

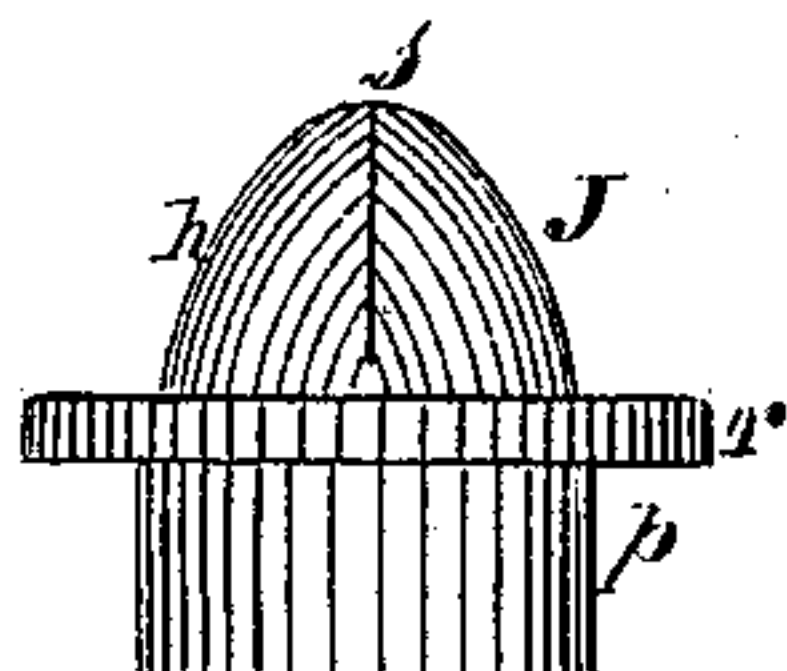
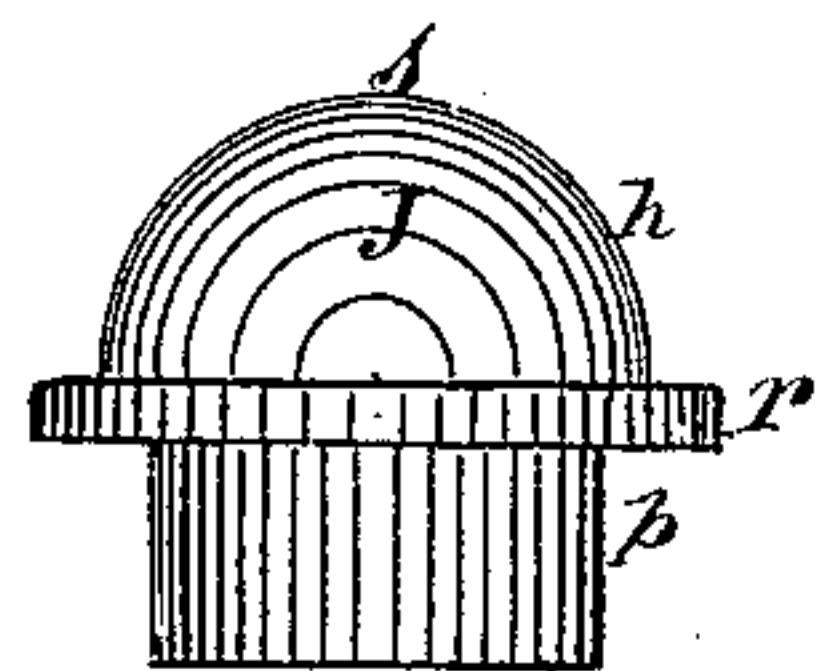
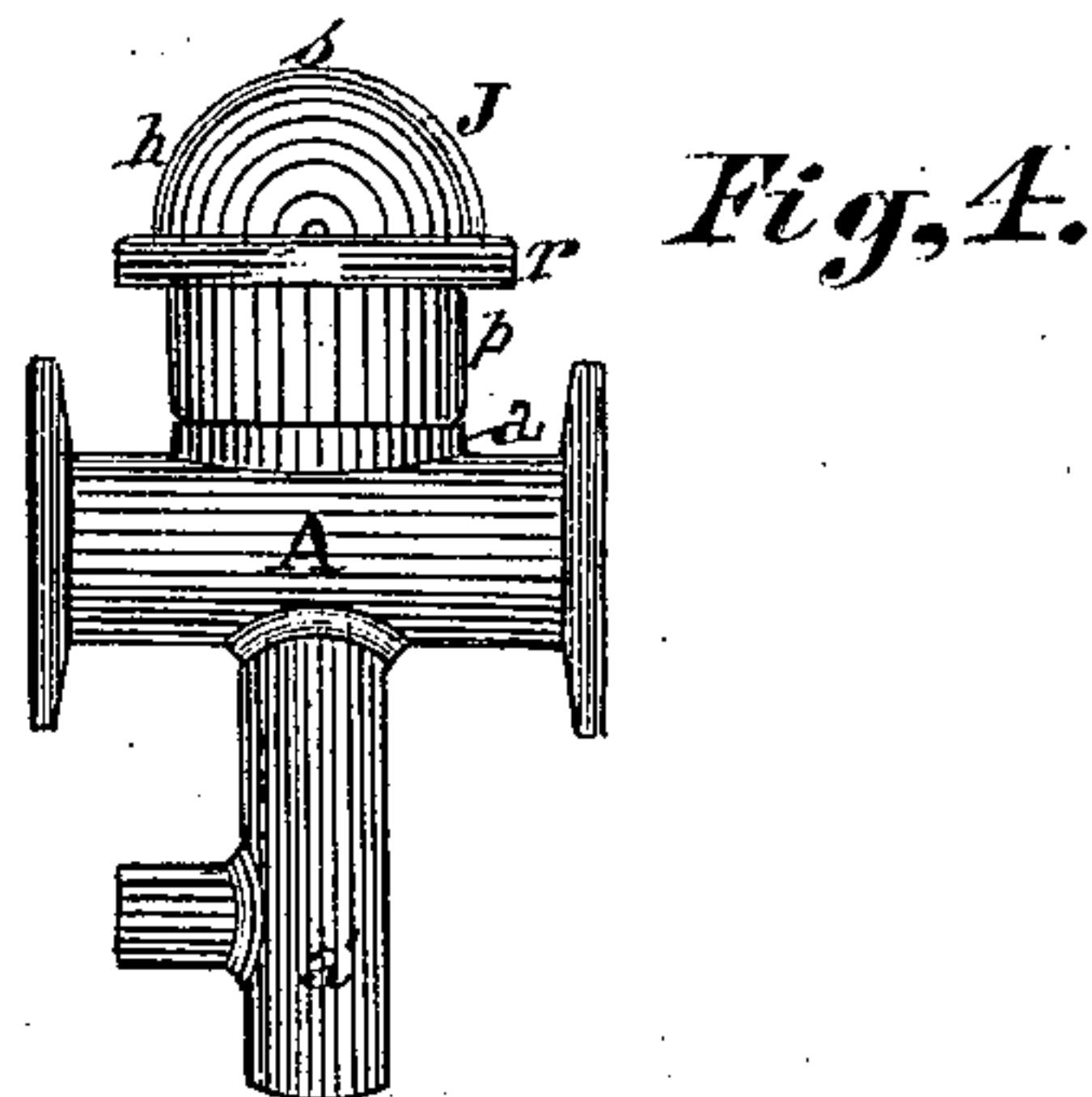
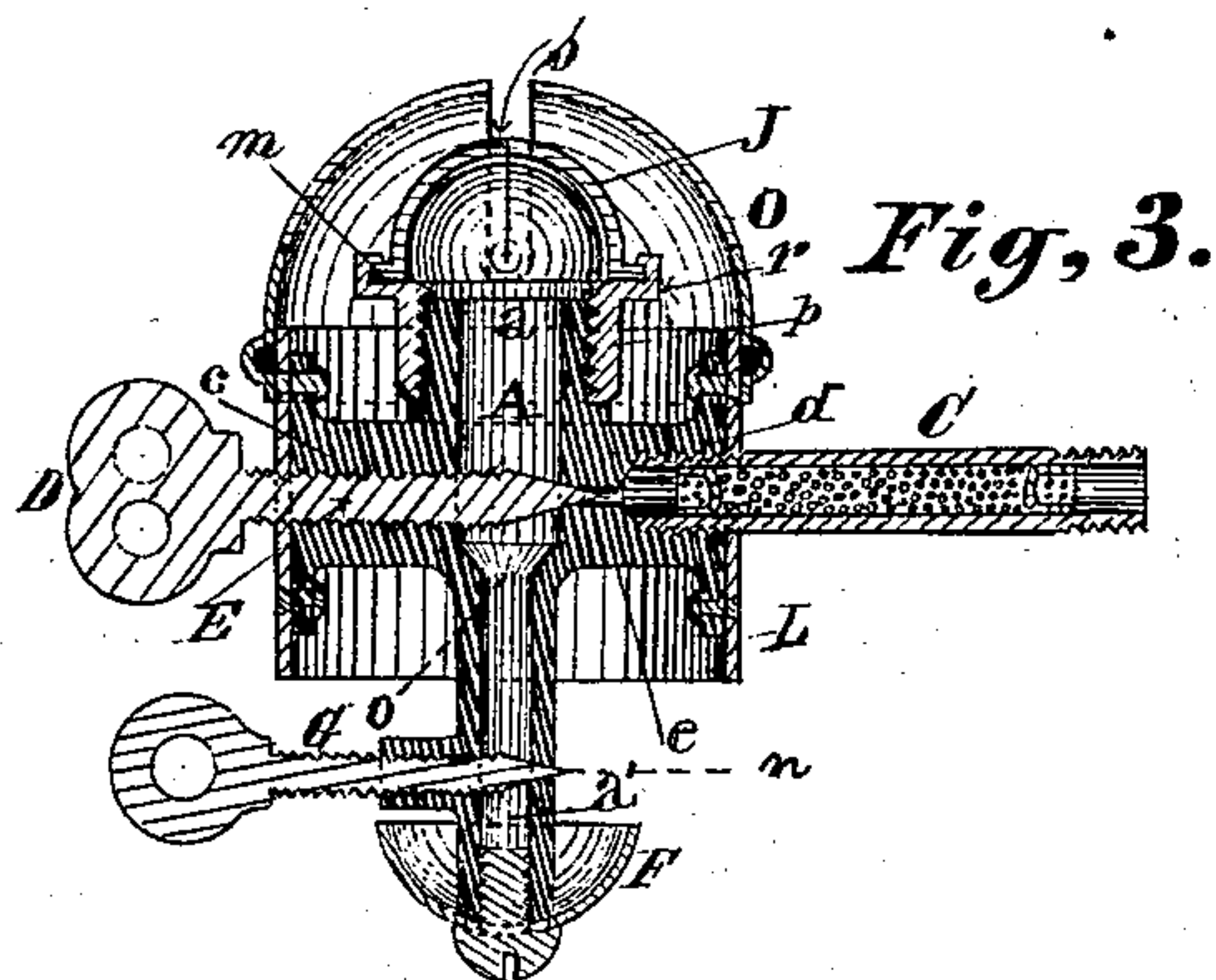
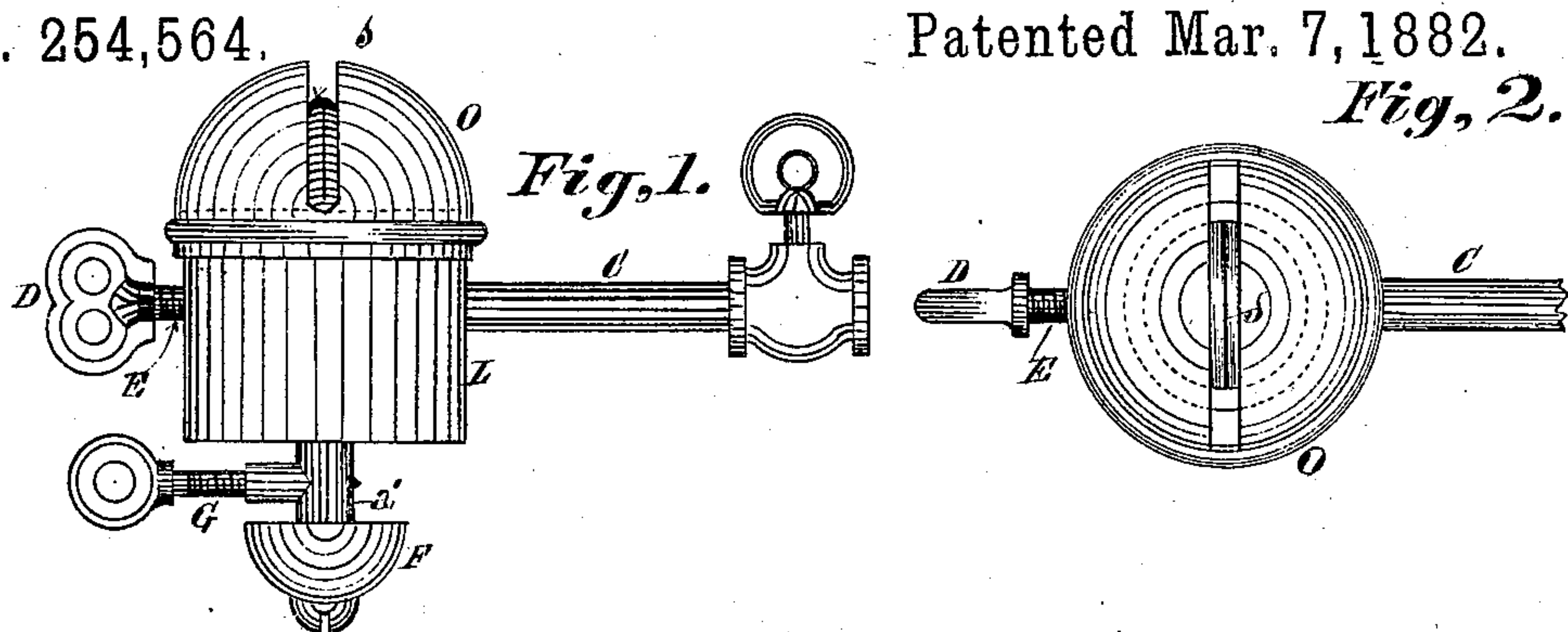
(No Model.)

W. P. PATTON.

SELF GENERATING VAPOR BURNER.

No. 254,564.

Patented Mar. 7, 1882.



Witnesses.

Ed. M. Cooper.

Inventor.

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UNITED STATES PATENT OFFICE.

WILLIAM P. PATTON, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR OF
THREE-EIGHTHS TO DAVID LUTHER JAUSS, OF SAME PLACE.

SELF-GENERATING VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 254,564, dated March 7, 1882.

Application filed January 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. PATTON, of the city of Harrisburg, county of Dauphin, and State of Pennsylvania, have invented a new and Improved Self-Generating Vapor-Gas Burner.

The object of this invention is to produce a brilliant light, free from smoke or smell, in a perfectly safe manner, using heavy crude benzine as an illuminating material.

I hereby declare the following to be a full, clear, and exact description of my improved burner, reference being made to the accompanying drawings, and the letters of reference marked thereon, in which—

Figure 1 is a side elevation of the burner in perspective. Fig. 2 is a plan or top view of the device. Fig. 3 is a side elevation of the burner in section. Fig. 4 shows the body of the gas-generating chamber and burner-tip in perspective, the hot-air jacket being removed. Fig. 5 is a side view of the burner-tip in perspective.

In the drawings, letter A represents the gas-generating chamber. It is made preferably of cast metal, either brass or malleable iron. It is given the form substantially as shown, having a vertical cylindrical portion, *a a'*, and two other parts, *c d*, also cylindrical in the body, that project from the vertical piece *a a'* in an axial line with each other and at right angles to the piece *a a'*, as is shown in Figs. 3 and 4. The vertical part *a a'* of the gas-generating chamber A is perforated with a hole of a proper size. The diameter of this perforation is larger at the upper end, and continues of such enlarged dimension to a point just below the junction of the projections *c d*. From said point through to the lower end the hole is made of a diminished size, as shown at *o* in Fig. 3. The upper end of the vertical body *a a'* is threaded upon its outside, as is shown in Fig. 3 at *a*. The laterally-projecting portions *c d* are made a proper diameter and are perforated axially, the portion *c* being tapped or threaded for the reception of a taper-pointed set-screw, E. (See Fig. 3.) This set-screw is intended to act as a valve to control the influx of benzine, and the point must be made true with the center of the body and the threaded

portion be well fitted to its place, so as to be gas-tight and yet move readily by application of the hand of the operator to the thumb-piece D. (See Fig. 3.) The other or conical-tapered end is made to accurately fit into, so as to perfectly close up, the small perforation *e* in the center of part *d*. This small perforation *e* forms a diminutive passage or communication between the vertical hollow chamber *a a'* and the feed or supply pipe C. (See Fig. 3.) Said pipe C is screwed tightly into a threaded hole made for its reception in the body of the portion *d*. The pipe C should be packed with wire of a fine gage, so as to restrain the free flow of naphtha or benzine, either of these volatile fluids being suitable for use in my improved burner. Again, this packing prevents the gas generated from forcing back into the elevated tank from which the burner is fed. The lower end of the vertical part *a a'* is provided with a small hemispherical cup, F. (See Figs. 1, 3.) This cup is rigidly attached to the lower end of *a'*, and is intended to contain a small quantity of benzine or naphtha, for a purpose that will be hereinafter described. The cup F is filled by means of the small valve screw G. (See Fig. 3.) This is located as shown in the body *a'*, and is made of such proper relative size thereto as to permit a small quantity of fluid (either naphtha or benzine) to escape from the fine orifice *n*, and when the thumb-screw valve G is withdrawn from said orifice it is evident that the orifice *n* can be perfectly closed again by moving inward the point of screw G.

The burner-tip J (see Figs. 3 and 4) is constructed preferably of thin metal plate. It is made up of two separate pieces. The upper portion, *h*, is stamped up from a single disk of sheet metal, brass plate preferred. It is given the form substantially as shown in the drawings. (See Figs. 3, 4, and 5.) As represented, the tip has a rounded edge, and the body resembles a hemisphere that is flattened somewhat upon two opposite sides. The base of this upper portion of the burner-tip is extended so as to form a flange, *m*. The cone J is divided by a fine slit, *s*, made through the body. This slit extends downwardly to within a short distance from the base-flange *m*. As it is of importance that the slit in this

piece should be of such width as only to permit the vapor gas to escape through it under considerable pressure, I have found the best results to be obtained by cutting said slit with a saw the blade of which is (100) one-hundredth part of one inch in thickness, with very fine teeth. The lower portion, *p*, of the burner-tip J is made of sheet metal, the same as the upper, *h*, and is cylindrical in form, with a projecting flange, *r*, formed upon its upper end at a right angle to the cylindrical part *p*. The flange *r* extends outward a proper distance, and is raised at its edge, so as to receive and retain the upper piece, *h*, by being riveted or tightly pressed inwardly upon and over the edge of flange *m*. (See Fig. 3.) The lower or cylindrical part, *p*, is threaded on its inner surface, so as to permit it to be neatly screwed down upon the threaded upper end of the gas-generating chamber A at *a*. (See Fig. 3.)

Upon the outer ends of the portions *c* & *d* of generator A a cylindrical sheet-metal jacket, L, is rigidly secured. This jacket or sleeve is made of a proper relative length to that of the generator A, and upon its upper end is mounted a sheet-metal dome or heat-deflecting cone, O. (See Figs. 1 and 3.) Said cone O is made of a proper relative height to the top edge of the slitted burner-tip J, so that a sufficient air-space is allowed between its inner surface and the upper edge of the tip J. The cone O is also slotted a proper width and length to permit the gaseous flame to escape from the burner-tip J. The slit in the burner-tip and the slot in the cone O should be so adjusted that the cone-slot will locate directly over and in right line with the slit in burner-tip J.

As my improved vapor-burner will be used principally in glazed lanterns for street-lighting purposes and other similar uses, a properly-constructed lantern must be provided, a tank for receiving and delivering naphtha or benzine to the burner being properly secured to said lantern-frame in an elevated situation, so as to deliver its contents through a pipe and regulating-cock to the feed-pipe of the burner, the same being rigidly secured thereto by screw-thread or other similar method.

The elevated tank being filled, the manner of operating or lighting the burner is as follows: The ordinary cock that is attached to the feed-pipe C being opened, the fluid (gasoline or benzine) will flow through said pipe to near the generator-body A. The cone-pointed valve-screw E being withdrawn a slight distance from contact with its seat, benzine (or naphtha) will flow into the hollow body of the generator A. By then opening the small lower cone screw-valve, G, a sufficient quantity of the benzine (or naphtha) can be supplied to partly fill the cup F. The valve E being now adjusted to nearly cut off the flow of the benzine, the valve G entirely shut, the fluid in the cup F should be lighted. The resulting flame

will be conducted upward, in close contact with the generator-body, by the jacket L acting as a draft-flue or chimney. In a short space of time the benzine will be vaporized or gasified by the surrounding heat, and as the generator-chamber has no other outlet, the highly rarefied carbon gas will be expelled with force through the narrow or fine slit in the burner-tip J and be instantly lighted. The heat conducted by the various parts from the flame to the generator causes a continuance of the formation of vapor gas therein. The rarefaction of the air around the flame causes an upward draft in the jacket L, and the heat of the flame in contact with the deflector-cone O causing the cone and jacket upon which it is mounted to become hot, the upward current of air is highly heated, and, rising, produces a draft of air, and thus furnishes oxygen in sufficient quantity to cause perfect combustion of the carbonaceous vapor gas. My burner is so perfect in principle that heavy crude benzine of 65° specific gravity can readily be burned in it, furnishing a rich, soft, white light or flame of high candle-power.

I do not desire to broadly claim devices that vaporize naphtha by burning it in unprotected burners the bodies of which are exposed to the cold currents of air surrounding them.

I am aware that there are several gasoline-burners of that description patented. In operation all such devices are imperfect, as they fail to properly heat the air before it comes in contact with the gaseous carbon flame, and consequently the supply of oxygen is insufficient, and the flame is smoky and flickering, and light produced of low candle-power.

What I do desire to claim as new, of my invention, and desire to secure by Letters Patent of the United States, is—

1. The combination of the vapor-gas-generating chamber A, thin-slitted burner-tip J, heat-deflecting cone O, and feed-screw E, substantially as is herein set forth, and for the purpose specified.

2. The combination of the gas-generating chamber A, in which carbon vapor or gas is evolved by heat unmixed with air, with the thin-slitted burner-tip J, hot-air jacket L, heat-deflecting cone O, and feed-screw E, the whole being constructed and operating substantially as is herein shown, and for the purpose set forth.

3. The combination of the carbon-vapor-gas-generating chamber A, heat-deflecting cone O, hot-air jacket L, burner-tip J, feed-screw E, charging-valve G, and receiving-cup F, the whole being made and operating substantially in the manner and for the purpose specified.

WM. P. PATTON. [L. S.]

Witnesses:

S. W. FLEMING,
ED. M. COOPER.