

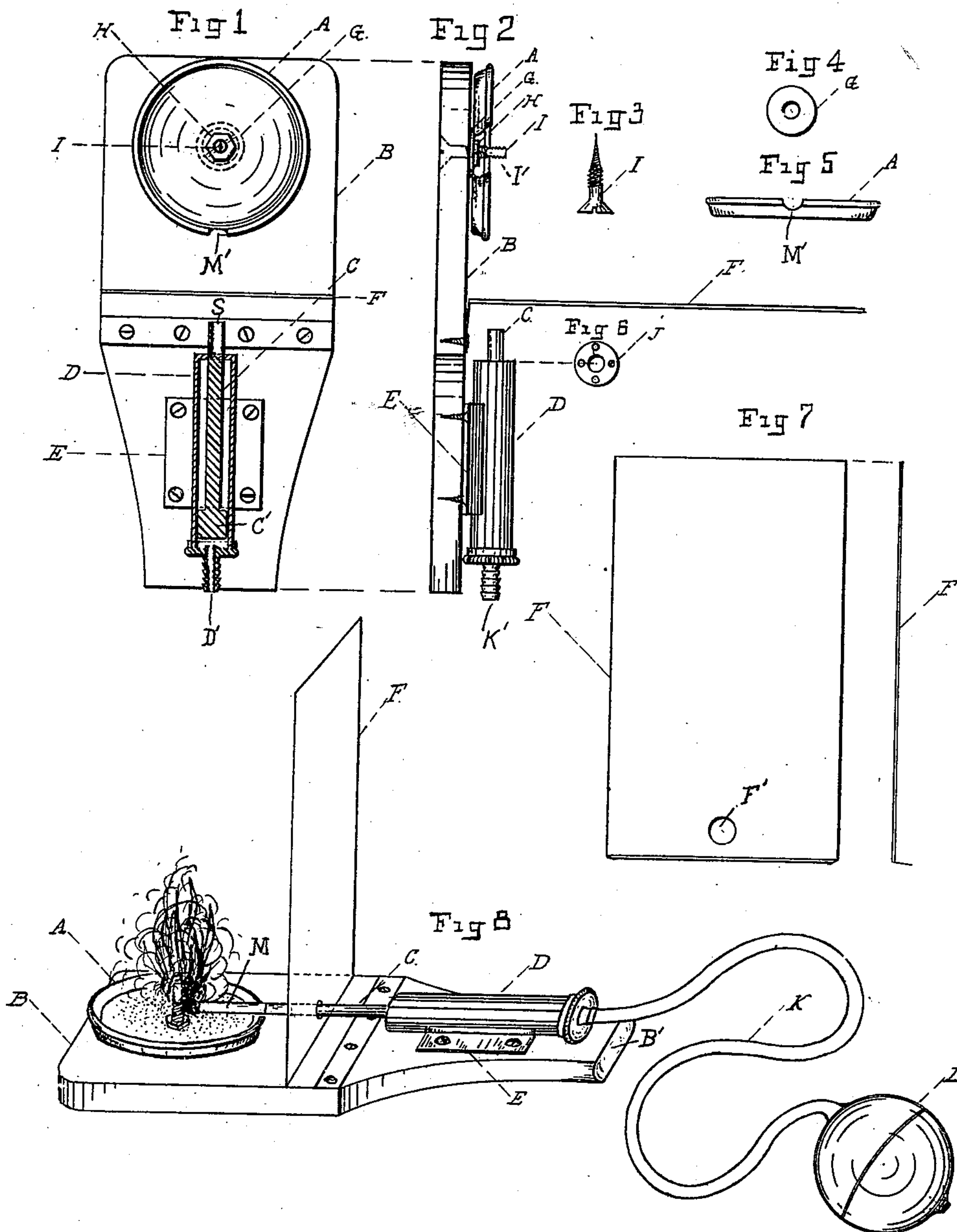
No. 665,504.

W. B. BUNNELL.  
FLASH LAMP.

Patented Jan. 8, 1901.

(Application filed July 18, 1900.)

(No Model.)



WITNESSES:

J. N. Smoot.  
W. L. Moran

INVENTOR,

W. B. Bunnell

BY D. J. Repley

ATTORNEY

# UNITED STATES PATENT OFFICE.

WATSON B. BUNNELL, OF SCRANTON, PENNSYLVANIA.

## FLASH-LAMP.

SPECIFICATION forming part of Letters Patent No. 665,504, dated January 8, 1901.

Application filed July 18, 1900. Serial No. 24,116. (No model.)

*To all whom it may concern:*

Be it known that I, WATSON B. BUNNELL, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Flash-Lamps, of which the following is a specification, reference being had therein to the accompanying drawings.

15 This invention relates to flashing-lamps such as are used by photographers for producing a brief and brilliant flashing-light by burning powdered magnesia or other compound for the purpose of exposure of photographic plates, and has for its objects the simplifying of means for lighting said flash-lamps, increasing their efficiency, effecting greater certainty and facility of operation, and improving such lamps generally, as appears in  
20 this specification and as more particularly pointed out in the claims.

To this end the invention consists of the construction, arrangement, and combination of the several parts herein specified, and illustrated in the accompanying drawings.

25 Referring to the drawings, Figure 1 is a top plan view, partly in cross-section, of the principal parts of my flash-lamp. Fig. 2 is a side elevation of the same having part of the powder-pan broken away to better show the construction. Fig. 3 shows a detail of the igniting device. Fig. 4 shows an asbestos washer which is adapted to be used in insulating the powder-pan. Fig. 5 is a detail view of the powder-pan used in the device. Fig. 6 is an end view of the pneumatic cylinder used in the device. Fig. 7 is a side and edge view of the shield, which is a detail of the device. Fig. 8 is a general view in  
30 perspective showing the device in operation.

Similar letters of reference denote like and corresponding parts throughout the several views.

35 Referring to the drawings, A is a powder-pan adapted to hold powdered magnesia or other suitable flashing-light powder and is secured to one end of a base B, which is preferably made of wood, by means of a central connection formed by inserting a screw I  
40 through the base-piece B and through the hole in the washer G and a similar hole in the center of the pan M and fastened in such

position by means of a nut H, running on the threads of the screw I. The washer G must be made thick enough and even so as to lift 55 the pan above the level of the wooden base B to prevent the heated pan from setting fire to the same. One edge of the pan is cut away at M' to make a way for the match M, which is adapted to be driven into the pan 60 for the purpose of igniting the powder. The screw I is flattened at two sides for the purpose of making serrations I', which serrations grate or scrape the head of the match thrust 65 against them by the pneumatic device disposed on the other end of the base B. The match M is adapted to be held by the piston-rod C, controlled by the piston C', sliding in the cylinder D, which cylinder is supplied with air through the port D' by means of 70 the rubber tube K and the bulb L, adapted to be placed in the hand of the operator. The cylinder D is adapted to lie in the same plane with the powder-pan and is secured to the same base-piece by means of a lug E, 75 screwed to the narrowed portion or handle B' of the base-piece. The rubber tube K is attachable to the fretted shank K' of the cylinder D. Disposed between the pneumatic cylinder D and the powder-pan is a shield F, 80 preferably constructed from metallic plate and screwed fast to the base B. An opening F' in the path of the match-holding member C allows of the entrance and exit of the match 85 to the powder-pan.

The operation of my device is readily explained. The pan is provided with a suitable amount of magnesia or other powder equally distributed around I, the igniting-center of the pan. The pan is of course turned so that 90 the opening M' through its side walls is also in line with the opening F' through the shield F and in the path of the moving match M. The piston C' is adjusted to the end of the cylinder D, as shown in Fig. 1. The rubber 95 tube K, with full-distended bulb, is now attached to the shank K' and a common lucifer match is set into the socket S and extending through the hole F' and the opening M' in the powder-pan and pointing directly toward the 100 serrations I' at the center of the pan. The operator is now ready for photographic exposure, and at the proper instant compresses the bulb L, which, driving the piston C' to the



opposite end of its course, thrusts the head of the match against the serrations I' and ignites the powder in the pan.

I do not wish to be confined to the exact construction in every detail described, as my invention permits of much variation without departing from the general spirit thereof.

What I do claim, and desire to secure by Letters Patent, is—

10 1. The herein-described flashing-lamp comprised in a base-piece, an insulated powder-pan having a central attachment-screw provided with serrations for the purpose of igniting a match, together with means on the  
15 said base-piece for thrusting the head of a match against the serrations aforesaid for igniting the powder, substantially as specified.

2. In a flashing-lamp, the combination of a powder-pan having a central rigid projection,  
20 the said powder-pan insulated and in proximity with a match-thrusting device, a shield disposed between said powder-pan and match-thrusting device, the said shield having an opening therethrough through which a match  
25 is adapted to be thrust, and means for thrusting an igniting-match through the said opening in said shield, and against the rigid projection in the center of the powder-pan, substantially as and for the purpose specified.

30 3. In a flash-lamp a base-piece having a powder-pan, and in the same horizontal plane a pneumatic cylinder controlling a piston-rod, said piston-rod provided with a match-holding socket, and the said piston-rod sliding in  
35 direct line with a central rigid projection in the powder-pan adapted to ignite a lucifer match when the head thereof is thrust against the said projection, a pneumatic bulb L and rubber tube K adapted to introduce pressure  
40 against the piston aforesaid for the purpose of driving the match forward in combination with a shield disposed between said powder-pan and match-thrusting device, and an opening in said shield through which the match is  
45 adapted to be thrust, all arranged for joint operation.

4. In combination with a flashing-lamp having a shield provided with an opening, a cylinder, a rubber tube and bulb attached and having connection with one end of said cylinder,  
50 the said cylinder provided with a sliding piston, and the said piston provided with means for holding a lucifer match, and adapted to thrust the same through the opening in the shield aforesaid and against a match-igniting  
55 projection a powder-pan, a base-piece to which said powder-pan, shield and cylinder are adapted to be secured, and an opening in said shield and in the path of the match-holding member aforesaid adapted to permit its pas-  
60 sage therethrough, substantially as specified.

5. The herein-described flashing-lamp consisting of a powder-pan having a central rigid and serrated projection, a shield in proximity thereto, an opening in said shield and a match-  
65 thrusting device opposite said opening, and means for thrusting a match through said opening and into contact with said rigid projection by the compression of a pneumatic bulb, substantially as specified. 70

6. In a photographer's flashing-lamp a suitable base-piece provided with a powder-pan and a match-thrusting device, a shield disposed between said powder-pan and match-  
75 thrusting device, a serrated rigid projection in said powder-pan, an opening in said shield adapted to have passed therethrough a lucifer match endwise; in combination with a pneumatic cylinder in line with said opening and rigid serrated projection aforesaid, a piston operating in said cylinder, and means for  
80 driving air into said cylinder for the purpose of thrusting the lucifer match through the opening aforesaid and against the serrated projection, substantially as specified. 85

In testimony whereof I affix my signature in presence of two witnesses.

WATSON B. BUNNELL.

Witnesses:

CHAS. W. DAWSON,  
J. N. SMOOT.