G. W. COOK.

PNEUMATIC LAMP.

No. 191,032. Patented May 22, 1877.

Fig. 1.

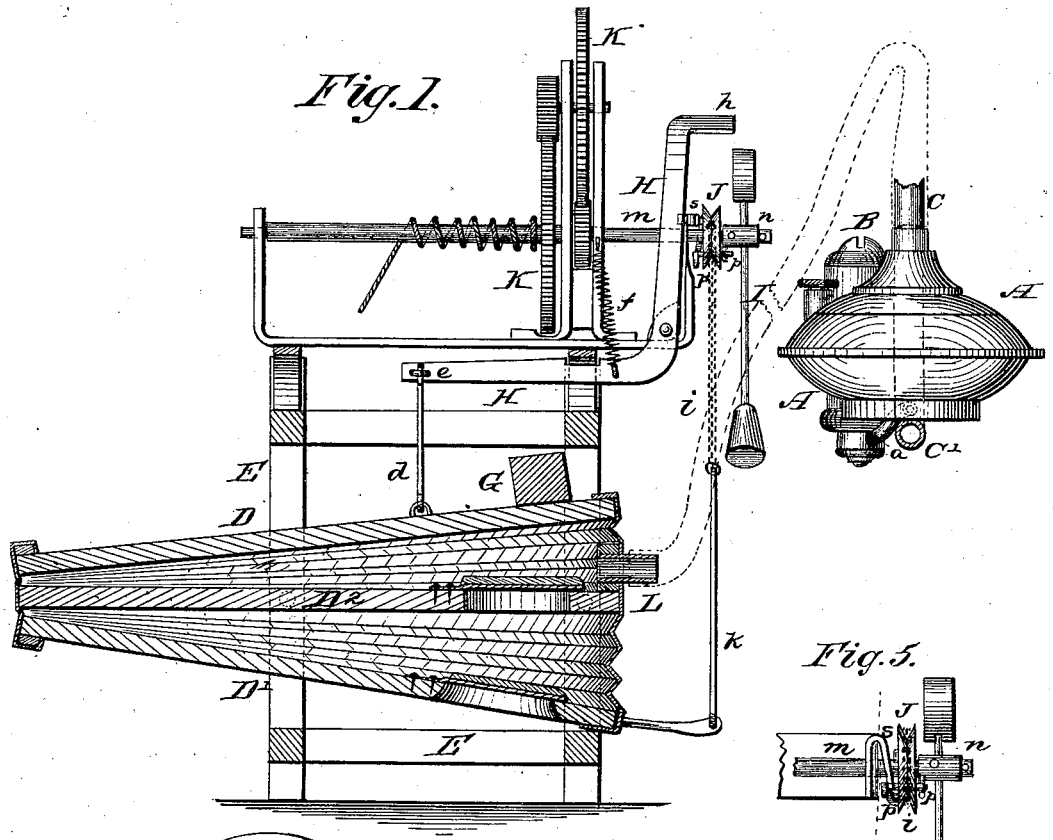


Fig. 5.

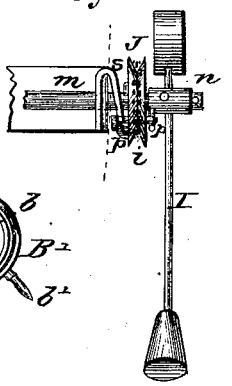


Fig. 2.

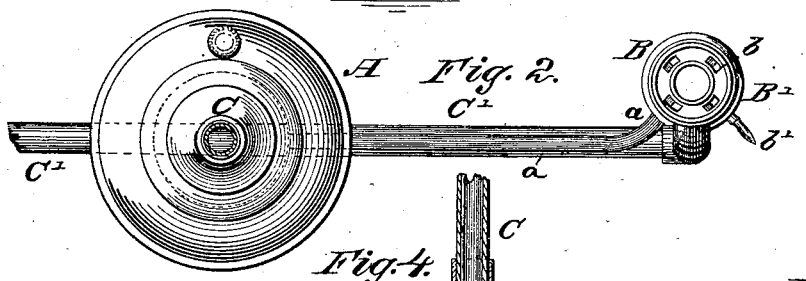


Fig. 3.

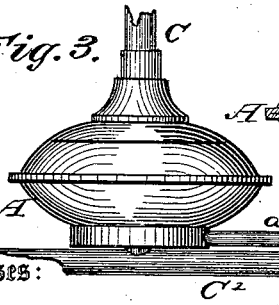


Fig. 4.

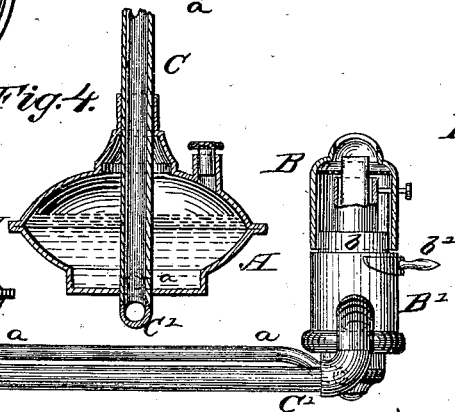
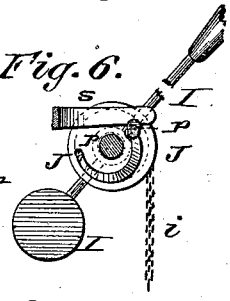


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE W. COOK, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN PNEUMATIC LAMPS.

Specification forming part of Letters Patent No. **191,032**, dated May 22, 1877; application filed April 3, 1877.

To all whom it may concern:

Be it known that I, GEORGE W. COOK, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pneumatic Lights; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to obtain a large and brilliant light from oil, that will burn without a chimney; and the nature of my invention consists in applying air under pressure to kerosene burners, and also in the construction and arrangement of the machinery for accomplishing the object, all as hereinafter more fully set forth.

In the annexed drawing, to which reference is made, Figure 1 is a central vertical section. Figs. 2, 3, 4, 5, and 6 are various details of my invention.

A represents the kerosene reservoir, of any suitable size and shape, and from the same lead one or more pipes, *a*, to as many burners, B. C represents an air-pipe passing through the reservoir A, and dividing below the same into branches C′, one for each burner. The branch C′ leads into a chamber or jacket, B′, surrounding the burner, and in said chamber is a register or cut-off, *b*, operated by a handle or knob, *b′*, from the outside, for the purpose of distributing and equalizing as well as regulating the current and pressure of air on the way to the mouth of the burner. The bends and elbows of the pipe C′ are of the same size as the body of the pipe, so that the air will flow unobstructed to the air-chamber B′ around the burner.

The air is forced by mechanism hereinafter described through the pipes C C′ to the chamber B′, and from thence through the register *b* to the flame, so that the air will reach the same under pressure, whereby a large and brilliant light is obtained and all chimneys may be dispensed with.

The mechanism for supplying the air under pressure to the burners I construct, preferably, as follows: E is a suitable frame-work, in which is a double-acting bellows, having top and bottom sides D D¹, respectively operating to and from the center D². This bellows is constructed, as shown, to draw the air in and force it out both at the larger end of the bellows. The top bellows D has a weight, G, on top, and it is connected by a wire, *d*, with one end of an elbow-lever, H, the wire passing through an eye, *e*, thereon and bent at its upper end so that it will pass upward independent of the lever, but in going downward it will catch on the staple *e* and pull the lever with it. Upon the upper end of the elbow-lever H is formed a projection, *h*, which acts as a stop for a pendulum-lever, I, the elbow-lever being held by a spring, *f*, in position, as shown. The bottom bellows D¹ is, by a rod, *k*, and chain, *i*, connected with a pulley, J, placed loosely on a shaft, *m*. On this shaft is fastened a sleeve, *n*, to which the pendulum-lever I is secured, and the pulley J is detachably connected to the sleeve *n* by a spring-clutch, *p*, as shown. The shaft *m* is operated by means of a train of gearing, K, which may be run by spring or weight, as desired.

The operation is as follows: The train of gearing being wound up, the pendulum-lever I held by the stop *h*, and the upper bellows D expanded and full of air, then as this bellows descends the air is forced from it through the outlet L into the air-pipes, and when the bellows D gets down or completes its downward movement, the rod *d* catches on the staple *e* and draws down the elbow-lever H, so that the stop *h* will be withdrawn from the pendulum-lever. The shaft *m* is then quickly turned by the gearing one revolution, and the pulley J turns with it, whereby the bottom part D¹ of the bellows is quickly raised, and the air therein transferred to the upper part D, which is thereby raised again. As the pulley completes its revolution the spring-clutch *p* is, by an arm, *s*, thrown out of gear, causing the bottom part D¹ of the bellows to drop suddenly, thereby again filling it with air. The lever I is at the same time caught by the stop *h*, thereby again stopping the machinery. The top part D of the bellows then again slowly descends, forcing the air to the burners, until the lever H is pulled down, and so on.

It will be noticed that the filling of the bel-

lows is almost instantaneous, while the discharging is slow and even.

This machine may be located in any part of the building desired.

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

1. The independent oil-reservoir A, connected to the burner B by means of pipe *a*, in combination with the air-pipe, C C′, chamber B′, and cut-off *b*, all constructed substantially as and for the purpose set forth.

2. The combination of the bellows D D¹, rod *d*, elbow-lever H, with stop *h*, pulley J, chain *i*, pendulum-lever I, clutch *p*, and gearing K, all constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

GEORGE W. COOK.

Witnesses:
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