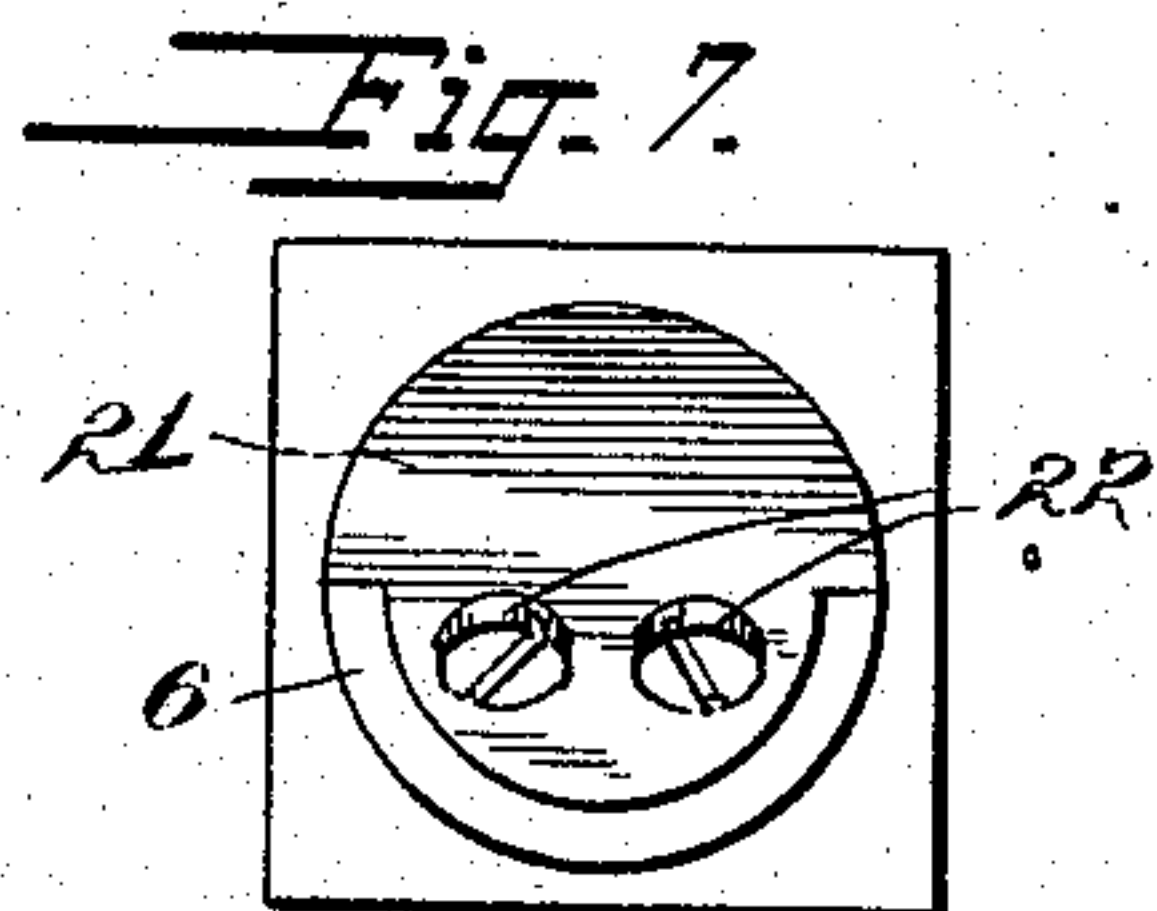
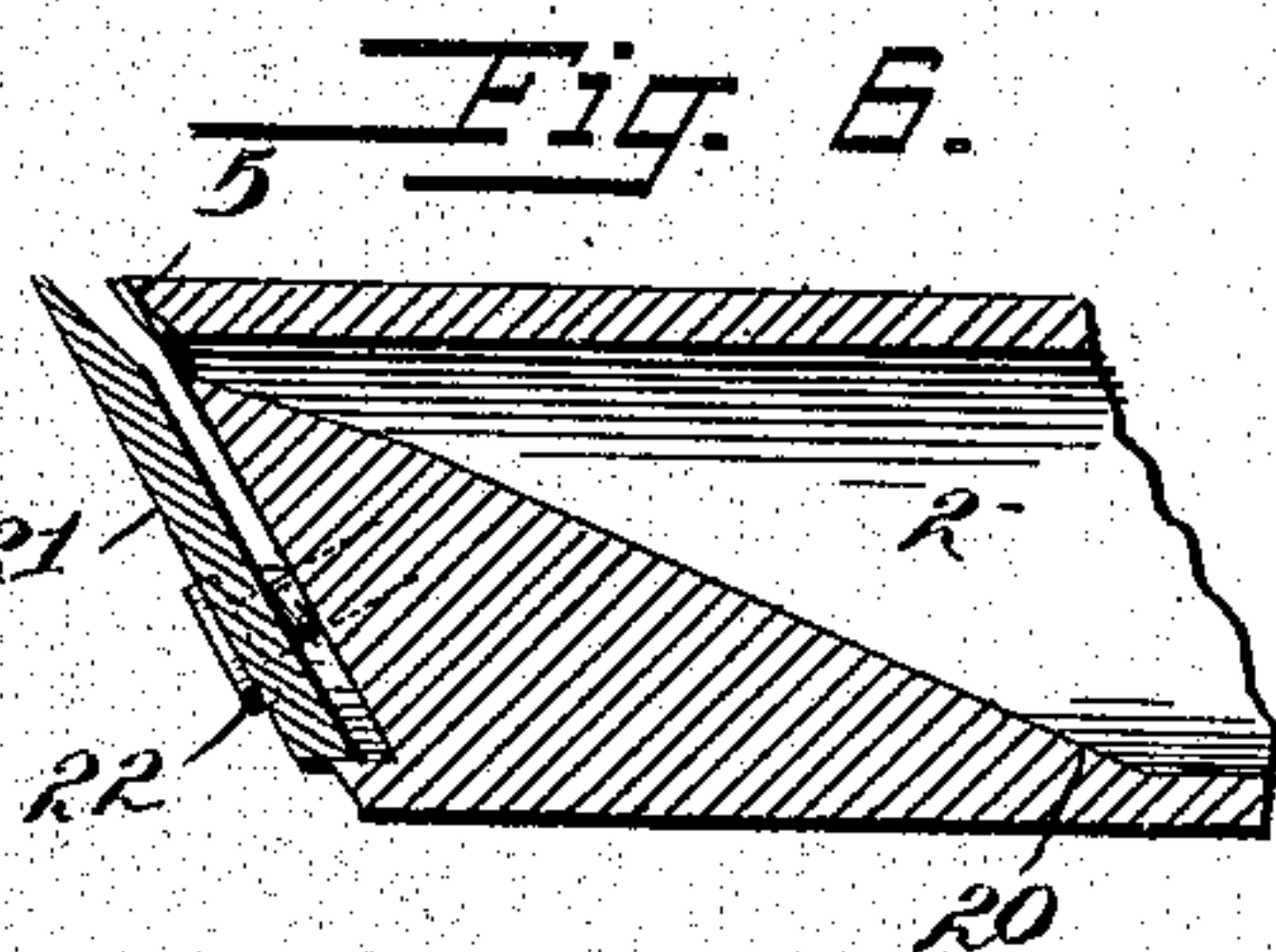
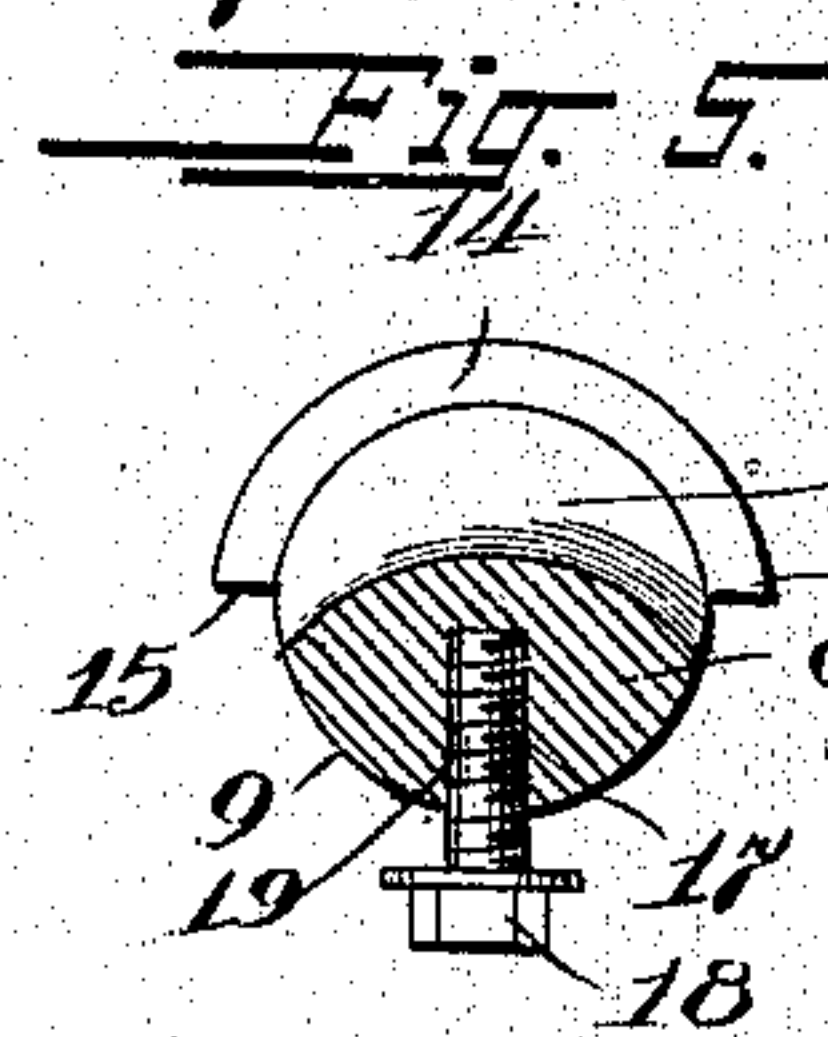
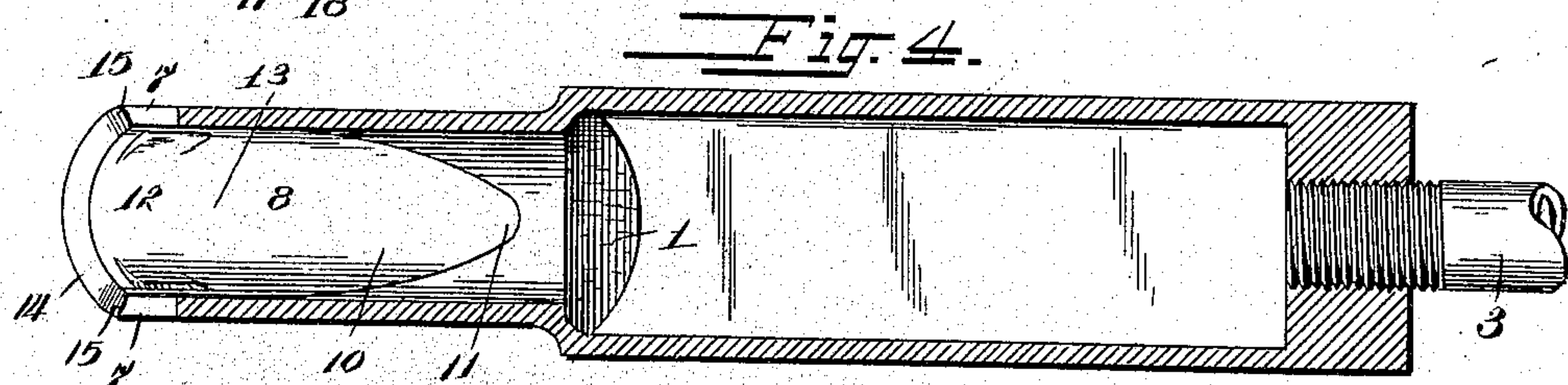
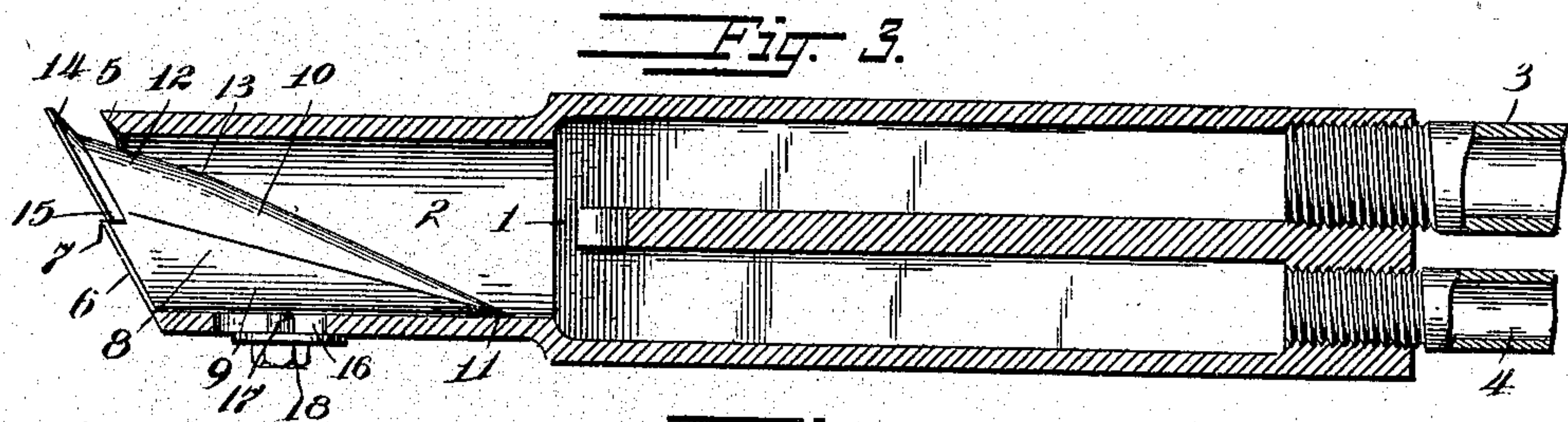
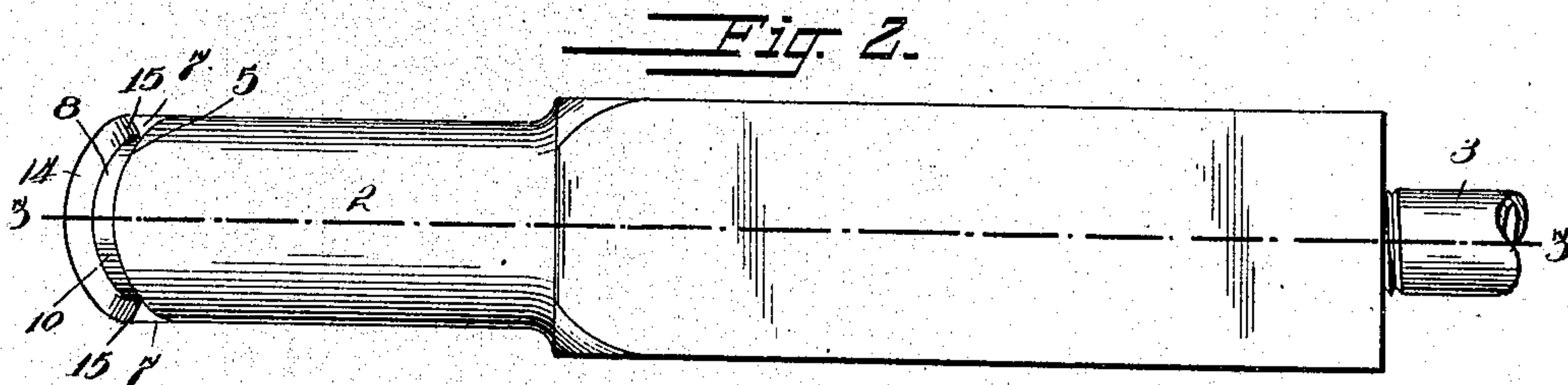
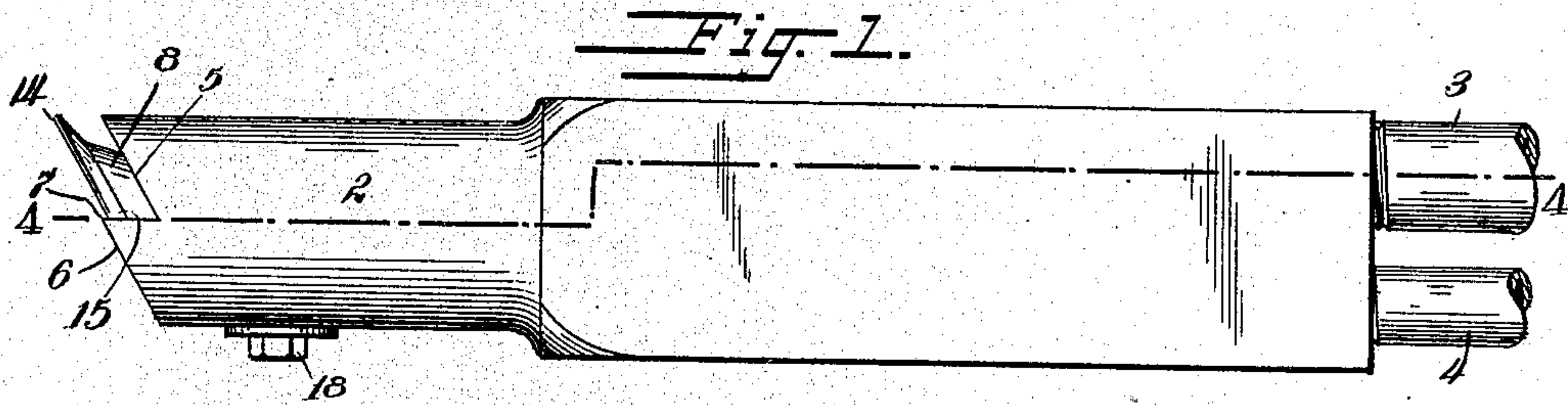


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CRUDE OIL BURNER.
APPLICATION FILED DEC. 27, 1905.

900,112.

Patented Oct. 6, 1908.



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UNITED STATES PATENT OFFICE.

ALONZO DAVID MOORE, OF NEEDLES, CALIFORNIA.

CRUDE-OIL BURNER.

No. 900,112.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed December 27, 1905. Serial No. 293,496.

To all whom it may concern:

Be it known that I, ALONZO DAVID MOORE, a citizen of the United States, residing at Needles, county of San Bernardino, and State of California, have invented certain new and useful Improvements in Crude-Oil Burners, of which the following is a specification.

My invention relates to crude oil burners.

In the use of crude oil burners in steam boiler furnaces a very high degree of heat is necessary to cause the vaporized oil to turn into gas and obtain what is known as a "gas fire", and a defect common to burners now in use is that much of the oil fails to vaporize and become converted into gas and passes off in the shape of smoke causing considerable wastage of oil. Crude oil burners are commonly employed in steam boiler furnaces and are used in a deep pan and much of the oil is consumed beneath the heating surface of the fire-box, the pan being usually disposed quite a distance below the heating surface in order to cause the vaporized oil to become converted into a gaseous condition and produce the desired "gas fire" which is necessary to obtain good results. Burners of this character are usually placed beneath the mud ring at the rear end of the fire-box, with the bridge wall and arch straight ahead and the use of the deep pan commonly employed is to allow the oil to strike the bridge wall under the arch and provide room for the flames to pass back and up into the heating surface, thus obtaining sufficient heat to generate gas. The foregoing disposition of crude oil burners in steam boiler furnaces is necessary where a burner is what is known as a "straight shot" burner, as a bridge wall must be employed for the heat is too severe on the boiler sheet if made to strike direct thereon.

The object of this invention is to provide a crude oil burner for use in steam boiler furnaces which will be of such improved construction that the oil will be sprayed in an improved fashion in just the shape of the arch but without touching the brick thereof so that when the brick have attained a white heat, the sprayed oil is immediately converted into a clear gas fire in front of the burner and all of the oil consumed in useful heat and not wasted in unconsumed products of combustion as has been the case heretofore.

Another object of the invention is to provide a crude oil burner which can be used

with a flat pan flush with the bottom of the fire-box, thus doing away with all of the brick previously used in the deep pan and saving the cost of this brick-work, as the bridge wall, where most of the brick are used is eliminated.

A still further object of the invention is the provision of a crude oil burner having a nozzle of improved construction to spray the oil in more or less fan shape and, further, to provide a novel form of nozzle which may be adjusted to modify the spraying flow of the crude oil.

The invention is set forth in detail and the novel features are recited in the appended claims.

In the accompanying drawings:—Figure 1 is a side elevation of the burner; Fig. 2, a plan view; Fig. 3, a longitudinal section on line 3—3 of Fig. 2; Fig. 4, a horizontal section on line 4—4 of Fig. 1; Fig. 5, a sectional detail of the adjustable nozzle; and Figs. 6 and 7, details of a modified form of nozzle.

The compressed air or steam is conducted into the commingling chamber 1 in the tubular nozzle 2 through a duct 3, while the oil flows into the commingling chamber through a duct 4, from suitable sources of supply. The tubular nozzle 2 is cut away obliquely to its horizontal diameter at 5, leaving the lower portion 6 of the nozzle of semicircular shape and provided with the shoulders 7.

The spraying plug 8 has its bottom portion 9 rounded to snugly fit the lower part of nozzle 2 and prevent the escape of any oil or air or steam between said rounded bottom portion 9 and the bottom portion of the nozzle. The upper face 10 of the spraying plug is sharply beveled or cut away in the direction of its length until it substantially merges, at 11, into the bottom of the inner portion of the tubular nozzle 2, said cut away portion 10 being convex upwardly to some extent. The discharge portion 12 of the spraying plug extends from the point 13 outwardly at somewhat less of an angle than the bevel of part 10 and is rounded in cross-section to more nearly semi-circular configuration, the purpose of which is to spread or distribute the oil and air or steam commingled therewith in a substantially semi-circular or fan-like sheet. The extreme end of the spraying plug is provided with a substantially semi-circular lip or flange 14 beveled on its inner face and lying

substantially parallel to the under-cut or beveled obliquely cut-away portion 5 of nozzle 2, while the lip or flange terminates in shoulders 15 which rest upon the shoulders 7.

- 5 In the bottom of nozzle 2 is an elongated slot 16, through which passes a screw 17 having a nut and washer 18 threaded into the spraying plug at 19, thus providing means for adjusting the spraying plug in and
10 out of the nozzle 2 to the desired extent to regulate the size of the discharge opening and control the spraying action.

In the modification shown in Figs. 6 and 7, the spraying plug is of the same shape as
15 heretofore described, but is formed or cast integral with the bottom part of the nozzle 2, as shown at 20, while the outer portion 21 of the plug is made in a separate piece and adjustably connected to the plug by screws
20 22. This construction is practically as efficient and satisfactory as that previously described, but is much cheaper to produce. The oil and compressed air, or steam striking the spraying plug, are commingled and
25 spread in the form of a sheet corresponding to the shape of the plug and issue from the discharge mouth in a fan-shaped or substantially semi-circular sheet which is thrown at an inclination upwardly and may be regulated and controlled by adjustment to bring
30 about the desired effect.

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

- 35 1. In a burner of the class described, the combination with a nozzle provided with a commingling chamber having at one side of

the nozzle an exit mouth of arc-shape, of a transversely curved inclined surface within the nozzle and extending in general trans- 40
verse relation to the nozzle and leading from one side of the interior thereof to the exit mouth at the opposite side thereof, and means for introducing the oil and vaporizing element into the commingling chamber prior 45
to their impinging the inclined surface.

2. In a burner of the class described, the combination with a nozzle provided with a commingling chamber having at one side of the nozzle an exit mouth of arc-shape, of a 50
transversely curved inclined surface within the nozzle and extending in general transverse relation to the nozzle and leading from one side of the interior thereof to a point adjacent the arc-shaped exit mouth, and a 55
spraying flange or lip of arc shape located adjacent the exit mouth.

3. In a burner of the class described, the combination with a nozzle provided with a commingling chamber having an exit mouth 60
of arc shape, of a spraying flange or lip of arc shape disposed beyond and substantially parallel to the said mouth, and cooperating shoulders or supports on the nozzle and spraying lip or flange, together with means 65
for adjusting the lip or flange toward or away from the nozzle to vary the size of the mouth.

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

ALONZO DAVID MOORE.

Witnesses:

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RUSSELL H. MARLING.