Sheet 1-2 Sheets.

C. A. Leech,

Camera Attachment,

No. 55,682. Patented June 19, 1866.

Fig. 1.

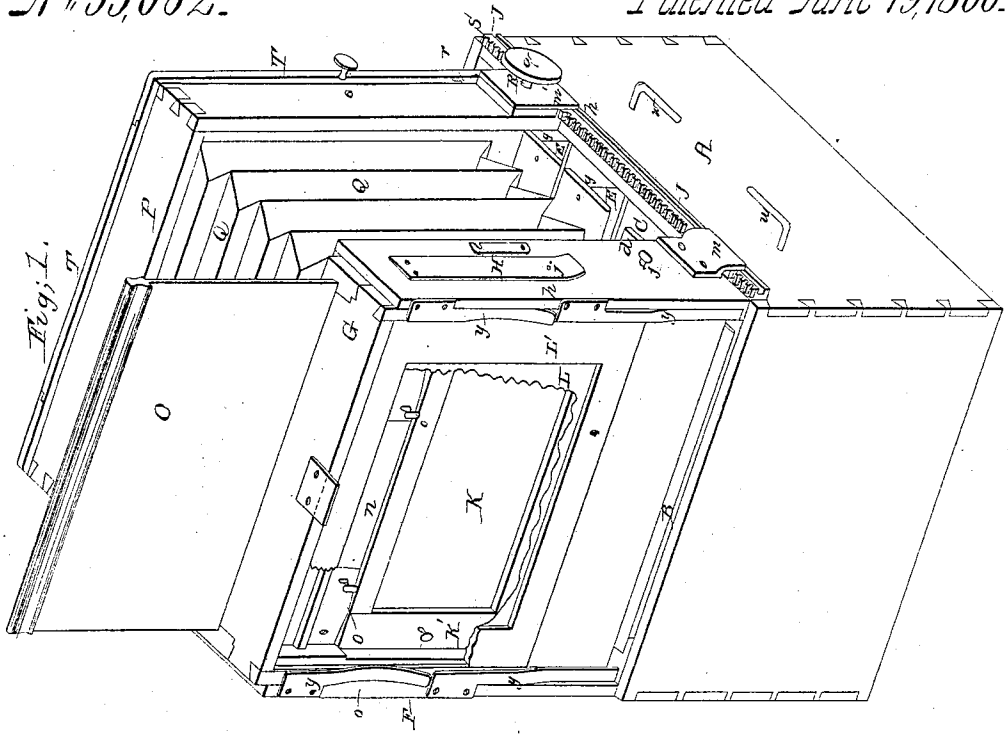
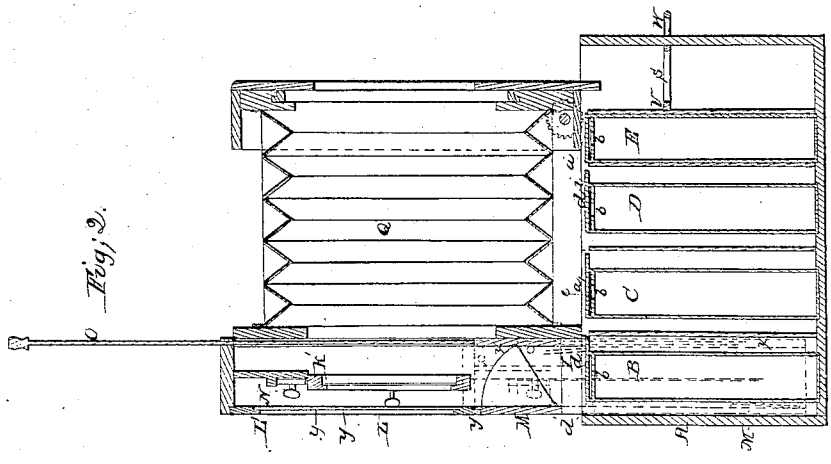


Fig. 2.



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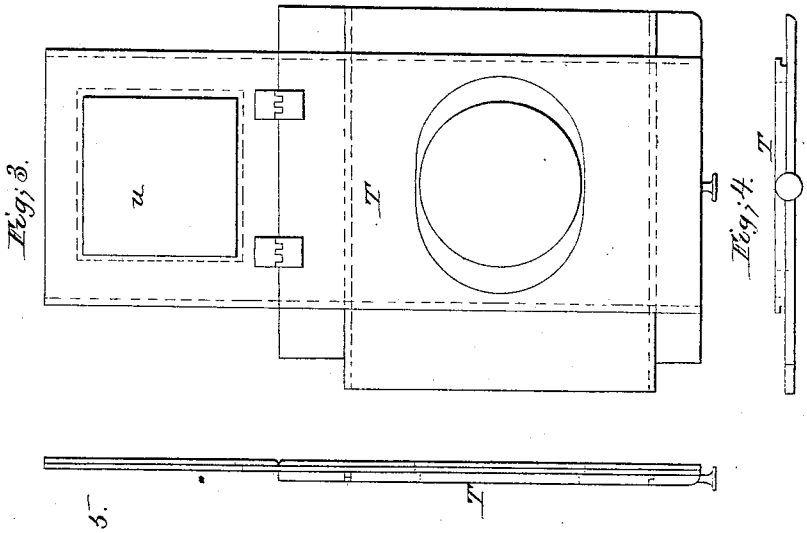
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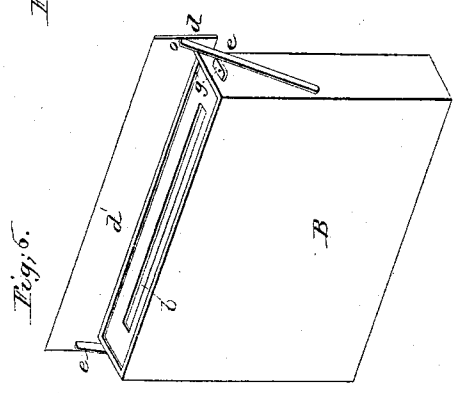
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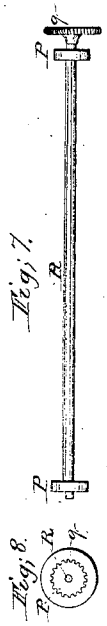
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UNITED STATES PATENT OFFICE.

CHARLES A. LEECH, OF PHILADELPHIA, PENNSYLVANIA.

PHOTOGRAPHIC APPARATUS.

Specification forming part of Letters Patent No. **55,682**, dated June 19, 1866.

To all whom it may concern:

Be it known that I, CHARLES A. LEECH, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improved Photographic Apparatus; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention and improvement consists in constructing an apparatus for taking photographic negatives in such a manner as to combine into one machine the several parts or devices relative to the solar action on the plates, the nitrate-bath, the developing-bath, the washing-bath, and the fixing-material bath, thus dispensing with the use of the cumbrous dark tent, and having all the processes necessary to producing a complete negative carried on before the plate is removed from the machine, the apparatus being very compact and portable, and convenient for in or out door work.

To enable others skilled in the art to which my improvement appertains to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 in the accompanying drawings is a perspective view of the apparatus. Fig. 2 is a vertical section of the same. Fig. 3 is a face view of the front slide, T. Figs. 4 and 5 are edge views of the same. Fig. 6 is a perspective view of one of the hard-rubber baths. Figs. 7 and 8 are views of the shaft R and pinions *p p*.

Like letters in all the figures indicate the same parts.

A is a case which contains the nitrate bath B, the developing-bath C, the washing-bath D, and the fixing-bath E. The said baths are made of the usual hard-rubber material. There are sinks in the bottom *a* of the case, which receive the bottoms of the baths, as represented in Fig. 2, the baths being removable therefrom at pleasure.

The baths are all closed at top, with the exception of the slots *b*, which are of sufficient dimensions to admit the plates, as hereinafter described. The tops of the baths have a raised edge, *c*, surrounding the slots, to insure a close contact with the under surface of the lids *d*, which are provided with sheets of soft rubber *d'*, for the same purpose. There are springs *e*, which yield to allow the lids *d* to come into their vertical position, as represented by a red line in Fig. 2, to allow the plates to descend into the baths, and when the dark chamber is elevated cause the lids to return to their places.

To give additional security I confine the lids down, when the apparatus has to be removed, by means of screws, which enter the tapped ears *g* on the ends of the baths.

F is a dark chamber to receive the plates, which pass through all the operations of receiving the impression and the immersion into all the solutions before they are removed therefrom, thus dispensing entirely with the dark tent heretofore used for those purposes. To effect this end said chamber fits in the frame G, and has a vertical movement therein, so as to be depressed and elevated alternately by the hand of the operator, and to be changed from one bath to another successively by the movement of the frame G, there being a spring, H, on the side of the case provided with a pin, *j*, that fits in a side, *h*, of the chamber, to hold the latter in its elevated position during the exposure of the plate, as seen in Fig. 2. The spring is drawn outward to withdraw the pin, to admit of the descent of the dark chamber for immersing the plate into the baths.

There are springs I I in the inner faces of the sides of the frame G, which fall into the recesses *i* at the upper edges of the case A, to hold the chamber securely in its position above each bath, respectively, the said springs being operated by means of the headed pins *j'*, which project from the former and through suitable openings in the sides of the frame G.

There are grooved ways J J secured to the sides *k* of the case, which receive the tongues *l* of the slides *m* on the sides of the frame G, to provide for changing the horizontal position of the frame, and consequently that of the dark chamber F.

The dark chamber is provided with the ground glass K in the frame K', for focalizing, and which occupies the position of the plate when exposed. It is also provided with the

orange-colored glass L in the frame L′, to shut out the actinic rays during the development of the plate, and an opaque valve, M, which, by closing, prevents the entrance of light from beneath when the dark chamber is raised, and which opens to admit of the descent of the chamber over the baths, as represented by lines in Fig. 2.

There are springs N N, which hold the plate in its vertical position by pressing upon a free margin of the plate, left for that purpose, the margin resting against the rail *n*. The springs are manipulated by means of the knobs *o*.

O is a vertical slide for shutting out the light from the front of the frame G when the plate is ready for immersion in the baths.

P is the front sliding part of the camera-box, connected with the back part, G, by the ordinary bellows Q.

There are slides *m′ m′*, by means of which the said frame has a forward and backward movement, the slides fitting in the grooved ways J J, and being provided with the shaft R, which has pinions *p p* on its ends, which gear into the racks S on the upper side of the said ways, there being a milled head, *q*, for operating the shaft for focalizing, which is done with much accuracy and expedition. The said shaft and pinions are represented in Figs 7 and 8.

There is a slide, T, (shown detached in Figs. 3, 4, and 5,) which carries the lens-tube and a hinged window, U, of non-actinic glass. The said slide has a horizontal adjustment in the grooved ways *r r*, for alternate connection of the lens-tube and the said non-actinic-glass window with the camera-box, as I will presently describe. The window is hinged for the purpose of its being folded over out of the way when not in use.

In the front part of the case A there is a space, which may have divisions for holding bottles to contain the various chemicals. The divisions may be formed by means of a board, V, containing openings *s*, as seen in Fig. 2. There are hooks *w* on the sides of the case A, to provide for its connection with an ordinary tripod.

The operation is as follows: The dark chamber A is placed in the position represented in Figs. 1 and 2, above the mouth of the nitrate bath B. The ground glass K is put in position, and the focus obtained by turning the milled head *q*. The ground glass is then removed and the flowed plate substituted in its place, which is held securely by the springs N N, and the actinic glass is closed, as represented in Figs. 1 and 2. The slide O is then raised to allow the plate to be exposed to the light from the lens. When the exposure is complete the slide is closed and chamber is pushed down into the position represented by lines in Fig. 2.

The lower edge of the rail *x*, by pressing on the projecting edge of the lid of the bath, brings the lid into the position represented by lines to allow the plate to pass through the slot *b* into the bath.

The valve M is turned also by coming into contact with the corner of the bath in the descent of the dark chamber. There are springs *y*, which bear against the front of the chamber to arrest the rapid descent of the same and hold the chamber against the front part of the frame G.

When the plate is sensitized the dark chamber is raised into its elevated position and the plate inspected through the non-actinic door. The dark chamber is then moved over the developing-bath C, and depressed, in like manner as before, to bring the plate into the solution, and after it is raised it is examined, as before, through the non-actinic windows or glasses, the front one being in the place previously occupied by the lens-tube for this purpose. After development the dark chamber is then pushed over the washing-bath and again made to descend for the washing of the plate. The plate is then removed from the dark chamber and at leisure dipped into the fixing-bath E. This last operation being performed by hand, it is not necessary to have the lid *d* extend over a side of the bath, as those of the other baths.

It will readily be seen that my apparatus, while being simple and compact and strictly portable, effects all that is obtained by the most complex apparatus, and dispenses entirely with the cumbrous dark tent and with the uncertain photographic dry process.

Having thus fully explained the construction of my improved photographic apparatus, and the operation of the same, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination and arrangement of the dark chamber F with the camera-box by means of the sliding frame G, substantially in the manner above described, and for the purposes set forth.

2. The combination of the dark chamber F with the bath-case A and baths B C D E by means of the sliding frame G, the said parts being constructed and arranged in relation to each other substantially as described, so that the said chamber may be brought successively into its vertical and horizontal positions with all the baths for the immersion of the plate into the same and its removal therefrom without removing it from its fixed position in the dark chamber, as and for the purposes above specified.

3. Constructing the baths B C D E with the slots *b* and hinged lids *d*, substantially as and for the purposes above described.

4. The combination and arrangement of the opaque valve M with the dark chamber F, for shutting out the light from beneath the latter when it is in its elevated position, substantially as described.

5. The combination of the springs I I with the sliding frame G, for holding the latter in its vertical position with the baths by means of the recesses *i* in bath-case A, substantially as described, and for the purposes specified.

6. The combination of the spring H, having a pin or projection, *j*, with the sliding frame G, for holding the dark chamber F in its elevated position, substantially as described.

In testimony that the above is my invention I have hereunto set my hand and affixed my seal this 17th day of March, 1866.

C. A. LEECH. [L. S.]

Witnesses:
STEPHEN USTICK,
J. P. DELANEY.