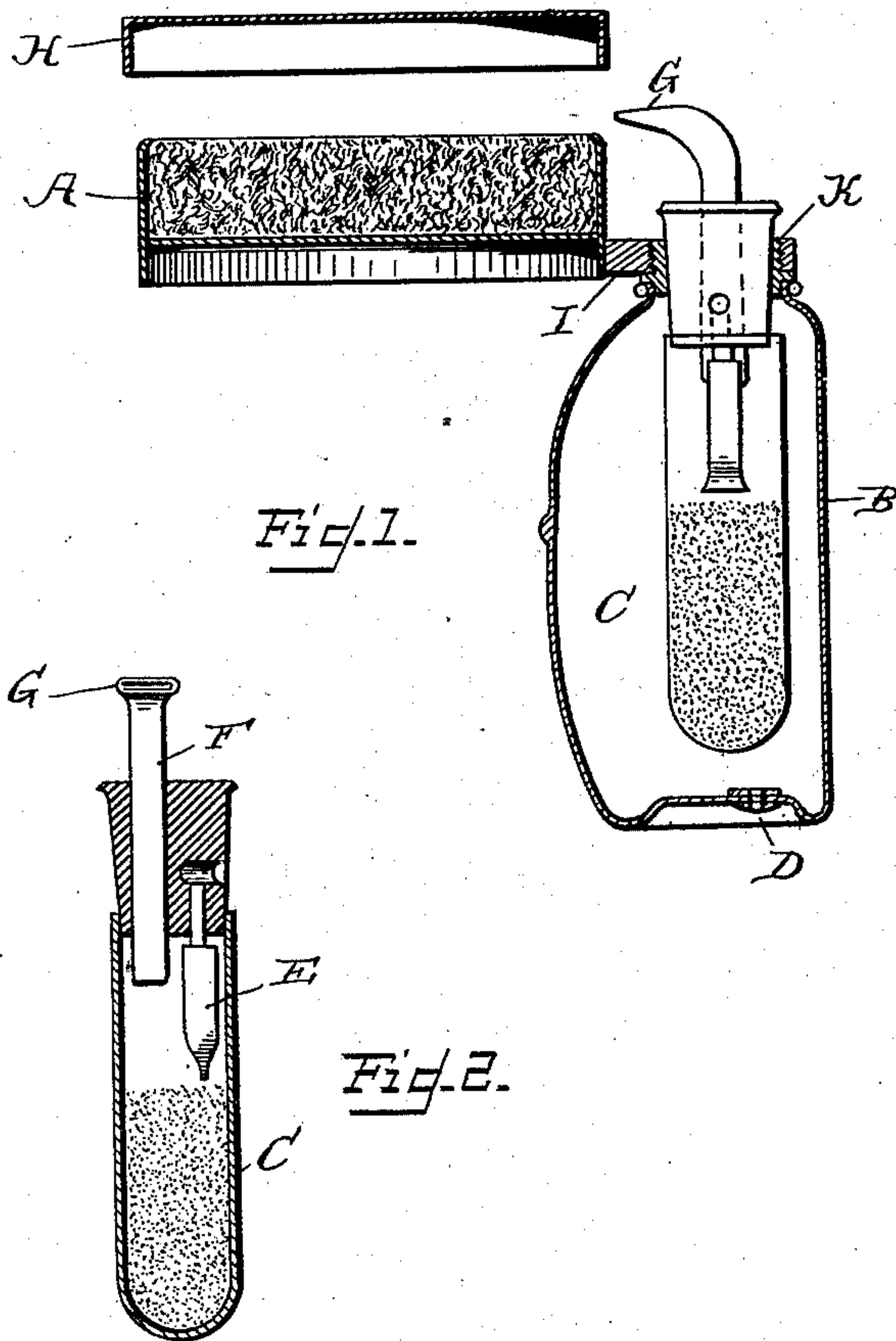


(No Model.)

H. G. PIFFARD.  
MAGNESIUM FLASH LAMP.

No. 413,547.

Patented Oct. 22, 1889.



Witnesses  
Jas R. Steward  
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By his Attorney

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# UNITED STATES PATENT OFFICE.

HENRY G. PIFFARD, OF NEW YORK, N. Y.

## MAGNESIUM FLASH-LAMP.

SPECIFICATION forming part of Letters Patent No. 413,547, dated October 22, 1889.

Application filed December 1, 1888. Serial No. 292,411. (No model.)

### *To all whom it may concern:*

Be it known that I, HENRY G. PIFFARD, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented a certain new and useful Improved Magnesium Flash-Lamp, of which the following is a specification.

The object of my invention is to provide a simple, convenient, and easily-operated apparatus for producing powerful flashes of light from powdered magnesium.

My invention consists in the combination of a flat alcohol-lamp, a receptacle for magnesium, and a pressure-bulb, all connected together so that the apparatus may be supported and operated by a single hand, and arranged in proper manner to project a stream of magnesium powder in a horizontal direction across the flame.

My invention consists, further, in combining the parts described by a separable connection, permitting the detachment of the pressure-bulb and lamp from one another for convenience of transportation.

In the accompanying drawings I have shown one way of connecting and supporting the parts together in accordance with my invention.

Figure 1 is a vertical section through the apparatus, and Fig. 2 is a vertical section through the holder for the magnesium powder.

A indicates a flat alcohol-lamp of any description packed with asbestos or other suitable material which will absorb the alcohol which produces the alcohol-flame.

H is the usual cover for said lamp.

G indicates a nozzle through which the magnesium powder is projected across the burning surface of the lamp when the pressure-bulb B of the apparatus is compressed.

The lamp is supported by means of an arm or extension I, which is separably attached to a collar K upon the neck of the pressure-bulb B, as indicated, by means of the screw-threads.

In the form of my invention herein shown the magnesium powder is contained in a receptacle C, into which air is forced through a pipe E when the bulb B is compressed. The powder and air escape from the receptacle C through the pipe F to the nozzle G. Air enters

the bulb B through a valve D when the bulb is relieved of pressure.

The bulb B, the receptacle C, and other parts form together a device well known as a means for projecting a stream of powder in any desired direction.

In the operation of the apparatus the lamp A is lighted and a single compression of the bulb B will deliver a stream of powder G at right angles to the flame of the lamp A.

I denominate the lamp A a "flat" alcohol-lamp because of the large flat surface on which the flame burns.

For the purpose of spreading the magnesium stream, the nozzle G is preferably flattened, as indicated in Fig. 1. By means of this arrangement the apparatus can be used with one hand and without any artificial support for any of the different parts of the same, the bulb B being grasped by the hand in obvious manner.

It is obvious that the lamp might be supported from the bulb or a part secured thereto in any other desired way without departing from my invention, and also that the stream of magnesium powder might be delivered from any other receptacle upon the flame by the simple compression of a bulb. It is also obvious that the parts might be connected by a device which would not allow separation; but I prefer to connect them by a screw-joint or other means of detachment for the convenience of carriage.

I do not claim as novel the blowing of magnesium through an alcohol-flame by means of a pressure-bulb, as this has been previously done; nor do I claim the throwing of magnesium through the center of a ring or annular frame in a vertical direction, as this also has been done, but I may use an annular lamp with magnesium jet so arranged as to throw the magnesium horizontally; but

What I do claim as my invention is—

1. A flash-lamp having a magnesium-receptacle, a bulb within which said receptacle is located, and which serves as a hand-grasp, an air-induction tube extending to the interior of said bulb, an ejector-tube leading therefrom, and a flat alcohol-lamp attached to the neck of said bulb, substantially as described.

2. A flash-lamp having a magnesium-recep-

tacle located within a bulb which serves as a hand-grasp, an air-induction tube extending into said receptacle, an ejector-tube extending therefrom, a flat alcohol-lamp detachably secured to the neck of said bulb, the nozzle of said ejector being deflected at an angle to said receptacle and parallel to the surface of the lamp, substantially as described.

3. As a new article of manufacture, a magnesium flash-lamp having a magnesium-receptacle, a bulb to which said receptacle is attached, and which serves as a hand-grasp,

an air-induction tube extending into said receptacle, an ejector-tube leading therefrom, and a flat alcohol-lamp attached to the neck of the bulb, as and for the purpose described.

Signed at New York, in the county of New York and State of New York, this 22d day of November, A. D. 1888.

HENRY G. PIFFARD.

Witnesses:

WM. H. CAPEL,

IRA R. STEWARD.