I. G. McCOLL.

FLASH LIGHT APPARATUS.

APPLICATION FILED APR. 27, 1912.

1,061,306.

Patented May 13, 1913.

Fig. 1.

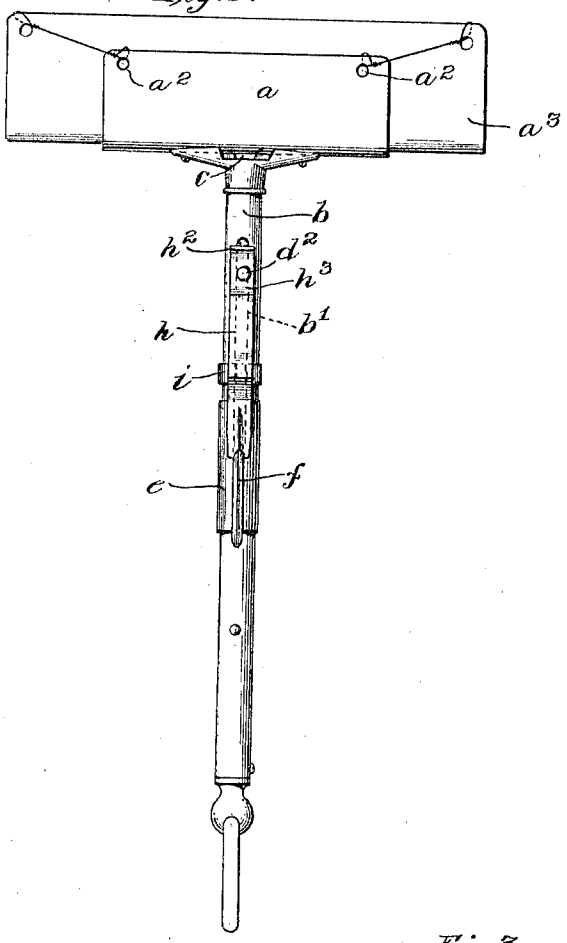


Fig. 2.

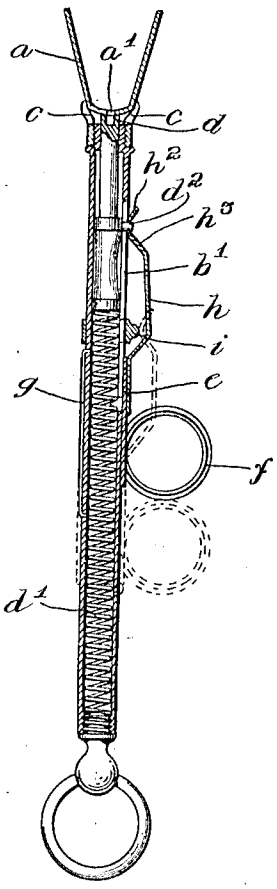
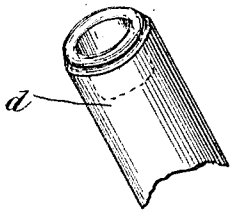


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FLASH-LIGHT APPARATUS.

1,061,306. Specification of Letters Patent. Patented May 13, 1913.

Application filed April 27, 1912. Serial No. 693,548.

To all whom it may concern:

Be it known that I, IRVING G. McCOLL, a citizen of the United States, residing at the borough of Manhattan, in the city, county, and State of New York, have invented certain new and useful Improvements in Flash-Light Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to flash light apparatus, and more particularly to a type thereof wherein powder is ignited by means of a percussion cap.

The main object of the invention is to provide a flash light apparatus wherein the firing pin may be readily controlled by the operating handle or trigger to facilitate the adjustment of the percussion cap and wherein said pin will, in firing, be set and released through the same action in order to insure the proper timing of the ignition of the charge of powder.

A further object is to provide an apparatus of this character wherein the trigger and the firing pin may be positively coupled together in a manner to insure the simultaneous operation thereof under all conditions to the point of release of the pin, this release being automatically accomplished during, or at the end of, the movement setting the firing pin, thus preventing the accidental release of the said pin and the accidental firing of the powder charge.

A still further object is to provide an apparatus of this character wherein the firing pin will be so constructed and arranged as to insure the discharge of the priming cap with each actuation thereof.

A still further object is to provide an apparatus of this character having a flash pan of fixed dimensions which is adapted to have detachably mounted therein a supplemental pan so as to adapt the device for use with charges of different sizes. And a still further object is to provide a device of this character which will be simple in design, reliable in use, and inexpensive to produce.

The invention consists primarily in a flash light apparatus embodying therein such novel features of construction and combination of parts as are hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

Referring to the drawings:—Figure 1 is a side elevation of a flash light apparatus embodying my invention; Fig. 2 is a vertical section thereof, and Fig. 3 is a detailed view of the end of the firing pin.

Like letters refer to like parts throughout the several views.

In the embodiment of my invention shown in the drawings, *a* indicates a metallic flash pan having in the bottom thereof an opening *a'* through which a charge in the flash pan is adapted to be ignited by means of a percussion cap. The pan *a* is mounted upon and adapted to be carried by a hollow standard *b* having therein a longitudinal slot *b'*. The standard *b* adjacent to the flash pan *a* has formed therein a recess *c* open at the front and rear thereof as shown in the drawings, which recess is adapted to receive a cap to prime the apparatus. Mounted in the hollow standard *b* is a reciprocatory firing pin *d* which is adapted to be actuated by the spring *d'*. Slidably mounted upon the standard *b* is a sleeve *e* having a finger hold *f* by means of which it may be reciprocated upon said handle, this sleeve being guided in its reciprocatory movement by the standard *b*, and held against rotative movement upon said handle in any desired manner, as by the spline *g*.

Mounted upon and movable with the reciprocatory sleeve *e* is a spring tongue *h*, this tongue and the firing pin *d* being provided with coöperating coupling members adapted to be automatically disengaged in a manner which will be hereinafter described. This coupling mechanism preferably consists of a stud d^2 carried by the firing pin *d* and projecting through the slot *b'* of the standard and an opening *h'* in the tongue *h* adapted to pass over and engage said stud. The outer end of the tongue *h* is flared away from the handle *b* as at h^2 so as to cause said tongue, through its engagement with said stud when coupling the trigger mechanism to the firing pin, to be forced outwardly and pass over said stud to bring the tongue into the proper relation to said stud and insure the automatic coupling of the trigger mechanism with the firing pin. The tongue *h* intermediate the end h^2 and the sleeve *e* is raised as shown more particu-

larly in Fig. 2 of the drawings, to provide proper clearance between said tongue and the standard b and to form a cam surface h^3 adjacent to the end of said tongue.

Carried by the standard b is a cam or projection i adapted to be engaged by the cam surface h^3 of the tongue h when the spring d' has been tensioned to the desired extent, and to automatically disengage said tongue from the stud d^2.

To insure reliability in the operation of the firing pin, I form a recess in the end of said pin in a manner to produce a continuous circular impact surface thereon entirely encircling the opening a' in the flash pan a, thus having a continuous rim fire which is bound to engage every portion of the percussion cap about said opening a' and thus preclude a misfiring of the apparatus.

To permit a powder receptacle of greater capacity than that of the flash pan a to be used in connection with the firing mechanism described, I provide the pan with a plurality of openings a^2 which may be utilized to wire, or otherwise secure, a powder receptacle such as a^3 having greater capacity than the pan a in position relative to said pan, the receptacle a^3 being detachably secured in position relative to the pan a.

When it is desired to use the apparatus, the standard b is held in the hand of the photographer or his assistant with the forefinger in the finger hold f of the trigger mechanism; and the sleeve e is forced upwardly until the outwardly flared end h^2 of the tongue h engages and is forced outwardly of the stud d^2 to a point where the said tongue is tensioned and caused to spring toward the standard b when the opening h^2 is over said stud, thus causing said tongue to automatically engage said stud. The sleeve e is then drawn slightly downwardly, carrying with it the firing pin d thus exposing the recess c in a manner to permit the percussion cap to be placed therein between the pin and the pan a, and below the opening a' in the latter without placing the spring d' under substantial tension. The firing pin may then be permitted to move upwardly under the spring d' leaving the trigger mechanism set, the velocity developed by said spring being insufficient to detonate the cap. When it is desired to fire the charge, it is merely necessary to draw the sleeve e downwardly by a continuous movement, the tongue h when reciprocated, drawing the firing pin d downwardly with the sleeve, thus tensioning the spring d'. As the cam surface h^3 approaches the cam or abutment i, upon the standard b, the spring d' will be tensioned to a degree to secure the desired velocity of the return movement of the firing pin thereunder, so that when with the continued movement of said sleeve, the disengagement of the tongue h with the pin g^2 is effected through the elevation of the tongue h by said cam or abutment, said firing pin will be automatically projected with the desired force against the cap to detonate same and thus ignite the charge of flash powder within the pan a.

It is not my intention to limit the invention to the precise details of construction shown in the accompanying drawings, it being apparent that such may be varied without departing from the spirit and scope of the invention.

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

1. A flash light apparatus embodying therein a flash pan, a handle therefor, said flash pan having an opening therethrough and a recess being formed between said handle and said pan adjacent to said opening and opening outwardly below said pan, a spring actuated firing pin mounted within said handle and adapted to be forced into engagement with a cap contained in said recess, and a trigger mechanism comprising a member slidably mounted upon said handle, coöperating coupling members carried by said firing pin and said member respectively, and means operating to disengage said coupling members at a predetermined point in the movement of said slidable member, whereby said firing pin will be set and released by the continued movement of said slidable member.

2. A flash light apparatus embodying therein a flash pan, a handle therefor, said flash pan having an opening therethrough and a recess being formed between said handle and said pan adjacent to said opening, a spring actuated firing pin mounted within said handle and adapted to be forced into engagement with a cap contained in said recess, a stud carried by said pin and movable in a slot in said handle, a trigger mechanism comprising a slidable member mounted upon said handle, and a spring tongue carried thereby and adapted to engage said stud, and a cam carried by said handle and adapted to act upon said tongue at a predetermined point in its movement to release said firing pin.

3. A flash light apparatus embodying therein a flash pan, a handle therefor, said flash pan having an opening therethrough and a recess being formed between said handle and said pan adjacent to said opening, a spring actuated firing pin mounted within said handle and adapted to be forced into engagement with a cap contained in said recess, a stud carried by said pin and movable in a slot in said handle, a trigger mechanism comprising a slidable member mounted upon said handle, and a spring

tongue carried thereby and adapted to engage said stud, a cam carried by said handle and adapted to act upon said tongue at a predetermined point in its movement to release said firing pin, and means holding said member against rotation upon said handle.

4. A flash light apparatus embodying therein a flash pan, a handle therefor, said flash pan having an opening therethrough and a recess being formed between said handle and said pan adjacent to said opening, a spring actuated firing pin mounted within said handle and adapted to be forced into engagement with a cap contained in said recess, a stud carried by said pin and movable in a slot in said handle, a trigger mechanism comprising a slidable member mounted upon said handle, and a spring tongue carried thereby and adapted to engage said stud, and a cam carried by said handle and adapted to act upon said tongue at a predetermined point in its movement to release said firing pin, the free end of said tongue being flared outwardly away from said handle, and said tongue intermediate said flared end being spaced away from said handle, whereby oppositely pitched cam surfaces are provided adapted to coöperate respectively with said stud and with said cam to insure the automatic engagement of said spring with, and release from, said stud.

5. A flash light apparatus embodying therein a flash pan, a handle therefor, said flash pan having an opening therethrough and a recess being formed between said handle and said pan adjacent to said opening, a spring actuated firing pin having the impact end thereof recessed to form a continuous firing rim, mounted within said handle and adapted to be forced into engagement with a cap contained in said recess, and a trigger mechanism comprising a member slidably mounted upon said handle, cooperating coupling members carried by said firing pin and said member respectively, and means operating to disengage said coupling members at a predetermined point in the movement of said slidable member, whereby said firing pin will be set and released by the continued movement of said slidable member.

In witness whereof, I have hereunto affixed my signature, in the presence of two subscribing witnesses, this 19th day of April, 1912.

IRVING G. McCOLL.

Witnesses:
F. T. WENTWORTH,
EUGENE WENING.