(No Model.)

W. HARRIS.

PORTABLE PHOTOGRAPHIC APPARATUS.

No. 301,983. Patented July 15, 1884.

Fig. 1.

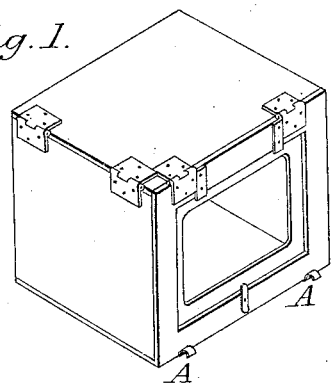


Fig. 3.

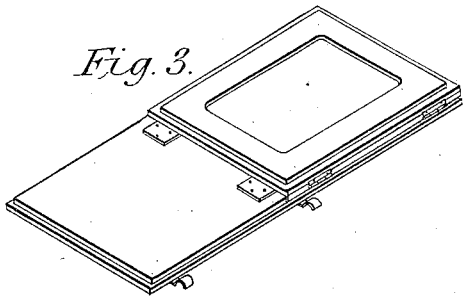


Fig. 5.

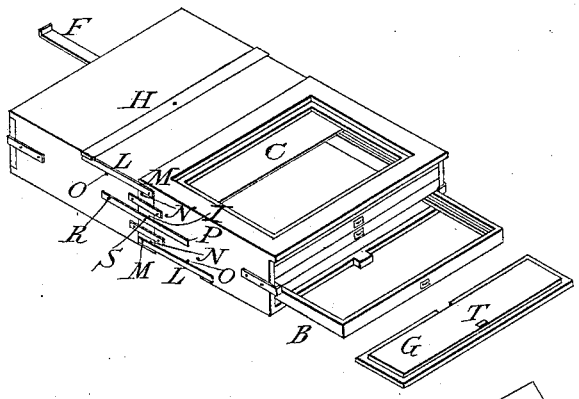


Fig. 2.

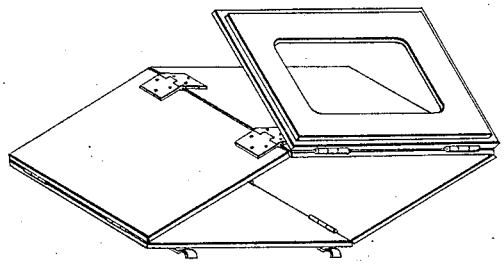
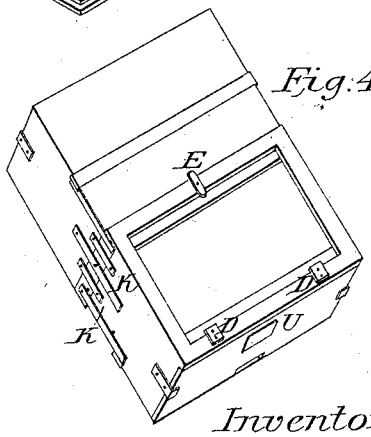


Fig. 4.



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UNITED STATES PATENT OFFICE.

WARREN HARRIS, OF DANVILLE, VERMONT.

PORTABLE PHOTOGRAPHIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 301,983, dated July 15, 1884.

Application filed July 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, WARREN HARRIS, of the town of Danville, in the county of Caledonia, in the State of Vermont, have invented certain new and useful Improvements in Photographic Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same.

The object of my invention is to combine in the highest possible degree portability, convenience, and protection against light in a photographic camera and plate-holder for making pictures on photographic dry plates.

Figure 1 is a view of the folding camera-box. The top, bottom, and sides are composed of four pieces of wood, the ends of which are square. The top and bottom pieces extend the whole length of the outside of the box, and the other two pieces are as long as the width of the inside. The corners are held together by hinges, those on two diagonally-opposite corners being placed on the outside and those on the other two corners on the inside, to permit the box to fold down sidewise in the same direction as shown in Figs. 2 and 3. The light is excluded at the corners by a projection or shoulder at each inside corner covering the joint, which shoulders are formed on the long or outside pieces, either by rabbeting across the end and leaving the shoulder or by gluing the shoulder on. The exclusion of the light in this manner is more easily, cheaply, and effectively accomplished than by beveling the ends and excluding the light by hinges extending the whole length of the corner, because a square corner is more easily made than a beveled one. Ordinary hinges are cheaper than those made for this especial purpose, varying in length for different-sized cameras, and a solid piece of wood shuts out light more effectively than a hinge with joints in it. The beveled corners are also more liable to be split or broken than square ones. The camera-front is hinged to one of the pieces composing the body of the box, with hinges on the outside to allow it to fold back against the outside of the same piece. It may be rabbeted to allow a part of its thickness to shut inside the top, bottom, and sides to hold them in a rectangular position, and a part to extend over the front edges of the same to exclude the light. By hinging the front to the body of the camera, as above described, it can be more quickly adjusted and folded and more conveniently carried than when the front is separate. The lens may be attached to the camera-front, or to a board fitted to an opening in the front, as shown in Fig. 2. This opening may be made of the same size as the body of a smaller camera, to which it may be attached, and serve as an enlarged extension for taking larger pictures, or for copying. When folded, the camera-box is the same length as the plate-holder for the same size plate, and so thin as to occupy but little space, and is very portable.

Figs. 4 and 5 are views of the combined plate-holder and plate-box.

B, Fig. 5, is a plate-frame partly inserted in the plate-box. On the inside of two sides and one end is a groove about one-eighth of an inch deep, and wide enough to admit two plates, with an opaque slide between them to stop the light and to press them up against the flanges on each side. The remaining end is composed of two pieces of the same thickness as the flanges. These pieces are let in on each side, so that their inner surfaces are even with the inner surface of the flange, leaving an opening of the same width as the groove for inserting the plates. Now, if two plates are inserted in the groove and a slide pushed in between them, they might, on being turned with the opening downward, slide out, or in drawing out the slide the plates might be drawn along with it and cause the film to be scratched against the inside of the end pieces. To prevent this a thin piece is glued on the inside of each end piece, close to the end of the plate, so that the plate cannot be drawn out of the frame until the slide is withdrawn and the plate is allowed to fall back away from the flange. Instead of gluing this ledge or shoulder on the end pieces, it may be formed on the same piece. The two plates are inserted with the film side outward, and an opaque slide is pushed in between them to cut off the light, and also to press the plates up to the flange.

The slides may be made of thin wood or cardboard, and covered with velvet or some other elastic material to serve in place of springs; and the covering may be of some non-actinic color to prevent blurring or halation.

The plate-box is as wide as the length of one

of the plate-frames, and as long as the width of two plate-frames, and of a depth varying according to the number of plates to be carried. The plate-box is divided into two similar apartments by a thin movable partition, the ends of which slide in grooves across the middle of the sides of the box. The partition is about one-half inch narrower than the depth of the box, so that when it is drawn to one side it will leave an open space at the other side large enough to allow a plate-frame to pass through, but when in the center will prevent the frames from passing on either side. One side of each apartment has an opening which may be closed by the slide C, which is shown in Fig. 5 partly withdrawn. About one-fourth of an inch outside of this opening is a ledge of wood about one-fourth of an inch high all round, inside of which the back edge of the camera-box slips, and is by it held in a rectangular position. The plate-box is held to the camera by the pieces of brass D D and the button E. The side of each apartment opposite the opening is composed of two thicknesses of wood with a space between, into which the slide is drawn when the plate is exposed. The slide C is moved back and forth by a narrow piece or rod, F, which passes through a hole in the cover G, which is packed with velvet to exclude the light. The cover G is rabbeted to exclude the light, and is held in place by spring-catches. The two halves of the box are exactly alike, except that one is the reverse of the other.

H is a spring fastened at the middle to the box, having wires in each end, which pass through the double back of the box and against the ends of the plate-frames, to press them up to the opening and hold the plate to be exposed in focus.

I, Fig. 5, is a piece of brass sliding in a groove, in which it is held by the pieces K K.

L L are two levers connected with I at M, and resting on the pins N N, so that they cannot make less than a right angle with I.

O O are pins inserted in the box. When the slide I is pushed upward, the upper lever raises the spring above, while the lower lever, acting over the pin O as a fulcrum, raises the spring on the other side of the box. When the slide is pushed in the opposite direction, the action of the levers is reversed and both springs raised, as before.

P is a lever fastened to the box at R.

At S a pin passes through the lever, through the slide I, through a slot in the side of the box, into the center of the sliding partition. When the lever P is drawn to one side, it raises all the springs and draws the partition to that side, leaving an opening on the other side for a plate-frame to pass.

The mode of operation is as follows: Two plates are put in each plate-frame, film side outward, with the opaque slide between them. Both apartments are filled with frames, except space for one in one apartment. The end of the box which is full is attached to the camera and the slide C drawn back into the double back of the other apartment. After the exposure is made the slide is returned. The plate-holder is then detached and held inclined, with the exposed plate uppermost. The levers P P are then pressed down, loosening all the springs, drawing the partition to one side, and permitting the plate-frame containing the exposed plate to slide through into the other apartment, making that apartment full. The other end of the box is next attached to the camera, the exposure made, and the frame passed through, as before. Thus all the plates in one side of the frames are exposed at one opening and all in the other side of the frames at the other opening.

To facilitate the finding and exposure of any particular plate and keeping a record of the same, each frame is numbered on the middle of each side. In each of the covers is a small piece of red glass, T, through which the numbering on the frame may be seen. The red glass is covered by a piece of brass, U, which can be turned to one side. One of the openings in the plate-holder may be one color and the other of another color, and the sides of the frames of different colors to correspond with the colors of the openings.

What I claim as my invention, and for which I wish to secure Letters Patent, is—

1. A photographic-plate holder having two apartments, with an opening for exposing the plates on each side and at opposite ends, substantially as described and set forth.

2. In a plate-holder with two apartments, the double back with an interior space, into which the slide C may be drawn, substantially as described, and for the purpose set forth.

3. In a plate-holder with two apartments, the interior movable partition, substantially as described and set forth.

4. The combination of slide I, levers L P, and the movable partition, substantially as described, and for the purpose set forth.

5. In a portable photographic apparatus for taking pictures on dry plates, the combination of folding camera-body, hinged front, plate-holder with two apartments, openings for exposure at each end and on opposite sides, sliding partition, double plate-frames with single grooves, and with shoulders in openings, all substantially as described, and for the purposes set forth.

WARREN HARRIS.

Witnesses:
CHARLES HARRIS,
ASA WILKINS.