

(No Model.)

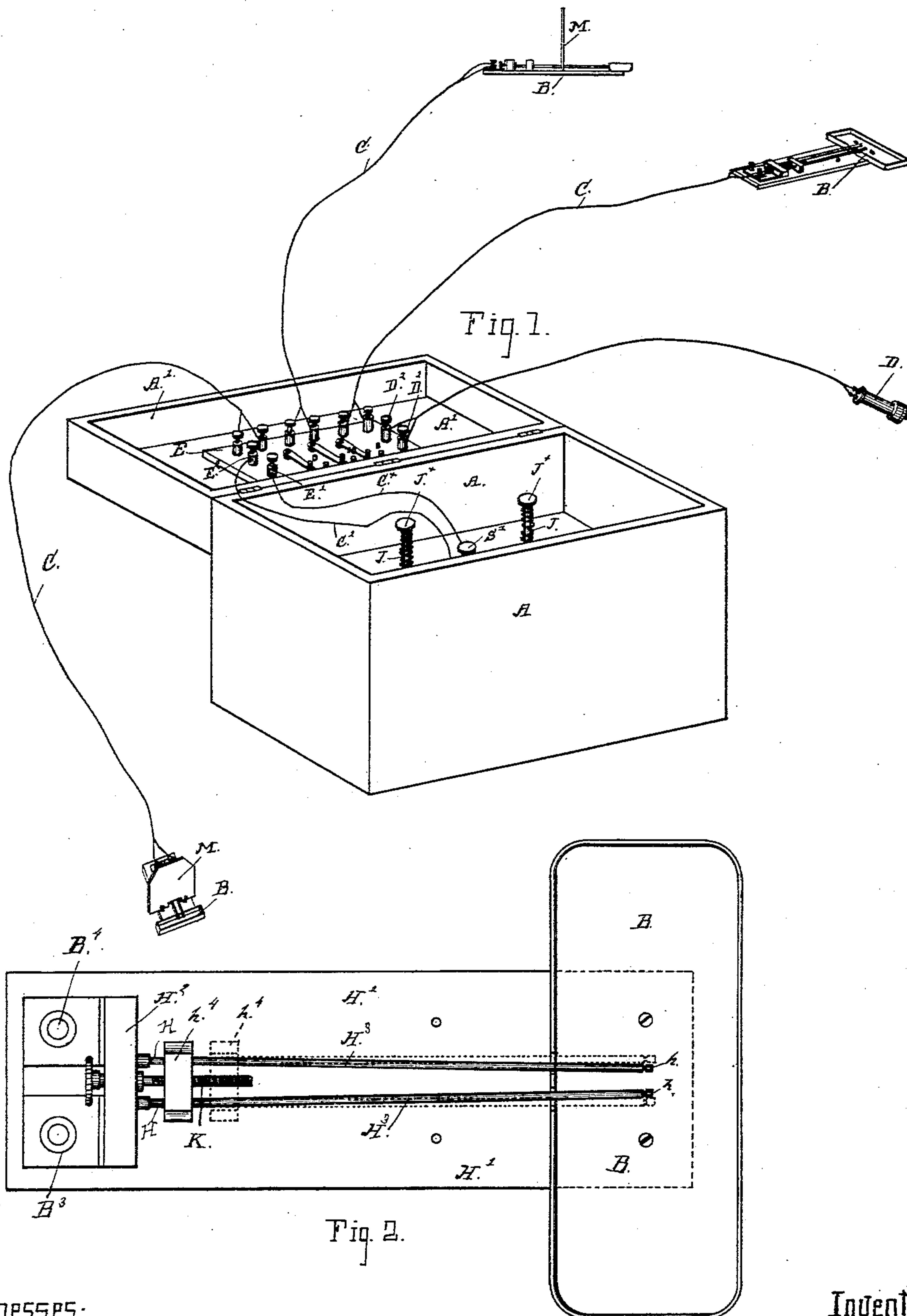
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J. N. & H. J. HARRISON.

FLASH LIGHT APPARATUS FOR PHOTOGRAPHERS' USE.

No. 504,578.

Patented Sept. 5, 1893.



Witnesses:

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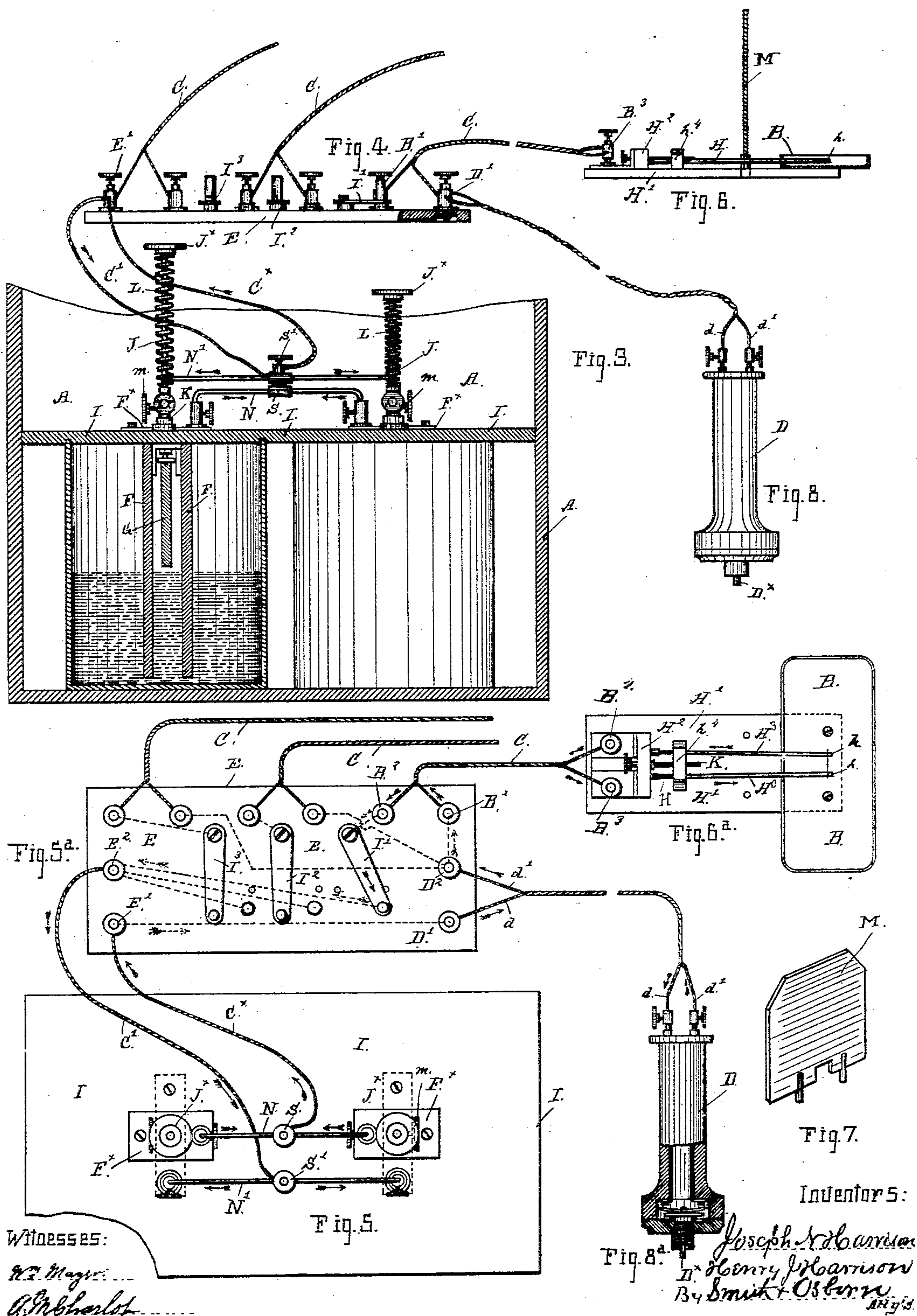
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UNITED STATES PATENT OFFICE.

JOSEPH N. HARRISON AND HENRY J. HARRISON, OF SAN FRANCISCO,
CALIFORNIA.

FLASH-LIGHT APPARATUS FOR PHOTOGRAPHERS' USE.

SPECIFICATION forming part of Letters Patent No. 504,578, dated September 5, 1893.

Application filed June 8, 1891. Serial No. 395,579. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH N. HARRISON and HENRY J. HARRISON, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Flash-Light Apparatus for Photographers' Use, of which the following is a specification.

Our invention relates to a flash-light apparatus for photographers' use and for other uses in the arts where other illuminating powders or mixtures are to be fired.

It has for its object to produce an electric firing or exploding apparatus in and by means of which a number of separate charges or lights can be fired and set off simultaneously in different parts of a room or at several different points from a single station, and it consists in the construction and arrangement with a battery of a number of flash-pans and their electrodes, a switch-board and a circuit-closer, producing an apparatus for operating several flash lights at the same instant of time in different parts of a room, or at different points from a central station. A portable apparatus is made by setting and mounting the battery and switch-board in a box or case in which room is provided to stow and pack the flash-pans, conducting wires, and other parts, so that the complete apparatus can be brought into small compass and readily carried about from place to place.

The accompanying drawings forming a part of this specification represent the manner in which we have constructed an apparatus to operate three flash-lights, both the general arrangement and the special construction of the novel parts or features being shown.

Figure 1— is a general view of the apparatus with the case open and the flash pans set out. Fig. 2— is a top view on an enlarged scale and in detail of a flash-pan and the electrodes. Fig. 3— is an elevation partly in longitudinal section of the battery and connections. Fig. 4— is a side view of the switch-board. Fig. 5— is a top view of the battery and connections; and Fig. 5^a is a top view of the switch-board and connections. Fig. 6— is a side view, and Fig. 6^a is a plan of one of the flash-pans. Fig. 7— is a perspective view of a reflector to be set on the pan. Figs. 8—

and 8^a are views of the circuit-closing hand-piece.

A indicates a box or case of suitable size to contain a galvanic battery and affording room also for the flash-pans B B, and their conducting wires C C, and the circuit-closer D. A switch-board E is fixed to the hinged top or lid A' of the case.

F F are the carbon plates and G the zinc plate of the battery.

I is a removable board setting down upon the rims of the cells and fitting closely into the case. The carbon and zinc plates are fixed to the under side of this board, and the connections that couple the two cells together are mounted on the top of the board. By drawing up the board and lifting it out of the case access is given to the cups as occasion may require.

The zinc element of each cell is attached to the lower end of a draw-rod J working through a socket K, in a top plate F^x and furnished with a head J^x under which is placed a spiral spring L, a set-screw *m* working through the side of the socket and against the rod serves to hold it up and the zinc is lifted out and held above the level of the exciting fluid by drawing up this rod. In like manner either one or both of the cells are brought into service by pressing down upon the heads of the rods and setting up the binding screws. This mode of mounting the zinc elements in a battery is already in use and is not claimed as a feature of this invention. In this construction the zinc elements are coupled together by a bridge or connecting wire N, while the carbons are coupled in a similar manner, by the bridge N'.

On the bridges and midway between their two ends are fixed binding posts SS' to which are connected the conducting wires from the battery to the switch-board, or to the electrodes in the flash-pan; where a single light is to be worked the conductor C' leads from the zinc or positive side and the conductor C^x from the negative side.

In a single light apparatus, the conductors C^x C' will be attached directly to the electrodes H H, of the flash-pan; but to operate a number of lights the conducting wires are cables carried to a switch-board E to one end of

which they are attached by binding posts E' E^2 and from these points the wires are distributed to the several switches.

In an apparatus to work three lights such as we have illustrated in the drawings the connections are made as represented in Fig. 5^a, and the circuit is carried through a hand-piece, D having a push button or circuit-closer D^x . The wires d d' from the circuit-closer are attached to the switch-board at D' D^2 and the connections between the binding-posts B' B^2 and B^3 , B^4 of the flash-pan conductors and the binding-posts D' D^2 and E' E^2 are made through the switches I' I^2 I^3 as clearly shown in Fig. 5^a. This arrangement places the several flash-pans under separate control, so that one, two or more lights can be worked at pleasure, and the whole number being switches in the circuit they can be touched off simultaneously by the circuit-closer. The electrodes H are formed of rods to obtain suitable resistance of current and are mounted on a base H' upon which is fixed the flash-pan B. The rods have enlarged heads h h , at their forward ends, and are fixed at the opposite ends in a base-plate H^2 .

Sliding upon each of the rods H between the enlarged heads h , h , and the base plate H^2 is a sliding tube or sleeve H^3 , the rear ends of these tubes or sleeves being fixed to and held by a sliding cross bar h^4 , so that when the said sliding cross bar h^4 is moved upon the rods H it carries backward and forward the sliding sleeves H^3 . The said cross bar h^4 is moved to and fro by means of a screw, as shown, or any other suitable and appropriate device may be used. The forward ends of these sliding tubes are finished to fit snugly against the enlarged heads h , h , of the rods H, for the purpose of holding a fusible wire connecting these electrodes.

To move the cross-bar we use a screw-rod K working through a socket in the base-plate and into a threaded socket in the cross-bar. These movable sleeves and the fixed heads on the rods thus form a clamp to hold and connect a fusing wire with the two electrodes, and when this connection is made and the circuit is closed the current will fuse the wire and fire the powder or material in the flash-pan. As the faces of this clamp are pressed tightly together at the time of firing, they will be kept always bright and are not corroded by the flame or fumes of the powder.

A reflector M is sometimes fixed on the flash-pan base directly behind the pan, as shown in Figs. 6 and 7.

It is evident from the foregoing description that a greater number of flash lights than is shown in the apparatus can be arranged for operation from a single circuit-closer by providing conducting wires of proper length, and flash pans can be distributed and set at different points or stations more or less distant from one another.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a flash light apparatus the combination of an electric battery, conductors, electrodes having enlarged heads or ends, sleeves upon said electrodes, and means for operating said sleeves, a fusing wire connecting the ends of the electrodes, a flash pan or receptacle, and a circuit closer arranged for operation, substantially as described.

2. A flash light apparatus consisting of a suitable battery, a number of flash pans or powder receptacles, electrodes having enlarged heads or ends, sliding sleeves upon said electrodes and means for operating said sleeves, a fusible wire connecting the electrodes in each flash pan, a switch board and suitable connections interposed in the conductors between the battery and the electrodes, to control each circuit independent of the others, and a circuit closer adapted to close one or all of the circuits for operation, as described.

3. A portable flash light apparatus consisting of a battery, flash pans, conductors, electrodes having enlarged heads or ends, a fusing wire connecting said electrodes, a movable reflector placed back of the flash pans, a switch board and suitable connections interposed in the conductors between the battery and the electrodes to control each circuit independent of the others, and a circuit closer adapted to close one or all of the circuits for operation, as and for the purpose set forth.

In testimony that we claim the foregoing we have hereunto set our hands and seals.

JOSEPH N. HARRISON. [L. S.]
HENRY J. HARRISON. [L. S.]

Witnesses:

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