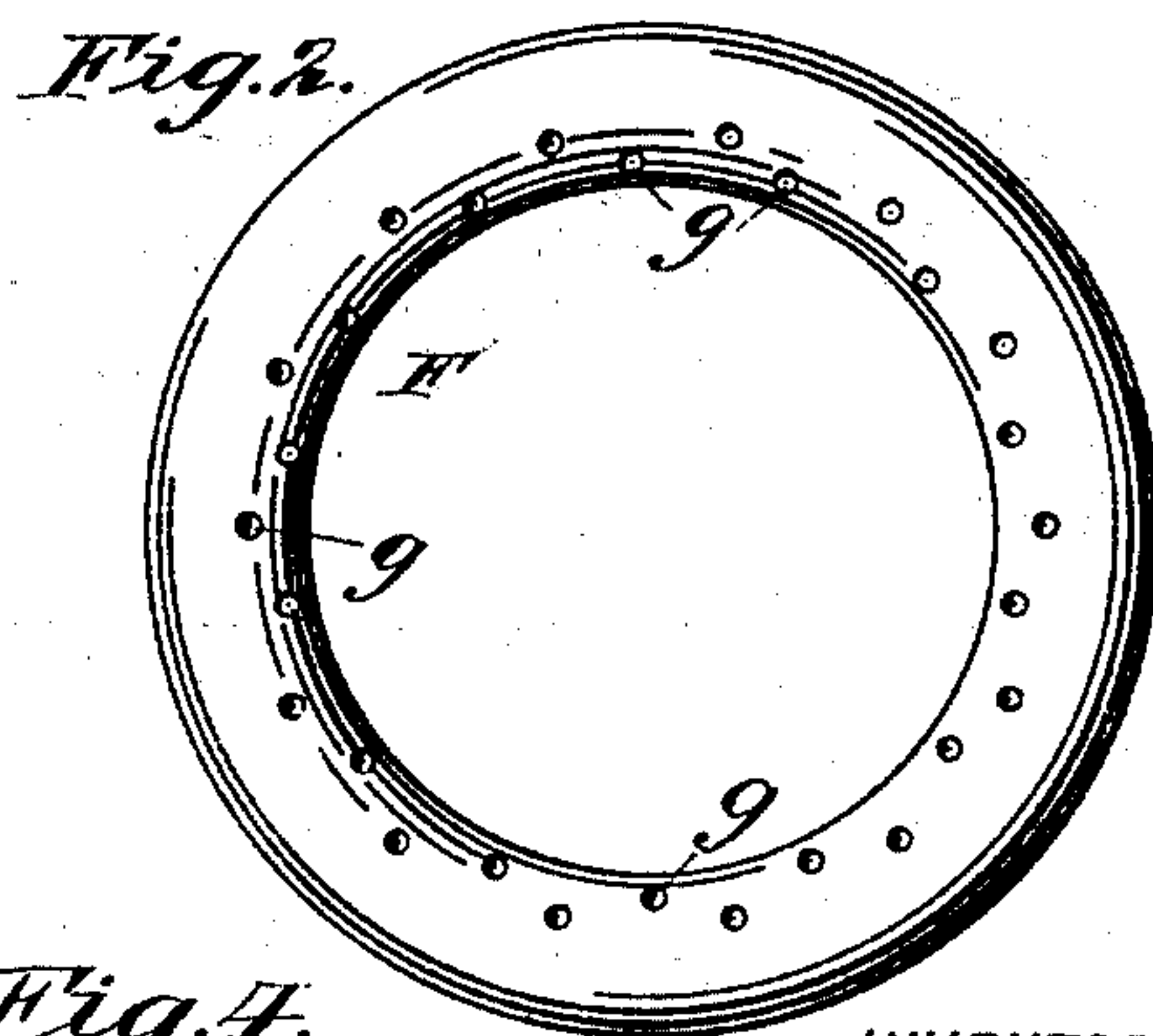
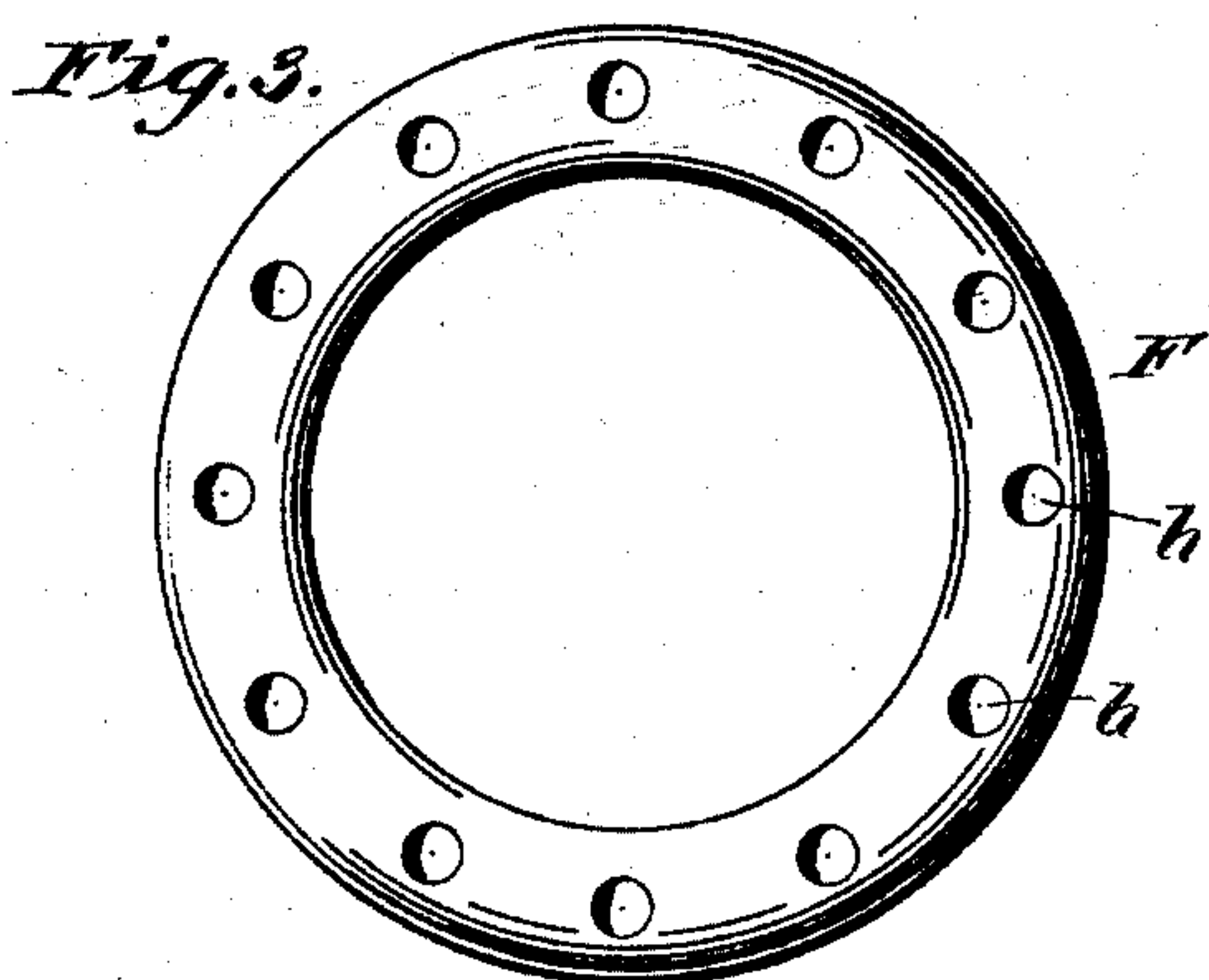
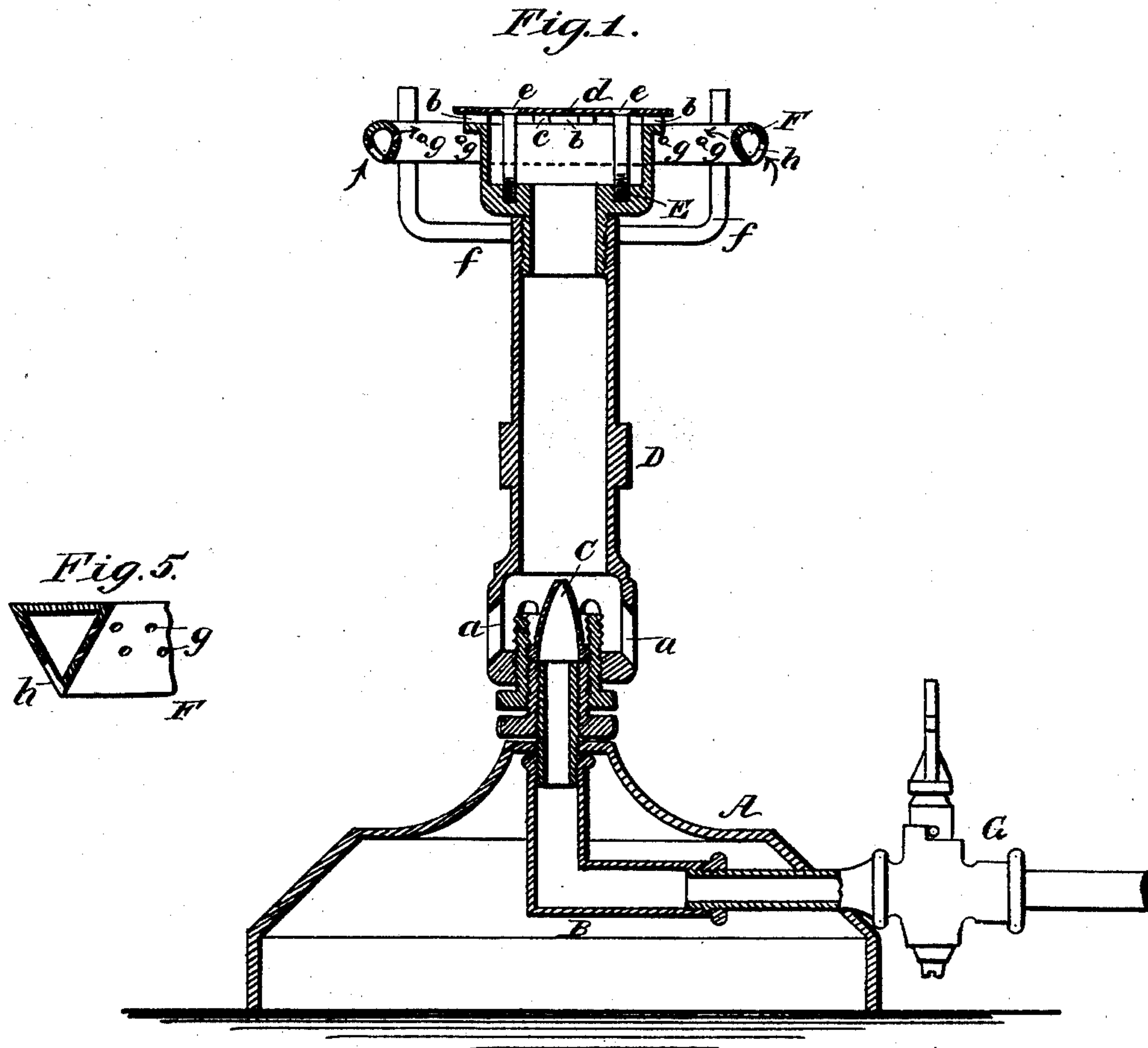


(No Model.)

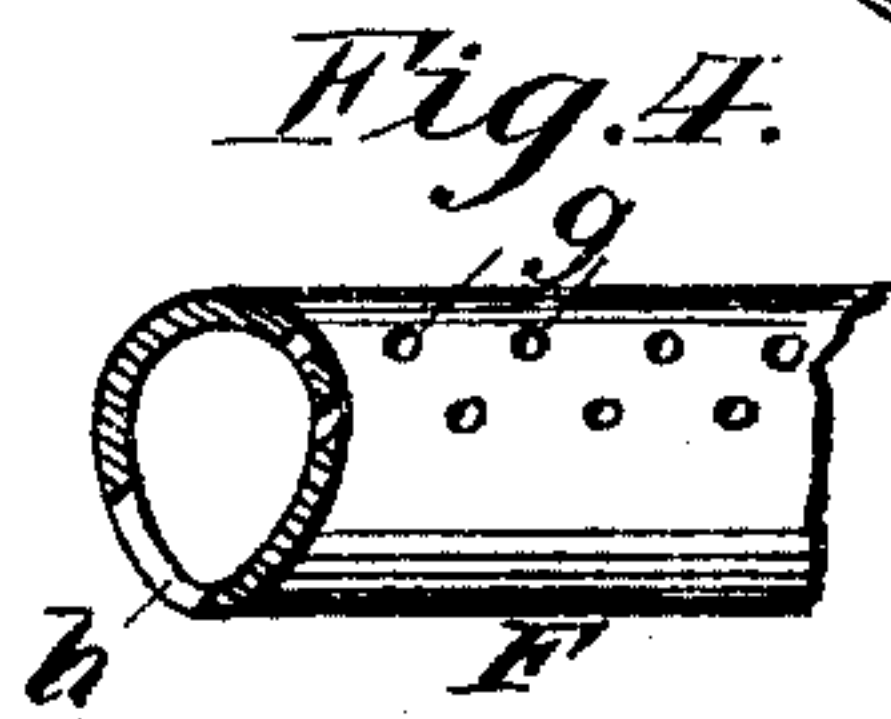
J. R. WILLIAMSON & I. W. BUZBY.
HEATING GAS BURNER.

No. 509,710.

Patented Nov. 28, 1893.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN R. WILLIAMSON AND ISAAC WILSON BUZBY, OF SEATTLE,
WASHINGTON.

HEATING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 509,710, dated November 28, 1893.

Application filed May 27, 1893. Serial No. 475,728. (No model.)

To all whom it may concern:

Be it known that we, JOHN R. WILLIAMSON and ISAAC WILSON BUZBY, both of Seattle, in the county of King and State of Washington, have invented a new and Improved Heating Gas-Burner, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a vertical transverse section of our improved heating gas burner. Fig. 2 is a plan view of the air heating ring. Fig. 3 is an inverted plan view of the air heating ring. Fig. 4 is a transverse section of the pipe of which the ring is formed; and Fig. 5 is a section of a modified form of ring.

Similar letters of reference indicate corresponding parts in all the views.

The object of our invention is to construct a heating gas burner in which the gas will be completely consumed and economy in fuel increased.

Our invention consists in the combination with a burner of the Bunsen type, of a hollow metallic ring supported in proximity to the flame of a burner, and provided with air receiving apertures on its under surface, and air discharge apertures in the portion impinged by the flame of the burner, all as will be hereinafter more fully described.

In the base A, is inserted the right angled tube B, upon the upper end of which is placed the conical nozzle C, surrounded by the chambered lower end of the mixing tube D, the said mixing tube having air apertures *a* in the sides thereof, near its lower end.

In the upper end of the mixing tube D is inserted the threaded portion of the burner E. The said burner is made in two diameters, the smaller portion being inserted in the tube, the larger portion being provided with lateral apertures *b*, through which the gas issues. The body of the burner is formed of a casting having lugs *c* at short intervals, and the top of the casting is closed by the disk *d*, which rests upon the lugs *c* and is secured in place by screws *e* passing through the disk and into the casting. The disk *d* projects slightly beyond the body of the burner.

In the sides of the burner are inserted right angled rods *f*, which support the hollow ring F, in the path of the flame issuing from the

apertures *b* of the burner. The said ring is preferably made of oval section, as shown in Figs. 1 and 4, and in the inner surface of the ring, at the point where the flame of the burner impinges, are formed apertures *g* and in the outer and lower portion of the ring are formed larger apertures *h*. The openings *a* in the chambered lower part of the tube D are inclined downwardly toward the outer side of the burner, to give the air entering the burner a direction toward the tip of the nozzle C. The horizontal end of the tube B is provided on the outside of the base A with a stop-cock G by which the flame is regulated.

Although we have described the hollow ring as having an oval cross section, we do not limit or confine ourselves to this shape, as the burner will work successfully with a hollow ring of circular cross section, or of triangular section as shown in Fig. 5. The gas being turned on at the stop-cock G and lighted at the apertures *b*, the air entering the apertures *a* and mixing with the gas issuing from the nozzle C, causes the gas to burn with a nearly non-luminous flame, and this flame impinging on the hollow ring F, raises it to a high temperature, thus heating the air which enters the hollow ring through the apertures *h*, so that when it emerges through the apertures *g*, it mingles with the gas of the flame, thus supplying the amount of oxygen necessary to complete combustion to cause the flame to burn with an intense heat and without waste of gas.

We have found by experiment that the heating capacity of the burner is increased twenty five per cent. by the addition of the perforated ring F.

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

1. The combination with a heating burner, of an air heating tube supported in the path of the flame of the burner and having air inlets formed in the outer portion of the ring and air outlets in the portion of the inner surface impinged by the flame of the burner, substantially as specified.

2. The combination with the heating burner provided with apertures for projecting the gas outwardly, of a tubular ring supported in

the path of the flame and having air inlets in the outer and lower portion of said ring, and air outlets in the inner surface at the point where the flame of the burner impinges, substantially as specified.

3. In a heating burner, the combination of the gas nozzle C, the mixing tube D, provided with inclined apertures *a*, the burner E, made in two diameters and provided with side apertures *b*, the right angled rods *f* inserted in the burner, and the hollow ring F, supported

by the rods *f* and provided with the apertures *g*, in the inner surface at the point where the flame of the burner impinges and the apertures *h* in the outer and lower portion of the ring, substantially as specified.

JOHN R. WILLIAMSON.
ISAAC WILSON BUZBY.

Witnesses:

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