

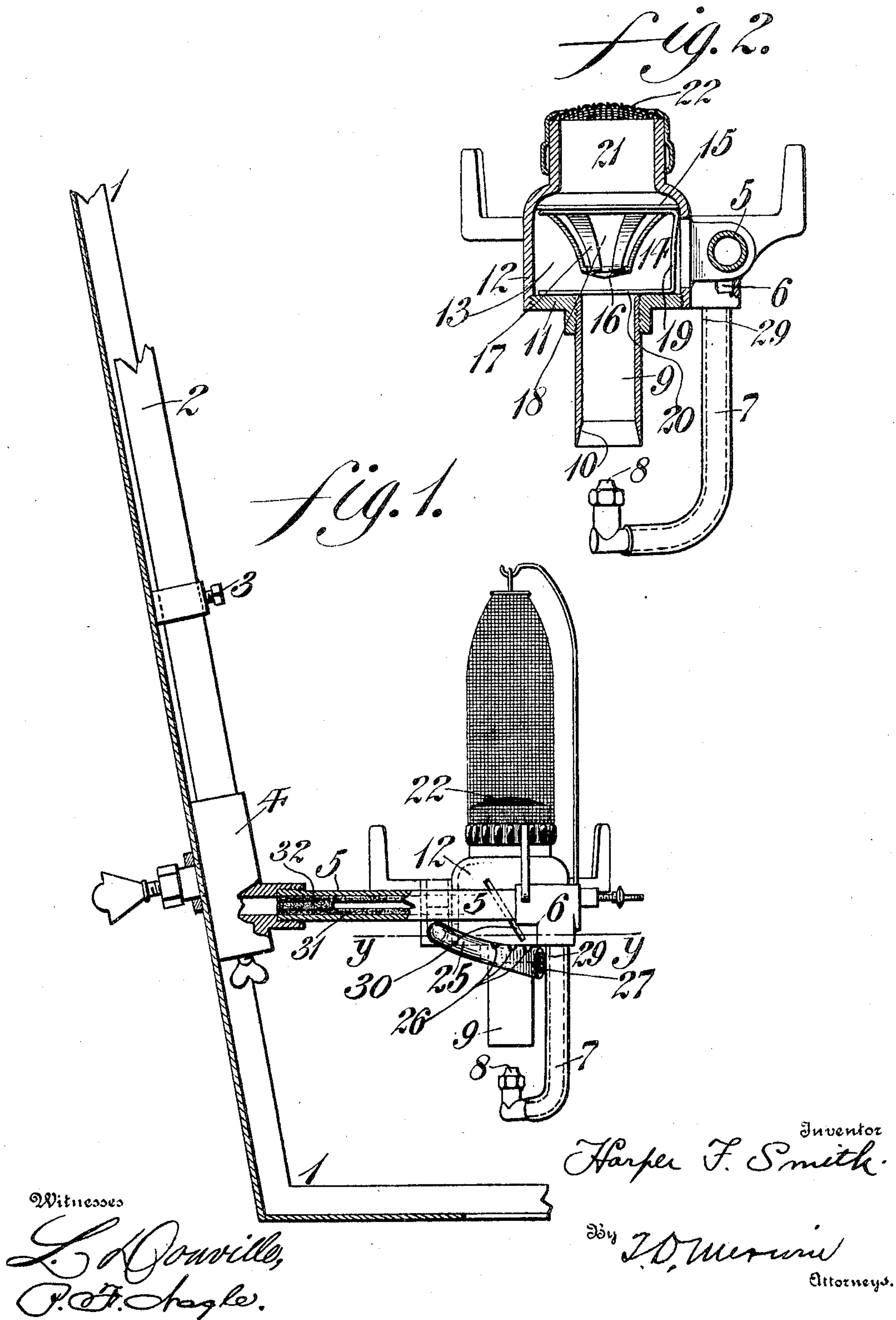
No. 808,581.

PATENTED DEC. 26, 1905.

H. F. SMITH.
VAPOR BURNER.

APPLICATION FILED MAR. 3, 1905.

2 SHEETS--SHEET 1.



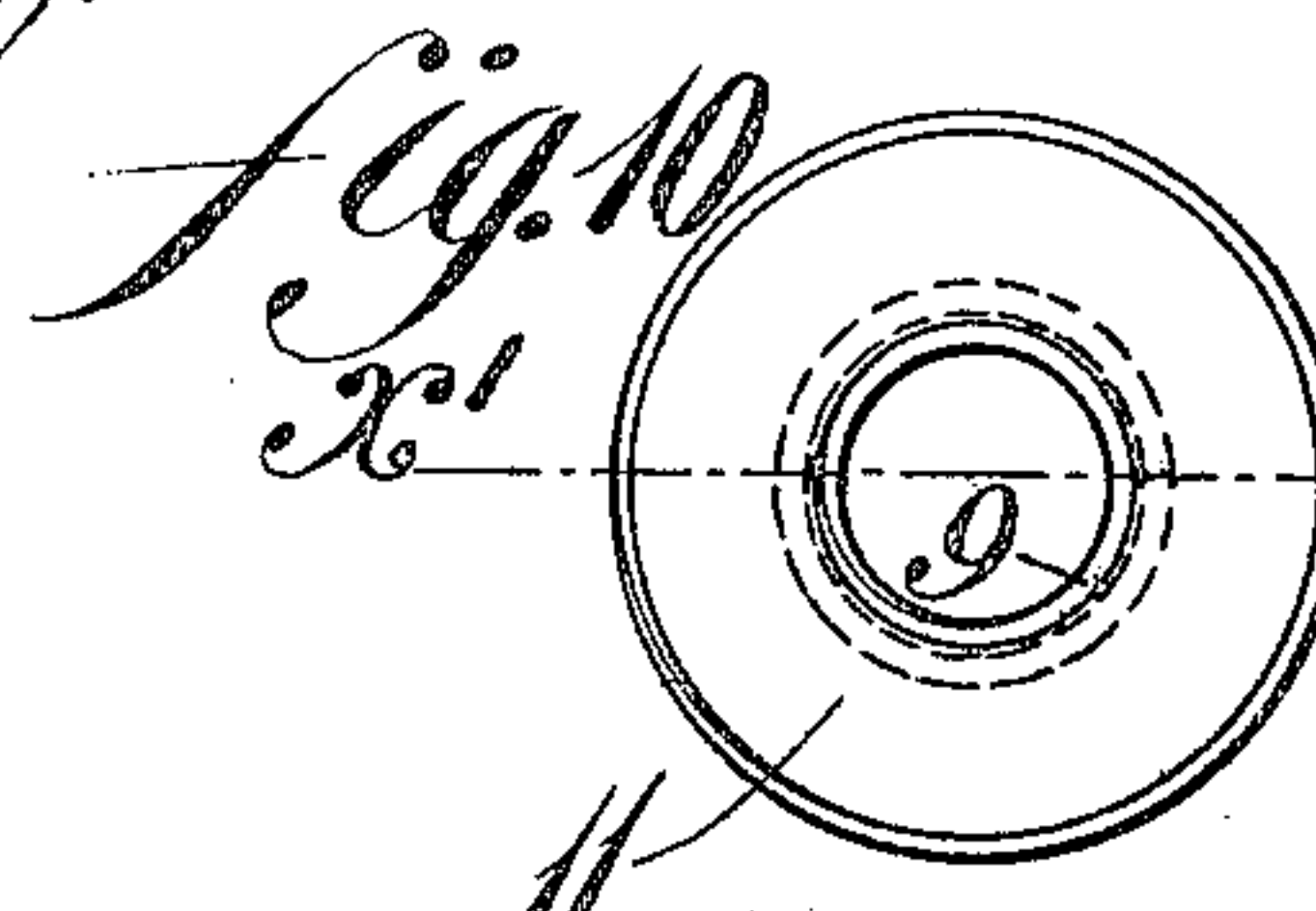
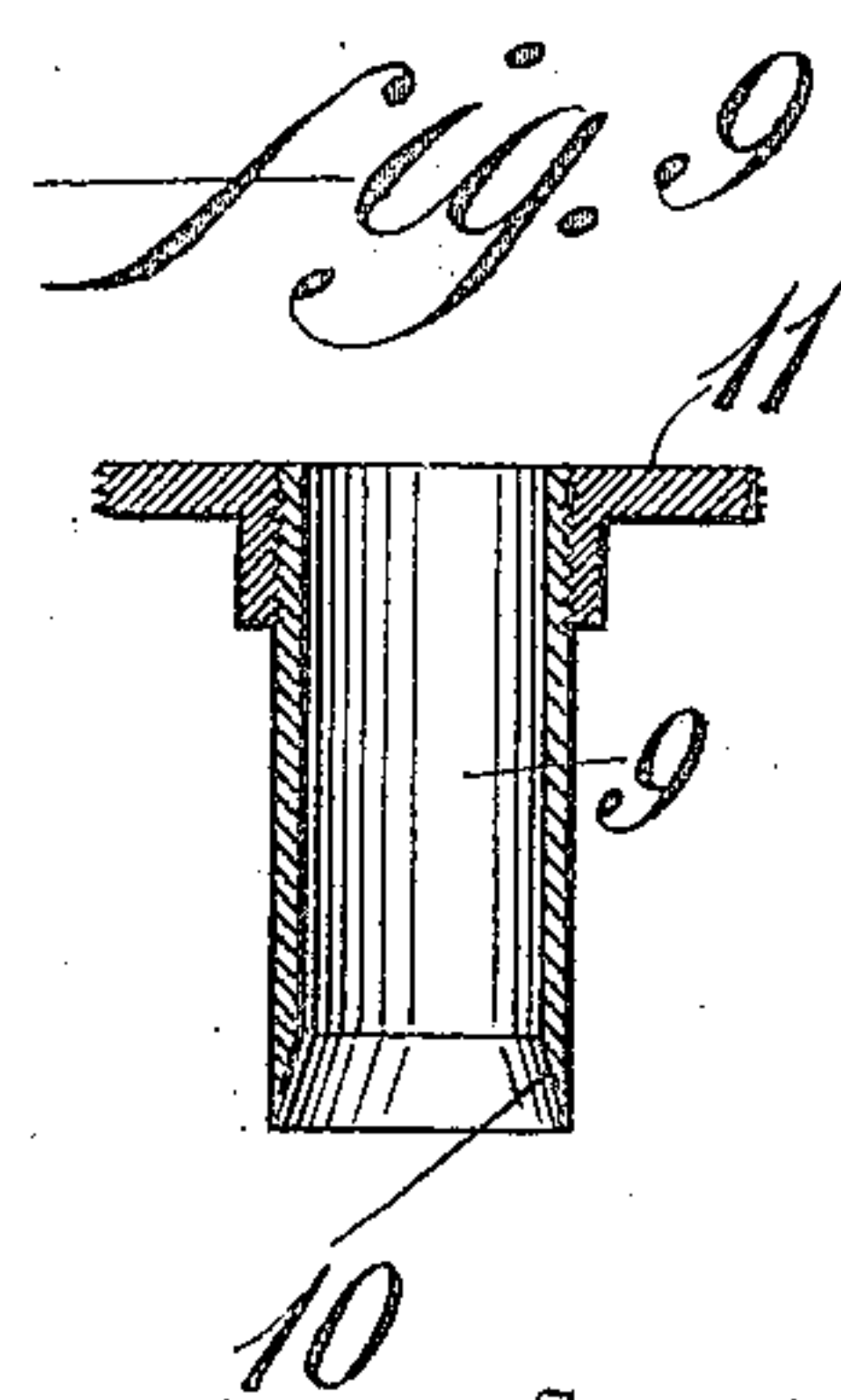
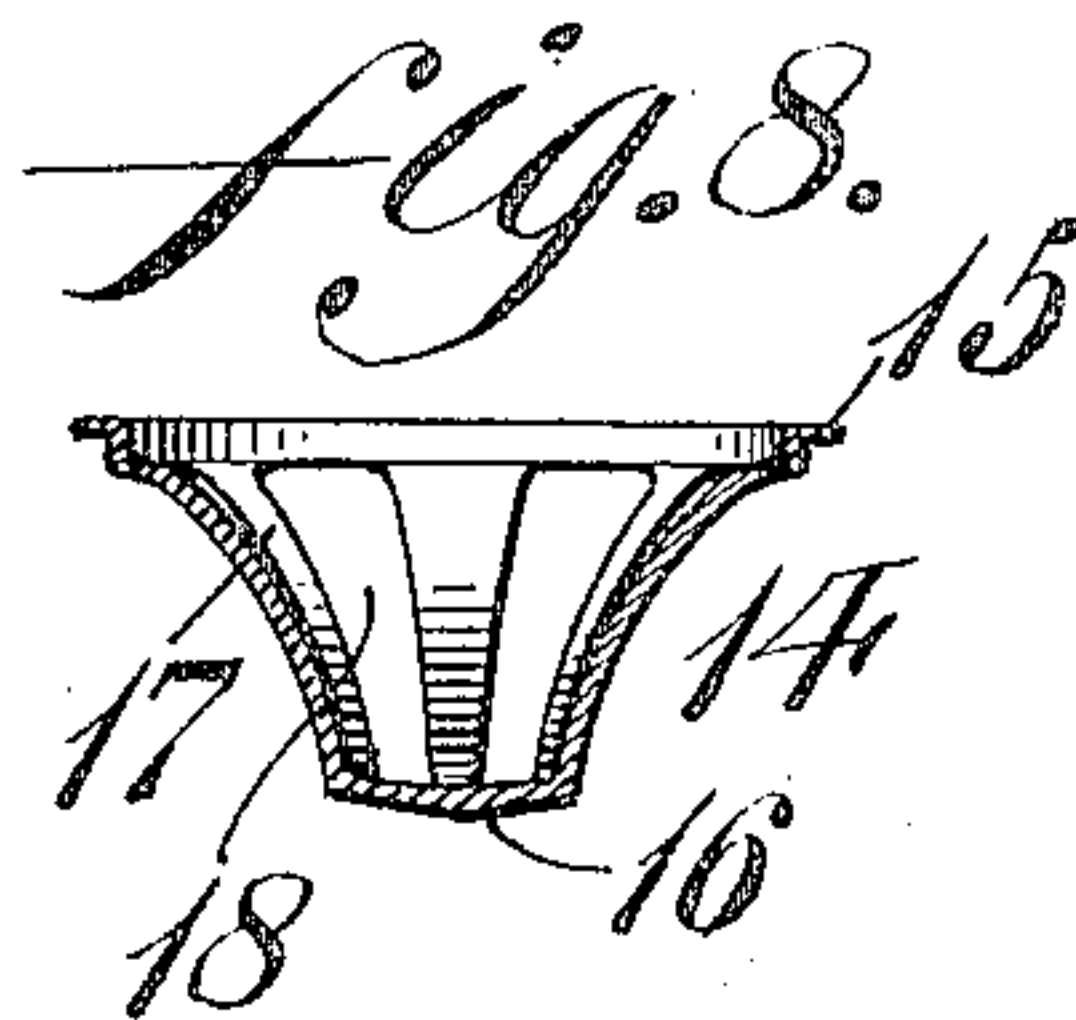
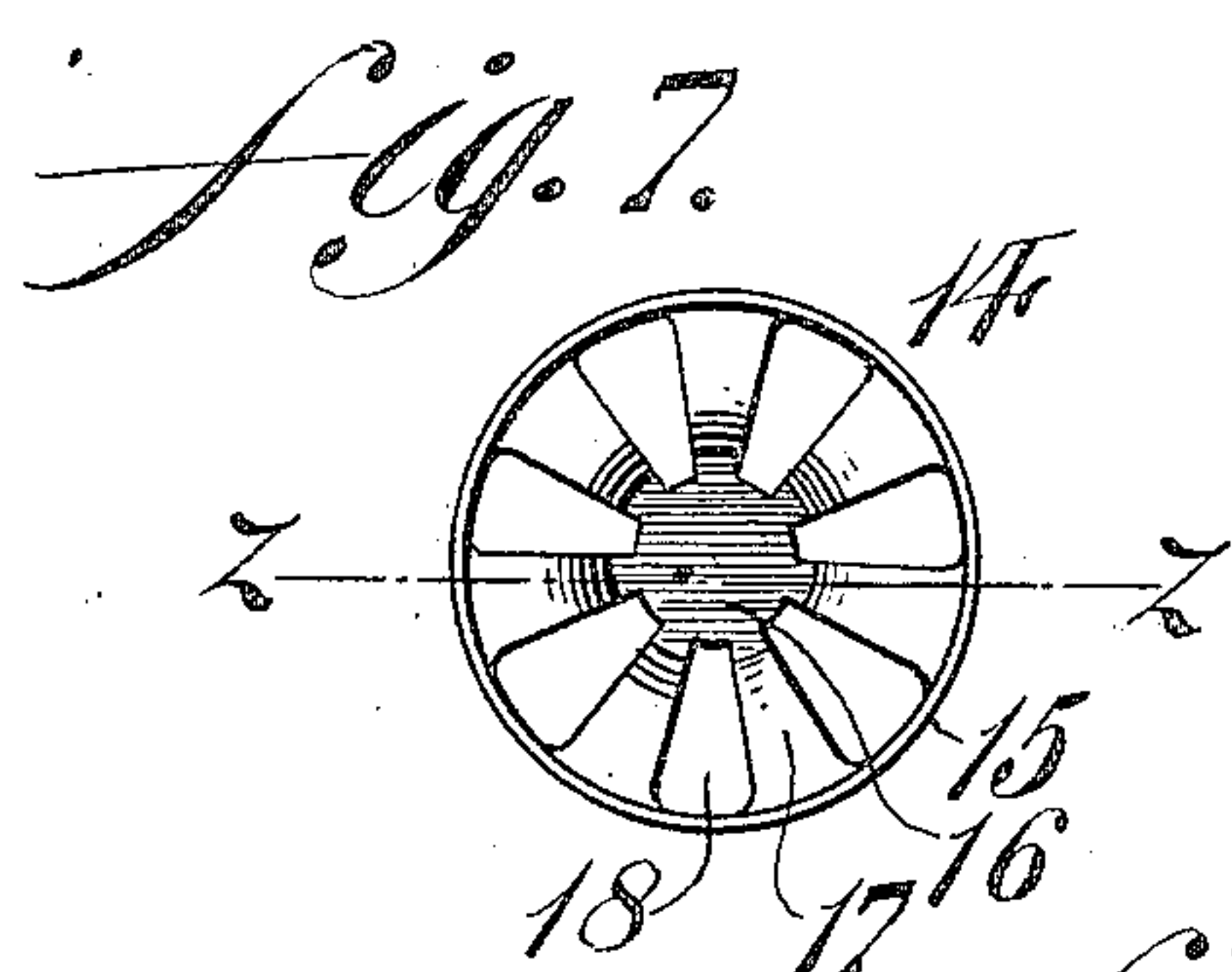
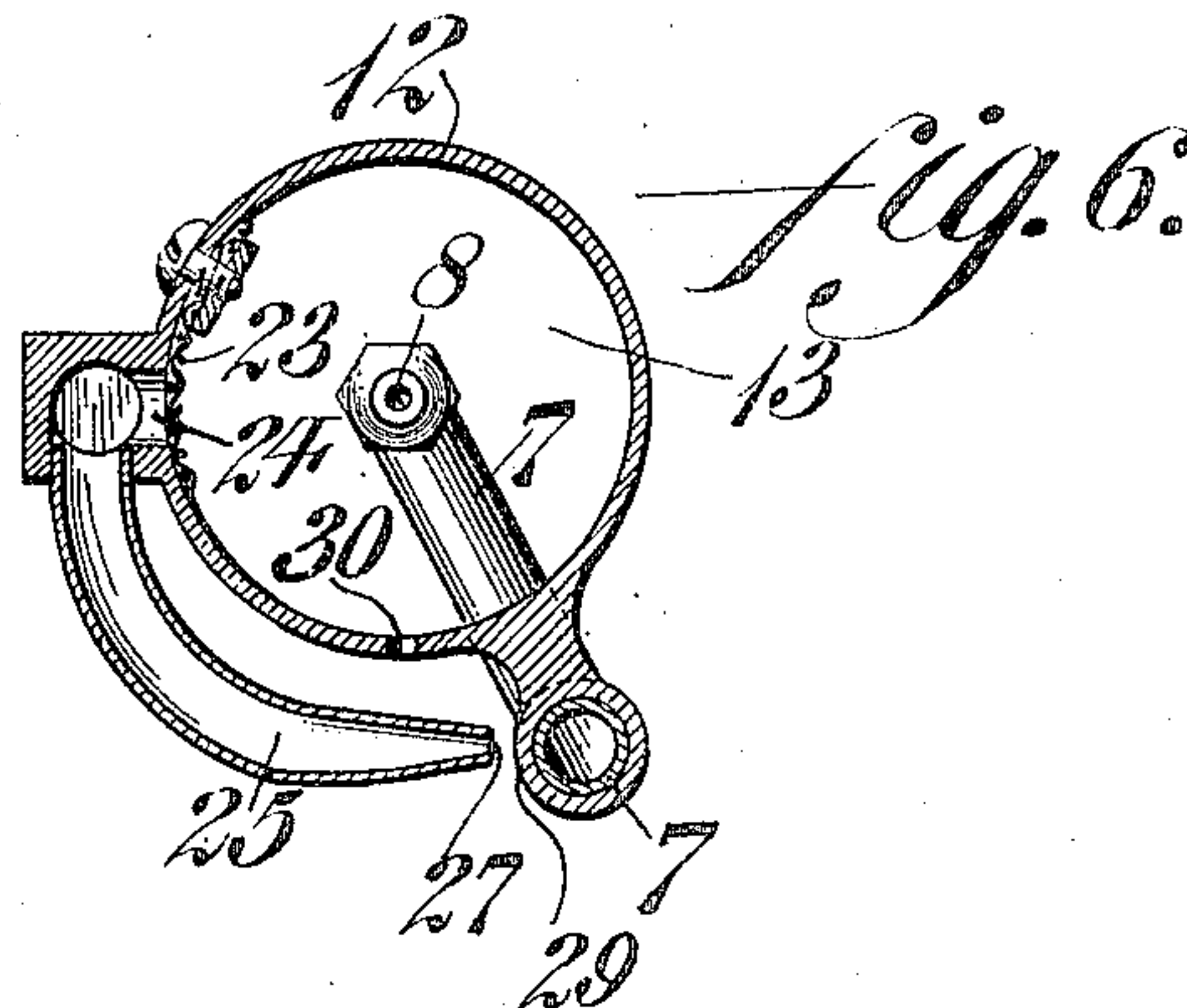
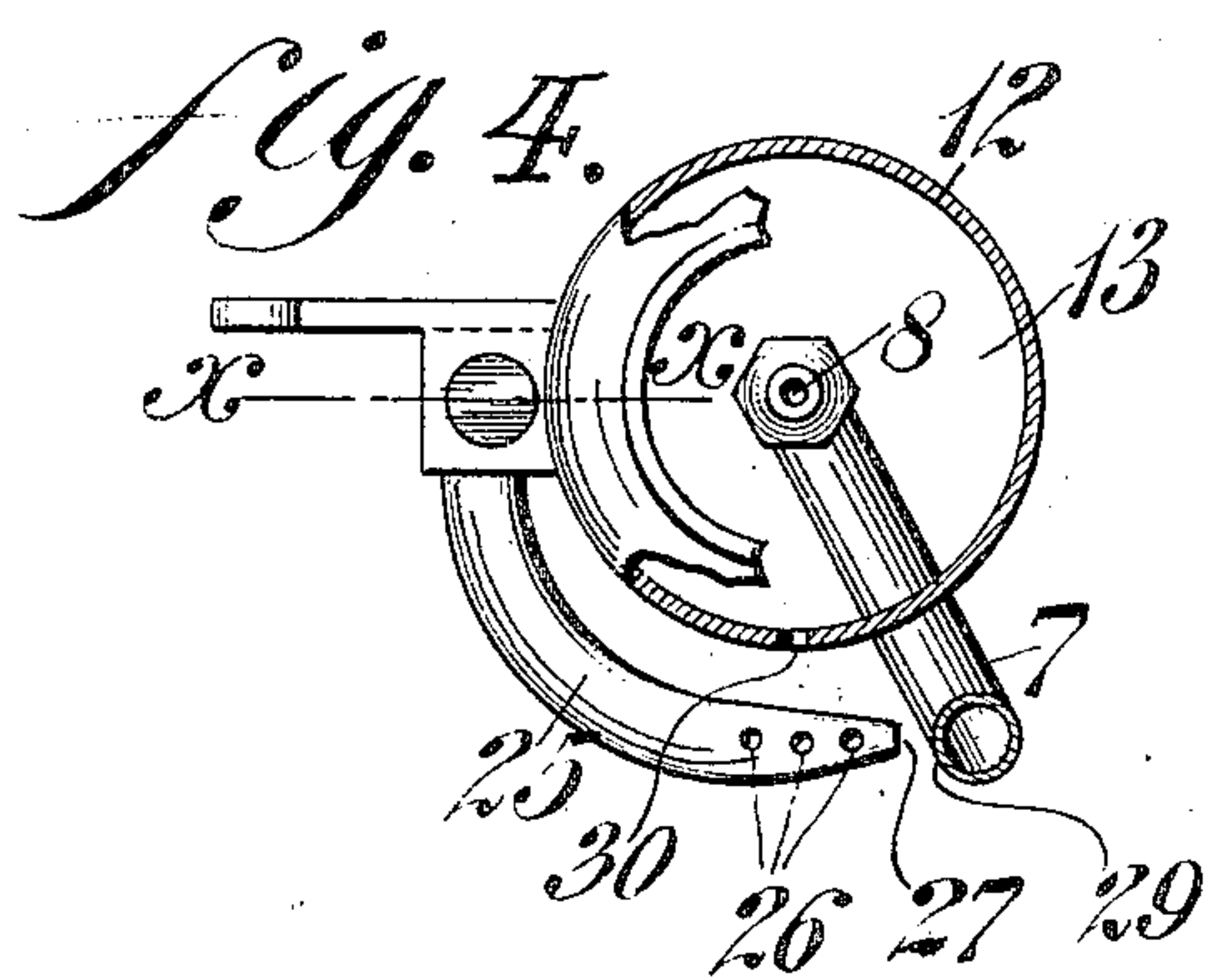
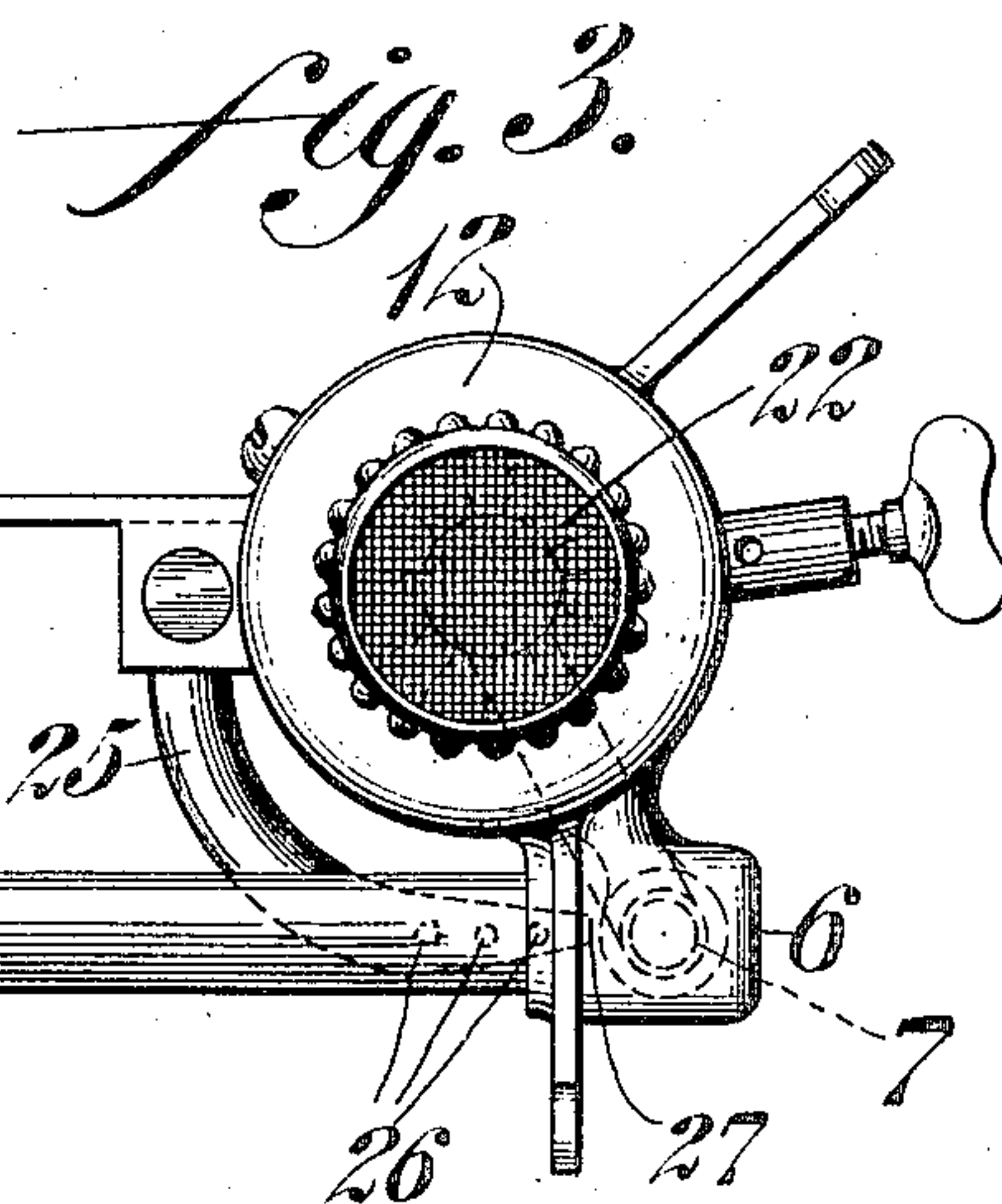
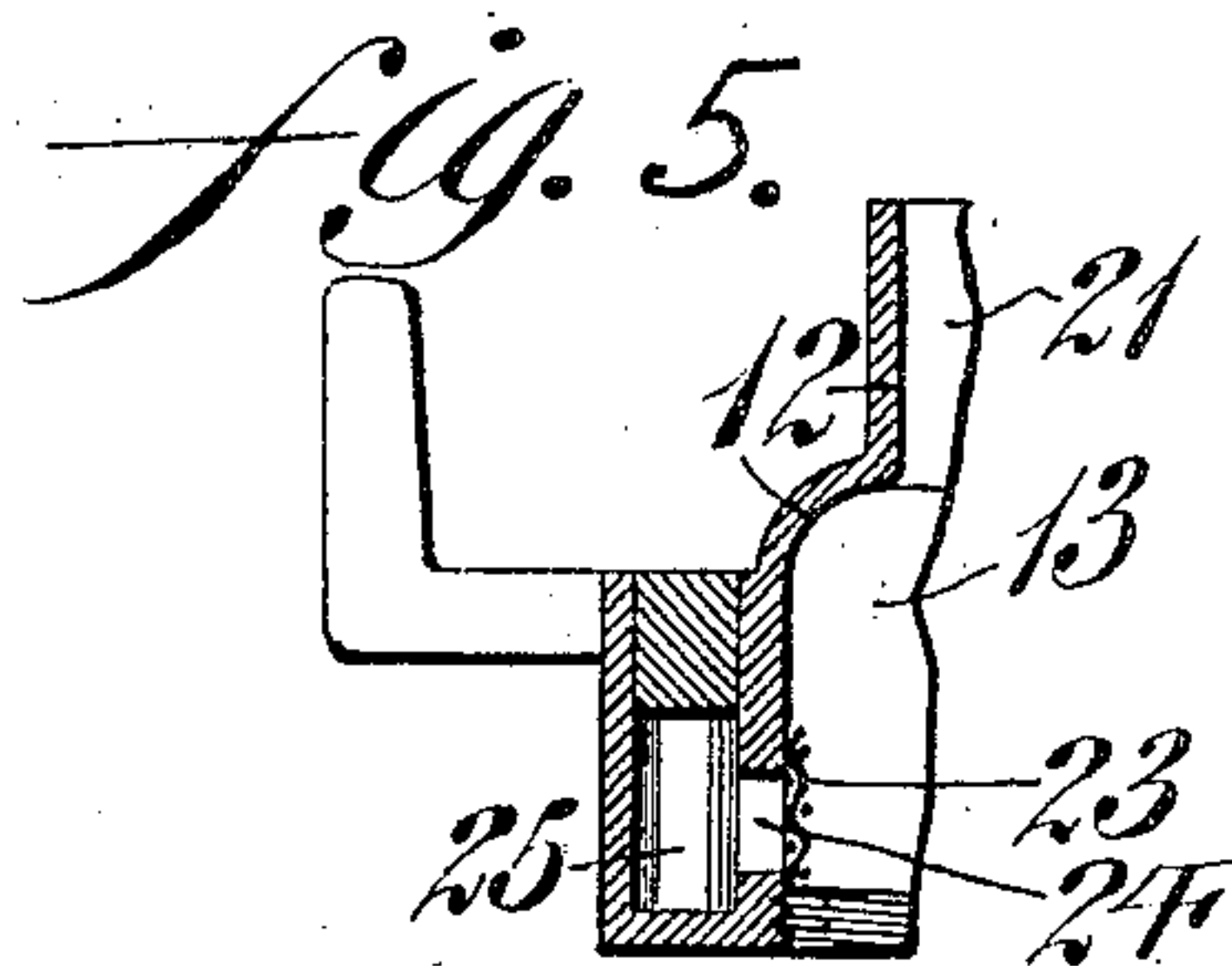
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2 SHEETS—SHEET 2.



Witnesses
L. Douville,
P. H. Hagler.

Inventor
H. F. Smith.
By *J. D. Mierow*
Attorneys

UNITED STATES PATENT OFFICE.

HARPER F. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

VAPOR-BURNER.

No. 808,581.

Specification of Letters Patent.

Patented Dec. 26, 1905.

Application filed March 3, 1905. Serial No. 248,261.

To all whom it may concern:

Be it known that I, HARPER F. SMITH, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Vapor-Burners, of which the following is a specification.

My invention relates to improvements in incandescent vapor-burning lamps; and it consists in the features of construction hereinafter described and claimed.

In the drawings forming part of this specification, Figure 1 represents a side elevation, Fig. 2 a vertical section, and Fig. 3 a plan view, of my invention. Fig. 4 represents a plan view similar to Fig. 3, certain of the parts being omitted for clearness of illustration. Fig. 5 represents a section on line $x x$ of Fig. 4. Fig. 6 represents a section on line $y y$ of Fig. 1. Fig. 7 represents a plan view of the distributor or mixer. Fig. 8 represents a section on line $z z$ of Fig. 7. Fig. 9 represents a vertical sectional view of the mixing-tube in detached position, the section being taken on line $x' x'$ of Fig. 10; and Fig. 10 represents a plan view of Fig. 9.

Referring to the drawings, 1 designates the frame of the lamp, to which the supply-pipe 2 is secured, as by means of the set-screw 3.

4 designates a valve-casing which leads downwardly into the laterally-extending vaporizing-pipe 5, leading to the vaporizing-chamber 6. The vapor-tube 7, leading from the chamber 6, terminates in the tip 8, over which is the mixing-tube 9, having its lower open end 10 chamfered or flaring. The upper end of the tube 9 is threaded into the plate 11, constituting the bottom of the casing 12 of the mixing-chamber 13.

14 designates a deflector located in the mixing-chamber 13, comprising an annular ring 15, a conical base 16, and ribs 17, outwardly concave, connecting the ring 15 with the base 16, leaving intermediate slotted openings 18. The deflector 14 is held in position in the chamber 13, as by means of an arm 19, having a laterally-extending portion 20 resting upon the disk 11.

Above the mixing-chamber 13 is the burner-chamber 21, having the gauze outlet 22.

24 designates a lateral port covered by gauze 23, connecting the chamber 13 with the tube 25, which is provided with a series of perforations 26, arranged underneath the tube 5 and having its end 27 contracted to form a

flattened or slitted vent directed toward the tube 7 at about the point 29.

30 designates a slot or opening in the wall 12 above the openings 26 and preferably inclined.

31 is a thin asbestos lining for the tube 5, filled near its outer end with suitable porous material 32.

The operation is as follows: The hydrocarbon flows by gravity through the pipe 2, valve-casing 4, pipe 5, chamber 6, tube 7, being vaporized in its passage, the vapor issuing from the tip 8 and entering the mixing-tube 9 with atmospheric air, thence passing to the chamber 13. The commingled vapor and air are deflected by the base 16 and ribs 17 of the deflector 14, passing through the slits 18 into the chamber 21. Thence they pass to the burner and are ignited. A small portion passes through the gauze 23, port 24, and tube 25, issuing through and being ignited at the ports 26, the flame impinging upon the under side of the tube 5, part also issuing through and burning at the orifice 27, so that the flame impinges against the tube 7, thereby heating both the tubes 5 and 7 to vaporize the contained hydrocarbon. Vapor also issues from the slit 30 and is ignited by the flame at the mantle, serving to relight the vapor at the openings 26 and 27 should the same be accidentally extinguished.

For convenience the more important parts of my invention may also be defined as follows: the pipe 5 and chamber 6 as the vaporizer, the tube 7 as a vapor-tube, the pipe 9 as the mixing-tube, the chamber 13 as the mixing-chamber, the openings 26 and 27 as vaporizing-burners, and the port 30 as the pilot-burner.

I claim—

1. In a burner of the class described, a vaporizer, a mixing-chamber, a mixing-tube leading to said mixing-chamber, a vapor-tube leading from said vaporizer to said mixing-tube, a spreading device in said mixing-chamber, a superposed burner-chamber and burner, a vaporizing-burner adjacent said vaporizer, and a pilot-burner above said vaporizing-burner, both said burners being connected with said mixing-chamber.

2. In a vapor-burner, a supply-pipe, a vapor-tube leading therefrom and provided with an outlet, a commingling-tube located above said outlet, a spreading and deflecting chamber into which said commingling-tube

discharges, a spreader contained in said chamber, a port leading from said chamber, a gauze covering for said port and a gas-tube extending laterally and partly around the exterior of said chamber and provided with a series of ports in its upper portion, and an elongated orifice discharging against said vapor-tube.

3. In a vapor-burner, a supply-pipe, a vapor-tube leading therefrom and provided with an outlet, a commingling-tube located above said outlet, a spreading and deflecting chamber into which said commingling-tube discharges, a spreader contained in said chamber, a port leading from said chamber, a gauze covering for said port and a gas-tube extending laterally and partly around the exterior of said chamber and provided with a series of ports in its upper portion, and an elongated orifice discharging against said vapor-tube in combination with a relighting device.

4. In a vapor-burner, a supply-pipe, a vapor-tube leading therefrom provided with an outlet, a commingling-tube located above said outlet, a spreading and deflecting chamber into which said commingling-tube discharges, a spreader contained in said chamber, a port leading from said chamber, gauze covering said port and a gas-tube extending laterally and partly around said chamber, and provided with a series of ports in its up-

per portion, and an elongated orifice discharging against said vapor-tube, said spreader consisting of a ring having a base portion of less diameter and ribs joining said ring and base portion.

5. In a vapor-burner, a supply-pipe, a vapor-tube leading therefrom and provided with an outlet, a commingling-tube located above said outlet, a spreading and deflecting chamber into which said commingling-tube discharges, a spreader contained in said chamber, a port leading from said chamber, gauze covering said port and a gas-tube extending laterally partly around said chamber and provided with a series of ports in its upper portion, and an elongated orifice discharging against said vapor-tube, said spreader consisting of a ring having a base portion of less diameter and concave ribs joining said ring and base portion, said vapor-tube having a flaring mouth and being secured to a base in threaded engagement with the lower walls of said spreading and deflecting chamber.

In witness whereof I have hereunto set my hand, at the city of Philadelphia, this 23d day of February, 1905.

HARPER F. SMITH.

Witnesses:

S. R. ALBRIGHT,
JOSEPH C. MURPHEY.