

No. 673,386.

Patented May 7, 1901.

J. COURTIER.

FLASH LAMP.

(Application filed Dec. 8, 1899.)

(No Model.)

Fig. 1.

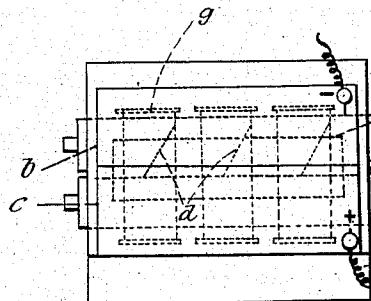


Fig. 2.

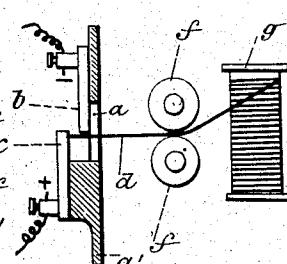


Fig. 3.

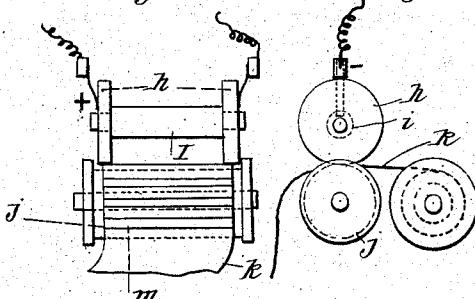


Fig. 4.

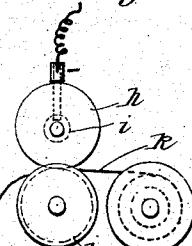


Fig. 5.

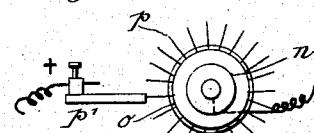


Fig. 6.

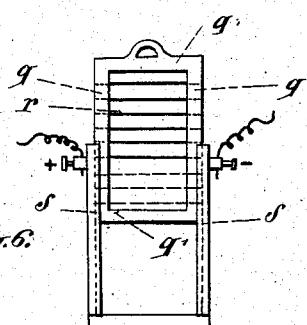
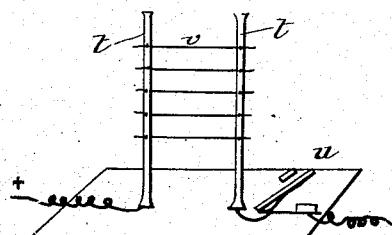


Fig. 7.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JULES COURTIER, OF PARIS, FRANCE.

## FLASH-LAMP

SPECIFICATION forming part of Letters Patent No. 673,386, dated May 7, 1901.

Application filed December 8, 1899. Serial No. 739,709. (No model.)

To all whom it may concern:

Be it known that I, JULES COURTIER, a citizen of the Republic of France, and a resident of Paris, France, have invented certain new and useful Improvements in Flash-Lamps, of which the following is a specification.

My present invention relates to an improved apparatus for producing flashes by the electric evaporation of thin wires for photographic purposes; and it consists in the construction, novel combination, and arrangement of parts fully described and claimed hereinafter with reference to the accompanying drawings, wherein—

Figure 1 is a front view of an apparatus embodying my invention. Fig. 2 is side elevation of same with parts shown in section. Figs. 3 and 4 illustrate an apparatus arranged for producing less intensive flashes. Fig. 5 shows a modification for producing very short flashes. Figs. 6 and 7 are modifications hereinafter described.

The apparatus shown in Figs. 1 and 2 is arranged for producing very intensive flashes. Said apparatus comprises a board *a'*, having a suitable aperture *a*, (preferably rectangular,) limited by means of two current-conducting surfaces *b* and *c* (preferably made of carbon) and insulated from each other. One of said surfaces is connected to the negative terminal, the other surface being connected to the positive terminal of a circuit. When a very fine or thin wire *d* in contact with the surface *b* is brought in contact with the surface *c*, the electric circuit will be closed and said wire is instantaneously vaporized, the force of the current being sufficiently strong to attain this result. The aforesaid aperture is located in front of rollers *f*, adapted to feed one or more thin wires *d* from rollers *g* to one edge and then to the other edge of said aperture *a*. Said rollers *f* may be also employed for rolling thicker wires by means of a suitable tightening device. (Not shown.) The electric aperture, the metal wires, and the wire rolling and feed rollers form the essential parts of the "phlogostome." Other secondary devices—such as switches, safety cut-out, rheostat, wire guides, &c.—may be provided for obtaining a perfect and regular operation. The phlogostome may be actuated by means of a crank, a clockwork, or a me-

chanical transmission. In the first instance one of the rollers *f* is provided with a crank made of insulating material.

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In practice I preferably employ a plurality of wires, so as to obtain a more intensive flash, and as the wires are not vaporized exactly at the same instant the flash will be longer, and as the wires are constantly fed to the carbons I obtain a very intensive practically continuous light. The intensity, actinism, and duration of flashes may be varied as desired by properly determining the number of wires, the section of same, the metal to be employed, and the length of said wires. It will be readily understood that the shape of the said aperture *a* and the means for feeding the wires may be modified as desired without departing from the scope of the invention. 70

In Figs. 3 and 4 I have shown a modification arranged for producing successive flashes of less intensity. The apparatus comprises a roller the ends of which are formed of metal disks *h*, the body *i* of less diameter being 75 made of insulating and non-inflammable material. Thus the metal disks *h* are insulated from each other. One of said disks is connected to the negative terminal of a circuit, the other disk being connected to the positive terminal of said circuit. Said roller is frictionally engaged with a lower roller *j*, made of insulating material. Between said rollers is inserted a band or strip *k*, preferably made of asbestos cloth, upon which are 80 secured wires *m* at equal intervals and extending at right angles with the longitudinal sides of the band, the ends of said wires coming successively into contact with the metal disks *h* of the aforesaid roller. When one of 85 the wires is in this position, the circuit is closed and the wire is instantaneously vaporized. The band *k* being continuously fed between the rollers another wire is brought into contact with said disks and vaporized, 90 and so on. This apparatus may also be actuated as desired and advantageously combined with a kinetoscope, so as to produce flashes by means of one or more wires when the shutter uncovers a portion of the band to 95 be exposed. 100

When it is desired to produce short flashes, I employ the modification shown in Fig. 5 and comprising a metal current-conducting

roller *n*, over which is fitted a cylindrical sleeve *o*, made of metal. Upon the periphery of said sleeve are secured radial fusible wires *p*. The journals of the roller *n* are connected to one of the terminals of the circuit and the roller is rotated in any convenient manner. As the roller *n* is rotated the fusible wires *p* are successively brought into contact with a metal blade *p'*, connected to the other terminal of the circuit, whereby the latter is successively closed to vaporize the wires.

Another modification, Fig. 6, consists in making the supports *q* of insulating material and of the form of a ladder, the wires *r*, extending transversely thereto, forming the steps. Two insulating cross-bars *q'* are provided to hold the uprights *q* in proper relative position. Said uprights *q* are arranged in vertical guideways *s*, respectively connected to the terminals of a suitable circuit, and when the ends of a wire *r*, extending through the uprights *q* and projecting slightly therefrom, are simultaneously brought into contact with the guideways *s* the circuit is closed and the fusible wire instantaneously vaporized.

Another modification (shown in Fig. 7) is adapted to produce a single very intensive flash for instantaneous photography. The apparatus comprises two metal standards *t*, secured on an insulating-support and respectively connected to the terminals of a suitable circuit. A suitable switch *u*, inserted between one of said standards and the corresponding terminal of the circuit, is provided for closing the latter at the desired moment. To the standards *t* are secured, transversely, fusible wires *v*, which are vaporized when the circuit is closed.

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

1. In an apparatus of the character set forth, the combination with an insulating-support, of metal parts mounted upon the same independently of each other and respectively connected to the terminals of a suitable electric circuit, fusible wires adapted to be brought into contact with said metal parts, and means for bringing said wires one at a time, and successively into contact with the metal parts, substantially as and for the purpose set forth. 45

2. In an apparatus of the character set forth, the combination with an insulating-support, of metal disks on the ends of the same and respectively connected to the terminals of a suitable electric circuit, of an insulating-roller arranged contiguous to said disks, an insulating-band adapted to pass intermediate the said disks and roller and be fed thereby, and fusible wires carried by the said band and adapted to come into contact one at a time with the said disks to complete the electric circuit and be fused in the manner and for the purpose set forth. 65

3. The combination with a revoluble insulating-support, and metal disks on the ends of the same and respectively connected to the terminals of a suitable electric circuit, of means for feeding fusible wires into contact with said metal disks. 70

In testimony whereof I have hereunto set my hand in presence of two witnesses.

JULES COURTIER.

Witnesses:

ADOLPHE STURM,  
EDWARD P. MACLEAN.