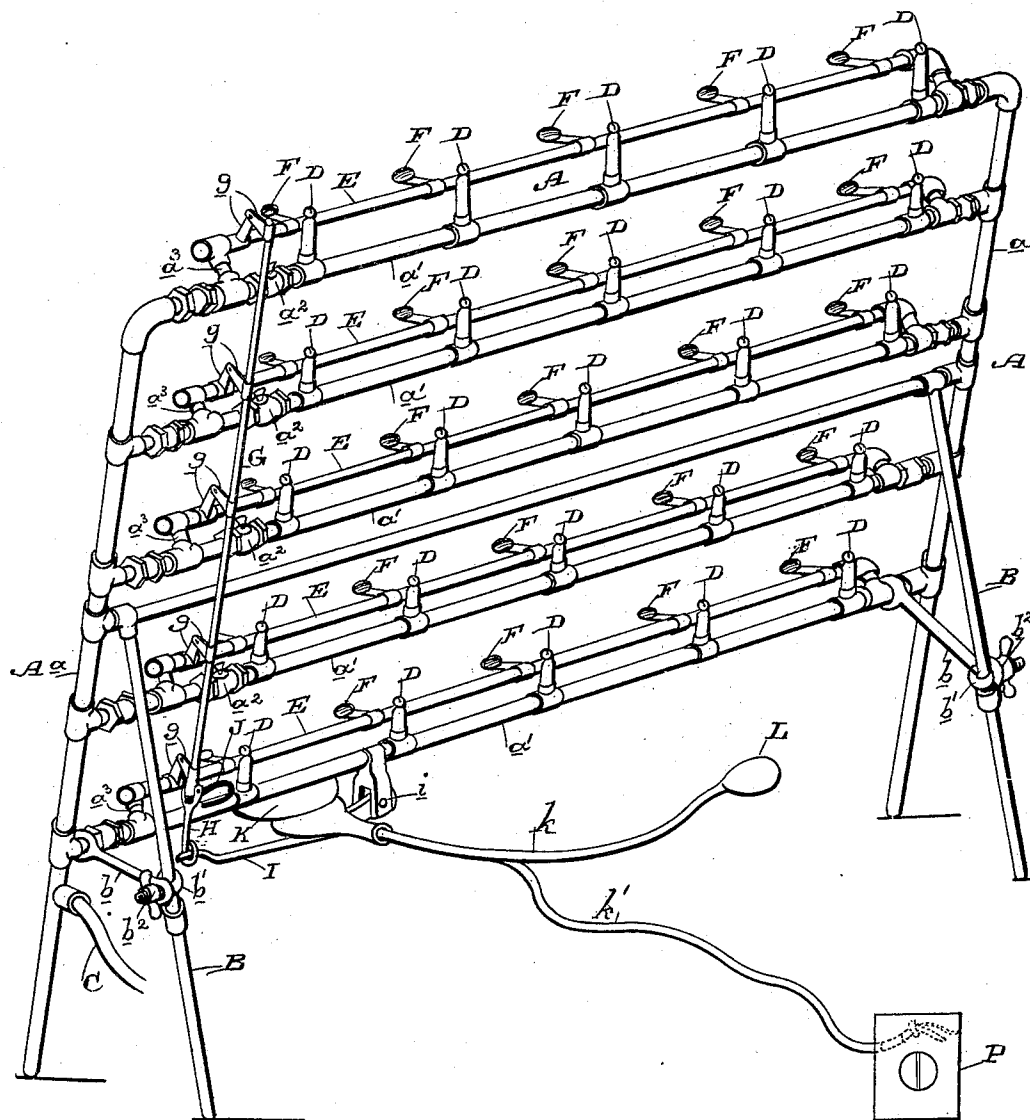


(No Model.)

S. M. WILLIAMS.
FLASH LIGHT BURNER.

No. 467,696.

Patented Jan. 26, 1892.



Witnesses,
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UNITED STATES PATENT OFFICE.

SYLVESTER M. WILLIAMS, OF SAN FRANCISCO, CALIFORNIA.

FLASH-LIGHT BURNER.

SPECIFICATION forming part of Letters Patent No. 467,696, dated January 26, 1892.

Application filed April 20, 1891. Serial No. 389,681. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER M. WILLIAMS, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Flash-Light Burners; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of burners for igniting magnesium and other flash-light powders for use in producing artificial light for photographic exposures.

It consists in the novel construction and arrangement of parts hereinafter fully described, and specifically pointed out in the claims.

The object of my invention is to provide a flash-light burner simple in construction and operation, of great capacity, and which can be used in daylight as well as in darkness.

Referring to the accompanying drawing for a more complete explanation of my invention, the figure is a perspective view of my burner.

The frame A of my burner is supported by legs B. The frame is made of gas-pipes with suitable couplings. The upright ends *a* of the frame carry the transverse pipes *a'*, which communicate with and are supplied by one of the uprights, (here shown as the one on the left and with which the gas-supply hose C is connected,) but with the other upright they do not communicate, but are secured thereto. In each cross-pipe *a'* are set at intervals the flame-burners D, in any suitable number, and the communication between each of the pipes *a'* and the supply-upright *a* is controlled by a cock *a²*. Arms *a³* extend from the ends of the cross-pipes *a'*, and in these are journaled the rock-shafts E, one for each cross-pipe and extending parallel therewith. To these rock-shafts are secured the cups F, which are to receive the charges of powder, and which, by the rocking of the shafts, are adapted to throw their contents into the flames of the burners D. All the rock-shafts are operated simultaneously by the vertical rod G, which is pivotally connected with them by the cranks *g*. The lower end of the rod is connected by a link H with one end of a lever I, pivoted at *i*, and at its other end to the lowermost cross-pipe *a'*. A spring J lifts the rod again and returns the parts to place.

The operation of the device, as far as described, is as follows: Suitable charges of the flash-powder are placed in the cups F, which in their normal position are horizontal. Then the gas-burners D are lighted, gas being supplied to them through hose C, upright *a*, and cross-pipes *a'*. Now when all is ready, lever I is pressed down, whereby through the rod G the rock-shafts are oscillated, and the cups swinging upwardly throw their powder into the gas-flame, thus producing the flash-light. The action of all the cups being simultaneous the light is an equal one, and there being so many flashes the light is better distributed than from a single flash, and is stronger than that produced by the ignition of the same quantity of powder in a single flash. Another advantage is that the powder being thrown into the flame will, if not ignited, pass through it and will not flash at all. Therefore all the flashes are necessarily simultaneous. By means of the controlling gas-cocks any one or more of the cross-pipes with their burners may be called into use, as desired. The lever I is pressed down by means of the expansible air-bulb K, seated between it and the lowermost cross-pipe. The tube *k* from this bulb passes to the air-bulb L to be held in the operator's hand.

As my flash-burner is to be used in daylight as well as at night, it is necessary to provide for opening the lens of the camera simultaneously with the flash. This I do by running a branch tube *k'* from tube *k* to the pump of the camera-shutter, which is here designated generally by P. Now, upon pressing bulb L the shutter is opened and at the same time the lever I is operated to actuate the burner and produce the flash. In order to render the burner adjustable both as to height and inclination, I have the following construction: The legs B are hinged at their upper ends to the frame A and are controlled by links *b*, pivoted to the frame and connected with the legs by sliding clips or loops *b'*, adapted to be fixed in the position to which it is set by thumb-nuts *b²*. Now by spreading or contracting said legs the inclination of the frame may be properly varied. Its height is varied by adding joints to its lower ends and to the lower ends of the legs.

Instead of gas I may use an alcohol or oil light, the pipes serving as reservoirs for the inflammable material.

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

1. In a flash-light burner, the combination of a flame-burner, a rock-shaft, a charge-cup carried by the shaft, a movable rod-and-crank connection with the shaft, a pivoted lever connected with the rod and an air-bulb to operate the lever, substantially as herein described.

2. The combination of a flash-light burner consisting of a flame - burner, a swinging charge-cup adapted to throw its contents into the flame, a camera-lens shutter, an air-tube, and bulb connections whereby the cup is swung and the shutter opened simultaneously, substantially as herein described.

3. The combination of a flash-light burner consisting of a flame - burner, a swinging charge-cup adapted to throw its contents into the flame, a rock-shaft carrying said cup, a movable rod for operating the shaft, a spring-controlled lever for operating the rod, and an air-bulb for operating the lever, a camera-lens shutter, and an air-bulb and tubes connecting it with the air-bulb of the burner and the shutter of the lens, whereby the flash and the opening of the shutter are effected simultaneously, substantially as herein described.

4. In a flash-light burner, the pipe-frame A, having the series of flame-burners, the series of rock-shafts having the cups to contain the powder - charges, and connections whereby said shafts are rocked to swing their cups and throw the contents thereof into the flames

simultaneously, substantially as herein described.

5. In a flash-light burner, the pipe-frame A, having the series of flame-burners, the series of rock-shafts having the cups to contain the powder-charges, the rod - and - crank connections to the several rock-shafts, and the operating-lever connected with the rod, substantially as herein described.

6. In a flash-light burner, the pipe-frame A, having the series of flame-burners, the series of rock-shafts having the cups to contain the powder-charges, the rod - and - crank connections to the several rock-shafts, the spring-controlled lever connected with the rod, and the air-bulbs and tube for operating the lever, substantially as herein described.

7. In a flash-light burner, the combination of the pipe-frame having the flame-burners, the rock-shafts and cups and means for operating them, and the legs hinged to the frame for adjusting the inclination of said frame, substantially as herein described.

8. In a flash-light burner, the combination of the pipe-frame having the flame-burners, the rock-shafts and cups and means for operating them, the legs hinged to the frame, the links pivoted to the frame and connected with the legs by a sliding joint, and the thumb-nut controlling and fixing the joint, substantially as herein described.

In witness whereof I have hereunto set my hand.

SYLVESTER M. WILLIAMS.

Witnesses:

S. H. NOURSE,
J. A. BAYLESS.