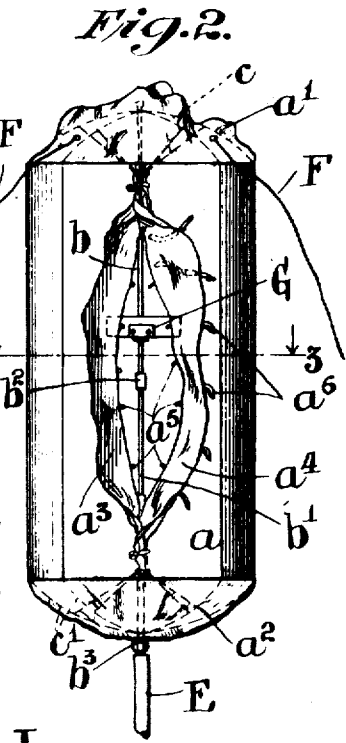
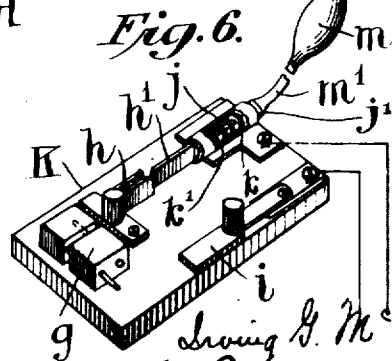
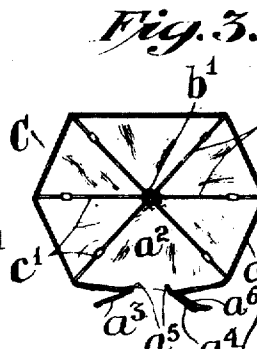
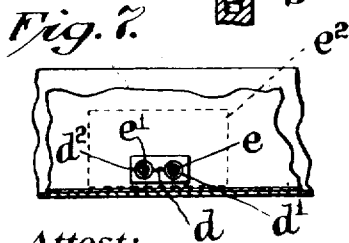
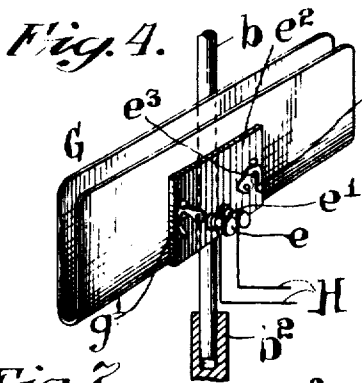
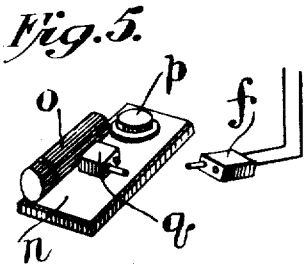
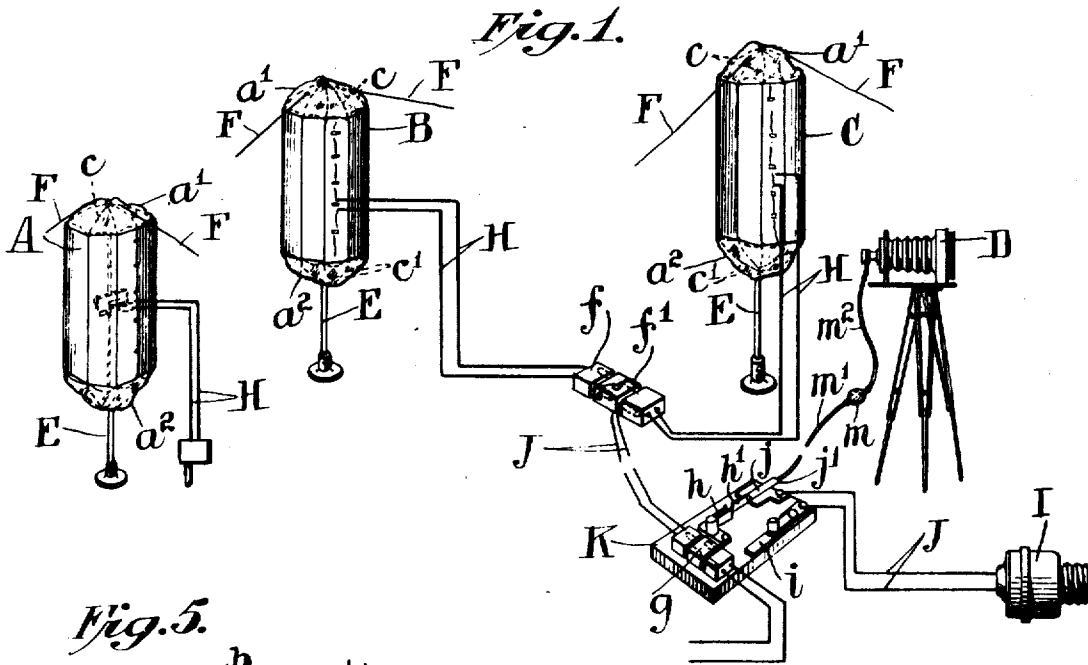


I. G. McCOLL.
FLASH LIGHT APPARATUS.
APPLICATION FILED SEPT. 19, 1908.

1,023,161.

Patented Apr. 16, 1912.



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his Attys.

UNITED STATES PATENT OFFICE.

IRVING G. McCOLL. OF NEW YORK. N. Y.

FLASH-LIGHT APPARATUS.

1,023,161.

Specification of Letters Patent. Patented Apr. 16, 1912.

Application filed September 19, 1908. Serial No. 453,791.

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, 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.

10 My invention relates to flash light apparatus, and more particularly to the bag for supporting the flash-pan and the electrical connections whereby the powder may be instantaneously ignited in one or a series of said pans.

15 The main object of the invention is to provide, in flash-light apparatus, a collapsible bag having on the inside thereof means whereby it may be readily distended and a flash-pan may be supported therein in a manner to not only diffuse the light of the flash, but to retain the smoke and gases in a manner to avoid the contamination of the air in a room, thus permitting the use, if desired, of a plurality of such pans so disposed about a room as to secure the desired instantaneous light effects without discomfort to the subjects or the operator.

20 A further object is to provide, in an apparatus of this character, means whereby the pan may be supported within the bag in a position whereby the flame or flash will be prevented from contacting with the body of the bag by reason of the positioning of the supports for the pan relative to the members distending the bag.

25 A still further object is to provide, in an apparatus of this character, an ignition fuse adapted to be included in an electrical circuit, which may be readily mounted in the flash-pan in a manner to be brought into intimate contact with the powder therein contained.

30 A still further object is to provide, in an apparatus of this character, an electrical ignition system wherein the terminals may be readily connected to a fuse within the flash-pan and be so supported within said pan as to avoid any likelihood of such short circuiting as would result in a failure of the fuse to ignite the powder or a premature ignition thereof.

35 A still further object is to provide an ignition system which may be used in connection with one or more bags, as desired,

and be capable of simultaneously firing all of the pans with which it is connected.

A still further object is to provide an ignition system wherein each bag may be disconnected from the main circuit and connected with a testing-device to determine whether or not the line to the igniter in said bag is in working condition.

40 A still further object is to provide an electrical ignition system, in a flash-light apparatus, embodying therein a switch which is normally open but which may be substantially instantaneously closed without any apparent attention on the part of the operator, thus permitting the powder to be ignited at any instant when the conditions within the room are such as to secure the desired exposure.

45 A still further object is to provide, in an ignition system of this character, means whereby, if desired, the camera shutter may be simultaneously actuated with the ignition of the flash-light powder.

50 A still further object is to provide a flash-light apparatus which may be compactly packed when not in use, which may be quickly set up, and the various electrical connections quickly coupled, when it is desired to use same. And a still further object is to provide a flash-light apparatus which will be simple in its construction, efficient in use, and inexpensive to manufacture.

55 The invention consists in the novel features of construction and combination of parts hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings, Figure 1 is a conventional showing of a camera, a plurality of smoke-bags, the switch controlling the electrical circuits of the igniter system, and the couplings whereby one or more bags may be included in the circuit, as desired. Fig. 2 is a rear elevation of one of the bags with the closing flaps distended so as to disclose the rods spreading the top and bottom of the bags and supporting the rods distending same, and the powder pan in position on said rods. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a detail view of a portion of the separating or spreader rods and the flash-pan attached thereto. Fig. 5 is a detail view of the tester showing a coupling attached to the end of one of the

branch lines leading to a smoke-bag in position to be applied thereto. Fig. 6 is a perspective view, on a larger scale, of the switch-board and the main line extension showing the coupling thereon; and Fig. 7 is a front view of the igniter coupling and igniter with the cartridge in which the fuse may be inserted, if desired, indicated in dotted lines.

Like letters refer to like parts throughout the several views.

It has heretofore been a practice, in photography, when taking pictures by flash-light, to inclose the powder-pan in a sack in a manner to confine as much as possible the smoke and diffuse and modify the light so as to prevent the flash startling the subject or subjects and avoid the staring effect so commonly found in flash-light pictures. The apparatus employed, however, has been more or less crude, and no attempts were made to so distend the sack as to eliminate wrinkles and other irregularities in the cloth composing same, and the ignition system was mechanical, thus practically limiting the use of the apparatus to a single sack. Furthermore, the construction of the sack is ordinarily such as to have ever present the danger of the flame or flash impinging against the cloth thereof and firing same. So far as I have been able to ascertain, no provision has ever been made for the extension of the ignition system so as to include a plurality of bags capable of having the powders therein simultaneously ignited from a single point so as to secure the substantial instantaneous ignition of the powder in each bag and diffusion of light from as many points as may be deemed expedient, in view of the size of the room in which the picture is being taken.

By my invention, as will more fully appear hereinafter, the smoke-bag will be so extended as to secure the highest efficiency from a given quantity of powder, and any number of such bags may be included in the system and set off at practically the same instant from a point adjacent to the camera, thus giving the operator the desired control of the apparatus so as to secure the best results in posing the subject. Furthermore, this control may be exercised without the knowledge of the subject, thus permitting the picture to be taken at the moment when the best results will be secured.

In the embodiment of my invention shown in the drawings, I have shown at A, B and C a plurality of smoke-bags, which may be so positioned around a room as to secure the desired diffusion of the light from the powders and at D a camera, of any ordinary, well-known construction. Each bag A, B and C has a stand E which may rest upon the floor, or be held by an attendant, as desired, and each bag is also provided with

guy-cords F, which may be used to suspend or stay it when suitable means are present to which said guys may be attached. Each said bag has a pan G therein (see Fig. 2) adapted to contain the flash-powder and the ignition device, the construction of which will be more fully described hereinafter, and leading from each said ignition device are terminal wires H adapted to be connected by means of an ordinary screw-plug I with a socket in circuit with any desired source of electrical energy, as a dynamo, supplying the power for ordinary illumination. The main circuit is through the wires J, which circuit includes therein a portable switch-board K, detail construction of which will be more fully described hereinafter. Each bag A, B, C, is composed of a covering a of white muslin, or other neutral translucent material distended by means of a collapsible frame. This frame, in the embodiment of my invention shown in the accompanying drawings, consists of two rods, b , b' , united by means of a ferrule b^2 forming a socket carried by one of them, adapted to receive the end of the other. Each said rod carries an umbrella frame c or c' , adapted to be raised and lowered, and latched in the open position like the ordinary umbrella.

The sides of the cover forming the smoke-bag are of a length to be drawn fairly tight when the rods are united and the umbrella frame extended, thus taking out such wrinkles and folds as would tend to cause an unequal diffusion of the light. This distension also holds the sides well away from the rods b , b' and permits said rods to be used as a support for the powder-pan. The top a' and the bottom a^2 of the smoke-bag are fairly full, thus increasing the capacity of the bag. To facilitate the placing of the powder-pan in the bag, I leave an opening in the back thereof, adapted to be closed by flaps a^3 , a^4 . To prevent the escape of smoke and gases from the bag, I provide a double row of fastenings, one adapted to bring the edges of the opening together, and the other a^5 adapted to pass over the flaps a^3 , a^4 , after they have been so rolled together as to close any openings left by the row a^5 between the edges of said opening. This opening is provided at the back of the bag for the twofold purpose of not interfering with the rays of light, and of preserving a slightly appearance toward the subjects. The lower rod b' has a screw threaded end b^3 by means of which the supporting standard E is attached to the smoke-bag.

The powder-pan G consists of a U-shaped receptacle made of metal or other non-combustible material open at the top and sides so as to permit the flame to spread in a fan-tail sheet, a type of pan which is well known in this art at this time. This pan is so con-

structed as to be capable of use with either a fixed cartridge, or loose powder, it being merely essential that the igniter be brought into intimate contact with the powder.

- 5 When a smoke-bag is used, as when a plurality of flash-pans are distributed about a room, I find it advantageous to use an electric circuit for igniting the charge of powder, to permit the convenient actuation of the igniter within the bag, and to insure the simultaneous firing of the powder in all bags. To simplify the structure of the igniter mechanism, I preferably use the electrical current itself to fire the powder by passing it through a fuse d in direct contact with some of the powder. The branch lines H have the opposite wires thereof, respectively, secured by means of binding posts, or any other desired expedient, to terminal pins e, e' , carried by a plate e^2 of fiber, vulcanite or other non-conduction material. These pins are spaced apart sufficiently to prevent the formation of an arc between them, and are passed through suitable openings in, and held away from the pan G by the plate e^2 , thus preventing short circuiting through said pan. The pins e, e' have tapered ends to facilitate the coupling thereof to the fuse. The plate e^2 is removably attached to the pan G by means of studs g' on said pan and hooks e^3 on said plate.

- The fuse d may form a part of a cartridge forming envelop for the powder, or not, as desired, it being merely necessary that the fuse be embedded in the powder. In either case, the fuse comprises the fusible wire, or fuse proper, d , electrically connected with end rings d', d^2 , adapted to pass over and come into electrical connection with the pins e, e' , respectively. When used with an envelop containing a charge of powder, the eyelets will be sealed so as to prevent the escape of the powder, but the pointed pins e, e' will readily pass through said seal and make the desired electrical connection with the rings d', d^2 . The other terminals of the line H are connected with an ordinary pin coupling block f having one pin and one socket in order to provide a universal coupling and permit the unlimited extension of the system of ignition by means of a main line having a plurality of such couplings f' . While each coupling f is single, with leads direct to the pin e, e' , the couplings f' are double, to permit branch lines to be run therefrom and the main line to be extended and branch lines added to any desired extent by a mere duplication of parts.
- 60 The various branch lines are coupled in multiple to the main line.

- Arranged at some point in the main line J is the switch-board K, which is preferably located adjacent to the camera D. This board has a coupling block g mounted there-

on, which is similar to the coupling f' so as to permit the main line J to extend from both sides of the board to opposite sides of a room. One terminal wire of said coupling leads to one member h of a knife switch and the other terminal to one member i , of an ordinary hand switch. The other member i' of said last mentioned switch is in direct electrical connection with the socket I, or other source of power, thus constituting means whereby the circuit may be permanently interrupted. Mounted on the switch-board K, adjacent to the switch-member h , is an air cylinder j having mounted therein a piston k carrying the knife member h' adapted to engage said member h to close the electrical circuit in the main line J and branch line H. Said switch is normally held open, in any desired manner, as a soft spring k' acting on the piston k .

The cylinder j has a part therein communicating with the nipple j' . To actuate said switch h, h' , I provide a hand bulb m such as is commonly used with a camera, having a tube m' coupled to the nipple j' . If desired, to secure an exposure only simultaneously with the ignition of the powder in the various pans G, I provide a second tube m^2 leading to the shutter controlling mechanism of the camera. The tester comprises a test-board n carrying a dry battery cell o the circuit from which includes therein an audible indicator p and a coupling block q similar to the blocks f . This construction affords a small, portable tester, by means of which each branch circuit H may be tested preparatory to making an exposure, the current from the cell o being of too low a tension to fuse the wire d . The plug I may be of any desired type used in house lighting systems.

The operation of the herein described apparatus is substantially as follows:—A number of bags A, B, C are positioned about a gallery, or room, in the desired localities to secure that diffusion of light necessary to produce the desired lighting of the subjects, said bags being either held by the standards E or by attendants, as desired. To so position said bags they are first unfolded and the flaps $a^3 a^4$ opened so as to permit access thereto. The umbrella frames $b b'$ are then opened to distend the top and bottom of the bag, leaving, however, sufficient looseness in both to permit the expansion of the gases of combustion from the discharge of the flash powder. The two rods $b b'$ are then forced apart to extend the sides a of the bag to the full extent, and united in this position by means of the socket and tenon joint b^2 between them. This not only serves to distend the sides of the bag so as to afford ample space within same for the flash-pan and its appurtenances, but removes any wrinkles or laps in the sides a , which would

tend to cast shadows or result in an unequal diffusion of light from the flash. A flash powder cartridge, or loose flash powder, is then placed in the pan G and the plate e^2 carrying the terminal pins $e e'$ is attached to said flash-pan by means of the studs g' and the hooks e^3 carried by said pan and said board, respectively, the pins $e e'$ passing through openings in the said flash-pan G and through the rings $d' d^2$, to which is attached the fuse d in a manner to make an electrical connection therewith. The terminal wires H are passed through the opening in the sides a of the bag and the said flaps $a^3 a^4$ closed upon said terminals by means of the fastenings a^5 , to secure a perfectly smoke-tight joint, the said flaps being then rolled together and secured by means of the fastenings a^6 .

The flash-pan G may be secured to the rod b by any desired form of clamp, the manner of attachment being immaterial to this invention. The plug I is then connected with any desired source of supply, as an ordinary lamp socket, and the switch-board K placed adjacent to the camera D with the tubes $m' m^2$ connected respectively, with the camera shutter and the nipple j' of the cylinder j . One or more sections of the main line J, each having a coupling plug f' , at one end thereof, and f , at the other, is then coupled to the coupling g of the switch-board K by means of the coupling member f , and said lines run adjacent to one or two of the bags, A, B, C, so as to permit the terminal wires H, of one or both of said bags to be coupled by means of the couplings f carried thereby, to the coupling member f' of the main-line. If more than two bags are to be coupled in series, a plurality of extensions J will be used, the coupling f of one extension being coupled to one side of the member f' , and the member f' of said additional extension being extended adjacent to the additional bags. By this means, the number of bags may be increased indefinitely, one set of terminals of each plug f' being capable of use in connection with a coupling member attached to the terminals II, or to a similar coupling member f in a further extension of the main-line. The flash light apparatus is then in readiness to set off the powders, but to avoid bad results which would follow did any of the flash light powders fail to ignite, it is desirable to test the electrical connections in each pan to assure the operator that they are perfect. For this purpose, each plug f of the terminals H is temporarily disconnected from the coupling member f' of the main-line and coupled to the coupling member g of the portable test board n . When so applied, the current from the cell o will pass through the terminal wires H to the terminal pin $e e'$, rings $d' d^2$ and fuse d , completing the

circuit and actuating the annunciator p , thus causing an audible indication of the existence of a complete electrical circuit. The current from the cell o is sufficiently small not to melt the fuse d or form a spark which would ignite the powder. When a bag has thus been tested, it is recoupled to the main-line and the remaining bags tested in the same manner. It being thus assured that the various branch circuits are in working condition, the operator can proceed to the camera, conceal the switch-board K and hand-bulb m from the subjects, and engage their attention till the pose is satisfactory, and, thereupon, by merely pressing the bulb m , actuate the knife-switch $h h'$ to simultaneously ignite all of the flash powders and thus secure a large volume of light disposed at points to secure the best high-lights and shadows. The electrical circuits to the fuse d will be readily understood from the drawings, and the foregoing description of the manner of coupling the main-line and branch line together and a detailed description thereof is unnecessary.

The auxiliary switch i is used merely to throw the switch-board out of circuit so as to prevent the accidental firing of the flash powders and it is necessary to exercise care, when it is desired to make an exposure, to determine whether or not the switch-board is in circuit, as the quality of the picture depends upon the skill of the operator in determining the period at which the exposure is to be made. All smoke and gases resulting from the explosion of the flash powders will be retained within the bags A, B, C, the free tops a' and bottoms a^2 thereof permitting such extension of the bag as might tend to rip same. After an exposure, the bags may be removed from the gallery or other room, where the picture was taken, said powder and said smoke and gases released by opening the flaps $a^3 a^4$. When the smoke and gases are thus discharged, the bag may be folded into compact form by a reversal of the operation described in setting them up. When the rings $d' d^2$ and the fuse d attached thereto form a part of a commercial cartridge, and said rings are sealed, the reduced ends of the terminal pins $e e'$ will, as the plate e^2 is attached to the pan G, puncture said closure and thus establish the desired electrical connection with said rings. If desired, the tube m^2 need not be attached to the camera shutter, the camera being set prior to the ignition of the flash powders.

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 or scope of the invention.

I believe it to be new to provide flash light apparatus wherein a plurality of flash-pans

may be disposed at widely separated points, and the powder therein simultaneously ignited from a single controlling point so as to secure the maximum volume of light from all of said pans. I also believe it to be broadly new to employ two umbrella frames distending the top and the bottom of the bag, respectively, and the rigid rod connecting said frames in a manner to stretch the sides of the bag and take out all wrinkles and folds, to avoid the casting of shadows.

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

1. In a flash light apparatus, a smoke bag comprising a spreading rod formed of a plurality of sections and means whereby said sections may be separably connected, a collapsible frame carried by each of said sections, and a flexible covering of translucent material covering and secured to both of said frames whereby the opening of said frames will distend said material both laterally and longitudinally.

2. In a flash-light apparatus, a smoke-bag comprising a spreading rod formed of a plurality of sections and means whereby said sections may be separably connected, a collapsible umbrella frame carried by each said section, and a flexible covering of translucent material covering and supported between said frames having an opening therein, flaps adapted to close said opening, and fastening means whereby said flaps may be held so as to entirely close said opening and prevent the escape of smoke and gases there-through.

3. In a flash light apparatus, an igniter mechanism comprising a flash pan, a plurality of pins included in an electric circuit and adapted to be supported by, and project into, said pan, a fuse comprising contact rings insulated from each other and from the flash pan, said rings being adapted to have a close driving fit with said pins to make electric contact therewith, and a fusible member extending from one of said rings to the other and insulated from said pan, said fuse being adapted to be mounted in said pan by means of said pins, and a make-and-break mechanism within said circuit

whereby said circuit may be controlled to time the ignition of the powder in said pan.

4. In a flash light apparatus, a powder pan having openings therethrough for the contact members of the firing mechanism and an igniting mechanism comprising a plate of electrically non-conductive material, pins carried by said plate and insulated one from the other, and adapted to pass through said opening in, without coming into electrical contact with, said pan, said pins forming adjacent terminals to a normally open electrical circuit, a fuse within said pan having electrically conductive rings adapted to encircle and engage said pins, and a connecting fusible member in contact with the powder, means whereby said plate may be detachably mounted on said pan, and a switch mechanism in said circuit.

5. In a flash light apparatus, a smoke bag comprising a spreading rod, collapsible frames at each end thereof, and a flexible covering of translucent material covering, and distended by and between said frames, the portion of said covering beyond the said frames being full, whereby additional space is afforded within said bag to accommodate the increased volume of gases due to the explosion of powder within said bag.

6. In a flash light apparatus, a smoke bag comprising a spreading rod, oppositely disposed collapsible frames carried by said rod, a flash pan carried by said rod between said frames, and a flexible covering of translucent material covering and secured to said frames respectively, whereby said covering will be both laterally and longitudinally distended when said frames are opened, said covering having an opening therein provided with means whereby said opening may be opened to permit the introduction of powder, and closed to prevent the escape of gases and smoke from said bag.

In witness whereof, I have hereunto affixed my signature this 25th day of June, in the presence of two witnesses.

IRVING G. McCOLL.

Witnesses:

GEORGE McCAY,
E. A. ALLEN.