(No Model.)

H. H. NORRINGTON.

LIGHTING APPARATUS.

No. 554,296. Patented Feb. 11, 1896.

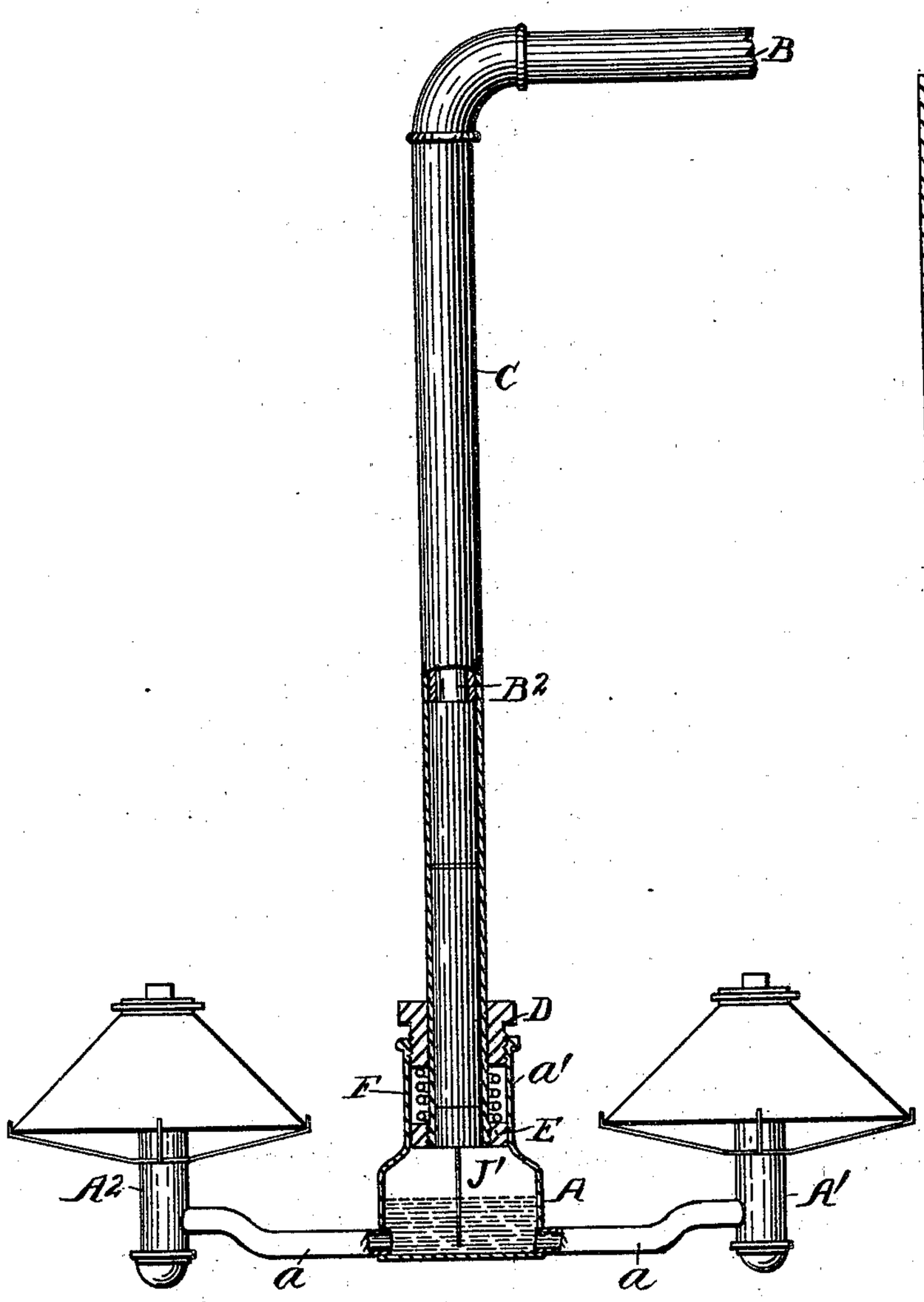

FIG. 1.

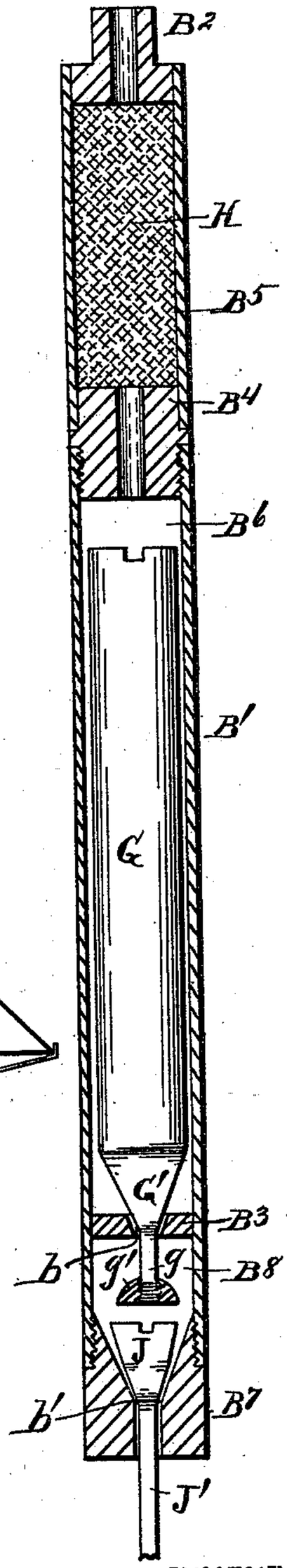

FIG. 2.

WITNESSES

O. B. Barringer.

W. A. Martin.

INVENTOR

Henry H. Norrington

By his Attorney

Newell S. Wright.

UNITED STATES PATENT OFFICE.

HENRY H. NORRINGTON, OF WEST BAY CITY, MICHIGAN.

LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 554,296, dated February 11, 1896.

Application filed June 20, 1895. Serial No. 553,408. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. NORRINGTON, a citizen of the United States, residing at West Bay City, county of Bay, State of Michigan, have invented a certain new and useful Improvement in Lighting Apparatus; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a certain new and useful improvement in a lighting apparatus, and consists more especially in the novel construction and arrangement of the valve used therewith.

It consists of the structure hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view partly in side elevation and partly in section. Fig. 2 is a vertical section through the valve.

My improvement is designed for application with a lighting system wherein the oil is fed from a supply-tank to a lamp-reservoir through a suitable feed-pipe, the flow of oil to the lamp-reservoir from the tank being automatically controlled by a valve in the feed-pipe.

I carry out my invention as follows:

A represents a lamp-reservoir supplying oil to the wick-chambers A′ A^2 of the lamps, said lamps communicating with the reservoir through arms *a a*.

B represents a feed-pipe, which may lead from a suitable supply-tank. (Not shown.)

C is an outer pipe surrounding the lower end of the feed-pipe B, upon which the lamp-reservoir A is suspended, said reservoir having a movable connection with the pipe C. To this end D represents a sliding collar upon the pipe C.

E is a fixed collar upon the lower end of the pipe C.

F is a spring located between the collars D and E.

The reservoir A is provided with a neck *a′* projecting over the sleeve D, with which the neck may have a threaded engagement. The feed-pipe is communicable with the reservoir A, as hereinafter set forth. The spring exerts its pressure against the collar D. It will be observed that when the oil in the reservoir A is diminished sufficiently the tension of the spring F will raise the lamp-reservoir. When the feed-pipe is open into the lamp-reservoir the supply of oil in the reservoir is intended to overcome the tension of the spring and cause the reservoir A to descend to its lower limit. These features so far described may be constructed in an ordinary manner, as embodied, for example, in the patent to J. S. Roblin, No. 527,005, granted October 2, 1894.

My present improvement consists more particularly, as above stated, in the structure and arrangement of the valves at the base of the feed-pipe B.

My improved valve consists essentially of a valve-casing B′ engageable by a tubular nipple B^2 with the base of the feed-pipe B.

G denotes a valve located within the base B′, the valve being weighted and made with a conical portion G′ toward its lower end to seat in a diaphragm B^3 formed with a correspondingly-shaped orifice, as at *b* in said diaphragm, the diaphragm forming the valve-seat for the conical portion of the valve. In the upper end of the casing B′, I prefer to locate an additional hollow nipple B^4 forming a chamber, as at B^5, above the valve, in which chamber is located cotton wicking or analogous material (indicated at H) to strain the oil descending from the feed-pipe into the chamber B^5, thence through the nipple B^4 into the valve-chamber between the diaphragm B^3 and the nipple B^4, as indicated at B^6.

B^7 is a tubular plug located in the lower end of the casing B′ forming between the diaphragm B^3 and said plug an additional valve-chamber B^8, in which is located an independent valve J of any suitable form, the upper portion, as shown, being made conical to seat in a corresponding orifice in the plug B^7, the orifice in the plug being indicated at *b′*, the plug B^7 constituting the valve-seat for the valve J. The valve G is provided with a stem *g* projecting through the diaphragm B^3, from the lower end of which is preferably engaged a boss *g′*. The valve J is provided with a stem J′ projecting through the plug B^7 toward the base of the reservoir A, so that when the supply of oil is diminished in the reservoir A sufficiently to permit of the reservoir being

lifted by the spring F the base of the reservoir striking against the stem J′ will lift the valve J, thereby opening the passage through the plug B⁷, opening communication between the chamber B⁸ and the reservoir A whereby oil may flow through the feed-pipe into said reservoir.

My invention contemplates the construction and adjustment of the valves G and J so that when the valve J is lifted it will strike against the boss *g′* on the lower end of the stem *g* on the valve G, thereby lifting the valve G and opening communication also from the chamber B⁶ through the diaphragm B³ into the chamber B⁸. It will be observed thus that I employ two independent valves in the casing B′ having no connection the one with the other, but so arranged that when the valve J is lifted it will also lift the valve G; but each valve seats independently, the one in the diaphragm B³ and the other in the plug B⁷. The weight of the valve G will cause it to seat in the diaphragm B³ when the valve J is free to seat.

It has been found that this construction—viz., the employment of the two valves located in independent valve-chambers communicable the one with the other—tends effectually to prevent the clogging of the valve, or of either valve, by any foreign substances in the oil, and that when the valve J drops away from the lower end of the valve G any particles of dirt will be more effectually washed away which otherwise might hinder the proper operation of the valve, and that by employing two independent valves the one in any event will securely seat to close off the oil from the reservoir A. We have found thus that the feed of oil can be thus controlled, into the lamp-reservoir, much more efficiently and satisfactorily than by any other device heretofore known, this construction giving perfect results in every way. At the same time the device is obviously simple and economical and not liable to get out of order.

What I claim as my invention is—

1. In a lighting apparatus, the combination with a vertically-movable lamp-reservoir, of a feed-pipe communicable therewith, a valve-casing communicable with the feed-pipe through which the feed-pipe communicates with the lamp-reservoir, and two separate and independent valves located within the valve-casing one above another, and arranged to seat independently the one of the other, said valves being successively opened by the upward movement of the lamp-reservoir, the lower valve being vertically movable a required distance before the upper valve is lifted, substantially as set forth.

2. In a lighting apparatus, the combination of a vertically-movable lamp-reservoir, a feed-pipe communicable therewith, a valve-casing B′ through which the feed-pipe communicates with the lamp-reservoir, said valve-casing provided with two valve-chambers communicable the one with the other, and separate and independent valves located the one above the other, the lower valve being lifted by the upward movement of the lamp-reservoir a required distance while the upper valve remains stationary, the lifting of the lower valve in turn opening the upper valve, substantially as set forth.

3. In a lighting apparatus, the combination of a vertically-movable lamp-reservoir, a feed-pipe, a valve-casing through which the feed-pipe communicates with the lamp-reservoir, a diaphragm B³ in the valve-casing, a valve-chamber B⁸ therebelow, a valve G seating in said diaphragm and provided with a stem projecting through the diaphragm into said chamber, a plug B⁷ in the lower end of the valve-casing, a separate and independent valve J in said valve-chamber seating in said plug and provided with a stem projecting therethrough adjacent to the base of the lamp-reservoir whereby the upward movement of said reservoir will lift the valve J against the stem of the valve G to lift the valve G, said valves G and J seating independently the one of the other, the valve J having a movement a required distance while the valve G remains seated, substantially as set forth.

4. The combination of a valve-casing provided with valve-chambers B⁶ B⁸ communicable one with the other, a weighted valve G within the chamber B⁶ to control said communication provided with a stem projecting into the chamber B⁸, a plug in the lower end of the casing provided with an orifice therethrough, and an additional valve J located within the chamber B⁸ controlling the communication thereof through the plug, the first-named valve being actuated to open communication between said chambers by the lifting of the last-named valve from its seat, the valve J separated from the stem of the valve G, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

HENRY H. NORRINGTON.

Witnesses:

E. LEEMAN,

C. E. MEAD.