

1,059,278.

Patented Apr. 15, 1913.

2 SHEETS—SHEET 1.

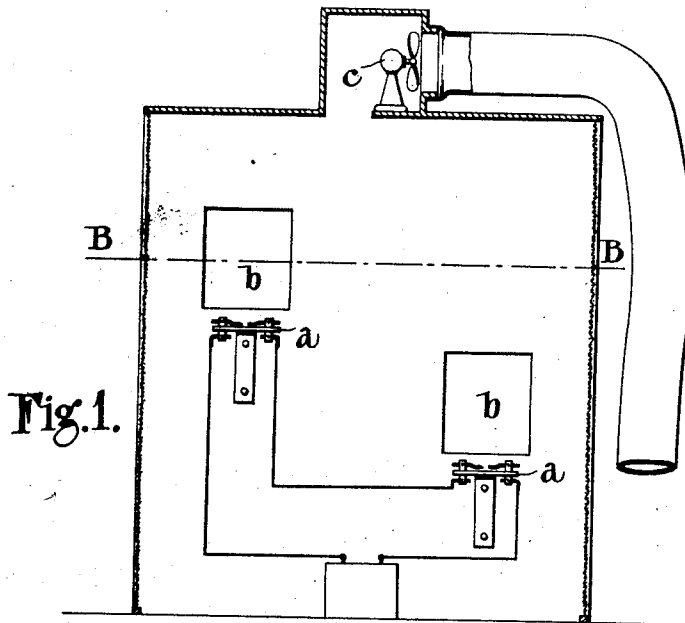


Fig. 1.

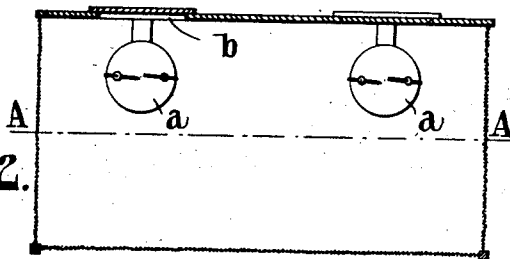


Fig. 2.

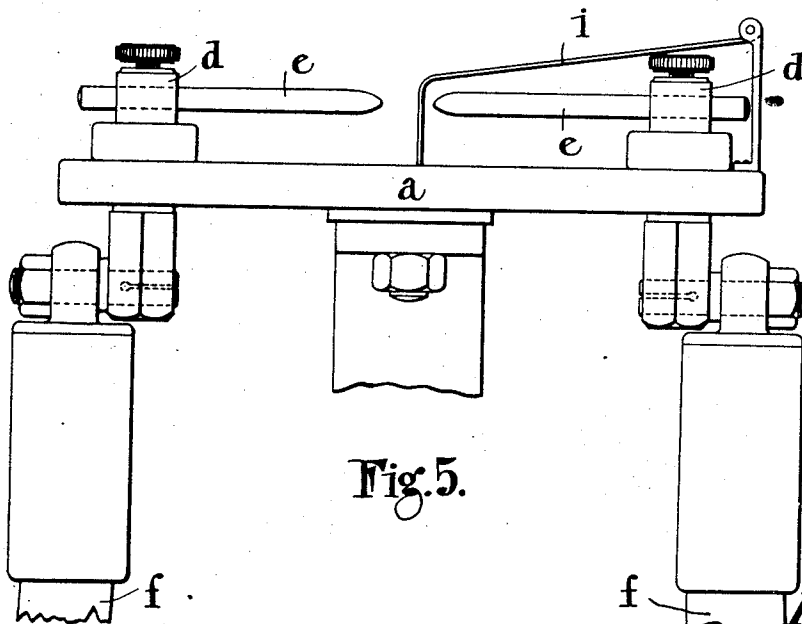


Fig. 5.

Witnesses.
 E. B. M. C. S. C.
 Wm. E. Tucker.

Inventor.
 Herbert Ernest Coston
 By Emil Nimmelycke
 Attorney.

H. E. COSTON.
PHOTOGRAPHIC FLASH LIGHTING.
APPLICATION FILED NOV. 11, 1912.

1,059,278.

Patented Apr. 15, 1913.

2 SHEETS—SHEET 2.

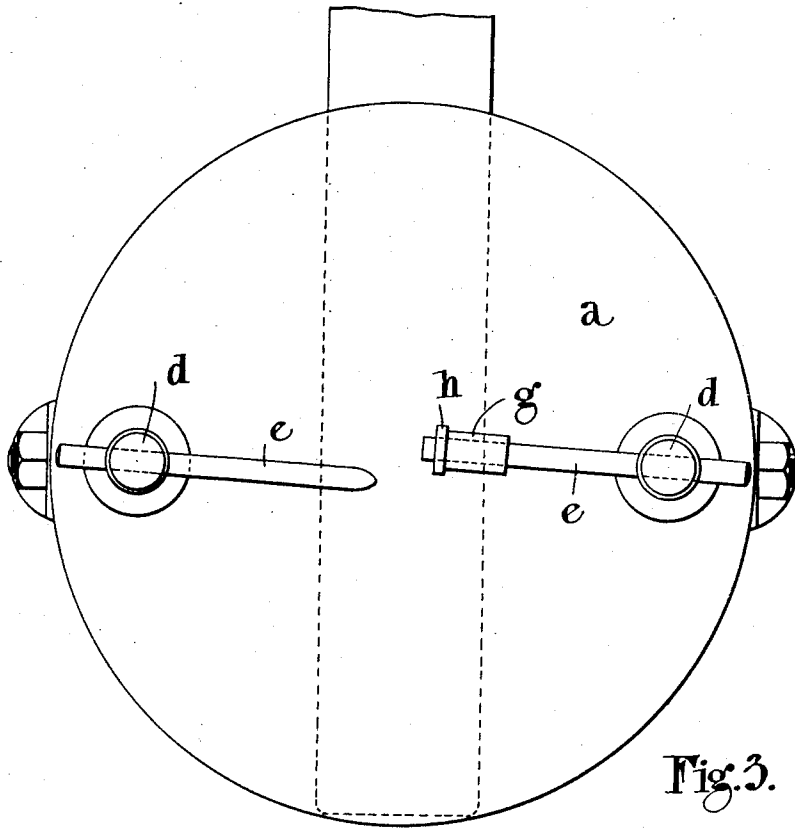


Fig. 3.

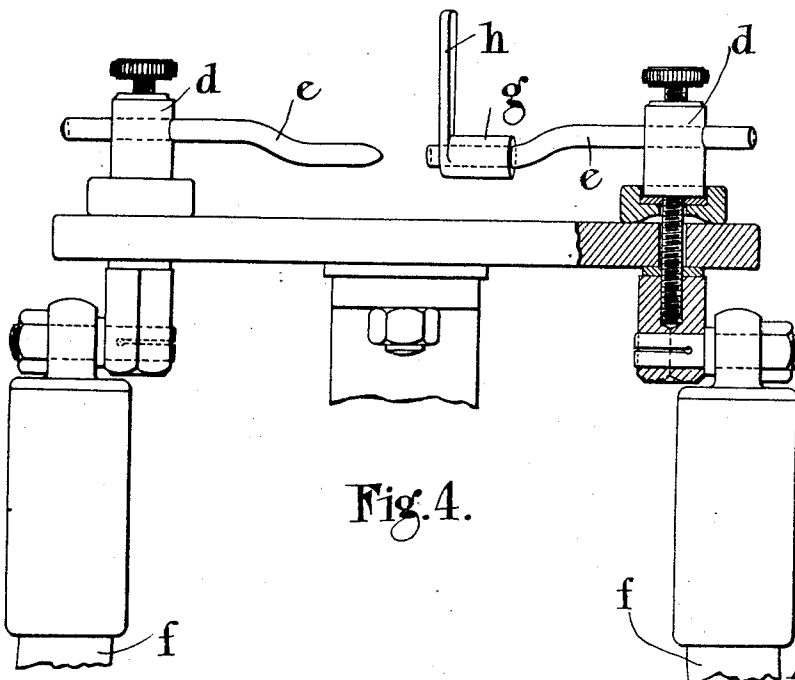


Fig. 4.

Witnesses.
E. A. McGehee.
Wm. E. Tucker.

Inventor
Herbert Ernest Coston
By Emil Rönnecke
Attorney

UNITED STATES PATENT OFFICE.

HERBERT ERNEST COSTON, OF LONDON, ENGLAND.

PHOTOGRAPHIC FLASH-LIGHTING.

1,059,278.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed November 11, 1912. Serial No. 730,617.

To all whom it may concern:

Be it known that I, HERBERT ERNEST COSTON, a subject of the King of Great Britain and Ireland, and residing at Dover street, London, England, have invented certain new and useful Improvements in and Relating to Photographic Flash-Lighting, of which the following is a specification.

This invention relates to means for obtaining instantaneously a strong light diffused over a large area for photographic or like purposes. This has been sought to be obtained by igniting portions of magnesium or other illuminating powder distributed at several points, but considerable difficulty has been experienced in obtaining really simultaneous ignition of the various portions. One electrical method proposed is to use electric fuses one for each portion, while another proposed is to use a corresponding number of spark gaps arranged in parallel. It has been found that neither of these methods gives sufficiently simultaneous ignitions for the purpose required, and the principal object of this invention is to secure the required simultaneity.

The invention consists for this purpose in means for simultaneously igniting a number of portions of magnesium powder or like illuminating material, said means comprising a high tension electric current which is caused to spark across a number of gaps arranged in series to effect the several ignitions, said gaps and the distribution of powder in their vicinity being similar so as to obtain practically equal rates of combustion of each of the portions of powder.

The invention also consists in the means for instantaneously and correspondingly igniting a number of supplies of illuminating material upon trays or like surfaces within a translucent chamber.

The invention further consists in flash lighting apparatus, in which the sparking gaps have an electrode which is provided with a removable molding device in order to obtain a similar configuration of the illuminating material at each of the gaps.

The invention further consists in an improved flash lighting apparatus as hereinafter described.

Referring now to the accompanying drawings:—Figures 1 and 2 are diagrammatic sections on the lines A—A and B—B respectively of one form of translucent chamber for use in carrying this invention into

effect. Figs. 3 and 4 represent plan and elevation partly in section of one of the trays or tables for carrying the illuminating powder. Fig. 5 shows a modified form of the molding device.

In carrying this invention into effect in one manner as shown diagrammatically in Figs. 1 and 2, a rectangular chamber or surrounding screen covered with treated silk or other suitable and preferably non-inflammable material is provided with trays, *a*, carrying the illuminating material. The front and any other desired parts of the screen are translucent and the back is provided with sliding panels, *b*, for loading the trays with the illuminating material. At the top of the chamber a small electric fan or other means, *c*, is provided for drawing off the products of combustion from the chamber and discharging them into a flexible pipe or conduit by which they may be conducted out of the room through any suitable opening. The chamber may be constructed in any preferred manner and may be portable or otherwise as desired, the trays being supported from the sides of the chamber or upon independent supports as may be found most convenient.

The trays or plates, *a*, shown in detail in Figs. 3 and 4 are formed of silica or other suitable fire-resisting material and are fitted with a pair of sparking terminals, *d*, capable of a small pivotal movement about their axes, and provided with adjustable horizontal rods or electrodes, *e*, or other suitable means for producing a spark of similar length at each tray upon the passage of a high tension electric current. The terminals are connected by means of the conductors, *f*, shown broken off in the drawing with a high tension coil or other suitable means for creating an electric current, the arrangement being such that each pair of terminals form a gap, the gaps being in series in the circuit.

One of each pair of the electrodes, *e*, is formed with a pointed end, the other having a substantially flat end and being provided with a loosely fitting hollow cylindrical member, *g*, provided with a handle, *h*, to effect its easy removal from the electrode.

In preparing the apparatus for use equal quantities of powder are placed upon each of the trays or plates in such a manner as to cover the pointed electrodes and to lie in a substantially similar way upon and around

the removable collars upon the other electrodes. The loose collars are then removed, which will leave the powder in substantially the same configuration with regard to each of the electrodes and in such a condition that on the passing of an electric current a similar spark will be produced at each of the gaps.

In place of the removable collar the terminal may be provided with a hinged plate, as shown in Fig. 5. This plate stands out horizontally above one of the electrodes and terminates in a bent down portion standing in front of the end thereof, so as to form a screen for the electrode. While the hinged plate is in this position the end prevents any material placed upon the tray coming in contact with the electrode, but when turned up about its hinged connection it leaves the electrode exposed. In this case in preparing the apparatus the hinged plate is turned down over the one electrode and the magnesium or other illuminating powder is placed upon the tray covering the other electrode and in contact with the turned down portion of the hinged plate. On lifting the plate the powder will slip down in an inclined position in front of the end of the first electrode and so the powder and the electrodes will occupy similar positions with regard to one another in the case of each of the trays in the same manner as in the first described form of the invention.

In passing an electric current through the circuit it will be met by an equal resistance at each of the gaps resulting in the production of sparks of equal magnitude and intensity, and as the powder will be in similar quantities and disposition with regard to each of the sparks corresponding inflammation and combustion will occur in all of the trays simultaneously. Any number of trays for the powder may be provided and arranged in any suitable manner within the screen or chamber, the construction of which may be optional having regard to the fact that a uniform illumination of all the surface of the screen is required, and that the screen shall effectually retain the products of combustion of the illuminating material and prevent their dispersion in the surrounding atmosphere.

It is clear that many modifications may be made in the details of the apparatus and in the manner of carrying the invention into effect without in any way departing from the spirit of the same.

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

1. In combination in a flash-lighting ap-

paratus, a high tension electric circuit, a plurality of receptacles for illuminating material, a similar pair of sparking terminals fitted to each of said receptacles and connected in series in said circuit, and a removable molding device co-acting with each of said pairs of terminals to distribute illuminating material in a similar configuration with regard thereto.

2. In combination in a flash-lighting apparatus, a high tension electric circuit, a plurality of receptacles for illuminating material, a similar pair of sparking terminals fitted to each of said receptacles, and connected in series in said circuit, movable rods included in said terminals, whereby the length of spark is adjusted, and a member easily fitting one of said rods and removable therefrom to distribute illuminating material in a similar configuration at each sparking place.

3. In combination in a flash-lighting apparatus, a translucent chamber, a high tension electric circuit, a plurality of gaseous portions in series in said circuit, and positioned within said chamber, means for passing a current through said circuit, means for equalizing the resistance of said gaseous portions, means for positioning illuminating material or the like at said gaseous portions and means for securing a like distribution of said material at each position.

4. In combination in a flash-lighting apparatus, a translucent chamber, a plurality of non-combustible trays within said chamber, a pair of terminals fitted to each of said trays, adjustable sparking rods included in said terminals, a source of high tension electric current, leads connecting said terminals and source of current whereby said pairs of terminals form sparking gaps and are arranged in series in a circuit, and means for distributing illuminating material in a similar manner with regard to each sparking gap.

5. In a flash lighting apparatus, a plurality of trays, means for positioning illuminating material in like manner on said trays, said means being movable with respect to the illuminating material to position same on the trays, and means for simultaneously igniting the material on all of the trays.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERBERT ERNEST COSTON.

Witnesses:

W. J. McARTHUR,
A. J. LINDEN.