

N^o 23,016



A.D. 1911

Date of Application, 18th Oct., 1911

Complete Specification Left, 17th Apr., 1912—Accepted, 18th Nov., 1912

PROVISIONAL SPECIFICATION.

Improvements in and relating to Photographic Flash Lighting.

We, HERBERT ERNEST COSTON, Photographer, and DOVER STREET STUDIOS LIMITED, all of Dover Street, London, W., do hereby declare the nature of this invention to be as follows:—

This invention relates to means for obtaining instantaneously a strong light
5 for photographic or like purposes.

The object of the invention is to obtain a more uniformly distributed and bright source of light.

The invention consists for this purpose in means for simultaneously igniting
10 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 corre-
15 spondingly igniting a number of supplies of illuminating material in trays within a translucent chamber.

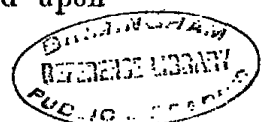
In carrying this invention into effect in one manner, a number of trays or receptacles for containing the magnesium or other powder are placed within a
20 rectangular chamber or surrounding screen which is covered with treated silk or some other suitable, and preferably non-inflammable and translucent material. Each of the trays is fitted with a pair of sparking terminals which may be provided with horizontal rods or other means for producing a spark upon the passage of a high tension electric current. The various terminals are connected up in series and with a high tension coil or other suitable means for
25 creating an electric current, the arrangement being such that each pair of terminals forms a gap in the circuit. One of each pair of terminals is provided with a collar or hollow cylindrical member loosely fitting the horizontal rod and which may be fitted with a small knob or handle to effect its easy removal from the horizontal rod.

In preparing the apparatus for use, equal quantities of powder are placed
30 upon each of the trays in such a manner as to cover one of the terminals and to lie in a similar manner upon and around the removable collar upon the horizontal rod of the other terminal. The loose collars are then removed which will leave the powder in substantially the same configuration with regard to each of
35 the horizontal rods 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 fitted with a hinged
40 plate standing out horizontally above the horizontal rod and turned down in front of the end thereof so as to form a screen for the rod, and while it is in position, preventing any material placed upon the tray coming in contact therewith. The screen can however turn about its hinged connection to the terminal and so be raised completely out of the way of the horizontal rod.

In this case in preparing the apparatus the hinged plate is turned down over the horizontal rod of the terminal and the magnesium powder is placed upon

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the tray in contact with the forward downwardly turned end of the plate. On lifting the plate by turning it about its hinge, the powder will slip down in an inclined position in front of the end of the horizontal rod and so the powder and the rods will occupy similar positions with regard to one another in the case of each of the trays or receptacles, in the same manner as in the first described form of the invention. 5

On 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 the trays simultaneously. 10

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 powder and prevent their immediate dispersion in the surrounding atmosphere. 15

It is clear that many modifications may be made in this invention and the manner of carrying it into effect without in any way departing from the spirit of the same. 20

Dated this 18th day of October, 1911.

MARKS & CLERK,
57 & 58, Lincoln's Inn Fields, London, W.C.,
13, Temple Street, Birmingham, and
25, Market Street, Manchester,
Agents. 25

COMPLETE SPECIFICATION.

Improvements in and relating to Photographic Flash Lighting.

We, HERBERT ERNEST COSTON, Photographer, and DOVER STREET STUDIOS LIMITED, all of Dover Street, London, W., do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:— 30

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. 35

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. 40

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. 45 50

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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.

5 The invention further consists in flash lighting apparatus in which the sparking gaps have an electrode which is provided with a removable moulding 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.

10 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.

15 Figures 3 and 4 represent plan and elevation, partly in section of one of the trays or tables for carrying the illuminating powder.

Figure 5 shows a modified form of the moulding device.

20 In carrying this invention into effect in one manner as shown diagrammatically in Figures 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
25 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.

30 The trays or plates, *a*, shown in detail in Figures 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 axis, 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
35 tension electric current. The terminals are connected by means of the cables, *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 forms a gap, the gaps being in series in the circuit.

40 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.

45 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.

50 In place of the removable collar the terminal may be provided with a hinged plate, *i*, as shown in Figure 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
55 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

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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. 5

On 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. 10 15

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. 20

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In flash lighting apparatus 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. 25 30

2. Apparatus according to Claim 1, in which a plurality of means for effecting the instantaneous and corresponding ignition of a number of supplies of illuminating material are arranged within a translucent chamber, substantially as described.

3. Apparatus according to Claim 1, in which the sparking gaps have an electrode which is fitted with a removable moulding device for obtaining similar configuration of the illuminating material at the electrodes of each of the gaps in the circuit, substantially as described. 35

4. Improved flash lighting apparatus substantially as and for the purposes described with reference to the accompanying drawings. 40 45

Dated this 17th day of April, 1912.

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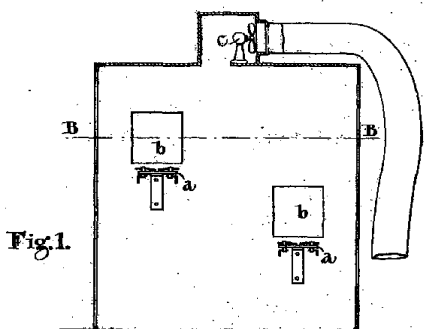


Fig. 1.

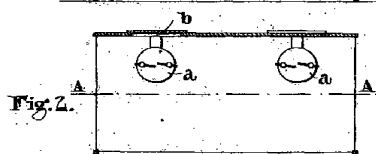


Fig. 2.

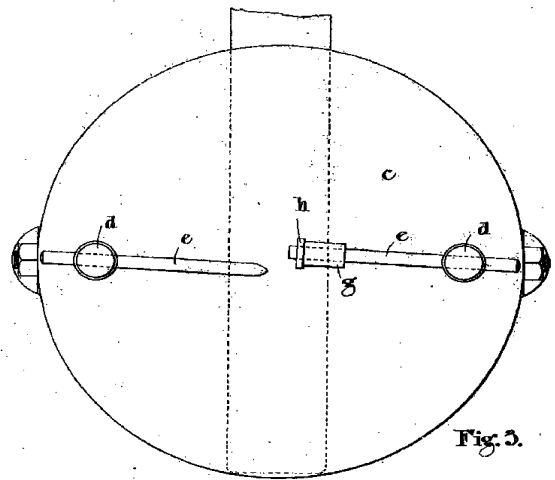


Fig. 3.

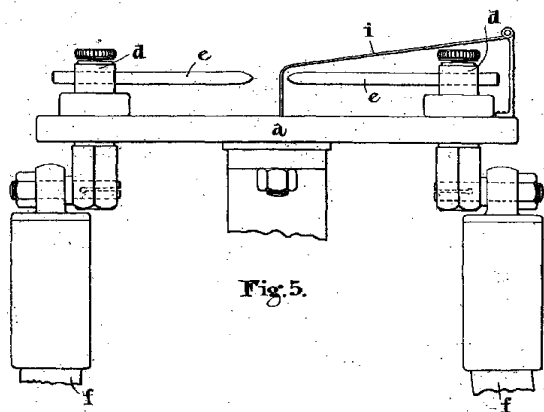


Fig. 5.

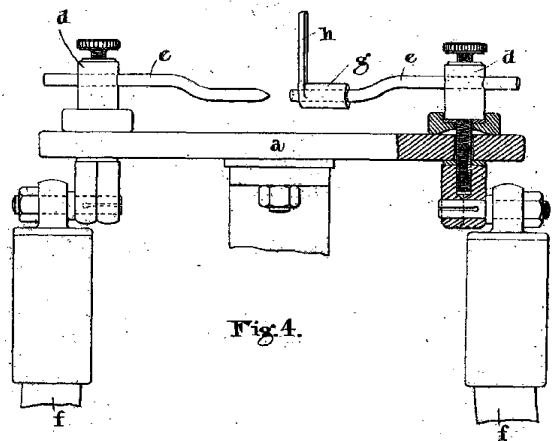


Fig. 4.

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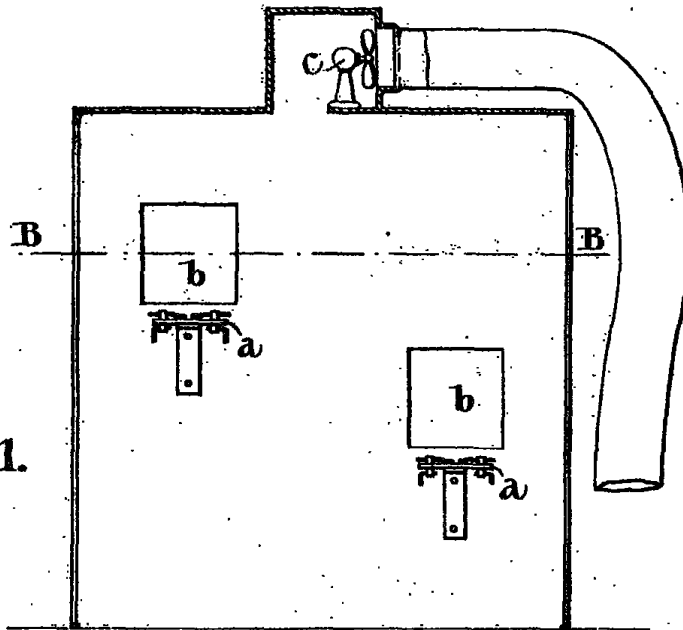


Fig. 1.

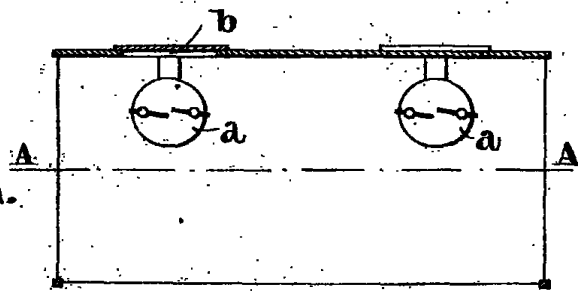


Fig. 2.

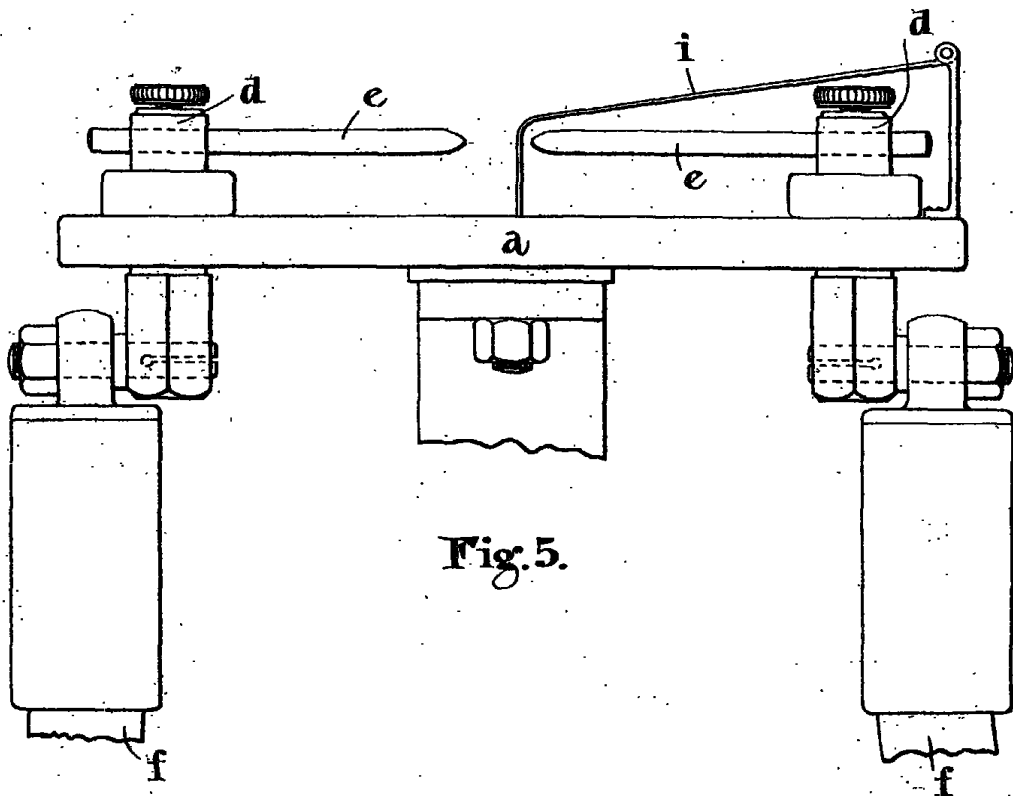


Fig. 5.

[This Drawing is a reproduction of the Original on a reduced scale.]

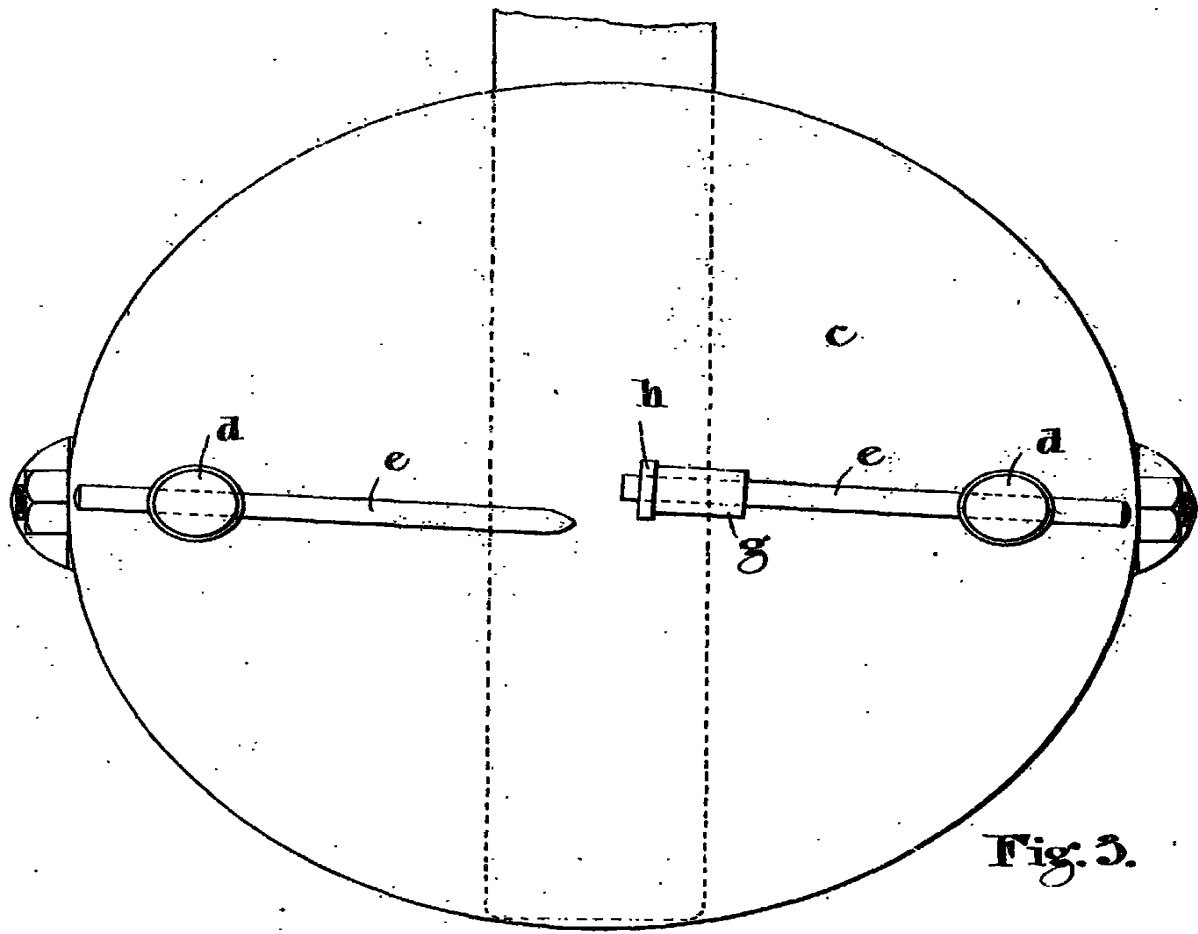


Fig. 3.

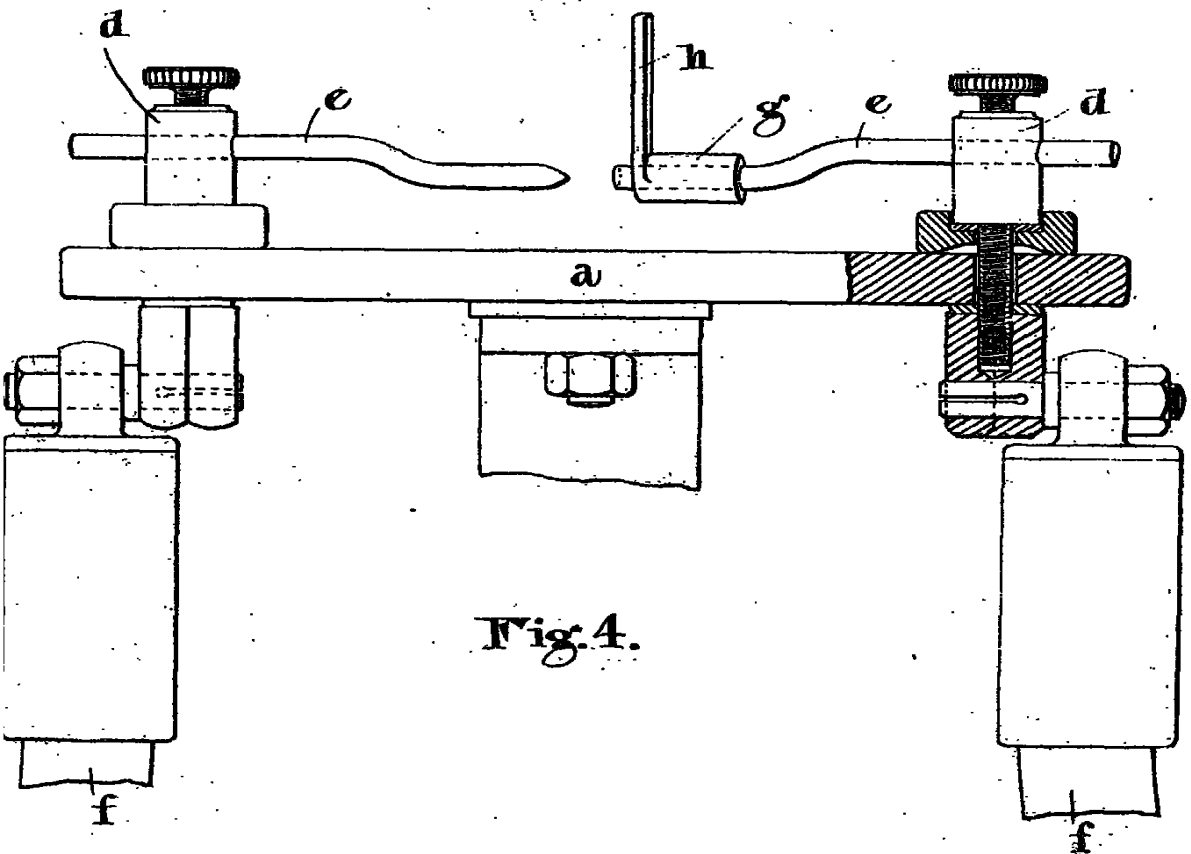


Fig. 4.

