

(No Model.)

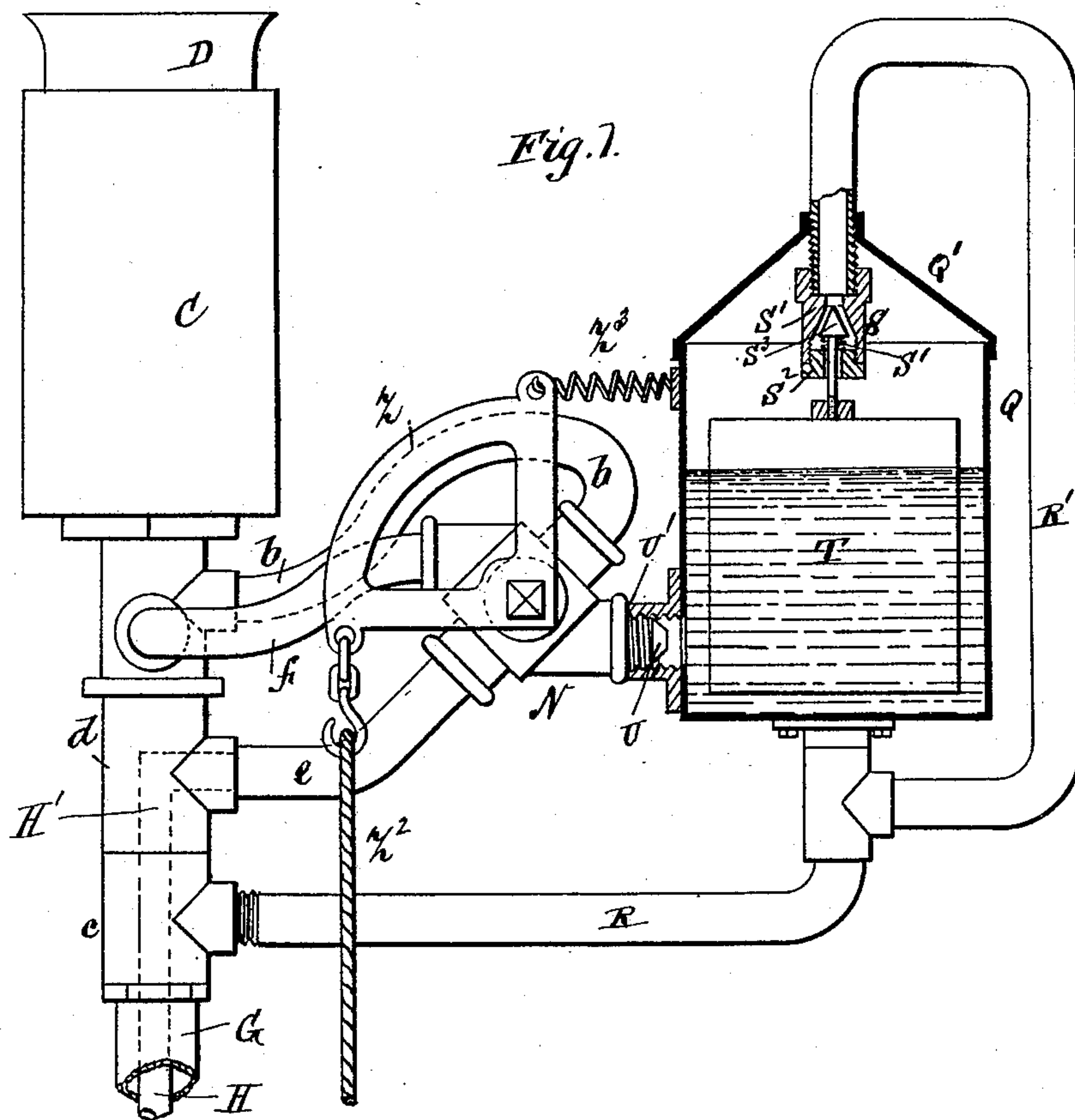
2 Sheets—Sheet 1.

G. ROSE.

SPRAY LAMP FOR LIGHTING, HEATING, AND SIGNALING PURPOSES.

No. 452,390.

Patented May 19, 1891.



Attest:  
Geo E. Bruce  
E. Arthur

Inventor:  
George Rose  
by Knight Bros.  
attys

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

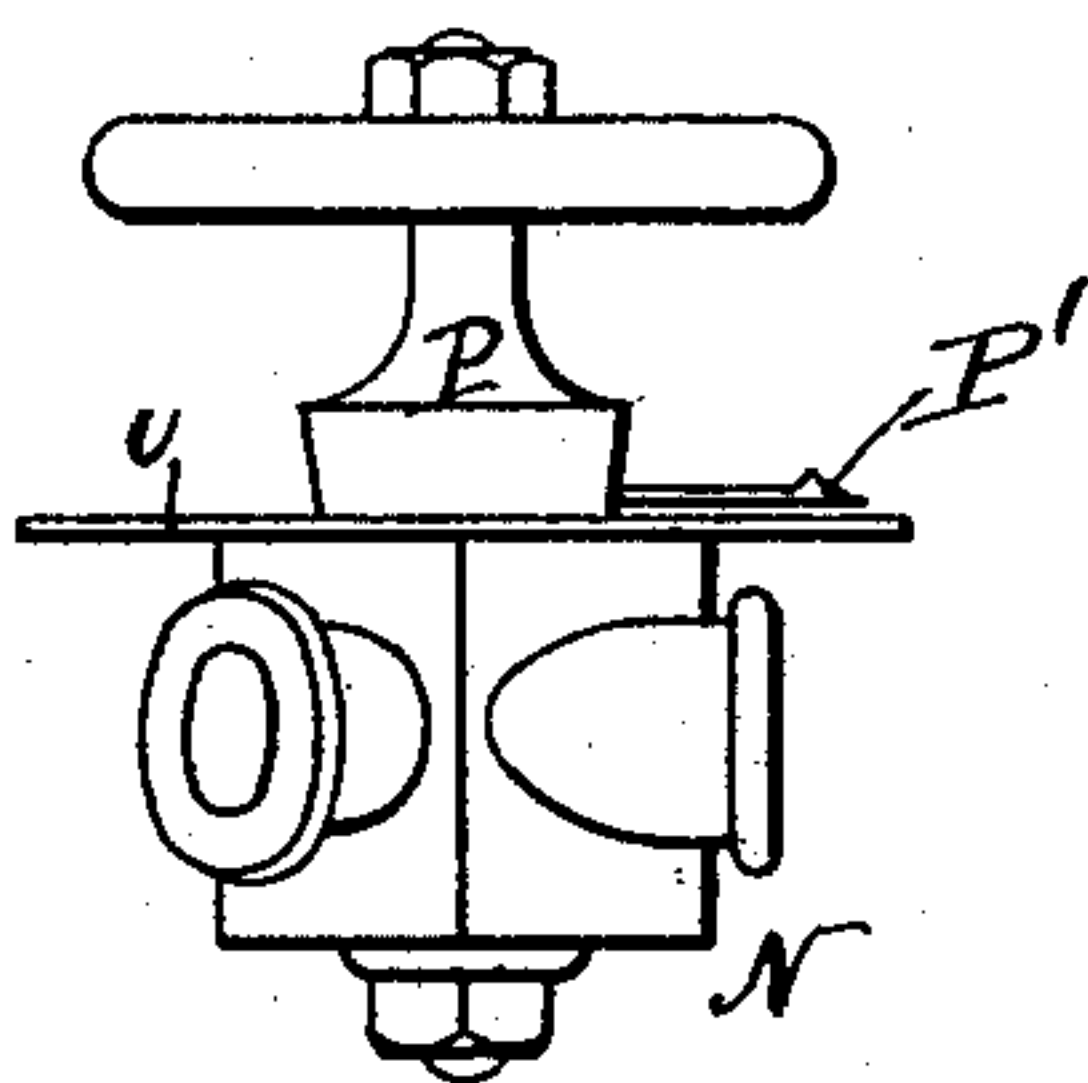


Fig. 4.

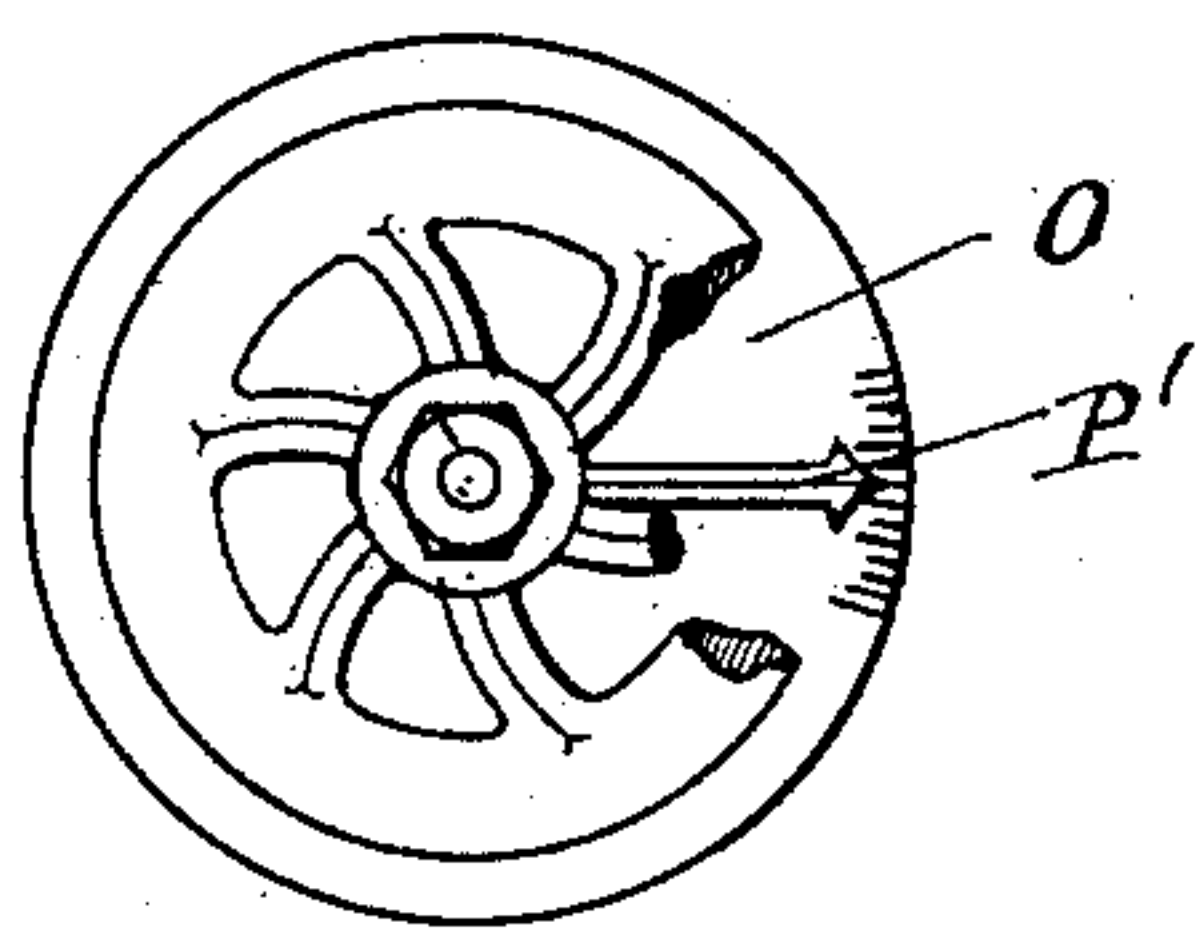
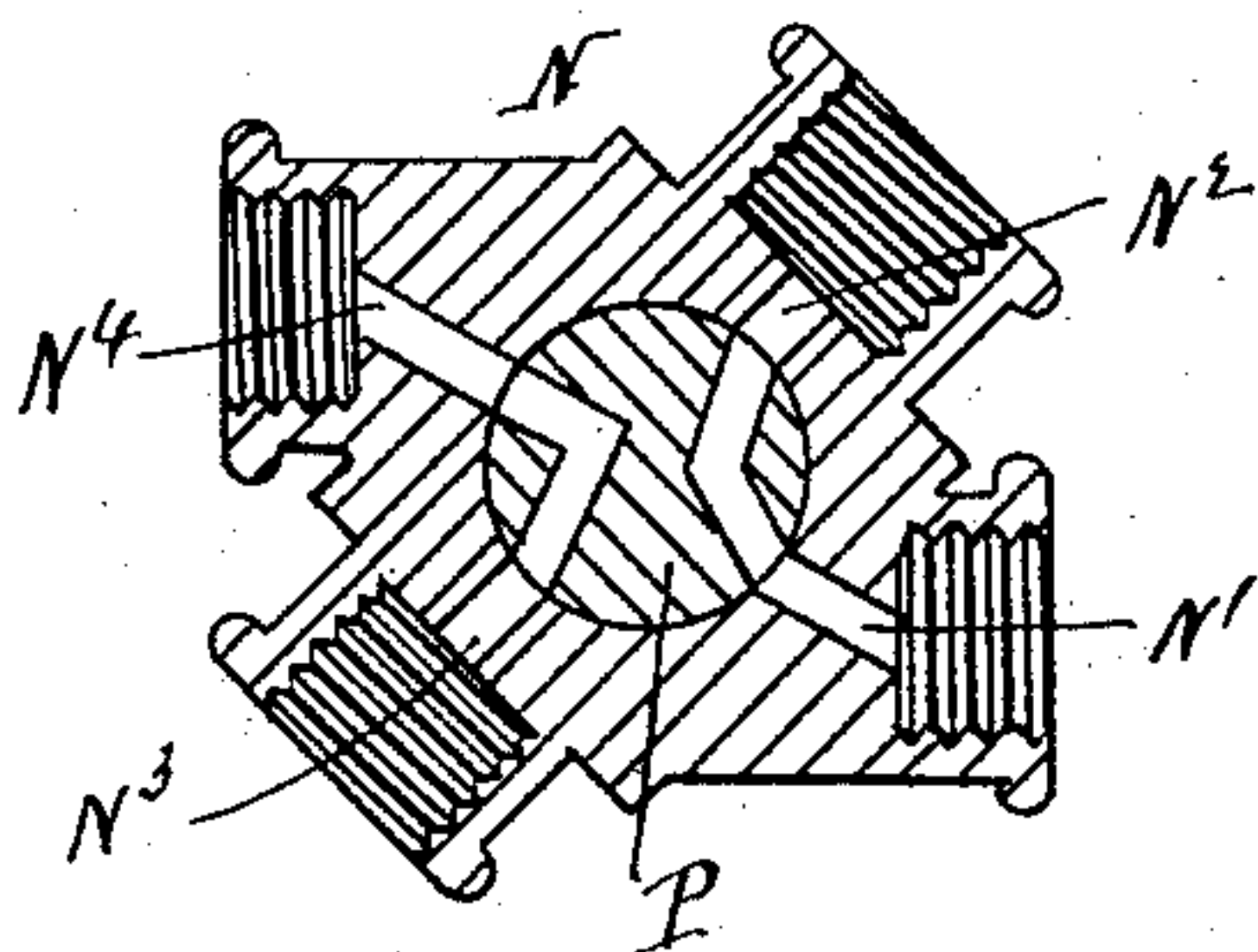
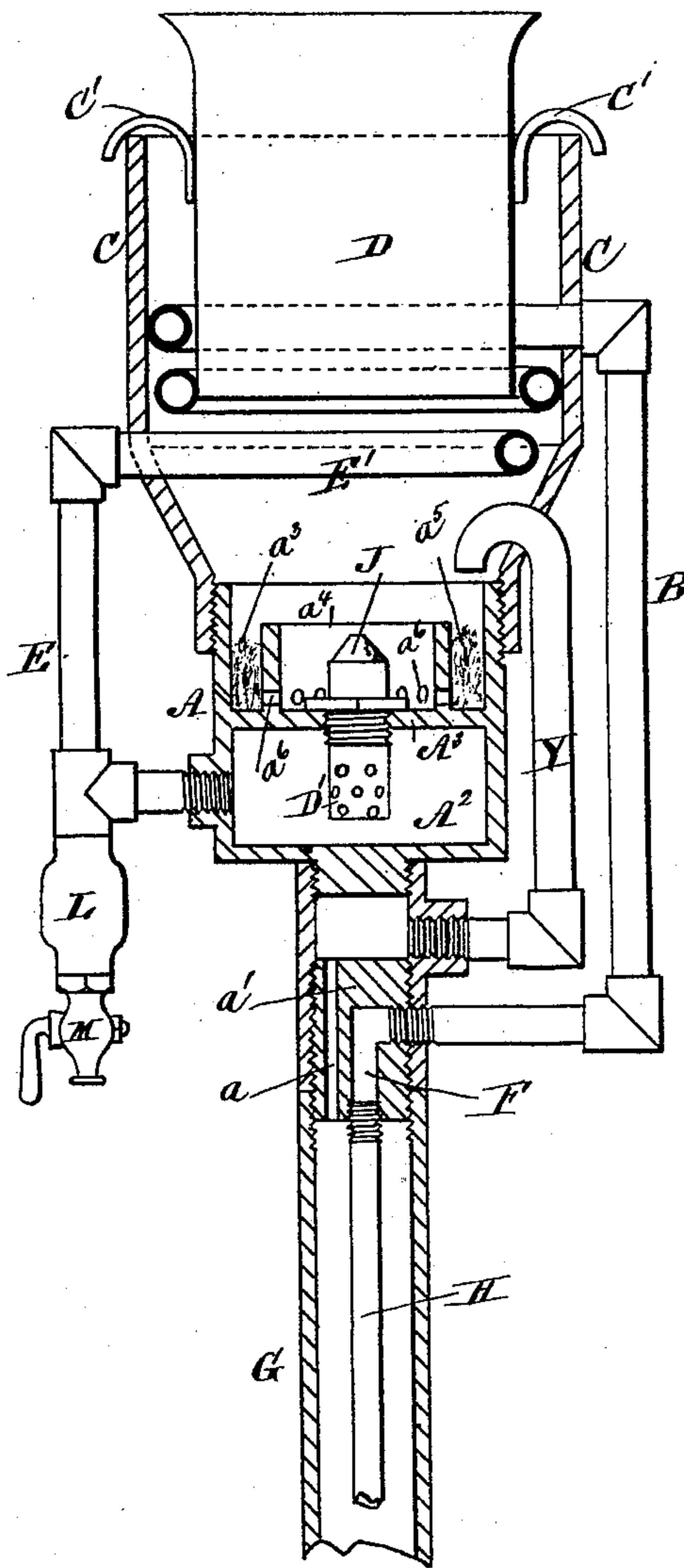


Fig. 5.



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Fig. 2.



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# UNITED STATES PATENT OFFICE.

GEORGE ROSE, OF GLASGOW, SCOTLAND, ASSIGNOR OF TWO-THIRDS TO  
ARCHIBALD BAIRD AND MATTHEW BARR BAIRD, OF SAME PLACE.

SPRAY-LAMP FOR LIGHTING, HEATING, AND SIGNALING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 452,390, dated May 19, 1891.

Application filed February 25, 1890. Serial No. 341,651. (No model.) Patented in England March 15, 1889, No. 4,504.

*To all whom it may concern:*

Be it known that I, GEORGE ROSE, a subject of the Queen of Great Britain, and a resident of the city of Glasgow, Scotland, have  
5 invented certain new and useful Improvements in and Connected with Spray-Lamps for Lighting, Heating, and Signaling Purposes, (for which I have obtained Letters Patent in Great Britain, No. 4,504, dated March  
10 15, 1889,) of which the following is a specification.

This invention relates to that class of spray-lamps for lighting, heating, and signaling purposes wherein compressed air or steam is used  
15 to spray the oil; and it has for its object to simplify and improve the construction and arrangement of the parts of lamps of this class.

In order that my said invention may be  
20 properly understood, I have hereunto appended an explanatory sheet of drawings, whereon—

Figure 1 is a side view, partly in section, of the head of the lamp with a signaling arrangement attached. Fig. 2 is a sectional  
25 view of a lamp-burner and combustion-box. Figs. 3, 4, and 5 represent, in side elevation, plan, and transverse section, respectively, a four-way cock.

30 On the drawings wherever the letters of reference are repeated similar or like parts are indicated.

Referring to Fig. 2, as will be seen, my improved lamp has a hollow cup-shaped burner  
35 A, in which the air or steam nipple J for spraying the oil is centrally secured, and communicates with a hollow air or steam chamber A<sup>2</sup>, forming the base of the burner, into which the steam or air supply is led by the  
40 pipe E. The dividing-partition A<sup>3</sup> may be cast in one piece with the burner A or secured therein. The burner A is surmounted by a combustion-box, which consists of an outer casing or cylinder C, in which is supported  
45 concentrically by hangers C' or equivalent another preferably shorter cylinder. In the annular space formed between these two cylinders I insert a coil-pipe E' for superheating the air or steam to spray the oil, one end of  
50 which is connected to pipe B and communicates by the passage F (in the solid piece a')

and pipe H in the stand-tube G of the lamp with the air or steam supply, while the other end communicates by the pipe E with the chamber A<sup>2</sup> of the burner. In some cases, 55 and especially when the lower end of the outer cylinder C of the combustion-box is made tapered, (as shown,) so as to be easily fitted on the burner, instead of fitting the steam or air superheating coil-pipe E' in the annular space between the concentric cylinders C D, it may occupy the space between the lower end of the inner cylinder D and the top of the burner A. At the point where the superheating coil-pipe E' E joins the burner 65 a small drip tube or chamber L may be fitted for collecting any condensed water or dirt. This drip-chamber would by preference be provided with a small draw-off cock or tap M at its lower end. In this form of burner 70 the oil is forced under pressure from the oil-tank of the lamp up the stand-tube G through the channel a in the solid piece a', and so by the pipe Y to the annular space a<sup>3</sup>, formed between the wall of the burner-cup and an inner rim a<sup>4</sup> cast in the cup. From the annular space a<sup>3</sup> the oil trickles through holes a<sup>6</sup>, formed in the rim or wall a<sup>4</sup> or otherwise into the cup, and so to the point of the burner-nipple J. 80

For the purpose of keeping a light continually burning in the combustion-box during the periods when the oil and air or steam supply to the burner is cut off when the lamp is used for signaling purposes, I, by preference, 85 insert in the annular space a<sup>3</sup> an asbestos or other wick a<sup>5</sup>, which will keep a light during the periods between the flashes and will, on the oil spray being again turned on, instantly relight it. As will be seen, the oil- 90 pipe Y is preferably bent over, as shown, and the oil trickles onto the wick a<sup>5</sup>; or the pipe Y may communicate directly with the oil cup or well of the burner. A cylindrical piece of perforated metal or wire-gauze 95 D' is preferably screwed into or on the lower end of the burner-nipple for preventing grit or dirt choking the nipple.

The oil to support combustion and the air or steam, as the case may be, to spray the oil 100 are each conducted from their respective sources of supply to a regulating valve or cock



N, Figs. 3, 4, and 5. This valve or cock N, which may be fitted on top of the stand tube of the lamp or on top of the basement tank or reservoir, in which is contained the oil, or in  
 5 other convenient situation consists, preferably, of a hollow barrel of cylindrical or other shape having four openings or ways formed in it, two on each side, the two  $N^1 N^2$  on one side constituting, respectively, the steam or  
 10 air inlet and outlet, and the two  $N^3 N^4$  on the other side constituting, respectively, the oil inlet or outlet. In the barrel of the cock is fitted a plug or key P capable of being easily  
 15 turned by a handle or wheel, as usual, and which has bored in it, two elbow-shaped channels or ways, as shown, which, when the cock or valve is turned slightly round, opens communication between the oil inlet  $N^3$  and out-  
 20 let  $N^4$  and the air or steam inlet  $N^1$  and outlet  $N^2$  simultaneously. Likewise, when the plug is turned back or reversed, the air or steam and the oil are both shut off synchronously.

For the nice adjustment of the oil and air  
 25 or steam supply, I by preference fit on the valve or cock a dial-plate O, a finger or pointer P' fitted to the key or plug P of the valve or cock indicating thereon the degree to which the valve has been opened or closed.

30 The ways or channels in the key or plug, instead of being elbow-shaped, as hereinbefore described, may be straight, and the valve or cock may be otherwise slightly altered to meet varying circumstances.

35 The oil and the air or steam from the four-way valve or cock may be led by two separate tubes G H to the burner. These tubes may be for the sake of compactness either both inclosed in a third tube, which may constitute  
 40 the stand-pipe supporting the burner and combustion-box, or they may be inclosed the one within the other, as shown at Figs. 1 and 2, the tube G being for oil and the tube H for air or steam. The oil before passing to the  
 45 burner to be sprayed would preferably have its supply regulated and controlled by a regulating apparatus, as shown at Fig. 1, consisting of a hollow box or casing Q, surmounted by a suitable lid or cover Q', which may, if  
 50 desired, be provided with an air-valve at top. A draw-off cock may be fitted at the bottom of the casing, if required.

Into the box or casing Q is led the oil-supply pipe R', which has at its end an outlet-  
 55 valve S, which is preferably constructed of a solid piece S', forming the valve-seat, and having a plug  $S^2$  screwed into it. Through the plug works the valve-spindle, which is surmounted by the valve  $S^3$ . A small spring  
 60 S' is also provided for counterbalancing the weight of the float T. Any other suitable arrangement of valve may, however, be used.

The outflow of the oil through the valve S is regulated and controlled by the cylindrical  
 65 float T. A ball or equivalent float may, however, be used instead of a cylindrical one. The spindle of the valve S is connected to the

float, so that when the oil in the casing rises above a certain level the float rises, and in so rising shuts the valve and cuts off the supply. 70 When the oil-level falls, the float also sinks, and so opens the valve  $S^3$ . The oil issuing from the regulating box or casing Q is made to pass, for the purpose of preventing as far as possible any grit or dirt passing along with 75 the oil to the burner, by preference through a small cone U, having a hole at its apex situated in the pipe U' leading to the burner.

In the view Fig. 1 the valve or cock N is shown as fitted on the oil-supply pipe U'. In 80 the arrangement shown in this figure the oil from the source of supply passes from the pipe G through a T-piece, pipe R, and siphon R' to the oil-regulator Q, from whence it passes through the cone U into the valve 85 N, and thence to the burner by the pipe b. The air or steam likewise passes from the source of supply up the pipe H (shown partly in dotted lines) through the channel H' (shown dotted) in the solid piece d and pipe connec- 90 tion e to the valve N, from whence it passes by the pipe f to the burner. When, however, the four-way valve is not used, the pipe U' communicates direct with the burner, and a tap or valve is provided on it for opening and 95 cutting off the oil-supply.

When it is desired to turn off the oil and air or steam, or the oil only, so as to put out or lower the flame when signaling, I prefer in all cases where the controlling valve or 100 cock is situated some distance above the ground, or in the case of a vessel above the deck, to affix a quadrant Z, as shown attached to the cock N at Fig. 1, or a bell-crank lever or an equivalent device to the handle, key, 105 or spindle of the valve or cock, which can be actuated by a cord or a wire or chains, so as to turn the key of the cock round and so turn the oil or air or steam, as the case may be, on or off at will. In some cases where a bell- 110 crank lever or quadrant is used a spring  $Z^3$  may be so fitted to one end as to keep the valve opened or closed, while a cord  $Z^2$ , wire, rod, or equivalent is attached to the other end, and on being pulled from below closes 115 or opens the valve.

In many instances the arrangements which have been described for the steam or air supply may be used for the oil-supply, and, vice versa, the oil-supply arrangements be used 120 for the steam or air.

My improved lamp may be used for heating as well as illuminating and signaling purposes, and when so used in connection with any furnace arrangement for heating 125 boilers, smelting, and other purposes the flame would by preference be directed horizontally into the furnace or chamber to be heated.

In my application, Serial No. 327,548, filed 130 October 19, 1889, for improvements in steam-spray lamps I have shown and claimed the stand-pipe H, and its interior plug, &c., also shown, but not claimed in this case.



Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a spray-lamp, the combination, with the casing divided into an upper and a lower compartment, of the rim  $a^4$ , of smaller diameter than the casing, projecting upwardly from the bottom of the upper compartment and having perforations in its side, a nipple communicating with the lower compartment and projecting up into the upper compartment within said rim  $a^4$ , an oil-pipe for supplying oil to the upper compartment, and a steam or air pipe communicating with the lower compartment, substantially as set forth.

2. In a spray-lamp, the combination, with the casing divided into upper and lower compartments, of the perforated rim  $a^4$ , projecting upwardly from the bottom of the upper compartment and forming a space  $a^3$ , a fibrous substance located in the space  $a^3$ , a pipe for supplying oil to said fibrous substance, a nipple communicating with the lower compartment and projecting up into the upper compartment, and a steam or air pipe connected with the lower compartment, substantially as set forth.

3. The combination, with the casing having the partition  $A^3$ , and a nipple projecting upwardly from said partition, of a rim surrounding said nipple and having perforations below the summit of said nipple, an oil-pipe adapted to supply oil to the space between said rim and casing, and a pipe for supplying steam or air to said nipple, substantially as set forth.

4. In spray-lamps, an oil-well burner consisting of a casing divided into two compartments by a partition having on it a rim pierced with holes near its bottom for the passage of oil, said rim being of smaller diameter than the casing and surrounding a centrally-situated nipple having a perforated

cylindrical filter at its under side and secured in the partition, substantially as specified.

5. The combination, with the oil and air or steam controlling valve or cock N, of a quadrant Z, fitted to the key of the valve, a spring  $Z^3$  for actuating the valve in one direction, and a rope  $Z^2$  or equivalent for enabling it to be actuated in the opposite direction, substantially as hereinbefore described.

6. The combination, with the lamp having an oil-pipe and a steam-pipe, and the stand-pipe G, connected with an oil-supply and supporting the lamp at its upper end, of the oil-box Q, the pipe R, communicating with said stand-pipe and supporting said oil-box, the pipe R', leading from pipe R to said oil-box, a steam-pipe H within said stand-pipe, a four-way cock arranged between the lamp and oil-box and having two of its ports connected, respectively, with the oil-box and oil-pipe of the lamp and its other two with the pipe H and steam-pipe of the lamp, the quadrant Z for operating said cock, a spring secured to the oil-box and to one side of said quadrant, and a cord secured to the other side of said quadrant, substantially as set forth.

7. The combination, with the burner having the open oil-chamber, of the nipple projecting up into said chamber and a strainer arranged before the inlet to said nipple, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses this 1st day of February, 1890.

GEORGE ROSE.

Witnesses:

HUGH FITZPATRICK,  
Patent Agent, Glasgow.  
WILLIAM FLEMING,  
Draftsman, Glasgow.