

(No Model.)

2 Sheets—Sheet 1.

W. A. ARMSTRONG.  
PHOTOGRAPHIC CAMERA.

No. 494,517.

Patented Mar. 28, 1893.

Fig. 5.

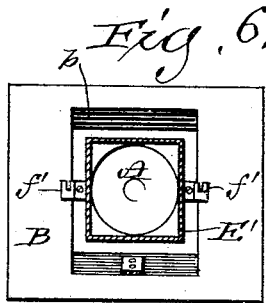
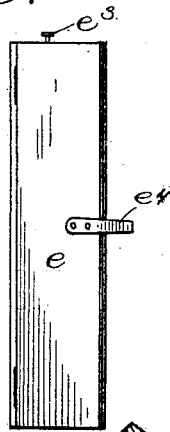


Fig. 7.

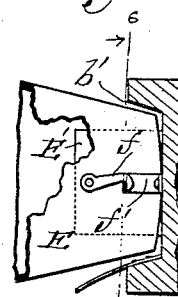


Fig. 8.

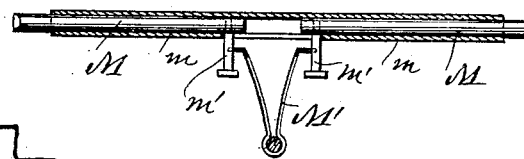
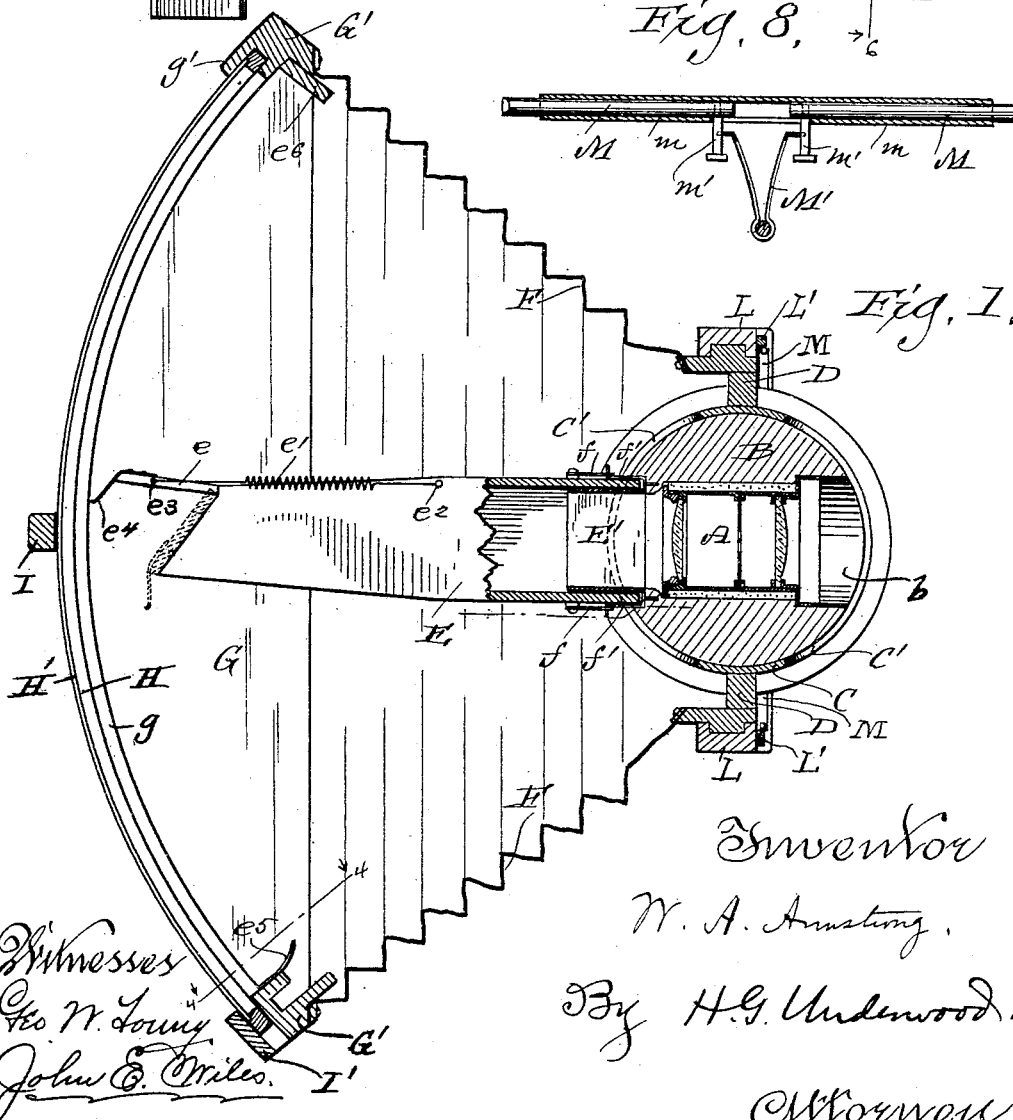


Fig. 9.



Witnesses  
Geo. W. Loring  
John C. Miles.

Inventor  
W. A. Armstrong.  
By H. G. Underwood.  
Attorneys

(No Model.)

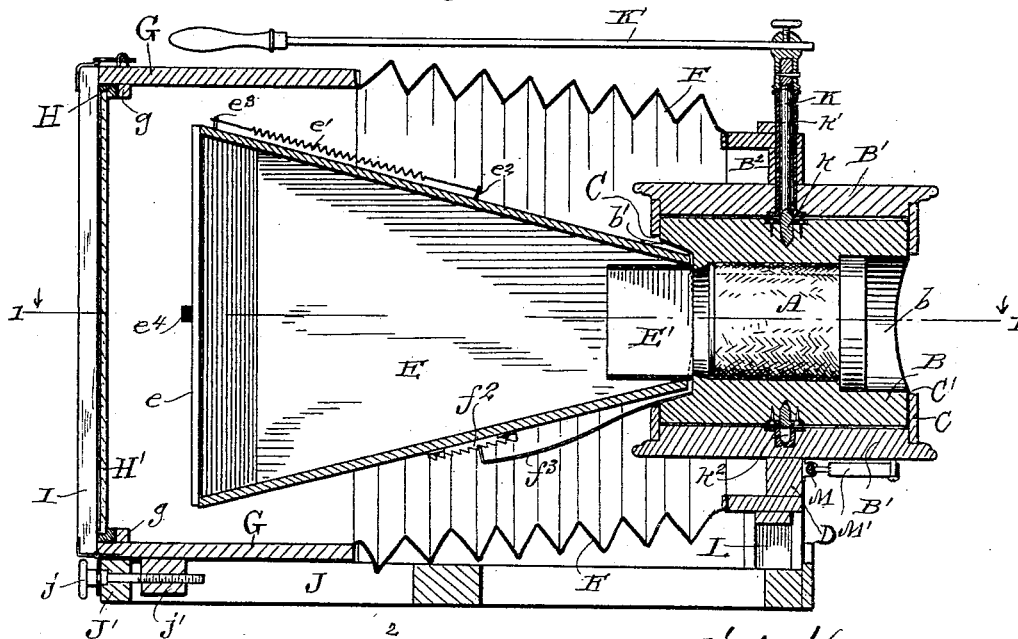
2 Sheets—Sheet 2.

W. A. ARMSTRONG.  
PHOTOGRAPHIC CAMERA.

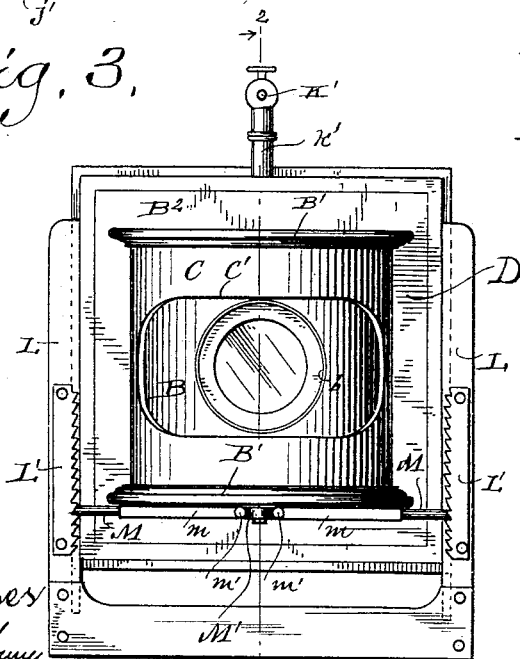
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*Fig. 2.*

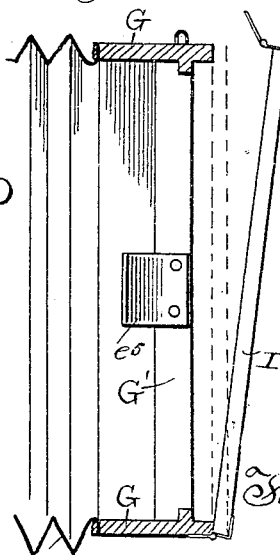


*Fig. 3.*



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*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

WILLIAM A. ARMSTRONG, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE  
ARMSTRONG CAMERA COMPANY, OF SAME PLACE.

## PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 494,517, dated March 28, 1893.

Application filed August 1, 1892. Serial No. 441,802. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. ARMSTRONG, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Photographic Cameras; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to new and useful improvements in photographic cameras, and it consists in the matters hereinafter described and pointed out in the appended claims.

In the accompanying drawings illustrating my invention, Figure 1, is a horizontal sectional view of a device constructed in accordance with my invention, said section being taken on line 1—1 of Fig. 2. Fig. 2, is a vertical sectional view of the same taken on line 2—2, of Fig. 3. Fig. 3, is a view in elevation of the front of the camera. Fig. 4, is a detail vertical sectional view taken on line 4—4 of Fig. 1. Fig. 5, is a detail elevation of the shutter. Fig. 6, is a detail vertical sectional view taken on line 6—6 of Fig. 7, with the hood removed. Fig. 7, is a view partly in section and partly in elevation, of a portion of the hood at the back of the lens. Fig. 8, is a horizontal sectional view of the device for vertically adjusting the lens.

In said drawings:—A represents the lens of any description. The lens A is secured in a horizontal position in a transverse, cylindrical opening *b*, in a vertically disposed cylindrical block B, which is axially journaled at its top and bottom in a housing comprising top and bottom disks B' B', and a cylindrical shell or tube C arranged between said disks. This housing is suitably secured in the usual vertically adjustable lens board D at the front side of the camera. The lens is arranged within the block B, in such a position that a line drawn vertically through the axis of the block B would pass through the optical center of the lens. The front and rear sides of the shell C are provided with horizontally elongated openings C' C' of a width equal to or greater than the diameter of the lens A, so as to permit the block B with the lens A to be rotated from side to side without obstruction to the passage of light through the lens, while

at the same time preventing the light from penetrating past either side of the opening so as to injure the film. A narrow elongated box or hood E is secured to the rear side of the block B, and a tubular extension E' is preferably arranged in rear of the lens tube and projects some distance into the hood E.

The usual bellows F is provided, which is connected at its front edges, with the lens front as shown, and at its rear edges, is secured to a back which comprises upper and lower frame pieces G G which are shaped at their rear edges upon arcs of circles concentric with the axis of the cylindrical block B, and end pieces G' G', suitable ribs or flanges *g g* being provided upon the inner surfaces of the top and bottom pieces G G, adjacent to the curved rear edges thereof. A curved frame H carrying a correspondingly shaped ground glass or translucent film H' is adapted to the curved back of the camera, and when in position rests against the ribs or flanges *g g* on the top and bottom pieces G G. One of the end pieces G' is conveniently provided with a vertically disposed flange *g'* which extends laterally in position to engage with the rear surface of the end of the curved frame H, to hold the same position against the ribs *g g*. Bars I I' are suitably hinged to the rear edge of the bottom board G, at its middle and the end opposite the flange *g'* respectively and are arranged to be engaged at their upper ends with the top piece G and to engage with the rear surface of the frame H in an obvious manner to assist in holding it in place against the ribs *g g*. In this manner the ground glass or focusing film is held in position at the back of the camera and is disposed in the form of a cylindrical curve concentric with the optical center of the lens, so that the image thrown by the lens upon every part of said glass will coincide with the sensitive film that receives the impression. After focusing the camera, frame H and the ground glass or film may be removed, and a similarly shaped frame carrying a sensitive plate or film substituted in an obvious manner. The camera is preferably mounted upon the usual base J, and an adjusting screw *j* is passed through a transverse piece J' at the rear of said base and is engaged

with a lug or projection  $j'$  upon the bottom board G, and serves to adjust the back part of the camera for the purpose of focusing in the usual manner.

5 The hood E is conveniently provided at its free end with a shutter  $e$  adapted to normally close the slot or opening therein, and a suitable spring  $e'$  is connected to a pin  $e^2$  upon the hood E at one end and with a pin  $e^3$  on the  
10 shutter, at its other end, the arrangement being such that when the shutter is in its closed position, as shown in dotted lines in Fig. 1, the tension of the spring will serve to hold it closed, and when the shutter is opened and  
15 occupies the position shown in full lines in said figure, the tension of said spring will serve to keep the shutter open. A projection  $e^4$  is provided on the free edge of the shutter  $e$  and is arranged to come into contact with a  
20 stop  $e^5$  at one side of the camera back when the lens and the attached hood have been oscillated to the limit of their movement in one direction, and a stop  $e^6$  is provided at the other side of the camera back and is arranged  
25 to engage with the shutter  $e$  when the lens and hood have been oscillated to the limit of their movement in the opposite direction. It follows from this construction, that an oscillation of the lens and chamber in one direction  
30 will by engagement of the projection  $e^4$  with stop  $e^5$ , operate to open the shutter, which will now be held open by the spring, and an oscillation of the parts in the opposite direction will bring the slot or opening  
35 in the end of the hood successively opposite to every portion of the sensitized plate or film, supported in the curved frame at the rear of the camera, until the hood reaches the limit of its movement, when the impact  
40 of the shutter against the stop  $e^6$  will operate to move said shutter into its closed position, where it will be held by means of the spring. The hood E is conveniently secured upon the outside of the extension E' by means of hooks  
45  $ff$  upon opposite sides of said hood, which engage with suitable catches  $f'f'$  secured to the rear part of the block B, the forward end of the said chamber being preferably rounded or curved as best shown in Fig. 7 so as to permit the rear end of the hood to be adjusted  
50 vertically without affecting the engagement of the hooks  $ff$  with the catches  $f'f'$ . I also prefer to provide a notched plate  $f^2$  upon the under side of the hood and a spring arm  $f^3$   
55 supported upon the block B and arranged to engage at its free ends with the notches in said plate. This spring arm serves to sustain the hood E in its adjusted position within the camera. The rear side of the block B is preferably cut away as at  $b'$  for the reception of the forward end of the hood E, as shown and by this construction light is effectually prevented from leaking past the junction of the hood and the tubular extension E'.  
60  
65 The pivotal support for the block B within the housing consists of a spindle K secured as at  $k$  to the upper part of the block and extend-

ing upward through a tubular sleeve  $k'$  which is arranged to extend up through the top disk B' as shown. The lower end of the block B  
70 is provided with a trunnion  $k^2$  stepped in a bearing in the lower disk B'. A handle or lever K' is connected with the upper end of the rod K and projects rearwardly so as to be within reach of the operator as he stands be-  
75 hind the camera. To elevate and depress the lens, it is desirable to provide means for vertically adjusting the front or lens board of the camera, and for this purpose the lens board B<sup>2</sup> is mounted between standards L L  
80 located at opposite sides of the front part of the frame, said standards being conveniently provided with notched plates L' L' as shown. Suitable horizontally disposed bars or rods M  
85 M are movably connected by sleeves  $m m$  upon the lens board, said bars being arranged so as to engage at their outer ends the notches in said plates L' L'. A spring M' is suitably arranged between said rods or bars so as to  
90 normally hold the bars in engagement with the notched plates. Projecting thumb pieces  $m' m'$  are conveniently provided upon the inner ends of the rods or bars M M, by means of which they may be retracted out of engagement with the notched plates. By this con-  
95 struction, the lens may be readily adjusted in a vertical direction so as to cover the desired field of view.

In using my improved camera, the operator after adjusting the camera in proper position  
100 places the curved frame that holds the ground glass or translucent film in position at the back of the camera, when by the operation of the lever, he moves the lens and the swinging hood at its rear, to the limit of its move-  
105 ment, the shuttle or cover of said hood being opened in the manner before described, when he may oscillate the lens and said hood so as to project the several parts of the view successively upon the ground glass or film. He  
110 may, by means of the adjusting screw at the back of the camera, move the back nearer to or farther from the lens, so as to obtain a perfectly sharp focus. After the instrument has been properly adjusted and focused, he oper-  
115 ates the lever to close the shutter in the manner before described, and then removes the frame carrying the ground glass or film and substitutes in its stead, a holder carrying a sensitized plate or film, covered in the usual manner  
120 by a slide, and then withdraws said slide. He now operates the lever in the manner before described to swing or oscillate the lens and the chamber to one side and to open the shutter, when, by a movement of the lever  
125 in the opposite direction, he brings the slot at the rear end of said chamber successively opposite to every part of the sensitized surface of the plate or film, the shutter being automatically closed when the chamber reaches  
130 the other side of the camera as before described. If some portion of the view contains dark objects such as a clump of trees, or dense shadows, which would require longer

exposure in order to secure detail in the negative, the operator may move the lever more slowly while the lens is directed toward this portion of the view than during the exposure of the remainder of the negative. In this manner, a perfect negative may be obtained of a view containing a great variety of subjects.

My improved apparatus is exceedingly well adapted to street views and landscape photography and the device may be arranged to take in at one sweep of the lens a very wide extent of view.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A photographic camera, comprising a cylindric, vertically disposed housing provided with suitable horizontally elongated apertures in its front and rear walls, a back constructed upon a cylindric curve concentric with said housing, a suitable bellows extending from said housing to said curved back, a cylindric block fitted within said casing and provided at its upper and lower ends with suitable trunnions and also provided with a transverse bore, a lens secured within said bore with its optical center upon the axial line of said block, and suitable means upon the outside of the camera, for oscillating said block upon its trunnions, substantially as set forth.

2. A photographic camera, comprising a cylindric, vertically disposed housing, provided with suitable horizontally elongated apertures in its front and rear walls, a back constructed upon a cylindric curve concentric with said housing and provided with suitable means for holding a sensitized plate or film, a suitable bellows extending from said housing to said curved back, a block, cylindrical in cross section and fitted within said cylindric housing and provided at its upper and lower ends with suitable trunnions, a transverse bore in said block, a lens supported in said bore with its optical center upon the axial line of said block, a hood secured to the rear side of said block and extending rearward through the aperture in said cylindric housing, and provided in its rear end with a narrow, vertical slot, and suitable means upon the outside of the camera for oscillating said block upon its trunnions, substantially as set forth.

3. A photographic camera, comprising a cylindric, vertically disposed housing, provided with suitable horizontally elongated apertures

in its front and rear walls, a back constructed upon a cylindric curve concentric with said housing and provided with suitable means for holding a sensitized plate or film, a suitable bellows extending from said housing to said curved back, a block, cylindrical in cross section and fitted within said cylindric housing and provided at its upper and lower ends with suitable trunnions, a transverse bore in said block, a lens supported in said bore with its optical center upon the axial line of said block, a hood secured to the rear side of said block and extending rearward through the aperture in said cylindric housing, and provided in its rear end with a narrow vertical slot, a shutter hinged to one side of the rear end of said hood and adapted to normally close said slot, means for opening and closing said shutter, and suitable means upon the outside of the camera for oscillating said block upon its trunnions, substantially as set forth.

4. A photographic camera, comprising a vertically adjustable front, a vertically disposed, cylindric housing secured thereto and provided with horizontally elongated apertures in its front and rear walls, a cylindric block fitted within said housing and mounted upon suitable trunnions, a transverse bore in said block a lens supported horizontally in said block with its optical center upon the axial line of the block, a back constructed upon a cylindric curve concentric with said axial line a suitable bellows extending from said housing to said curved back, a hood secured to the rear side of the block and communicating with the rear end of the lens tube, a narrow vertical slot in the rear end of said hood, a spring shutter for closing said slot, suitable means for setting the shutter open when the chamber is at the limit of its movement in one direction, and suitable means for closing said shutter when the hood reaches the limit of its movement in the opposite direction, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

WILLIAM A. ARMSTRONG.

Witnesses:

H. G. UNDERWOOD,  
ALICE BIRLER.