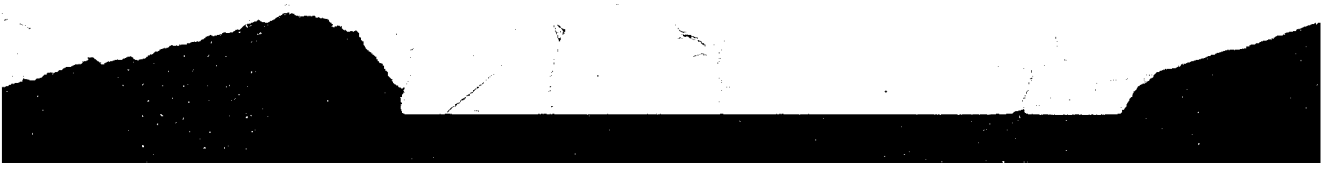

UNITED STATES PATENT OFFICE.

MILTON R. HEMPERLEY, OF PHILADELPHIA, PENNSYLVANIA.

FLASH-TORCH FOR PHOTOGRAPHERS.

SPECIFICATION forming part of Letters Patent No. 460,337, dated September 29, 1891.

Application filed December 8, 1890. Serial No. 373,884. (No model.)

To all whom it may concern:

Be it known that I, MILTON R. HEMPERLEY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Flash-Torches for Photographers, of which the following is a specification.

My invention consists of certain improvements in flash-torches, such as are used by photographers for interior or night work, and especially to that class of flash-torches in which a cloud of the inflammable powder is blown onto a flame, whereby the powder is ignited and the flash produced.

The objects of my invention are to provide for readily producing a number of flashes in rapid succession; to cause flashes of uniform brightness or strength; to insure the complete combustion of each cloud or discharge of the inflammable powder, and thereby produce the desired vivid flash by the employment of a minimum quantity of the powder, and to provide a torch having the general qualities of compactness and convenience. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a view of my improved flash-torch, partly in elevation and partly in longitudinal section. Fig. 2 is a perspective view of the torch on a smaller scale. Figs. 3 and 4 are transverse sections on the line 1 2, Fig. 1, one of the parts being shown in a different position in Fig. 4 from that represented in Fig. 3.

A represents a reservoir or receptacle for the inflammable powder, which produces the flash by ignition, this receptacle being by preference formed with tapering sides leading to a contracted outlet *a* from the receptacle into the tubular blast-pipe or stem B of the torch. Fitting over the front end of this stem is the tubular portion D of the discharge-nozzle F, the outer end of the latter being preferably flattened, so as to provide a contracted discharge-orifice, from which the charge of inflammable powder can be ejected in the form of a compact cloud. Secured to or forming part of the discharge-nozzle is a cup or casing G, which carries the igniting lamp or burner, the latter consisting, mainly, of a spirally-coiled wick G′ of asbestus fiber or similar heat-resisting material, there being also, by preference, a mass of this fiber surrounding the nozzle and filling the space between the same and the innermost convolutions of the spiral wick.

In the use of the torch the wick is saturated with alcohol and the latter is ignited, so as to form a flame for igniting the cloud of inflammable powder ejected from the nozzle F, the powder being thus surrounded on all sides by the flame and being, in fact, discharged through a mass of flame in front of the nozzle, so that the ignition and combustion of every atom of the powder is insured, and the desired flash thus produced by the employment of a minimum quantity of the powder. The same result might be attained by the employment of a perforated cylinder of asbestus fiber or like material; but the use of the spirally-coiled wick is preferred, because, owing to the free access of air, it produces the maximum volume of flame, and it can, moreover, be compressed by means of a cap or cover fitting on the casing G, so as to occupy less room when the torch is not in use.

Within the tubular blast pipe or stem B beneath the reservoir A is a tube J, open at both ends and having a longitudinal slot *b* in one side, this slot extending, preferably, throughout the length of the reservoir, as shown by dotted lines in Fig. 1, and to the rear end of this tube J is connected, by means of a short flexible tube *d*, an elastic bulb M, provided with the usual check-valve *f* at its outer end, so that on compressing the bulb a blast of air is forced through the tube J, blast-pipe B, and nozzle F. On turning the tube J in the stem B so that the slot *b* of said tube J registers with the contracted opening at the bottom of the reservoir A powder is permitted to pass from said reservoir into the tube J until that portion of the tube which is beneath the reservoir is filled with powder, as shown in Fig. 3, and on then turning the tube J so as to carry its slot *b* out of line with the contracted mouth of the reservoir, as shown in Fig. 4, the supply of powder in the tube is separated or cut off from the supply in the reservoir and constitutes a charge which can be blown from the stem B on compressing the bulb M, the tube J thus constituting a charging-valve for the blast-pipe

of the torch. Mounted upon the tube J is a ring or collar *g*, from which projects a frame K, preferably of bent wire, this frame projecting alongside of the bulb M and providing a rigid bearing for said bulb while the latter is being compressed, the frame K also facilitating the handling of the torch and the turning of the tube J. The extent of turning movement of said tube may be limited by the engagement of a pin *i* thereon with the ends of a slot *m* in the stem B, as shown by dotted lines in Fig. 1. The tube J may in some cases be extended, so that its front end will constitute the blast-pipe. By thus providing for successive charges from the main supply of powder contained in a reservoir a number of flashes can be given in rapid succession, so that the subject which is being photographed can be lighted from a number of different points, the flashes having, if necessary, the same intensity by reason of the uniformity of successive charges, or, if desired, the successive charges may be varied in volume by opening and closing the valve so quickly as to prevent the passage of a full charge or by only partially opening the valve and then closing the same.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination, in a flash-torch, of the blast-pipe with an igniting-lamp in the form of a ring surrounding and projecting forwardly beyond the discharge end or nozzle of said blast-pipe, said projecting portion of the ring being exposed to the air, substantially as specified.

2. The combination of the blast-pipe of the torch with an igniting-lamp in the form of a spiral wick surrounding and projecting beyond the discharge end or nozzle of said blast-pipe, substantially as specified.

3. The combination, in a flash-torch, of the reservoir for the flash-powder, a slotted tubular charging-valve free to turn in the lower portion of said reservoir, a blast-nozzle at the forward end of said tubular valve, an igniting-lamp in the form of an exposed ring surrounding and projecting forwardly beyond said nozzle, and an elastic bulb connected to the rear end of the tubular valve, substantially as specified.

4. The combination, in a flash-torch, of the blast-pipe and bulb with a rigid frame extending alongside of the bulb and forming a bearing therefor, substantially as specified.

5. The combination of the reservoir and blast-pipe with the slotted tubular charging-valve free to turn in the blast-pipe, the bulb connected to said tube, and the rigid frame also connected thereto and extending alongside of the bulb, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MILTON R. HEMPERLEY.

Witnesses:
HENRY M. BOYD,
JOSEPH A. REED.