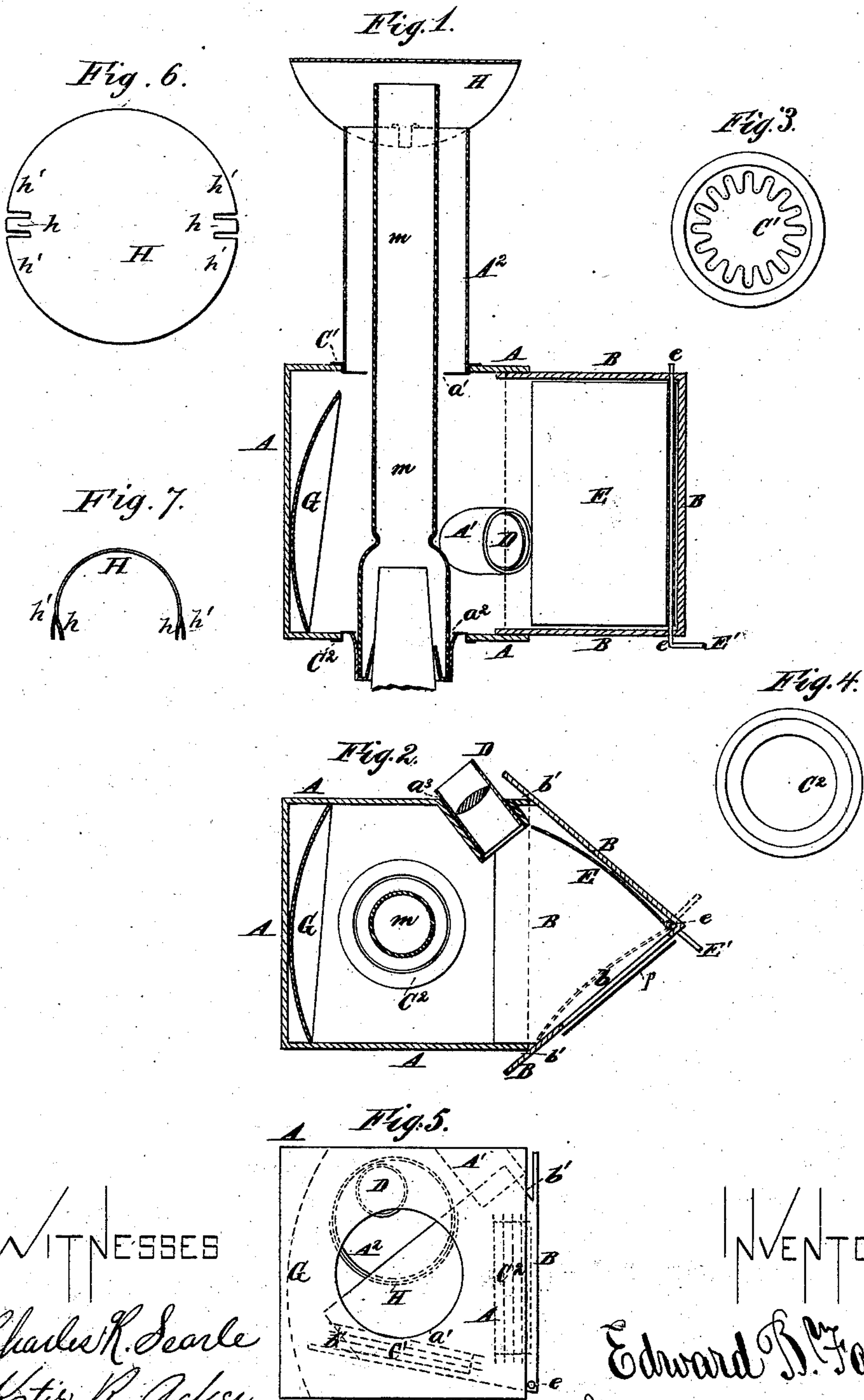


(No Model.)

E. B. FOOTE, Jr.
Magic Lantern.

No. 242,767.

Patented June 14, 1881.



WITNESSES
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EDWARD B. FOOTE, JR., OF NEW YORK, N. Y.

MAGIC LANTERN.

SPECIFICATION forming part of Letters Patent No. 242,767, dated June 14, 1881.

Application filed February 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. FOOTE, JR., a citizen of the United States, residing in New York city, in the county and State of New York, have invented certain new and useful Improvements relating to Magic Lanterns, of which the following is a specification.

The improvement relates to that class which are adapted to match on common lamps, so as not to require a lamp to be especially provided. I have arranged a reflector turning on a pivot, so that it can perform a double function—in one position serving as a reflector to throw light on the picture, and in another as a screen or shade to cover the aperture while the picture is being changed. I provide exchangeable rings of metal to adapt the device to set on, and fit closely on chimneys of different sizes.

I have devised a peculiar hood for preventing the escape of light from the chimney-top. It is easily attached and removed, serves its function completely as a hood, and is capable of packing in an unusually small space. I have adapted the case to serve efficiently, and pack in a more than usually small space.

The instrument can be used for exhibiting opaque pictures, being in such case what is sometimes known as a "megascope," or it can be used to show transparent pictures, as a magic lantern proper. It can also be adapted to serve with suitable lenses as a micro-magic lantern.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a central vertical section through the device as arranged for operation. Fig. 2 is a horizontal section in the same condition. Fig. 3 is a plan of the upper ring. Fig. 4 is a plan of the lower ring. Fig. 5 is a plan showing the parts arranged for packing. Fig. 6 is a plan view of the hood detached, and Fig. 7 is a cross-section thereof at right angles to the section shown in Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

A is the main body, being a rectangular box of stout pasteboard or other suitable material, with one open side, and with a large round

hole in the bottom and top. The bottom hole is marked a^2 , and the top hole a' .

The lamp-chimney is marked m . It is of round form, and it will be understood not only that this may be an ordinary Argand-lamp chimney, but that below are all the appurtenances constituting an ordinary or suitable Argand lamp. The perforated metal part a little below the chimney, ordinarily designated the "gallery," may serve as a support for the bottom of the case A. The chimneys m will vary in different instances. There are four regular sizes of circular chimneys.

I provide sets of corresponding rings of metal, C' C^2 , adapted to match in the holes a' a^2 , and to fit closely around the exteriors of the several sizes of chimney. These rings C' C^2 may be of brass; but I propose to use sheet-iron, by preference, in order to still further limit the conduction of heat from the chimney to the pasteboard or other thin material of the box or case A. These rings are sunk in the interior, so as to match tightly and securely in the holes a' a^2 , which receive them. The uppermost set of rings, C' , is also able, by virtue of the sunk condition of its center, to serve as a socket for receiving and holding with sufficient firmness the metal chimney A^2 , to be described farther on.

An oval hole, a^3 , in one side of the case is equipped with a short internal tube, A' , lined with felt, so as to match tightly and easily to the exterior of a tube, D, which supports the lenses. The tube A' is oblique to the side of the case A, so that it does not range toward the light, but stands at a tangent thereto, as plainly indicated in Fig. 2. The lenses may be of the ordinary character, and the focus may be adjusted by moving the tube D outward and inward.

B is a removable casing, having two sides at about right angles to each other, secured rigidly together and provided with a triangular top and bottom. An orifice, b , in one of the sides may serve either plain or equipped with any suitably-grooved or other support, to exhibit an opaque picture presented and removed from the exterior, as will be obvious. These parts are so formed that when the case B is in position for use the center of the orifice b is in line of the axis of the tube D.

E is a turning flap or door of bright metal. This may be made of a thin sheet of speculum metal, having a high degree of polish on one face; but ordinary burnished tinned iron or nickel-plated sheet metal may serve. It is mounted on an axis, *e*, provided with a lever, E', on the outside. By applying the thumb and finger to this lever E' the flap or door E may be swung around a quarter-revolution. In one position—that shown in Fig. 2—it is a reflector receiving the strong light from the lamp and throwing it upon the picture *p*. In the other position it serves as a screen to cover the hole *b*.

The casing B is notched, as shown at *b' b'*. These notches receive the edges of the main casing A, while the top and bottom plates of the case B apply within the casing A, and either by their simple friction or by some suitable spring or other fastening hold the two cases A and B properly together in position for work.

G is a concave reflector, preferably of speculum metal. It is mounted a little obliquely in the casing A, so as to throw the light received from the center of the chimney *m* in a concentrated form on the picture *p*. The picture is therefore illumined by the direct light from the closely contiguous lamp *m*, and also by the concentrated reflection from the mirror G, and by the further light received from the flap or door E.

A² is an opaque chimney of sheet metal surrounding the lamp-chimney *m* above the casing A. The top of A² should be something higher than the top of the highest lamp-chimney on which the apparatus is likely to be used.

H is a small sheet of metal larger than the cross-section of the metal chimney A², curved into a half-cylinder, as shown, and clipped and bent at its edges, so that when applied on the top of the chimney A² portions *h* may go within the metal chimney A², and other portions, *h' h'*, may go outside thereof. The bending of these parts is sufficient to allow them to apply upon the thin upper edge of the chimney A²; but the bending is not so great as to appreciably interfere with the packing. It is required to pack the parts for storage or transportation. The metal H *h h'* constitutes what I will term the "hood." It effectually stops the escape of light at the top when the apparatus is in use. It can apply closely on the exterior of the metal chimney A², and occupies very little space when the parts are packed.

In preparing the parts for storage or transportation it will be understood that the lamp-chimney *m* forms no part of this apparatus. It is merely a part of a common kerosene lamp, upon which my apparatus is adapted to fit and to serve usefully.

In packing the apparatus the whole goes

within the compass of the main case A. The hood and metal chimney are removed, matched together, and placed extending up and down in one corner of the case A. The tube D, carrying the lenses, may be inserted within the metal chimney A², or alongside thereof; then the case B is turned one-eighth ($\frac{1}{8}$) of a revolution and thrust within the body A, as indicated in Fig. 5. The whole may then be packed in a suitable pasteboard box a little larger, and it is ready for shipment.

Modifications may be made in many of the details.

I can use metal instead of pasteboard or wood for the casings A and B.

Soft rubber or other close-fitting and frictional material may be used to aid in holding the adjustable tube E in place after it has been adjusted within the tube A'.

The whole interior of the top and bottom and also of all the sides of the cases may be made reflective, and will contribute more or less to the illumination of the picture *p*.

Parts of the invention can be used without the others. I can, by the ordinary modification of the lenses, make the device serve as a magic lantern proper for exhibiting transparent pictures, or a microscope, or a micro-magic lantern.

The reflective door or turning flap E may be plain instead of being concave, as shown; but I prefer to give it a degree of concavity which will tend the most to concentrate the light on the area of the orifice *b*, where the picture *p* is to be illuminated. It contributes to increase the illumination somewhat like a second lamp in that position.

I claim as my invention—

1. In a magic lantern or megascope, the cases A and B, formed as shown, the latter having the deep notches *b' b'*, to engage with the sides of A when in use, and adapted to fit one within the other when the device is packed, as herein specified.

2. In a magic lantern or megascope, the extra reflector E, placed as shown relative to the light and the picture, so as to approximate the effect of two lights, as herein specified.

3. In a magic lantern or megascope, the swinging reflector E *e*, arranged to serve the double functions of throwing light upon the picture and screening the picture-aperture, according as it is adjusted in one position or the other, as herein specified.

In testimony whereof I have hereunto set my hand, at New York city, this 26th day of January, 1881, in the presence of two subscribing witnesses.

E. B. FOOTE, JR. [L. S.]

Witnesses:

THOMAS D. STETSON,
CHARLES C. STETSON.