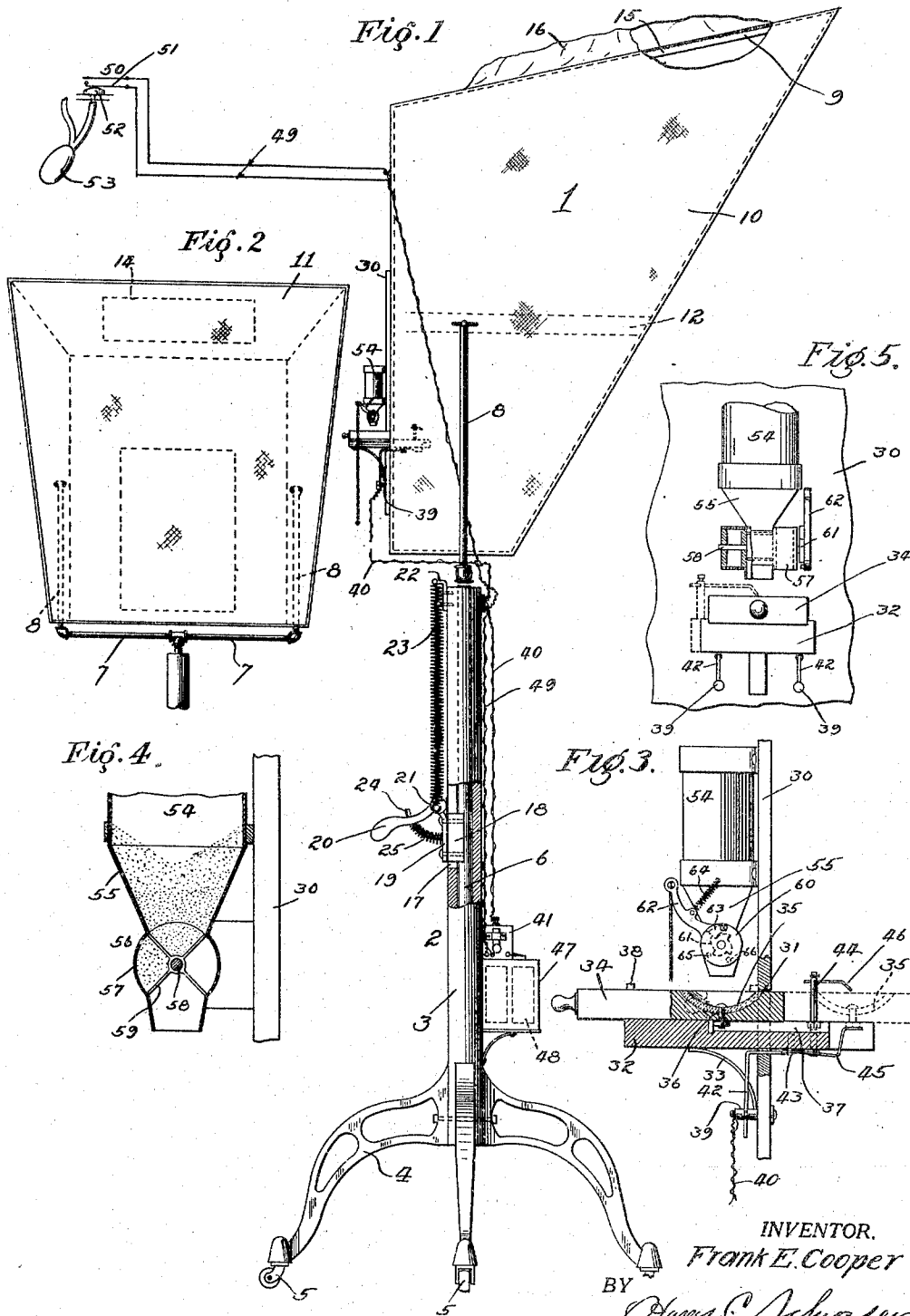


F. E. COOPER.
FLASH LIGHT CABINET.
APPLICATION FILED JAN. 25, 1916.

1,308,334.

Patented July 1, 1919.



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Specification of Letters Patent.

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Application filed January 25, 1916. Serial No. 74,136.

To all whom it may concern:

Be it known that I, FRANK E. COOPER, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Flash-Light Cabinets, of which the following is a specification.

This invention relates to improvements in flash-light cabinets and has for its object the construction of an improved device of this character particularly adapted for studio work.

The principal object of my invention is to provide a light weight cabinet for producing artificial light in studios, thereby enabling photographs to be taken at night, on cloudy days, or in a studio where it is not possible to secure sufficient daylight.

Another object of my invention is to arrange all parts on a suitable stand, thereby providing a device which can be readily moved about the studio.

Still another object of my invention is to provide a cabinet which is entirely closed, but, which is so arranged that when the explosion takes place the sides are capable of expansion thereby preventing the tearing of the material forming the closure due to the sudden expansion of the air within the cabinet.

Still another object is to provide an improved holding pan for the powder, which is easy to charge and accessible for repairs, and lastly,

Another object is to provide an automatic charging device whereby the proper amount of flash-light powder is placed in the firing pan by a simple pull of the cord on the part of the operator.

With these and other objects in view my invention consists in the novel construction, combination and arrangement of parts herein illustrated and more specifically pointed out in the appended claims.

Reference being had to the accompanying drawing forming a part of this specification,

Figure 1 is a view in side elevation of my improved cabinet.

Fig. 2 is a view in front elevation of the hood in which the charge is fired.

Fig. 3 is an enlarged view partly in elevation and partly in section of the door on the back of the cabinet, showing the arrangement of the firing apparatus and automatic charger.

Fig. 4 is a view in transverse section through the automatic charger.

Fig. 5 is a view in rear elevation of a portion of the automatic charger and the slide containing the firing pan.

Referring to corresponding parts in the several views by the same numerals of reference, 1 denotes the hood in which the charge is fired, and 2 the stand on which the same is mounted. The latter consists of the standard 3 mounted on vertical legs 4, which are preferably provided with casters 5, so that the same may be easily rolled from one position to another.

Slidably mounted in the post 3 is a tubular rod 6, having at its upper end the lateral branches 7, which are bent upwardly as at 8 to form a yoke in which the hood 1 is pivotally mounted. This hood comprises a light framework of strips 9, over which is stretched a cover of any suitable fabric material 10. The face 11 is of fabric, such as tracing cloth, through which the light is transmitted, but the sides, top and back are all non-transparent material, preferably light colored on the inside and dark on the outside so as to reflect as much light as possible toward the front. Between the front and the rear frame members are provided cross connecting members 12, in which the yoke arms 8 are pivotally mounted, and in the top is provided a rectangular opening 14, across which is stretched a fine mesh screen 15, and the opening above this screen is covered with a puffed cloth 16, which is attached around the sides of the hole so that when a charge is fired this piece of material may give outwardly and thus take care of the expansion within the hood.

The standard 3 is provided with a slot 17 adjacent the upper portion thereof, and the tubular member 6 has attached thereto a block 18, which projects through this slot. On this block is mounted a bracket 19, wherein is pivotally mounted the lever 20, having the cam shaped head 21, adapted to bear against the sides of standard 3. On the upper end of the standard 3 is provided one or more arms 22, to which are fastened the springs 23, the opposite ends of which are attached to the pivot pin of lever 20. These springs have sufficient tension that they almost counterbalance the weight of the hood and attached parts, thereby making it very easy to raise or lower. To bracket 19 is also attached the arc shaped member 24, which

extends through an opening in the handle 20, and a spring 25 is interposed between the handle and the bracket, which normally holds the handle extended and causes the cam shaped head to tighten against its bearing surfaces.

In the rear of the cabinet is a hinged door 30 provided with an opening 31, through which extends a base plate 32, held in position by means of the bracket 33. Slidably mounted on this plate is a block 34, in which is attached the firing pan 35, this pan consists of a shallow concaved member of refractory material, attached to 34 by means of a screw 36 passing through an opening in the center thereof. This screw is provided with a nut which moves in a slot 37 in the base 32, and which extends throughout only a part of the length at the base, thereby limiting the movement of 34 in one direction, its movement in the other direction being limited by a strip 38 on the upper surface thereof. This strip contacts with the outer surface of door 30, serving not only as a stop, but also to close the crack above the sliding plate.

On the back of the door are two binding posts 39, to which are attached conductors 40 extending from the spark coil 41. These binding posts are connected by conductors 42, one to a screw 43, and the other to a stud 44. Screw 43 has also attached a spring 45, having an upwardly bent end, which projects across the path of screw 36 whereby when the latter is pushed to its forward position, the screw is brought into contact with this spring member. The stud 44 is attached in the side of the base 32 and is provided with a lateral extending arm 46, the outer end of which is positioned approximately over the center of bolt 36, when the latter is in its inner position. The spark coil 41 is mounted upon a battery case 47, which contains several dry cells 48, or other source of electrical current. These cells are connected with the primary of the spark coil, the secondary of which is attached by conductor 49 to the binding posts 39.

Interposed between the batteries and the primary of the spark coil is a circuit closing arrangement 50 connected through conductors 49 to the spark coil and battery. This circuit closer consisting of two spring clips 51 adapted to be pressed together by means of pneumatic bulb 52, which in turn is operated by a bulb 53 of the type used for operating camera shutters. I prefer to arrange this bulb with two branches, one leading to the pneumatic device 52, and the other leading to the camera shutter operating mechanism, so that when the bulb 53 is pressed the shutter of the camera is opened and the charge simultaneously fired.

On the rear door 30 is provided a powder container 54 having the funnel shaped bot-

tom 55, below which is stationed an automatic measuring device 56. This device consists of the cylindrical shaped portion 57, in which is pivotally mounted a shaft 58, this shaft directly under the portion 55 is provided with a member having radial arms 59 forming preferably four compartments of the proper size to measure one charge of the flash-light.

On the outer end of shaft 58 is revolvably mounted a circular disk 60, having a handle 62 and having pivotally mounted on the inner face a pawl 63 adapted to contact with a ratchet wheel 61 keyed to shaft 38 and having teeth corresponding in number to that of arms 59. Extending from arm 62 is a spring 64 adapted to retract the same after it has been pulled downwardly. Stop pins 65 and 66 being provided in the disk 60 and the stationary casing 57, respectively, to limit the downward movement of this arm.

The operation is as follows:—

To charge; the firing pan 34 is pulled out as far as it will come, which is automatically centered under the funnel shaped portion of container 54. The cord attached to the handle 62 is then pulled down, which through the pawl and ratchet wheel rotates shaft 58, one quarter of a turn, allowing the powder contained between two of the arms to drop through the funnel shaped portion onto the firing pan. The strip 34 is then pushed inwardly until stopped by strip 38, contacting with the door which centers the screw under the arm 46, and at the same time causes the screw nut to make contact with the spring 45, thereby closing the secondary circuit for the spark coil except for the gap between head of screw 36 and the point of arm 46. Then by pressing bulb 53 the circuit closer 51 is operated, at the same time the shutter is opened. The closing of this circuit allows current to flow through the primary of the spark coil causing a spark which jumps between 36 and 46 through the powder igniting same. The smoke and dust from the firing of this charge is held within the hood 1 and the expansion which takes place at the moment of ignition is taken care of partly by the means of the puffed cloth and partly by the sides of the hood.

While I have shown and described the preferred embodiment of my invention it will be understood that minor changes may be made in detail and construction without departing from the scope of the claims.

I claim as new and wish to cover by Letters Patent:—

1. A flash light cabinet including a hood provided with an opening in an upper wall thereof, a reticulated fire screen arranged across the opening, and a loose and unsupported pouched cover arranged on the exterior of the hood and secured about the

edges of the opening in the latter to permit expansion of gases within the hood.

2. A flash light cabinet comprising a stand including a tubular member having a longitudinal slot therein, a rod slidable within said tubular member and carrying a hood upon the upper end thereof, a projection extending from said rod and extending through the slot in said tubular member, a tension spring having one end connected to said projection and the other end connected to an upper portion of said tubular member for counterbalancing the weight of said hood, and a cam carried by said projection and adapted to engage with said tubular member for clamping said rod in adjusted position within said tubular member.

3. A flash light cabinet including a hood, a manually movable flash light receiver slidably mounted to have a limited movement in and out of said hood through an opening in a wall thereof, an immovable flash light charging device mounted directly on the exterior face of said wall and above said receiver and manually operable to charge the latter with a flash material when the receiver is outside of the hood, and means for igniting said flash material when said receiver is inside of the hood.

4. A flash-light cabinet comprising a hood, a door on the back of said hood having an opening therethrough, a base extending through said opening, a block slidably mounted on said base, a firing pan mounted in one end of said block, means limiting the

movement of said block to positively position said pan on the inside or outside of said door, a charging device mounted on said door above the position of said pan on the outside of said door, a conducting member extending through the bottom of said pan, a spring strip adapted to contact with said conducting member when positioned within said hood, an arm extending over said pan when in the latter position, said arm and said conducting member forming electrodes of a spark gap.

5. A flash-light cabinet comprising a hood, a door on the back of said hood having an opening therethrough, a base extending through said opening, a block slidably mounted on said base, a firing pan mounted in one end of said block, means limiting the movement of said block to positively position said pan on the inside or outside of said door, a charging device adapted to drop a measured quantity of powder into said firing pan, mounted on said door above the position of said pan on the outside of said door, a conducting member extending through the bottom of said pan, a spring strip adapted to contact with said conducting member when positioned within said hood, an arm extending over said pan when in the latter position, said arm and said conducting member forming electrodes of a spark gap.

In testimony whereof I affix my signature.

FRANK E. COOPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."