(No Model.)

J. A. BOSTWICK.

FLASH LIGHT COMPOSITION.

No. 594,594. Patented Nov. 30, 1897.

Fig. 1.

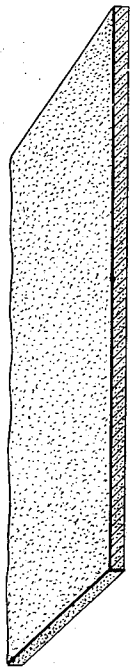


Fig. 2.

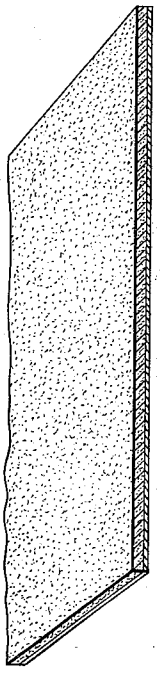
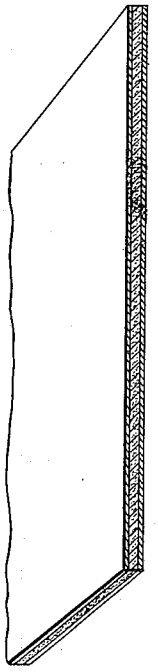


Fig. 3.



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FLASH-LIGHT COMPOSITION.

SPECIFICATION forming part of Letters Patent No. 594,594, dated November 30, 1897.

Application filed October 21, 1896. Serial No. 609,586. (No specimens.)

To all whom it may concern:

Be it known that I, JAMES A. BOSTWICK, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improved Article for Producing Flash-Lights, of which the following is a specification.

My invention relates, primarily, to the production of artificial light for photographic purposes.

Heretofore powdered metals or pyrotechnic mixtures have been largely employed for the production of artificial light and particularly to produce flash-lights for photographic purposes. The manner in which these materials have been employed has been to inject them in powdered form into a flame or by placing the powdered material upon some highly-inflammable material, such as guncotton, which is then ignited. The illuminating-flame produced by metals of the class referred to or mixtures of such metals with compounds containing oxygen is opaque, and the illumination effect therefrom only proceeds from the superficial area of the flame presented to the point to be illuminated, except, of course, when reflectors are employed, in which event the light given off by other exterior surfaces of the flame may to an extent be utilized. All the ways heretofore practiced for effecting the combustion of the materials referred to produce a solid flame or one having considerable area in cross-section, and are therefore wasteful. Hence the larger the quantity of the powder employed the more solid or greater in cross-section is the flame, and the percentage of waste correspondingly increased. Where the powder is thrown or injected into a flame, there is also a waste of that part which misses the flame. Aside from these objections, there is considerable inconvenience attending the production of flash-lights in the way suggested or in any ways heretofore employed, so far as I am aware.

The object of my invention is to produce an effective illuminating-flame or combustion having the greatest extent of superficial area exposed to the point or object to be illuminated for the amount of material employed and to provide a convenient way in which the combustion of the material may be effected and a desirable and economical form in which it may be put up for transportation, handling, and use. To this end I employ a film or thin layer, sheet, or leaf of some inflammable medium that constitutes a support for the combustible material giving the desired light, which may be suspended in any desirable way, and, when ignited, burns quickly and gives a thin flat flame of large superficial area relatively to the amount of such material consumed. The illuminating material may be attached superficially to such a thin flat supporting medium or may be incorporated into the body thereof. Thus by means of my invention I obviate the waste of the powder, overcome the inconvenience attending its handling and use, and produce a thin sheet of flame having a relatively large superficial area which may be presented to the point or object to be illuminated.

Where flash-lights for photographic purposes are to be produced, the proper illuminating metal or compound is employed, and the thin supporting medium should be one of high and rapid combustibility.

My invention therefore comprises a new article of manufacture having the characteristics above suggested.

As an illustration of one way of carrying out my invention for producing flash-lights for photographic purposes I may employ a sheet of collodion having the powdered metal or metals or compounds attached to its face or incorporated with it. Thus I may proceed as follows: Guncotton is dissolved in alcohol and ether and collodion produced by evaporation therefrom according to well-known methods. To the collodion is added a suitable quantity of the illuminating material, which may be powdered magnesium or aluminium or a mixture of potassium chlorate, seventy (70) parts; potassium perchlorate, forty (40) parts; magnesium, forty-five (45) parts, and aluminium twenty (20) parts. The quantity of this powder combined per square inch of superficial area with the sheet of collodion will depend upon the character of flame desired. I mix the powder and collodion and pour the mixture on a well-talcked plate of glass, and after it has hardened or set I strip

the layer from the glass and cut it into sheets of suitable and convenient size. Instead of the above procedure, however, I may flow the collodion on a glass or other suitable plate and dust the powder over it, after which a layer of collodion may be flowed over the powder. The second layer of collodion may be omitted. I may also after dusting the powder upon the layer of collodion subject it to pressure by a roll or otherwise to incorporate it more intimately into the face or body of the sheet of collodion.

A film or thin sheet of combustible material prepared in the ways above described or in any other suitable ways may be suspended in proper relation to the camera and the object or point to be illuminated and then ignited. A flat flame of relatively large superficial area and small thickness is thus produced that gives a maximum amount of light for a minimum quantity of the material employed.

The combustible illuminating-sheets may be cut up in suitable sizes and supplied to the trade in packages or in book-like form with suitable covers or in any other suitable way. The economy and convenience of their use will be apparent from the foregoing.

The powdered illuminating material is combined with the sheet, whether it be incorporated into the body of the sheet by mixture, pressure, or otherwise, or whether it be attached to the surface of the sheet of inflammable material. When, therefore, I speak hereinafter of the illuminating material being combined with the sheet of inflammable material, I intend to include all methods of uniting the two materials.

In the accompanying drawings, Figure 1 indicates a sheet of collodion or inflammable material having the illuminating-powder incorporated into it. Fig. 2 indicates a sheet having the powder attached to the surface. Fig. 3 indicates a sheet composed of two layers of combustible material and an intervening layer of powdered material. The thickness of the sheets in these figures is exaggerated for clearness of delineation.

I claim as my invention—

1. The herein-described new article of manufacture consisting of a photographic flash-light film or sheet composed of highly-inflammable material having combined with it photographic flash-light material, whereby upon its ignition an actinic light of brief duration and large area is produced.

2. The herein-described new article of manufacture consisting of a photographic flash-light film or sheet composed of collodion having combined with it powdered flash-light material, whereby upon its ignition an actinic light of brief duration and large area is produced.

3. As a new article of manufacture, two thin sheets or films of collodion having applied to their contiguous faces a powdered combustible flash-light mixture that will produce a brief illumination upon the combustion of the collodion.

4. As a new article of manufacture, a sheet of collodion having combined with it powdered magnesium for the purposes described.

5. As a new article of manufacture, a sheet of collodion having combined therewith a powdered mixture of potassium chlorate, potassium perchlorate, magnesium and aluminium, substantially as and for the purposes set forth.

In testimony whereof I have hereunto subscribed my name.

JAMES A. BOSTWICK.

Witnesses:

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