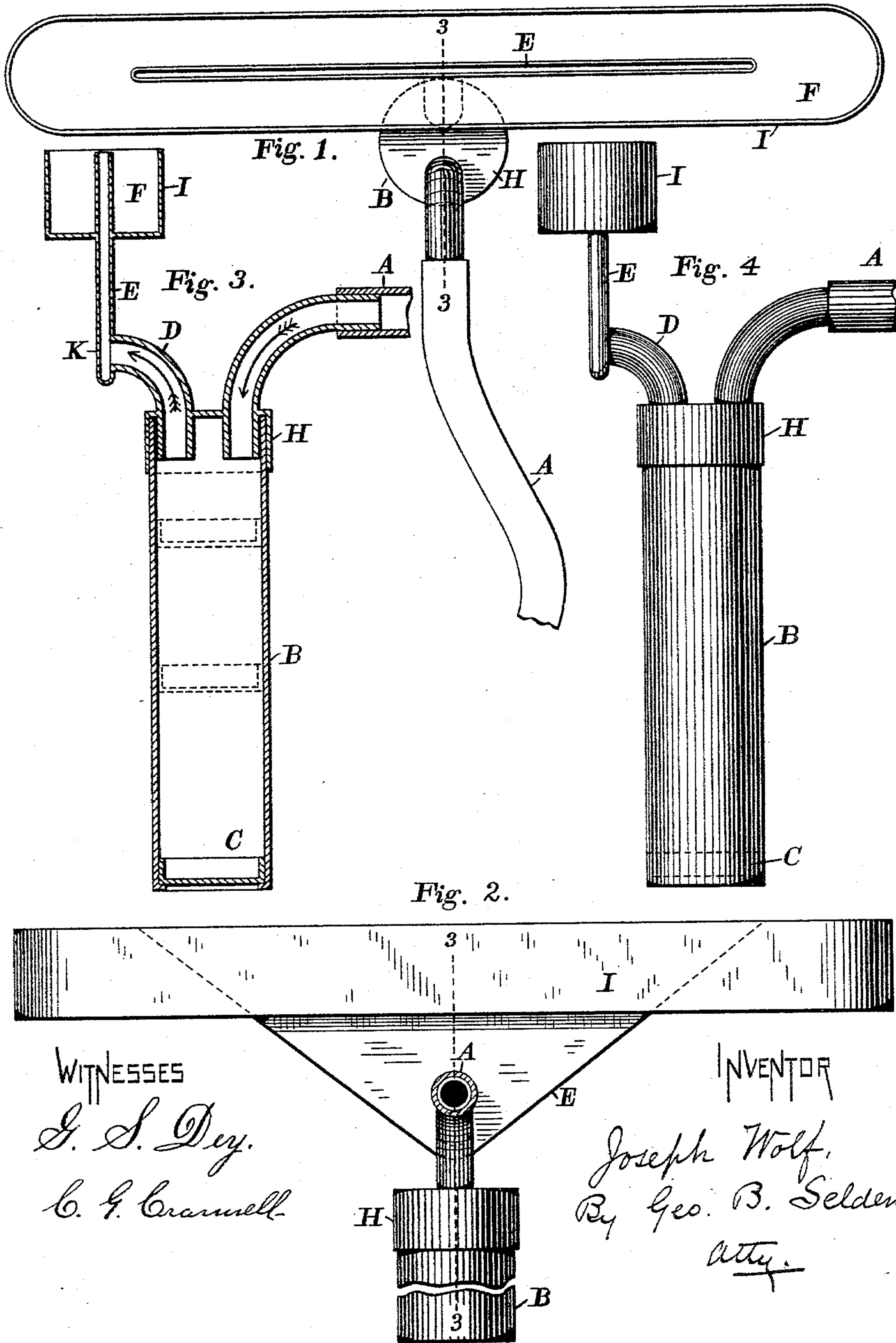


(No Model.)

J. WOLF.  
FLASH LIGHT APPARATUS.

No. 571,632.

Patented Nov. 17, 1896.





# UNITED STATES PATENT OFFICE.

JOSEPH WOLF, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF TO  
JOHN A. ROBERTSON AND ALBERT MUTSCHLER, OF SAME PLACE.

## FLASH-LIGHT APPARATUS.

SPECIFICATION forming part of Letters Patent No. 571,632, dated November 17, 1896.

Application filed May 7, 1896. Serial No. 590,566. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH WOLF, a citizen of Germany, residing at Rochester, in the county of Monroe, in the State of New York, have invented an Improved Flash-Light Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to an improved flash-light apparatus, which improvement is fully described and illustrated in the following specification and the accompanying drawings, the novel features thereof being specified in the claims annexed to the said specification.

My improved flash-light apparatus is represented in the accompanying drawings, in which—

Figure 1 is a plan view. Fig. 2 is a side elevation. Fig. 3 is a central vertical section on the line 3 3, Figs. 1 and 2. Fig. 4 is an end elevation.

My improved flash-light apparatus consists, essentially, of the air or gas supply pipe A, the reservoir B for combustible powder, provided with the movable bottom C, the connecting-pipe D, the funnel E, and wick F.

In the operation of the apparatus a blast of air or gas through the pipe A carries some of the combustible powder through the pipe D and discharges it against the opposite wall of the funnel, by which it is spread and distributed so as to emerge from the elongated mouth of the funnel, where it is ignited and produces a wide, brilliant, and powerful flame. By elevating the movable bottom C in the reservoir as the combustible powder is carried off the duration of the flash may be prolonged for a considerable period of time. The blast of air or gas may be supplied in any suitable or preferred manner.

The reservoir B may be of any suitable shape or dimensions. It is provided at its upper end with the removable cap or cover H, through which it is filled with the combustible powder. The pipes A and D are inserted through the cap. The movable bottom C is arranged to slide in the reservoir. It may, if preferred, be provided with a rod by which it is elevated as the powder is used up. The pipe D is arranged so as to deliver the powder carried by

the air-blast against the inside of the opposite wall of the funnel E at K, Fig. 3, from which point it is spread and distributed throughout, the current of air expanding laterally in the funnel, so that it is discharged from the mouth of the funnel in a wide thin sheet in condition to afford a flash of large surface and great power. A suitable support F is arranged for the wick along or around the elongated mouth of the funnel E. As shown, this support consists of a trough I, attached to the funnel E and filled with any suitable kind of a wick. The trough preferably extends along both sides of the funnel, and thus the powder is blown directly through the flame, thereby insuring its entire combustion. In practice a little alcohol or other suitable liquid is poured on the wick and ignited and the powder is then blown through the flame. The reservoir is filled with the combustible powder, preferably powdered magnesium, nearly up to the tubes A and D, and as the powder is used up, either by short or prolonged flashes, the bottom C is raised upward, so as to maintain the surface of the powder near the lower ends of the tubes. It will, however, be understood that my improved apparatus may be used with a reservoir having a solid bottom. It will also be understood that the narrow funnel with inclined sides and the tube connected with it so as to discharge the powder against the opposite side may be used in connection with any suitable reservoir or fluid-supply device.

By the use of my improved flash-light apparatus I secure a broad, brilliant, and powerful flame of great illuminating power, and the duration of the flash may be prolonged to any extent required.

I claim—

1. In a flash-light apparatus, the powder-reservoir, the adjustable bottom for the same, the air or gas inlet pipe, a powder-exit pipe, a funnel, an igniting device, said inlet and exit pipes communicating directly with the upper surface of the powder and all combined substantially as set forth whereby the powder may be discharged by a blast on its unobstructed surface, and the charge maintained at an approximately constant level, substantially as described.

2. The combination of the reservoir having

a removable cap provided with an inlet and  
an exit, an air or gas inlet pipe, a powder-  
exit pipe, both pipes terminating in the cap,  
a funnel and an igniting device, and an ad-  
5 justable bottom, whereby the reservoir can  
be separated from its cap and pipes, and filled  
and the pipes and cap replaced, and whereby  
the powder may be discharged by a blast on

its unobstructed surface, and the charge main-  
tained at an approximately constant level, so  
substantially as described.

JOSEPH WOLF.

Witnesses:

HOMER H. REICHENBACH,  
GEO. B. SELDEN.