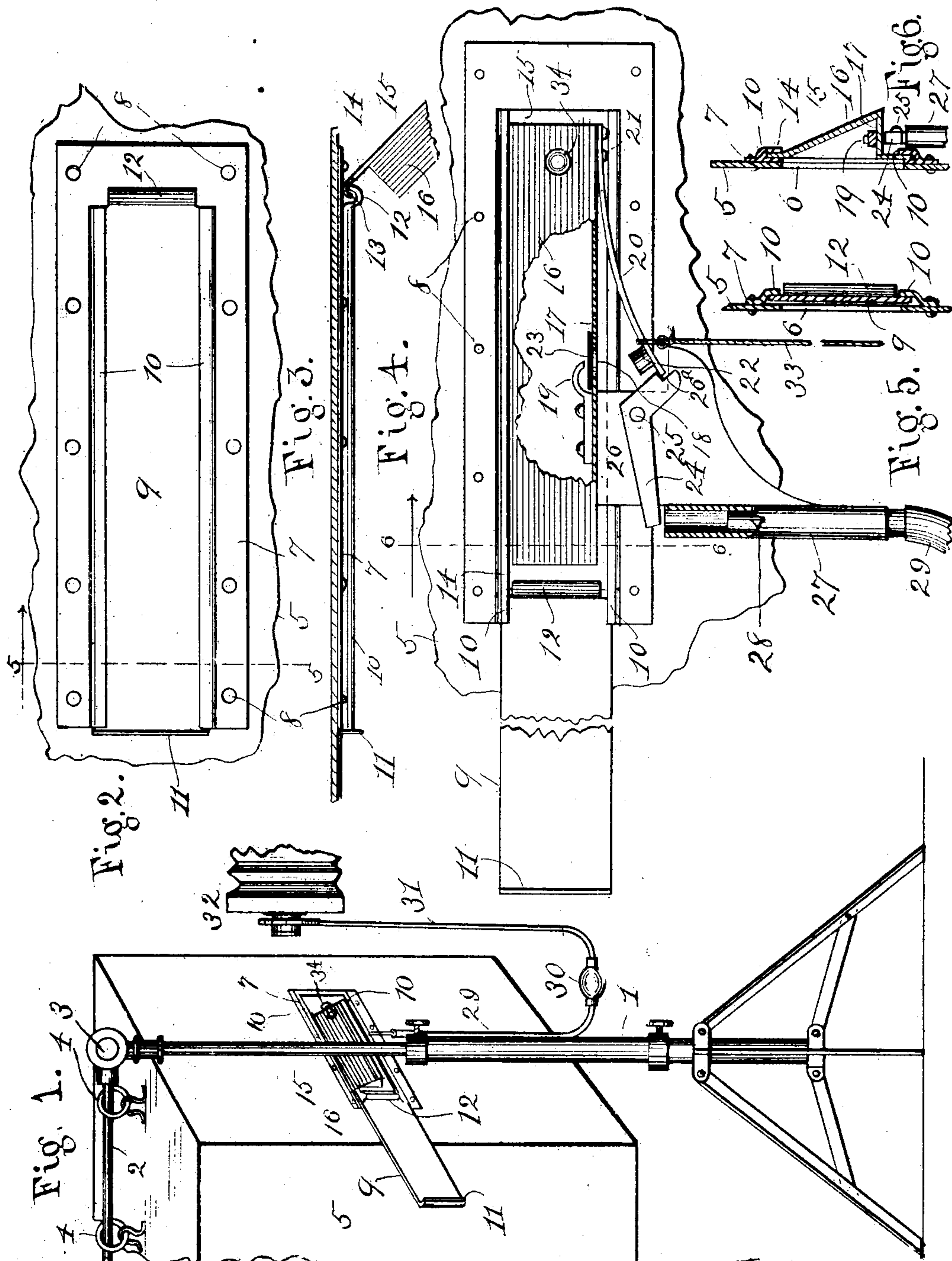


J. A. SMITH.
FLASH LIGHT APPARATUS.
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Witnesses:

Harry Brown
Carrie E. Jordan

Inventor:

Jay A. Smith
By David H. Fletcher
Atty

UNITED STATES PATENT OFFICE.

JAY ALBERT SMITH, OF CHICAGO, ILLINOIS.

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To all whom it may concern:

Be it known that I, JAY ALBERT SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Flash-Light Apparatus, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding numerals of reference in the different figures indicate like parts.

My invention relates to that class of flash-light apparatus which is provided with a receptacle in which to make the flash in order to prevent the dispersion of smoke and dust in the surrounding atmosphere. Heretofore various makeshift expedients, such, for example, as removing and emptying the receptacle after each flash, have been resorted to for this purpose, but I am not aware that any device has been made whereby a succession of flashes may be made within the receptacle while preventing the escape of smoke. A further difficulty has been found in providing satisfactory means for simultaneously operating a camera shutter and exploding a percussion cap to ignite a flash-charge through the medium of a pneumatic bulb. Not only does the force thus exerted vary so as to render it unreliable, but that which would insure the movement of the shutter would be wholly insufficient for the other purpose.

The object of my invention is to overcome both of these difficulties by providing a flash-light receptacle which shall be so arranged and constructed in combination with a movable closure, a flash-pan and igniting apparatus, as to enable a succession of flashes to be made within the receptacle while allowing the pan to be removed without permitting the escape of smoke.

A further object is to provide means for exerting a uniform blow to cause the explosion of a fulminate or percussion cap as a result of the action of a pneumatic bulb arranged to connect with and simultaneously actuate a camera shutter and to control said blow exerting means.

To these ends my invention consists in the combination of elements hereinafter more particularly described and definitely claimed.

In the drawings, Figure 1 is an elevation showing a rearward view of a flash-light receptacle and its supporting frame, to the

former of which my improvement is applied, Fig. 2 is an enlarged view of the closure at the rear of the receptacle as it would appear with the slide in its normal position, Fig. 3 is a plan view of the slide mechanism and a portion of the removable flash-pan arranged to indicate the manner of detachably connecting it with the permanent slide, the wall of the receptacle being shown in section, Fig. 4 is an enlarged elevation of the flash-pan, the permanent slide and a portion of the receptacle,—the slide being displaced by the flash-pan, which latter is in position for use, Fig. 5 is a vertical sectional view taken upon the line 5—5, Fig. 2, and Fig. 6 is a like view taken upon the line 6—6, Fig. 4.

Referring to the drawings, 1 represents generally a telescoping standard or support of well known construction having an adjustable arm 2 jointedly secured to its upper end at 3, by means of the usual clamping nut. Suspended from the arm 2, by means of rings 4, or otherwise, is a flash-light receptacle 5, preferably formed from muslin or other similar fabric adapted to permit the passage of light, said fabric being held in the desired form by means of any suitable skeleton frame or other appliance for wholly or partially distending it. The receptacle is normally closed so as to retain therein the smoke and other products of combustion resulting from the ignition of the flash light material.

Formed in the rear wall of the receptacle is an oblong opening 6, which is covered by a plate or frame 7, permanently attached to the fabric by means of rivets 8. Said plate is preferably formed from sheet metal and has an oblong opening therein adapted to be normally closed by means of a sheet metal slide 9, fitted to be moved longitudinally in grooves formed by means of two parallel flanges 10, attached to the plate 7. The slide 9 has an outwardly bent flange 11, upon its left-hand end adapted to engage the ends of the flanges 10 for the purpose of limiting the movement of said slide toward the right as shown in Fig. 2. When in that position, which is the normal one, the opening in the plate 7 is closed. Upon the right hand end of the slide is a hook-shaped flange 12, the length of which is less than the space between the flanges 10, so as to permit the slide to be moved toward the left. Said hook-flange is so shaped as to permit the

engagement therewith of a counterpart flange 13, Fig. 3, upon the left-hand end of a sliding plate 14, forming a part of a flash-pan, generally designated by 15, Figs. 1, 4 and 6. The plate 14 is of the same width but somewhat shorter than the plate 9 and when connected with the part 12, is adapted to slide in the grooves formed by the flanges 10. The part forming the flash-pan is projected rearwardly, as shown at 16, so as to form a horizontal ledge 17 therein for the purpose of holding the flash-powder, while the upwardly and forwardly inclined wall of the pan above the ledge, serves to deflect the flash forwardly at an angle away from the rear wall of the receptacle, thereby protecting the latter against possible ignition. An opening 18, Fig. 4, is formed in the bottom 17 of the pan, above which is projected an anvil 19, Figs. 4 and 6, the body of which is rigidly attached to the pan. A spring 20, has one end attached at 21 beneath the bottom 17, while near the free end, thereof is attached a hammer 22, adapted, when the spring is released, to pass through the opening 18 and strike against a percussion cap 23 placed upon the bottom of the pan over said opening beneath the anvil 19. The cap is made of thin paper arranged to inclose a fulminate and is intended to be wholly or partially covered by the flash-light powder, which is prevented thereby from falling through the opening. A trigger 24, Figs. 4 and 6, is pivoted at 25 to a bracket 26, which is rigidly attached to the flash-pan. Said trigger is in the form of a bent lever, in the short arm of which is formed a notch 26^a adapted to engage the end of the spring 20 and hold it under tension away from the anvil. The long arm of the lever is adapted to rest by gravity upon the upper end of a metal tube 27, rigidly attached to the bracket 26. Said tube is open at the top and is provided with a loose plunger 28, which rests upon a suitable ledge at the lower end, said plunger being made, as shown, considerably shorter than the tube in which it is placed and of sufficient weight so that when actuated, it may acquire a considerable speed and momentum before striking the trigger. The tube 27 is connected by means of a flexible tube 29 with a pneumatic bulb 30, Fig. 1, which in turn is connected in the usual way by means of a like tube 31 with the automatic shutter of a camera 32.

Having thus described my invention, I will now explain its operation: The percussion cap being placed upon the bottom 17 of the pan over the opening 18 with the flash-light powder thereunder, the pan frame is retained in a vertical position while the hook portion 13, is connected with the corresponding part 12 of the slide 9 in the manner indicated in Fig. 3. The plate 14 of the flash-pan is then pushed into the grooves in which

the slide 9 is held thereby displacing said slide, as shown in Figs. 1 and 4, without uncovering the opening 6, until the pan is opposite said opening. The plate of the flash-pan being somewhat shorter than the slide 9, a portion of the latter is still supported in the grooves. When the pan is in place the spring 20 is flexed by means of a cord 33, Fig. 4, until it moves the short arm of the trigger sufficiently to enable the end of the spring to pass beneath the shoulder of the notch 26^a. The bulb 30 is then compressed thereby causing the plunger 28 to be projected upwardly so as to strike a quick sharp blow upon the arm 24 of the trigger, thereby releasing the spring and causing the hammer to strike the cap against the anvil with sufficient force to insure an explosion and ignite the flash-powder in the pan. The same compression of the bulb causes the camera shutter to be simultaneously actuated to expose the plate. When the exposure is made the operator grasps the handle 34 upon the flash-pan and moves it to the right until it is withdrawn from the grooves. The result of this action is to return the slide 9 to its normal position over the opening when the hook upon the end of the plate 14 may be disconnected and the operation repeated without permitting an escape of smoke.

It is obvious that only a slight force is necessary to actuate the trigger and release the spring 20, and as this is accomplished by means of a quick blow from the plunger, its release is assured. Moreover, the hammer stroke from the spring being uniform, the explosion of the cap is rendered certain.

Having thus described my invention, I claim:

1. A flash-light apparatus in which is combined a normally closed receptacle for containing a flash-lamp, said receptacle having an opening in one of its walls, a slide for closing said opening a slidable flash-pan arranged to move in the pathway of said slide to, displace the same without uncovering said opening, said flash-pan being provided with a rearwardly projecting horizontal ledge for the reception of flash-light material with a forwardly inclined wall extending upwardly therefrom for deflecting the flash away from the rear wall of the receptacle, and means for igniting flash-light material upon said ledge when said flash-pan is in position to cover the opening in said receptacle.

2. A flash-light apparatus, in which is combined a normally closed receptacle for containing a flash-lamp, said receptacle having an opening in one of its walls, a slide for closing said opening, a detachably interlocking slidable flash-pan arranged to engage said slide to displace and replace the same by moving in the pathway thereof while

connected therewith without uncovering said opening, and means connected with said pan from without for igniting flash-light material therein.

5 3. A flash-light apparatus, in which is combined a normally closed receptacle for containing a flash-lamp, said receptacle having an opening in one of its walls, a slide for closing said opening, a flash-pan arranged
10 to move in the pathway of said slide to displace it without uncovering said opening, an anvil within said pan opposite to an opening, a spring-controlled hammer outside of said pan in position to strike said
15 anvil through said opening, a trigger for holding the hammer-controlling spring flexed, a pneumatic bulb, and means actuated thereby for releasing said trigger.

4. In a flash-light apparatus, the combination with a flash-pan having an anvil
20 upon one of its walls opposite to an opening, of a hammer upon the opposite side of said wall in position to strike said anvil through said opening, a spring for actuating said
25 hammer, a trigger for holding the spring flexed, said trigger having an arm extending across the open upper end of a stationary vertical tube, a disconnected plunger loosely fitted therein, said plunger being of
30 lesser length than that of the tube to enable it to acquire momentum and velocity before striking the trigger, and a pneumatic bulb in connection with said tube, whereby a
35 quick forceful blow as distinguished from a yielding pneumatic pressure, may be delivered against said trigger to insure its release.

5. In a flash-light apparatus, the combination with a flash-pan having a horizontal
40 ledge for the reception of flash-light mate-

rial for ignition, said flash-pan having a forwardly inclined wall extending upwardly from the rear of said ledge to deflect the flash away from the rear wall of the receptacle, an anvil above said ledge opposite to
45 an opening therein, a spring actuated hammer beneath said ledge in position to strike said anvil, a trigger for releasing said hammer, a tube having an open end in operative proximity to said trigger, a pneumatic bulb
50 in connection with said tube, and a loose plunger within and of shorter length than the tube, whereby the compression of the bulb may cause the plunger to be shot against the trigger with sufficient force and
55 velocity to insure its release.

6. In a flash-light apparatus, the combination with a flash-pan having an anvil upon one of its walls opposite to an opening therein, of a hammer upon the opposite side
60 of said wall in position to strike said anvil through said opening, a spring for actuating said hammer, a gravity trigger consisting of a pivoted bent lever having one arm arranged to rest upon an open ended tube
65 while the other is notched to engage said spring when flexed, an open ended tube having a loose plunger therein, a camera shutter, an air conduit for connecting said shutter with said open ended tube, and a pneumatic bulb interposed in the air conduit.
70

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses, this fourth day of February 1909.

JAY ALBERT SMITH.

Witnesses:

D. H. FLETCHER,

J. B. LANDON.