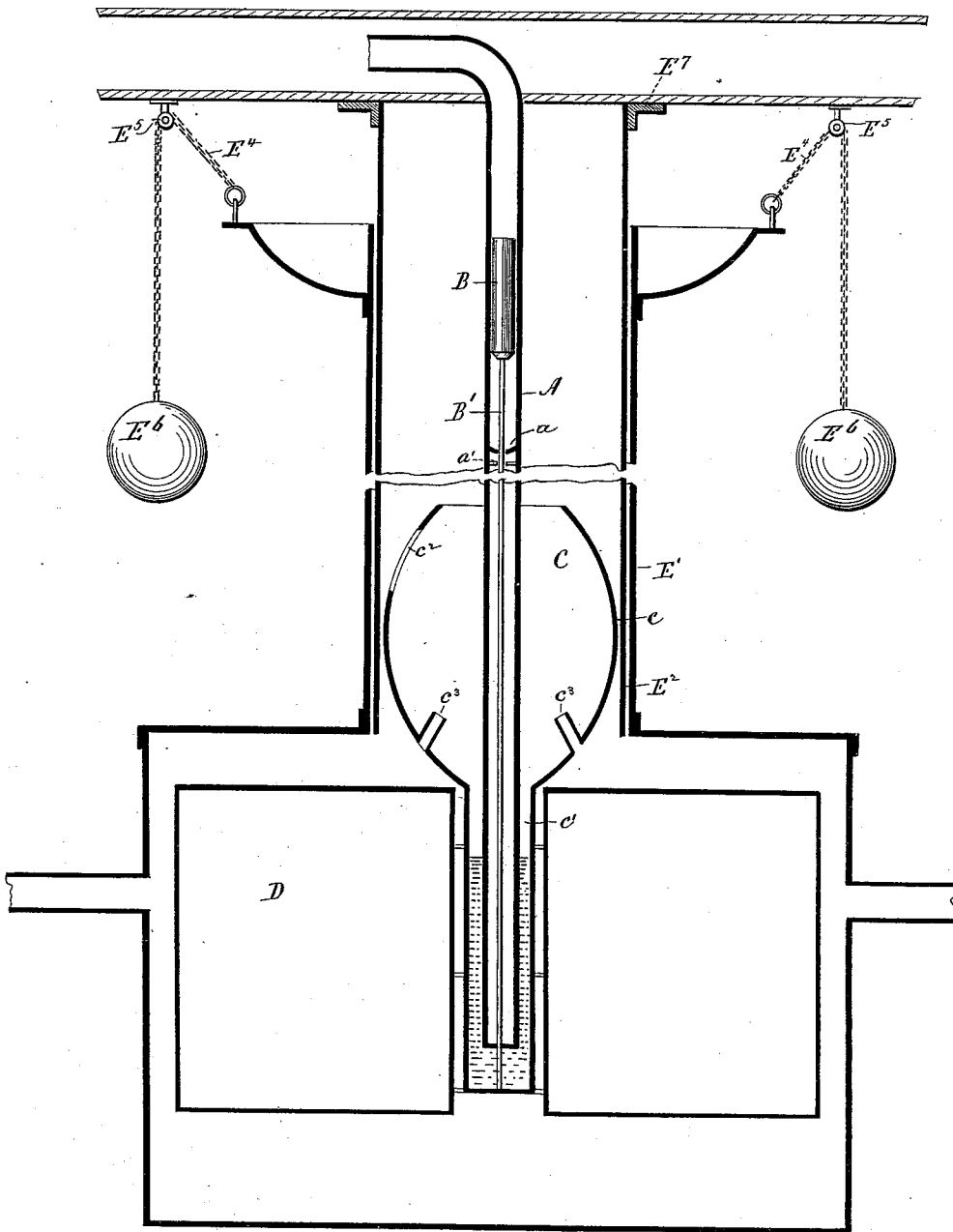


(No Model.)

S. ALEXANDER.
LIQUID CONTROLLING DEVICE.

No. 544,078.

Patented Aug. 6, 1895.



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SAMUEL ALEXANDER, OF MERIDEN, CONNECTICUT.

LIQUID-CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 544,078, dated August 6, 1895.

Application filed March 27, 1894. Serial No. 505,235. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL ALEXANDER, a citizen of the United States, residing at Meriden, New Haven county, Connecticut, have invented a new and useful Improvement in Liquid-Controlling Devices, of which the following is a specification.

My invention relates to that class of liquid-controlling devices used in automatic lighting systems and similar constructions. It is intended to provide a simple and safe method of checking and controlling an intermittent flow of oil or like fluid.

In the accompanying drawing, which represents my device in vertical section, A designates an oil-supply tube provided with a check-valve seat *a* and a guide or spider *a'*; B, a valve in the tube A; B', a lift-rod moving in the tube A; C, a cup formed with bulb portion *c* and tube portion *c'* and provided with filler-opening *c²* and outlets *c'''*; D, a float; E, an inclosing shell or case provided with outlet-pipes E' E'.

In the example of my invention shown in the drawing the oil-supply tube A may be connected with a supply-tank (not shown) and may be carried either above or below the ceiling of a room. It is bent at a right angle so as to hang perpendicularly. In practice this portion of the tube A and all the other parts of the device shown are inclosed within the vertical tubes E' and E² and shells E of an ornamental oil-chandelier. The said tube E' is a movable tube and connected at its lower end with the shell E, while its upper end is furnished with a canopy E³ to which are attached the inner ends of two suspension-chains E⁴ E⁴ running over pulleys E⁵ E⁵ mounted in brackets depending from the ceiling, and provided at their outer ends with weights E⁶ E⁶, which normally maintain the shell E and the float D in an elevated position. The tube E² is very slightly smaller than the tube E', down into which its lower end extends, its upper end being rigidly connected with the ceiling by means of a flanged ring E⁷. The said tubes E' and E², and the means for suspending the same, may be of any approved construction and are well-known.

Within the tube A is a valve B, here shown as a tube having a closed lower end adapted when unsupported by the rod B' to rest upon

and close the central opening in the valve-seat *a*. Beneath the seat *a* is the guide or spider *a'* having a central opening, the function of which will hereinafter appear.

The cup C surrounds the lower open end of the supply-tube A. Its upper portion *c* is bulbous and integral with its lower tubular portion *c'*. Near the upper end of the bulb *c* is an aperture *c''*, and near its lower end are outlets *c³* provided with small inwardly-projecting tubes, open at both ends. An annular float D supports the cup C and is in turn inclosed by the oil-tight case or shell E, to which are attached outlet-pipes E connected with burner-tubes. (Not shown in the drawing).

The operation of my device is as follows: The cup C is first filled through the feeder-opening *c²* with mercury or other fluid of great specific gravity about to the top of the tubular portion *c'*. Oil is then poured into the cup C, which flows through the outlets *c³* into the case E. This oil acts to raise the float D and cup C, the latter rising to the point shown in solid lines in the drawing, thus immersing the lower end of the tube A in the mercury in the tube *c'*. The oil-supply tank with which the tube A connects is then filled with oil, care having been taken to so place the tank that the column of oil in the tube A may be balanced by the column of mercury in the tube *c'*. It is evident that the equilibrium thus resulting will be disturbed by the consumption of the oil, the float D will lower, carrying with it the cup C, and a flow of oil will begin through the tube A, to be again stopped by the balancing-column of mercury when the float rises to its normal position. In this way an intermittent but regular flow of oil is secured, and the level in the attached lamp-burner tubes is maintained.

As is well understood by those familiar with the art of automatic lighting, it is necessary or convenient to lower the lamps for lighting and trimming. For this purpose chandeliers are provided with telescopic extension-tubes. To the lower and movable one of these tubes the case or shell E, with the contained float D and cup C, is attached. As the tube A is stationary it is clear that in the absence of any contrary provision the lowering of the cup C would permit the free egress of the oil from the tube A. To avert

this I secure within the cup C a rod B', which passes upward within the tube A. The upper end of the rod B' is centrally guided by a spider a' through the central opening in the valve-seat a and normally holds the valve B from said seat. When the support of the rod B' is withdrawn, owing to the lowering of the parts C, D, and E, the valve B falls or is forced by the flow of oil down upon the seat a and closes the opening therein, thereby stopping the flow.

If desired, the rod B' may be attached to the lower end of the valve-tube B, and rest upon the bottom of the tube c' when in its operative position. In either case the passage of a very small quantity of oil through the valve will not be of importance, as the time occupied in handling the lamps is short.

I do not consider myself as limited to the particular form of my device herein shown and described, as I am aware that many mechanical changes may be made without departing from my invention. Neither do I wish to be considered as limited to the use of my device in combination with an oil-chandelier only.

In a subsequent application filed by me under date of May 14, 1894, Serial No. 511,139, I have shown an automatic fluid-regulator in which the float is made independent of and disconnected from the cup, which is counter-balanced and prevented from descending when deprived of the support of the float due to the depression of the same when the fount is drawn down.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is as follows:

1. In an automatic liquid controller or regulator, the combination with a vertically arranged stationary feed pipe, of a vertically movable cup located below the said pipe, which is extended into it from its upper end, a sealing liquid located in the said cup and of greater specific gravity than the liquid fed through the pipe, a vertically movable fount located below the cup and arranged to receive the liquid discharged therefrom, and a float located in the said fount and constructed and arranged to lift the cup to increase the immersion of the lower end of the feed-pipe in the sealing liquid, substantially as described and whereby, by adapting the fount

to be vertically moved, the device becomes available as a suspension fixture.

2. In an automatic liquid controller or regulator, the combination with a feed pipe, of a vertically movable cup having the said pipe extended into it, a sealing liquid of greater specific gravity than the liquid fed, located in the said cup, a vertically movable fount into which the liquid fed is discharged, a float located in the said fount and arranged to lift the cup to increase the immersion of the lower end of the feeding-pipe in the said liquid, and means for cutting off the feeding of the liquid through the pipe when the fount and cup are drawn down below their normal positions, substantially as described.

3. In an automatic liquid controller or regulator, the combination with a feed-pipe, of a vertically movable cup having the said pipe extended into it, a sealing liquid of greater specific gravity than the liquid fed, located in the said cup, a vertically movable fount into which the liquid fed is discharged, a float located in said fount and arranged to lift the cup to increase the immersion of the lower end of the feed pipe in the sealing liquid, and a valve located in the feed pipe and normally situated above its seat, and connected with a movable part of the device so that it is drawn down upon its seat when the fount is drawn down below its normal position, substantially as described.

4. In an automatic liquid controller or regulator, the combination with a feed pipe, of a vertically movable cup having the said pipe extended into it, a sealing liquid of greater specific gravity than the liquid fed, located in the said cup, a vertically movable fount into which the liquid fed is discharged, a float located in the said fount and arranged to lift the cup to which it is attached to increase the immersion of the lower end of the feed pipe in the sealing liquid, and a valve located in the feed pipe, normally located above its valve seat and connected with a movable part of the device, and drawn down upon its seat when the fount is pulled down below its normal position, substantially as described.

SAMUEL ALEXANDER.

Witnesses:

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