W. W. BACHELDER.

Lamp.

No. 46,538. Patented Feb. 28, 1865.

Fig. 1.

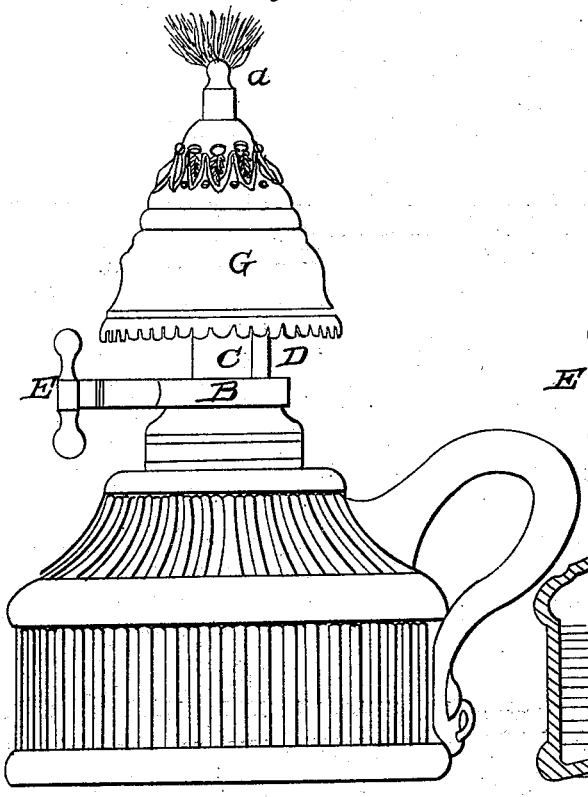


Fig. 2.

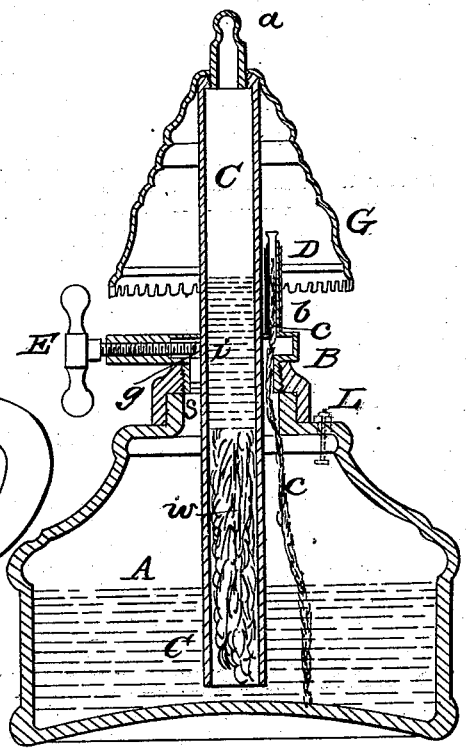
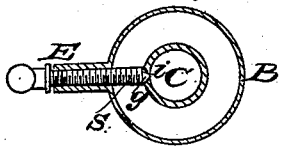


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM W. BATCHELDER, OF NEW YORK, N. Y.

IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. **46,538**, dated February 28, 1865.

To all whom it may concern:

Be it known that I, WILLIAM W. BATCHELDER, of the city of New York, county and State of New York, have invented a new and useful Improvement in Lamps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of my improved lamp, ready for use. Fig. 2 is a diametrical section through the same. Fig. 3 is a horizontal section through the chambered cap of the lamp.

Similar letters of reference indicate corresponding parts in the three figures.

The nature of my invention consists in the combination with a lamp, operating on the plan hereinafter described, of a safety contrivance.

My lamp generates the gas to support combustion from the fluid which is within its reservoir, and the feed of the oil to the point where it is converted into gas is produced by an expansion of air or gas within the reservoir itself.

I would state that I do not intend my lamp for burning such oils as are dangerous, by reason of their too sudden expansion under the influence of heat conducted from the generator into the lamp.

The object of my invention is to maintain the oil at the proper point for its volatilization by warming the air or gas in the body of the lamp, and thus creating a pressure upon the fluid therein, as will be hereinafter described.

Another object of my invention is to so construct a lamp, operating upon the principle above stated, that the pressure upon the fluid in the body of the lamp can be regulated or entirely removed at pleasure, as will be here inafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents the reservoir or body of a lamp, and B represents a chambered cap, which is fitted tightly over the mouth of A in any suitable manner. C is a tube, which passes vertically through the cap B and extends nearly to the bottom of the reservoir A. The upper end of this tube projects above the cap B, and has a gas-tube, *a*, of any suitable form, applied on its upper end. D represents a secondary burner, which is a tube secured to the cap B, and provided with a sliding tube *b*, which is intended for regulating the size of the flame by exposing more or less of the wick *c* beyond the end of the tube D. The wick *c* passes through the cap B and into the oil in the reservoir A. E represents a thumb-screw, which is tapped through the side of the chambered cap B, and provided with a tapering end, *g*, which serves as a valve for closing an opening, *i*, that is made through the side of tube C, as shown in Figs. 2 and 3. This perforation *i* forms a communication between the upper portion of the tube C and the chamber in the cap B, and a perforation, *s*, through the bottom of cap B, forms a communication between the reservoir A and this cap. G represents a perforated hood, which rests on the shoulder at the upper end of the tube C and extends down a suitable distance to confine the heat from the flame of burner D around the upper end of said tube as much as possible, for the purpose of heating this tube to such a degree as will volatilize the oil therein and eject the vapor through the gas-burner *a* to be burned, as shown in Fig. 1.

Before lighting my lamp the lower end of the tube C should be filled with a wick, *w*, which may be made of any suitable absorbent, for the purpose of preventing the oil which is forced up this tube to the point of volatilization from materially deviating from this point in consequence of a sudden change from heat to cold, and vice versa, to which the reservoir A may be subjected.

The reservoir A can be supplied with oil by removing the chambered cap B, after which this cap is screwed tightly in its place and the secondary burner, D, lighted. The flame of this secondary burner impinges upon the side of the tube C and rapidly heats this tube, not only above the cap B, but also below it. The heat thus produced expands the air above the oil in the reservoir A, and thus creates a pressure which forces the oil up through the wick *w* and above this wick, where it is volatilized by the intense heat at this point. When the pressure within the reservoir becomes too great, the valve *g* is opened and the expanded air or gas allowed

to escape through the openings *i s* into the tube C, whence it escapes through the gas-burner *a*. After the air in the reservoir is allowed to escape, the oil above the wick *w* in tube C will fall to the desired point.

It is desirable to maintain a uniform pressure in the upper end of tube C, and to thus keep up a steady light. For this purpose the size of the opening *i* may be regulated by adjusting valve *g* so as to allow of the overplus of gas to escape from the reservoir. The heated tube C will volatilize the oil in the reservoir A to some extent, but it will be seen that the gas thus generated can be mixed and reheated with that which is generated in the upper portion of the tube C.

The wick *w* is merely a medium, through which the oil in the reservoir A is forced by the pressure of expanded air therein. Without this wick the oil would be supplied to the volatilizing-chamber of tube C either too rapidly or too slowly, and it could not be maintained at a uniform height therein. The wick will allow the oil to rise or fall slowly in proportion to the amount of pressure, which can be easily regulated, as above described.

In Fig. 2 of the drawings, at L, I have represented a safety-spring valve, which opens when the pressure in the reservoir becomes too great for the safety of the lamp. This valve may be provided to all lamps operating on the plan herein described, and it, while the screw-valve E answers for preventing "blowing" of the flame under a high but safe pressure, will render the lamp anti-explosive under a very high pressure.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the safety or controlling devices herein described with a lamp constructed and operating as herein described.

2. The combination of the controlling conical screw E *g* with the cap B, tube C *i*, and lamp-reservoir A, all constructed and operating in the manner and for the purpose substantially as described.

Witness my hand in the matter of my application for a patent for improvement in lamps.

WILLIAM W. BATCHELDER.

Witnesses:

CLINTON P. SCOVEL,

E. SCHAFER.