

(No Model.)

H. & C. GAMWELL.
PHOTOGRAPHIC CAMERA.

No. 598,701.

Patented Feb. 8, 1898.

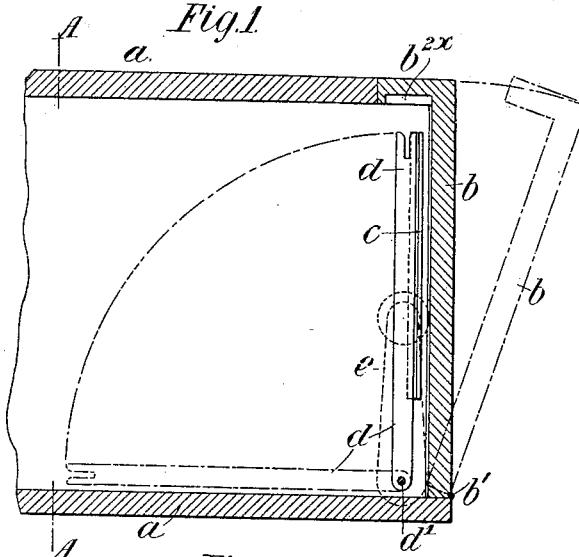


Fig. 1.

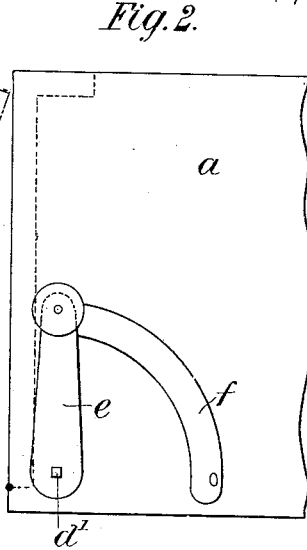


Fig. 2.

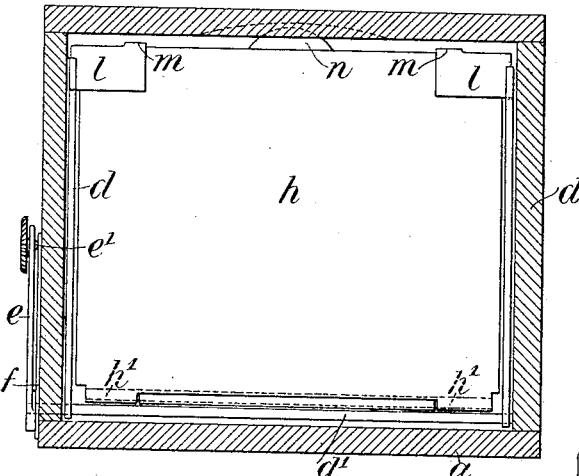


Fig. 3.

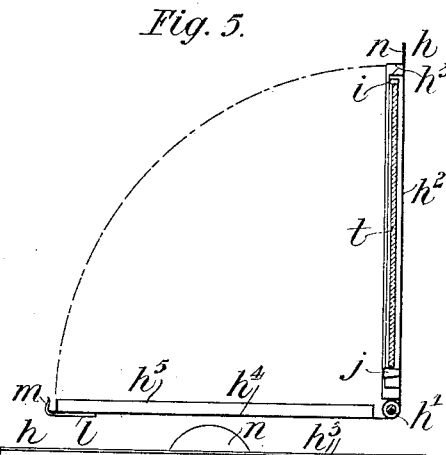


Fig. 4.

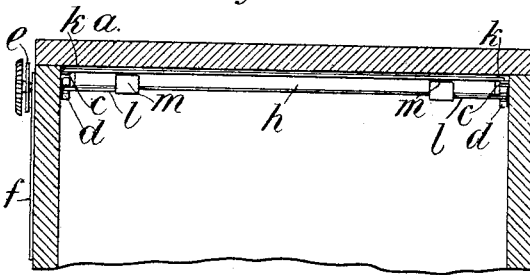


Fig. 5.

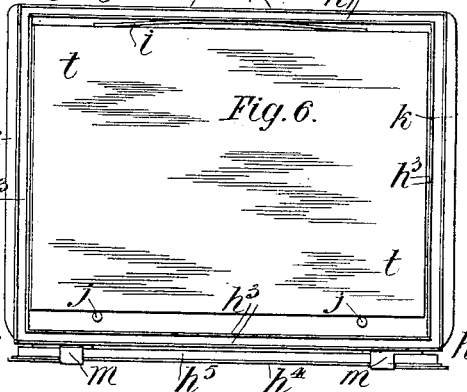


Fig. 6.

Witnesses.
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UNITED STATES PATENT OFFICE.

HARRY GAMWELL AND CHARLES GAMWELL, OF LIVERPOOL, ENGLAND,
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PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 598,701, dated February 8, 1898.

Application filed May 3, 1897. Serial No. 634,901. (No model.) Patented in England January 17, 1893, No. 1,000.

To all whom it may concern:

Be it known that we, HARRY GAMWELL and CHARLES GAMWELL, subjects of the Queen of Great Britain, residing at Liverpool, England, have invented a new and useful Photographic Hand-Camera, (for which we have obtained a patent in Great Britain, No. 1,000, dated January 17, 1893,) of which the following is a specification.

A photographic hand-camera according to this invention is provided with one or more light-tight plate-holders so constructed that the plate-holder can be opened and shut by means of a double lever or other suitable mechanism, part of which is on the outside of the camera, the other part acting inside in conjunction with the plate-holders, which can be opened and closed, during which process the whole of the inside of the camera is in darkness, thus enabling the operator to remove and replace the plate-holder in the brightest sunlight.

In the drawings illustrating our invention we show the camera provided with the improvements the nature of which is above described.

In the drawings, Figure 1 is a longitudinal sectional elevation illustrating the interior of the back of a camera without the plate-holder. Fig. 2 is an outside view viewed from the opposite side of the camera, showing the external operating device. Fig. 3 is a transverse section of the camera, taken at the line A A, Fig. 1, and looking toward the back end. Fig. 4 is a plan showing the back of the camera and the plate-holder in position. Fig. 5 is a transverse section of the plate-holder, showing the plate or film carrier in position therein, with the door open; and Fig. 6 is a front view of same, showing its internal construction, also with the door open.

Referring to the drawings, *a* designates the body of the camera. *b* is a door at the back end of same, hinged at *b'* to the body *a* and provided at the top, where it has a horizontal position, with any known suitable kind of catch (not shown in the drawings) for keeping it closed.

c is a front register against which the plate-

holder comes when in position, consisting of an internally-projecting ledge.

d are arms mounted on the horizontally-disposed spindle *d'* across the bottom of the camera, and *e* is an external actuating-arm fixed on the outer end of the shaft *d'*, which projects through the camera side. In the drawings two arms *d* are shown, one on either side of the camera. If desired, however, one only—namely, that preferably nearest the arm *e*—need be employed, in which case course that at the other side shown in the drawings would not exist.

f is a plate mounted on the side of the camera-body and against which a projecting part *e'* on the inside of the arm *e* bears and works, constituting a frictional retaining device by which the arm or arms *d* can be retained in any desired position.

h designates generally the plate-holder. It is made of thin metal—say, for instance, of about 24 Birmingham sheet-metal gage—as shown in the drawings, and is constructed, mainly, of two parts hinged together at the bottom by a hinge or joint pin *h'*, one part being or constituting the back *h²* and inclosing sides *h³*, and the other, *h⁴*, the door, by which it is opened and closed—closed normally when not in the camera and operated and afterward shut before and after exposing the sensitive plate or film within it. The sides *h³* are double and create a space between them all around the plate-holder, while the door *h⁴* is provided with a ledge *h⁵* all around on the inner side of the same, which when the door *h⁴* is closed fits in the space between the double sides *h³*, so rendering the plate-holder light-tight when closed.

Within the plate-holder there is provided at the top a spring *i* and at the lower part projecting supports *j*, inclined, preferably, in its upper surface, as shown, to afford better retention of the plate in position, and on which the lower edge of the plate or film carrier or film (marked *t* in the drawings) will rest when in position, the spring at the top being adapted to press the plate or film carrier downward onto the supports *j* and so keep it steady and in the correct position within the plate-holder.

The supports j , as is shown in the drawings, are so disposed—*i. e.*, some distance above the inner of the lower sides h^3 —as to leave a space below the plate or film when in position, by which the finger or thumb can be placed against and under it for withdrawing same or when placing it in the plate-holder and rendering these operations readily performed. By this construction of the plate-holder and the mode of fixing the plate in it the whole of the sensitive plate is exposed to the action of the light, thereby showing a larger proportion of view than with ordinary plate-holders.

To keep the door h^4 of the plate-holder closed against or upon the edge of the sides h^3 , an automatic catch, such as a frictional catch, is provided, which while keeping the plate-holder closed or shut up so that the door will not of itself open at any time will permit of its being easily opened and closed by a slight pressure, thus rendering it easy of operation through the actuating arm or lever e . The device shown in the drawings for effecting this consists of one or more metallic bars or projecting parts m , secured or formed on the upper part of the door h^4 and adapted, when closed, to press with a slight, but sufficient, pressure preferably upon the upper surface of the upper side h^3 , being of such thickness of metal as will give the amount of spring and friction desired, and the tip of the bar or bars m being tapered or rounded, as shown, to enable the bars when the door is being closed to ride onto the said upper side h^3 . If the plate-holder is operated from both sides, a bar m may be used at each end; but if it is operated only from one side then one bar m only need be used at the end nearest the arm.

The above-described construction, by which the whole of the surface of a plate or like sensitive media is exposed to the action of light during exposure, and the mode of or means for holding it in the plate-holder, and also the automatic locking of the plate-holders and yet enabling them to be easily operated from outside, as described, form part of an invention and the subject-matter of an application for Letters Patent made by us and filed contemporaneously herewith, and therefore we make no claim to same as part of or under this invention and application for patent.

The back h^2 of the plate-holder is provided with projecting ledges or flanges k , which come against the front registers c when the plate-holder is placed in position, the retention of which against such registers may be effected by a suitable spring in any known way.

The door h^4 is provided with appendages whereby it may be seized by the opening and closing mechanism. As shown, these appendages are in the form of a projecting lug l at each side. One of these, or both, as the case may be, is or are adapted to fit into the end of

the arm or arms d , which is or are bifurcated or slotted, as shown, to receive it or them, and when the plate-holder is placed in position in the camera this will be the position of the lug or lugs l . By this engagement of the lug or lugs l by the arm or arms d the door h^4 is caused to be opened—*i. e.*, moved down, and lifted up and shut, by the actuation down and up of the lever e .

In the camera shown in the drawings the plate-holder is placed in it when the door b is opened, and it is provided with a tab n at the top, by which it can be held, and when placed in the camera the lugs l can be dropped or placed in the slots in the arms d and are withdrawn therefrom with facility. To afford facilities of manipulation, the upper part of the door b when closed forms the upper part of the camera directly above the plate-holder h and the arm or arms d .

In operation a closed plate-holder h , containing a photographic plate, film, or the like, is placed in position in the camera—that is, with its lug or lugs l in the bifurcated end or ends of the arm or arms d and the ledges k bearing against the front registers c —when the door b is closed. Then at any time—say when one is about to expose the plate or film—the door h^4 of the plate-holder is opened—that is, moved down—by pressing the actuating-lever e forward and down until it takes or approaches the horizontal position or sufficiently removes the door as not to interfere with the rays of light getting to the sensitive surface from the lens. When this is done, the exposure may be made in any of the ordinary ways. After the exposure is made the door h^4 is moved up by bringing back the lever e and the plate-holder is closed, when the door b can be opened and the plate-holder removed.

We show the doors of the plate-holder and camera as being hinged at the lower horizontal plane of the latter, but do not desire to be limited to this construction, as any form in which a normally-closed plate-holder having a hinged door may be inserted and firmly held within a camera, in conjunction with which mechanism is employed by which the plate-holder may while so held be opened and closed from without the camera, comes within the scope of our invention. It will be understood, of course, that if the plate-holder is so inserted within the camera that its cover or door swings otherwise than downwardly the controlling mechanism must be correspondingly disposed.

As suitable mechanisms for actuating the door of the plate-holder two have been described with reference to the plate-holders in the drawings; but it is to be understood that the invention is not restricted to these as specifically set forth, since the modifications or equivalents thereof for use in conjunction with the plate-holder described may be used without departing from the invention.

Having now particularly described and ascertained the nature of our said invention and

in what manner the same is to be performed, we declare that what we claim is—

1. In a plate-holder the combination with a body portion having laterally-projecting lugs or wings, and a cover hinged to the body portion and having laterally-projecting lugs or wings, of a friction-clasp for securing the cover closed.

2. In a plate-holder the combination with a body portion comprising a back, h^2 , and channeled sides, h^3 , of a door or cover having a continuous flange for entering the channel, the body and cover portions being extended at one edge beyond such channeled side and the flange and such extensions being hinged together.

3. In a plate-holder the combination with a body portion comprising a back, h^2 , and channeled sides, h^3 , of a door or cover hinged to the body portion and having a continuous flange for entering the channel, the body and cover both having laterally-projecting lugs or flanges.

4. The combination with a light-proof camera-case having an openable portion, and a light-proof plate-holder having a hinged cover and being adapted to enter the case, of a fric-

tion-clasp for securing the cover closed, lateral wings projecting from the body of the plate-holder, ways within the case for receiving such wings, lateral wings projecting from the cover of the plate-holder, a rock-shaft journaled within the case, arms fixed upon the shaft and having slots for receiving the wings of the cover, and an actuating-arm outside the case and being fixed to the shaft, substantially as described and for the purpose specified.

5. The combination with a plate-holder having a swinging door and a friction-clasp for holding the door closed, of a light-proof case for receiving the plate-holder, means for fixing the body portion of the plate-holder within the case, a rock-shaft journaled within the case, an arm fixed upon the rock-shaft and adapted for attachment to the body of the plate-holder door, and means exterior to the case for rocking the shaft for the purpose of opening and closing the door.

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