightly upon the upper surface of the bead *b* to insure a tight joint for the cover-plate where it seats upon the generator-chamber 9.

A hydrocarbon-liquid-supply pipe 11 (shown broken) taps the cover-plate 10, and thence may be extended to an elevated source of supply for the liquid which is to be fed into the generator-chamber 9, and it is to be un-

derstood that any suitable means—such, for example, as a valve—is to be employed for control of the hydrocarbon-liquid supply, so that the feed of the liquid may be regulated as occasion may require.

Assuming that the improvement is positioned for service in the fire-chamber of a stove, range, or boiler and a controlled supply of liquid carbonaceous material is connected with the feed-pipe 11, the operation is as follows: Hydrocarbon liquid is fed into the generator-chamber 9 through the pipe 11, so that a small quantity will flow over the edge of the upstanding flange or collar 9^b and pass down in drops, striking the center plate 5^b, where it is ignited by any suitable means—such, for example, as burning paper in an opening for air below the base-plate 5. The feed of hydrocarbon liquid is continued slowly, and the flame produced by combustion of said material will pass out of the openings between the legs 8, where it will be supplied with oxygen from air that rises through the apertures 6. The flame will reach the overhanging bottom wall 9^a of the generator-chamber 9 and so heat the hydrocarbon liquid held in said chamber that it will quickly be converted into vapor, which will fill the generator-chamber, and thence pass down through the burner-body 7. The vapor escapes through the openings between the legs 8 and mixes with air rising through the apertures 6, and fierce combustion of this mixed air and vapor ensues, the volume of which may be controlled by regulating the drip of hydrocarbon liquid from the feed-pipe 11.

It will be seen that the deflector-flange 7^a will cause the volume of flame to be spread laterally and thence upwardly, so that the sides of a fire-chamber containing the improvement will be heated, which is essential for heating water in the water-back of a range or in a steam-boiler.

As the parts of the improved generator and burner are readily separated, it will be seen that by duplication of the generator 9 any accumulation of residuum on its inner surface, such as coked carbon, may be burned off of the generator-chambers successively by exposure to flame of the burner, and thus be adapted for renewed efficient service.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A vapor generator and burner, comprising a base-plate having apertures, a burner-body open at the top and bottom and held

spaced from and above the apertures, a generator-chamber centrally apertured in its bottom and having an upstanding collar and a depending collar bounding said aperture, the depending collar entering the top of the burner-body, a cover-plate seated on the generator, and means for feeding liquid gaseous fuel into the generator.

2. A vapor generator and burner, comprising a base-plate having curved apertures spaced by webs that support a center plate, a burner-body having short legs that seat upon the center plate, a generator-chamber having a central aperture and two border-flanges around said aperture, one depending and the other upstanding, the depending flange entering the top of the burner-body, and the other flange forming an annular wall rising from the bottom of said generator-chamber, a dished cover for the generator-chamber, and a liquid-feed pipe tapping said cover.

3. A vapor generator and burner, comprising a flat base-plate having three curved apertures circularly arranged, and three integral webs spacing said apertures apart, the webs holding a center portion of the base-plate concentric with the edges of the aperture, recessed seats on the center plate opposite the webs, a coniform burner-body having a circumferential deflector-flange thereon near the lower edge, legs depending from the burner-body and seating in the recesses of the center plate, a generator-chamber centrally apertured in its bottom wall and having two collar-flanges forming border-walls for said aperture, the lower flange entering the top of the burner-body, a dished cover-plate on the generator-chamber, and a feed-pipe tapping the cover-plate.

4. A vapor generator and burner, comprising a base-plate having spaced apertures forming a center plate, a burner-body supported on the said center plate, and a generator-chamber having a liquid-fuel inlet and provided with an aperture in its bottom bordered by flanges or collars, one of said flanges being depending and the other upstanding, the depending collar engaging the open top of the burner-body, as set forth.

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

QUINCE CRANE.
JAMES RESTINE.

Witnesses:

A. P. JOHNSON, Jr.,
H. E. CRANE.