C. BORNMANN.

FINDER FOR CAMERAS.

APPLICATION FILED MAR. 19, 1915.

1,152,782. Patented Sept. 7, 1915.

Fig. 1.

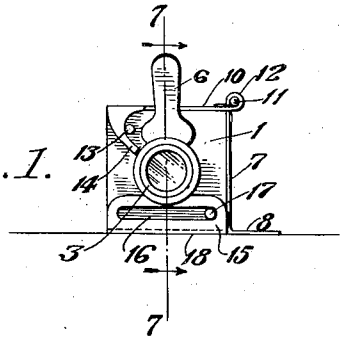


Fig. 3.

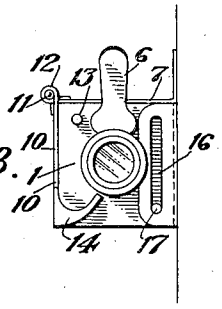


Fig. 2.

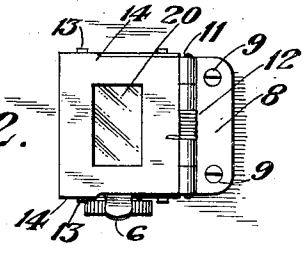


Fig. 4.

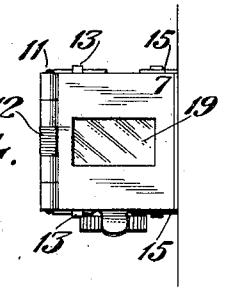


Fig. 5.

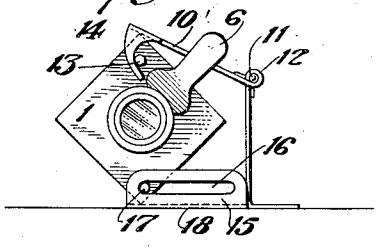


Fig. 6.

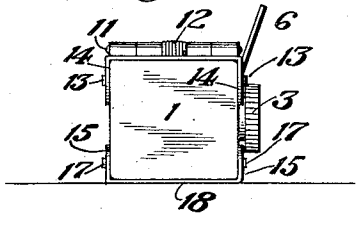
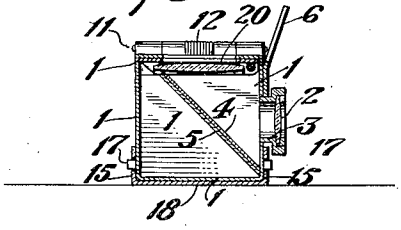


Fig. 7.



Witnesses:

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By his Attorney

Phillips Abbott.

UNITED STATES PATENT OFFICE.

CARL BORNMANN, OF BINGHAMTON, NEW YORK, ASSIGNOR TO ANSCO COMPANY, OF BINGHAMTON, NEW YORK, A CORPORATION OF NEW YORK.

FINDER FOR CAMERAS.

1,152,782. Specification of Letters Patent. Patented Sept. 7, 1915.

Application filed March 19, 1915. Serial No. 15,439.

To all whom it may concern:

Be it known that I, CARL BORNMANN, a citizen of the United States, and a resident of the city of Binghamton, county of Broome, and State of New York, have invented a new and useful Improvement in Finders for Cameras, of which the following is a specification.

It is the purpose of this invention to produce a finder adapted to both horizontal and vertical finding and provided with exterior diaphragms adapted to the two positions of the finder which are provided with openings, which define the picture as seen in the finder exactly coincident with that which shall be produced in the negative. The finder proper carries the usual diagonally arranged mirror and is adapted to revolve within the diaphragms so that it may attain the two positions requisite for horizontal and vertical finding. A peculiar feature of the invention is that the finder proper is an absolutely tight receptacle or box, so that no dust can enter to blur the mirror or inner side of the lens or the observation plate, and also no light can enter to dim the brilliancy of the found picture. The construction is also the cheapest and one of the most durable and least likely to get out of order of any known to me.

In the drawings Figure 1 is a front elevation of the finder, the parts being in position for vertical finding; Fig. 2 is a plan view of the structure illustrated in Fig. 1; Fig. 3 is a front elevation of the finder, the parts being in position for horizontal finding; Fig. 4 is a plan view of the finder shown in Fig. 3; Fig. 5 is a front elevation of the finder, showing the position of the parts during their transfer from vertical to horizontal finding position; Fig. 6 is a side elevation of the finder; Fig. 7 is a vertical sectional view on the line 7—7 of Fig. 1, looking in the direction of the arrows.

In the drawings 1 represents the body of the finder. In the present illustration it is in the form of a square box shown best in Fig. 7, the top, bottom and sides whereof are each solid, except that in the front side there is a lens 2, supported in the usual lens tube 3. Extending diagonally across the interior of the box is a mirror 4, which I prefer to support upon a diagonal plate 5.

6 is a handle connected to the lens tube 3, or to some suitable part of the finder box, to aid in manipulation of the device. It will not always be necessary, however.

7 is what I call the fixed diaphragm, which is fastened to some suitable part of the camera or camera lens frame in any suitable manner. I show a flange 8 provided with screw holes 9 (see Fig. 2) for this purpose.

10 is the movable diaphragm plate. It is pivoted as at 11 to the stationary diaphragm plate 7 and is provided with a spring 12, which normally tends to close it down upon the underlying finder box.

13, 13, are two pins, one projecting from each side of the finder box, with which horns 14 on each side of the movable diaphragm plate 10 engage as hereinafter described.

15, 15, are flanges formed upon the opposite edges of the fixed bottom plate 18, in which flanges slots 16 are made, through which slots pins 17 fastened to the outside of the finder box at the corners opposite the pins 13, work. In the fixed diaphragm plate 7 and also in the movable diaphragm plate 10, I make openings 19 and 20 respectively (see Figs. 2 and 4) and they are made of such size and shape as will define the boundaries, in other words, the area of the picture which will appear upon the negative.

The operation is as follows: When it is desired to find a vertical picture, the parts will be in the position shown in Fig. 1 and the reflection of the image passing through the lens will be reflected by the mirror and appear upon the observation plate of the finder in the usual manner. If the operator desires a horizontal picture, then he takes hold of the handle 6 and presses it to the right. The handle being rigidly attached to the finder box, will cause it to tilt upon its lower-right-hand corner, or edge, the upper-left-hand corner meantime moving upwardly and in a circular fashion, lifting the movable diaphragm plate 10 against the stress of the spring 12. Immediately the right hand upper corner or edge will come in contact with the fixed diaphragm plate 7 and the pressure upon the handle continuing, will cause the pins 17 to slide to the left through the slots 16 in the flanges 15. The pressure upon the handle being still continued, the pins 17 will slide still farther through the slot 16 until finally the parts drop into the position shown in Fig. 3, except that in that figure the camera, carry-

ing the finder with it, is supposed to have been given a quarter turn, so that the handle is illustrated as still presented upwardly. During this quarter turn of the finder box, the mirror and the observation plate have of course received a quarter turn also, so that the image is now observable at the diaphragm opening 19 in the fixed diaphragm plate 7, instead of at the diaphragm opening 20 in the movable diaphragm plate 10.

When desired to return the instrument to position for again taking vertical pictures, the handle is again manipulated but is now pressed to the left instead of to the right, whereupon the parts assume the position shown in Fig. 5, that it to say, in the first instance the finder box pivots upon its lower left-hand corner or edge, the upper right-hand corner meanwhile describing an upward arc pressing upwardly the movable diaphragm plate 10 against the stress of its spring 12, which maintains the under side of that plate always in contact with the upper right-hand corner or edge of the finder box. The pressure upon the handle 6 still being continued, the pins 13 are engaged by the horns 14, 14, which arrest their further movement and from that time forth they serve as a fulcrum, whereas previously the pin 17 at the left-hand end of the slot 16 in the flanges 15 had served as the fulcrum. The pressure to the left still continuing upon the handle, the pins 17 are caused to move toward the right through the slots 16 until finally the parts under the pressure of the spring 12, drop into their primary position as shown in Fig. 1.

It will be noted that this finder is of the simplest and most durable construction, that its parts are so few and of such construction that their durability is assured and that inasmuch as all the walls of the finder box are light and dust proof, except that one which carried the lens, that no dust can enter and obscure the mirror or observation plate or lens and that no light can enter to dim the picture, except through the lens.

It will be obvious to those who are familiar with such matters that modifications may be made in the details of construction and yet the essentials of the invention be retained. I therefore do not limit myself to the details described and shown.

I claim:

1. A finder embodying a closed box, a single lens, a mirror and an observation plate carried by the box, diaphragm plates, one fixed and the other movable, adjacent to two sides of the box and provided with openings adapted to register with the observation plate, a flanged plate upon a third side of the box and means upon the box and upon the movable diaphragm plate and upon the flanged plate whereby the box may be given a quarter turn and be compelled to assume and maintain proper positions relative to the diaphragm plates.

2. A finder embodying a closed box provided with a lens, a mirror and an observation plate, a fixed diaphragm plate adjacent to one side of the box, a spring actuated diaphragm plate hinged to the fixed diaphragm plate, a flanged base plate and devices upon the box and upon the movable diaphragm plate and upon the base plate whereby the box may be given a quarter turn and caused to assume and maintain proper relation with the diaphragm plates upon the completion of each quarter turn movement.

3. A finder embodying a box closed on all sides and provided with a lens, a mirror and an observation plate, diaphragm plates adjacent to two sides of the finder box, and means upon the box and upon the adjacent parts, whereby the box may be given a quarter turn and which, co-acting together, guide the box in proper relation to the diaphragm plates during each quarter turn and maintain it therein upon the completion thereof.

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

CARL BORNMANN.

Witnesses:

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ERNEST W. SCHULTZ.