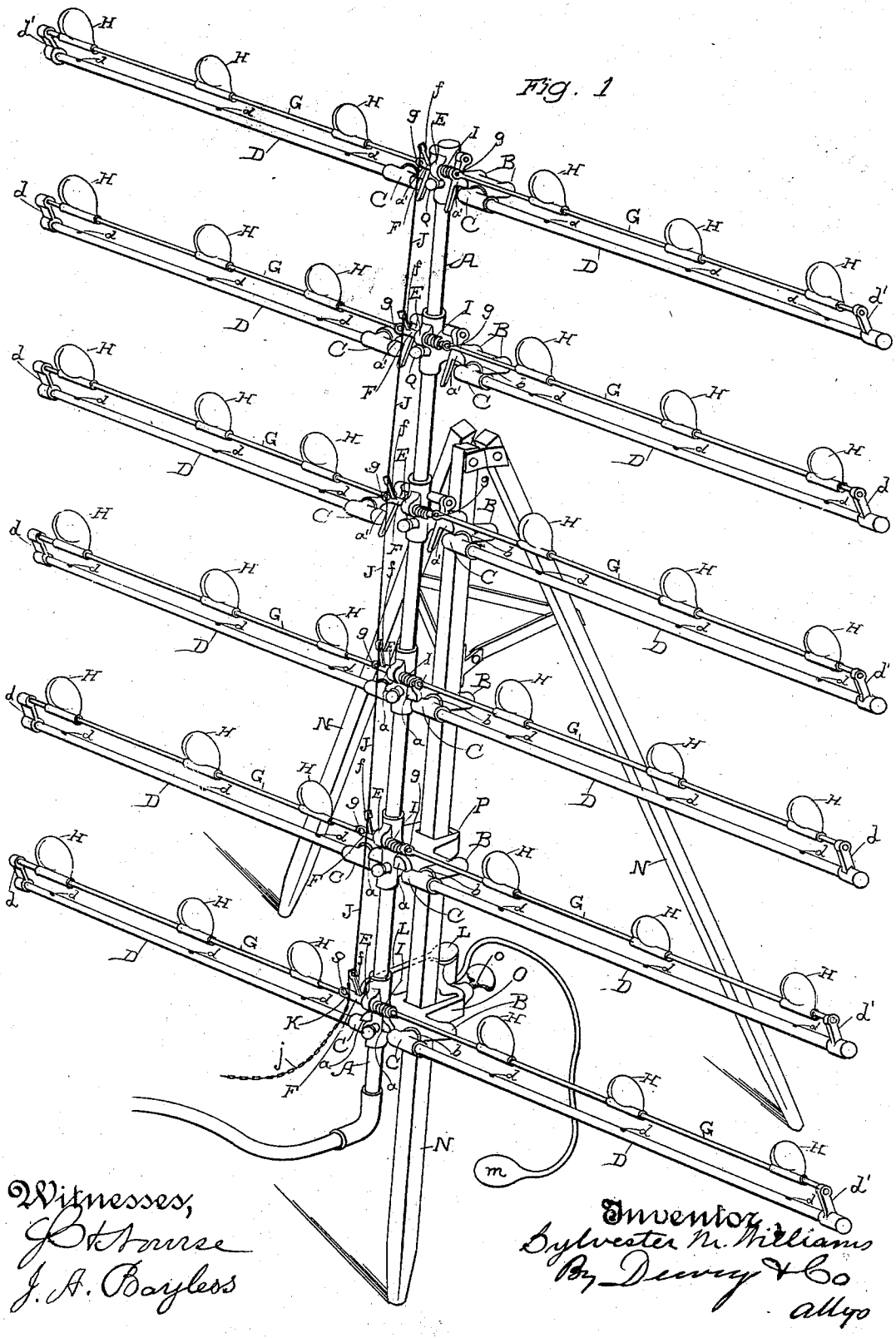
(No Model.) 2 Sheets—Sheet 1.

S. M. WILLIAMS.

FLASH LIGHT BURNER.

No. 504,956. Patented Sept. 12, 1893.

Fig. 1



Witnesses,
J. A. Bayless

Inventor,
Sylvester M. Williams
By Dewey & Co
Attys

(No Model.) 2 Sheets—Sheet 2.

S. M. WILLIAMS.

FLASH LIGHT BURNER.

No. 504,956. Patented Sept. 12, 1893.

Fig. 2

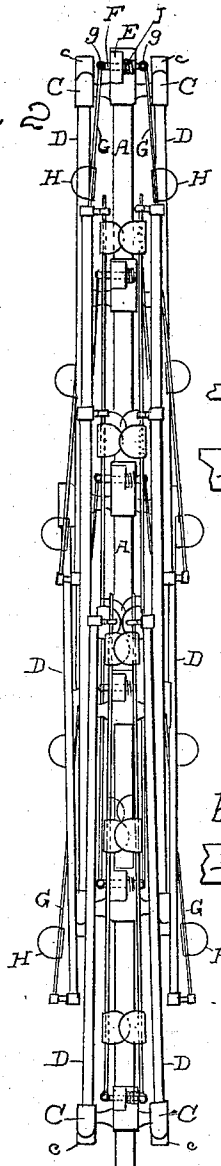


Fig. 3.

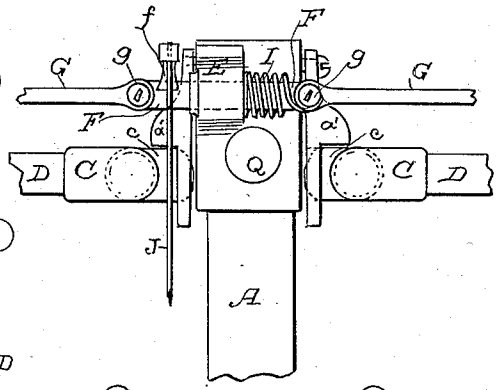


Fig. 5.

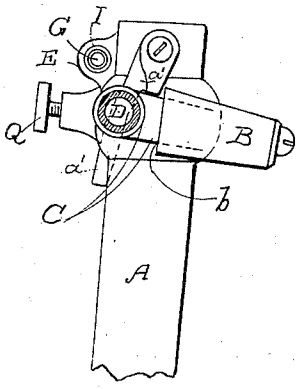


Fig. 4.

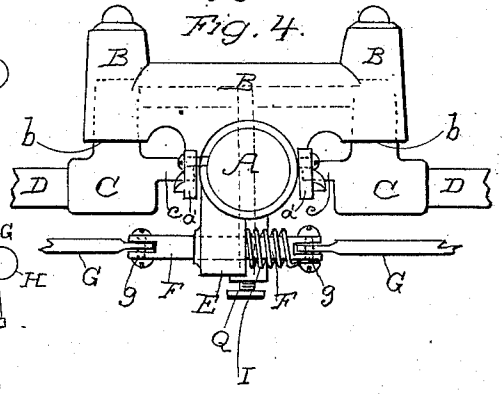
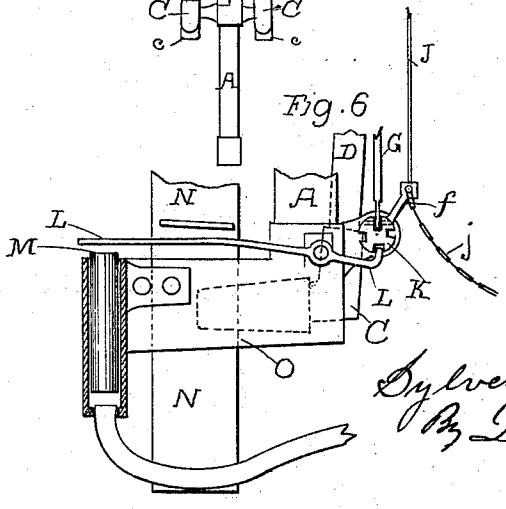


Fig. 6



Witnesses,
J. F. Rourse
J. N. Bayless

Inventor
Sylvester M. Williams
By Dewey & Co.
Attys

UNITED STATES PATENT OFFICE.

SYLVESTER M. WILLIAMS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO J. A. SHEPARD, OF SAME PLACE.

FLASH-LIGHT BURNER.

SPECIFICATION forming part of Letters Patent No. 504,956, dated September 12, 1893.

Application filed May 10, 1893. Serial No. 473,693. (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 flash-light burners for photographic exposures, in which a series of arms with flame jets, carry rock-shafts with charge cups adapted to throw their powder into the flame jets, said burners being exemplified by Letters Patent of the United States, No. 467,696, issued to me January 26, 1892.

My present invention consists in novel details of construction and arrangement whereby the whole device is simplified and is adapted to be readily set up for use and folded into small compass when not in use. These novel features will be hereinafter fully described and specifically claimed.

The object of my invention is to provide a flash-light burner having a number of flame jets and swinging charge cups properly distributed to produce an equal and sufficient light for the required exposure, said burner being adapted to be vertically adjusted to any required height and to be folded up compactly out of the way when not in use.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a perspective view of flash light burner, showing it extended. Fig. 2 is a view showing it folded. Fig. 3 is a back elevation showing the connections of one pair of arms and one pair of rock shafts. Fig. 4 is a top view of same. Fig. 5 is a side elevation showing the angularity of the bracket connection B to standard A. Fig. 6 is a side elevation of the tripping mechanism.

A is a central hollow standard. It is fitted at intervals throughout its length with apertured bracket-connections B, said connections having at each end seats *b* in which the elbows C are fitted and adapted to turn, said elbows receiving the outwardly extending hollow arms D, which said arms are thus connected with the central standard by means of pivotal joints, whereby they are adapted to be turned to a position at right angles with the standard, or to be folded into a position beside it. The hollow arms communicate with the hollow standard through their joints and bracket connections after the manner of gas fixtures. Those arms which are seated upon the lower half of the standard are adapted to turn upwardly beside the standard, and they are limited in their horizontal position by lugs *c* on the elbows C coming under fixed stops *a*. Those arms which are upon the upper half of the standard are adapted to fold downwardly, and they are limited in a horizontal position by their stop lugs *c* coming under pivoted gravity catches *a'*. By releasing these catches, the upper set of arms fold downwardly, and as the lower set of arms fold upwardly, all the arms are thus folded beside the standard, and within its own length. In order to permit the arms in different horizontal planes to pass by each other, in folding, it will be seen that the bracket connections B which support them, are at a slight angle with the standard, so that the arms do not move in the same vertical plane, and they thereby avoid each other. The arms D have holes *d* constituting burners for the jet flames.

Journaled in a suitable bearing E, on the back of the standard or on the back of the bracket connections thereon, are short shafts F, in each end of which is hinged at *g*, a rock shaft G, which extends out parallel with and above each arm D, and is supported in an end bearing *d'* from the end of the arm. These shafts G carry the charge cups H. A spring I is upon each short shaft F for returning it. Each short shaft has a crank *f*, and these are connected to each other by means of a rod or wire J, the lowermost crank having a chain or other pull *j* by which all the shafts are turned. The lowermost shaft has also a ratchet K with which engages a pivoted pawl L, the outer end of which lies directly over a pneumatic plunger M having an air bulb connection *m*. Now, by pulling down on the chain *j* all the shafts F, with their attached rock-shafts G, are turned so that the charge cups H of the latter assume a horizontal position, and the parts are held in this position by the engagement of the pawl L with the

ratchet K below. The charge cups, being supplied with powder, the pneumatic plunger M is operated, whereby the outer end of the pawl L is raised, thereby tripping the engagement of its inner end with the ratchet K, and, thereupon, the springs I return the shafts F; and the shafts G, rocking forwardly, cause their charge cups H to throw the powder into the several flame jets of arms D, whereby the flash is produced. When the shafts G are in a position of rest, their hinge connections *g*, with the short shafts F, are in such positions as will enable the shafts G to be folded downwardly with the arms D as heretofore described.

Now, to support the burner, I have a tripod N, to one leg of which the standard A is adjustably secured. For this purpose it has at its lower extremity a slide clamp O provided with a set screw *o* and just above, it has a sliding guide P. This clamp and guide are fitted upon one of the legs of the tripod, and the standard with its connected parts may be raised or lowered and set at the desired height.

The apparatus may be folded together, while still on the tripod, if desired; but by slipping the standard from the leg of the tripod, the arms D and shafts G may be folded within the length of the standard which is then practically no longer than the tripod, and both parts may be packed conveniently together for transportation.

By this construction a neat, convenient and portable flash-light burner is obtained, of light weight and slender construction, well adapted for the purposes intended.

The gas is supplied to the bottom of the standard by a suitable tube, and thence passes to the several arms D, and to regulate the supply I have the screw valves Q entering through the back of the standard and adapted to regulate the passage into the bracket connections B.

The regulating valves are of advantage in the use of the apparatus with different gases, as, for example, with ordinary illuminating gas and gasoline or other hydro-carbon gas which latter has a different weight from the former. In order, therefore, to make the jets throughout all the arms burn equally when different gases are used, the valves are properly manipulated. Thus the same apparatus may be used with different and any kind of gas.

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

1. A flash-light burner, consisting of a central hollow standard, hollow arms communicating therewith and connected to said standard by joints, enabling them to be extended at right angles to the standard and to be folded beside it, said arms having flame burners or jets, rock-shafts hinged at their inner ends and extending out parallel with the arms and adapted to be folded therewith, and charge cups carried by said rock-shafts adapted to throw the powder into the flame jets, substantially as herein described.

2. A flash-light burner, consisting of a central hollow standard, hollow arms communicating therewith and connected to said standard by joints, enabling them to be extended at right angles to the standard and to be folded beside it, said arms having flame burners or jets, rock-shafts hinged at their inner ends and extending out parallel with the arms and adapted to be folded therewith, charge cups carried by said rock-shafts adapted to throw the powder into the flame jets, and the means for rocking said shafts consisting of the oscillating short shafts to which the rock-shafts are hinged, said short shafts having cranks and controlling springs, the rod connecting said cranks, the ratchet on the lowermost short shaft, the pawl engaging the ratchet and means for disengaging the pawl, substantially as herein described.

3. In a flash-light burner, the combination of the central hollow standard, the hollow burner arms communicating therewith and having a hinge connection with the standard, whereby they may be turned to a position at right angles with the standard and be folded beside it, the stops for the lower set of arms adapting them to fold upwardly beside the standard and to be limited in a horizontal position, and the pivoted catches for the upper set of arms adapting them to fold downwardly beside the standard and to be limited in a horizontal position, substantially as here in described.

4. A flash-light burner consisting of a hollow standard, apertured brackets secured thereto at an inclination, and hollow arms communicating with and journaled in said brackets whereby they may turn to a position at right angles to the standard, and to be folded beside it without interference with each other, said arms having burners or flame jets, and the rock shafts with their charge cups, said shafts having a hinge connection at their inner ends with the standard whereby they may fold with the hollow arms, substantially as herein described.

5. A flash-light burner consisting of a tripod, a hollow standard having a clamp with set screw by which it is fitted to and is adjustable vertically upon one of the legs of the tripod, a series of hollow arms communicating with the standard and connected therewith by hinge joints enabling them to turn to a position at right angles to the standard and to be folded beside it, rock-shafts extending out parallel with the arms and having a hinge connection with the standard at their inner ends whereby they are adapted to fold with said arms, means for setting, tripping, and rocking said shafts, and charge cups carried by said shafts adapted to throw the powder into the flame jets, substantially as herein described.

6. A flash light burner consisting of a cen-

tral hollow standard, hollow arms communicating therewith and connected to said standard by joints, enabling them to be extended at right angles to the standard and to be folded beside it, said arms having flame burners or jets, suitable regulating valves controlling the gas passages whereby the jets can be made to burn equally with different gases, rock shafts hinged at their inner ends and extending out parallel with the arms and adapted to be folded therewith, and charge cups carried by said rock shafts adapted to throw the powder into the flame jets, substantially as herein described.

In witness whereof I have hereunto set my hand.

SYLVESTER M. WILLIAMS.

Witnesses:

S. H. NOURSE,

J. A. BAYLESS.