

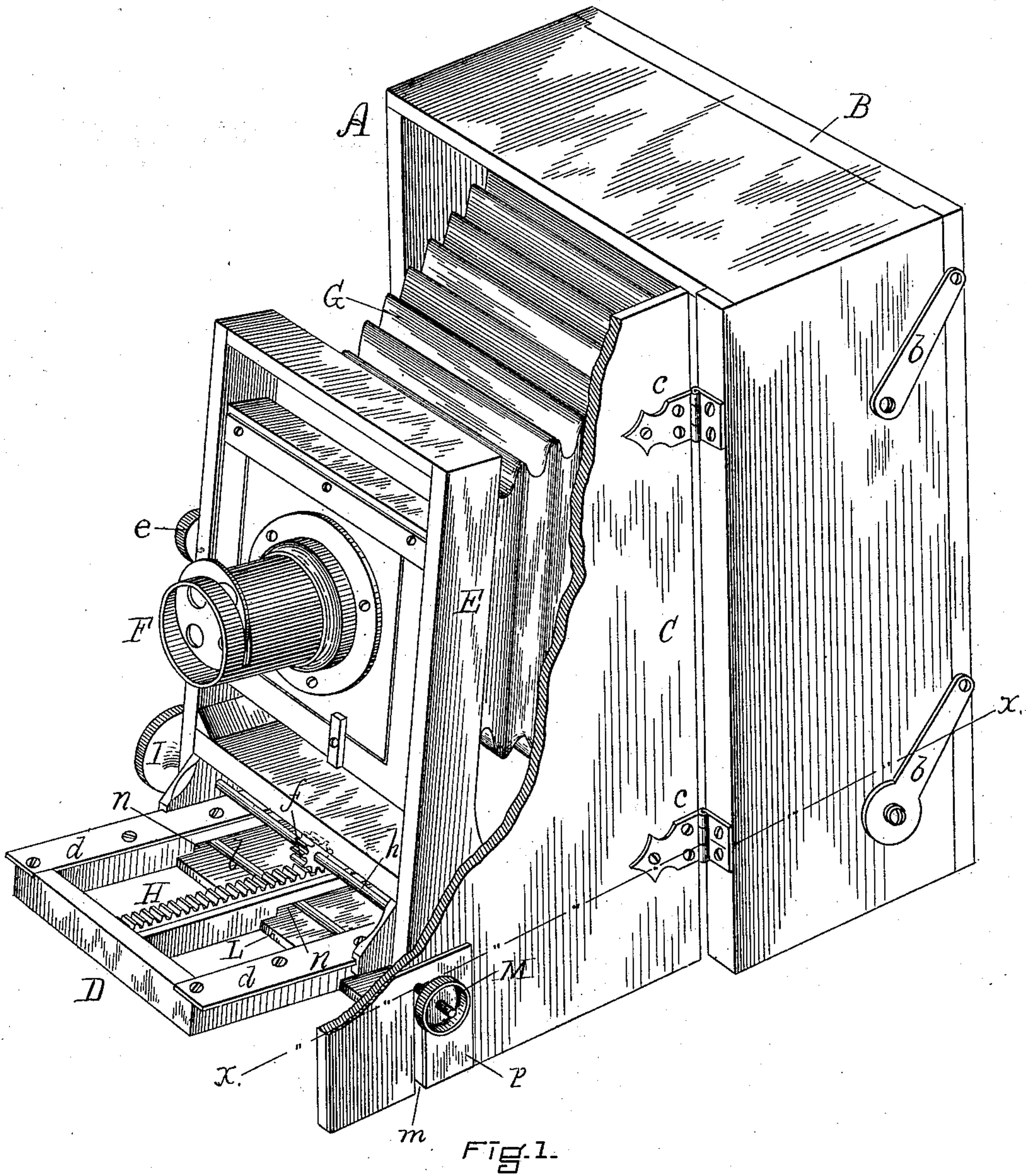
(No Model.)

2 Sheets—Sheet 1.

T. H. BLAIR.
PHOTOGRAPHIC CAMERA.

No. 362,599.

Patented May 10, 1887.



WITNESSES.

H. C. Lodge
William Foster

INVENTOR.

Thos. H. Blair.

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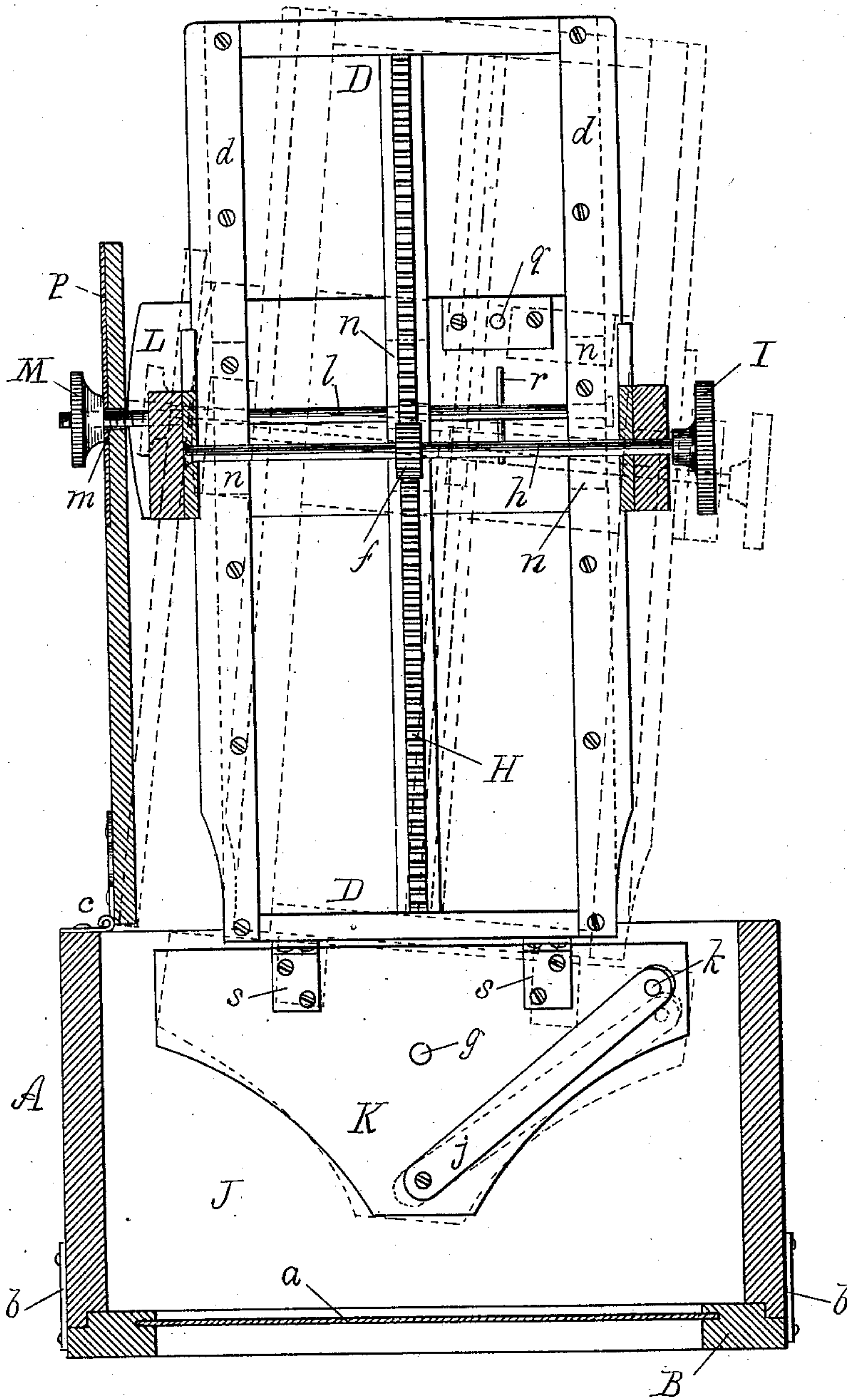


Fig. 2.

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UNITED STATES PATENT OFFICE.

THOMAS H. BLAIR, OF BOSTON, MASSACHUSETTS.

PHOTOGRAPHIC CAMERA.

SPECIFICATION forming part of Letters Patent No. 362,599, dated May 10, 1887.

Application filed January 28, 1887. Serial No. 225,789. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. BLAIR, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Photographic Cameras; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to photographic cameras; and it consists in the peculiar arrangement of its structural parts, as well as the manner of mounting and adjusting the lens with respect to the sensitized plate, in order to bring within the field the objects desired and then properly position them upon the plate then to be exposed.

My improvements are intended to do away with the swinging back now generally attached to camera-boxes; hence it is only necessary to set the tripod-top so that it will swing in horizontal planes, when it will be seen that the plate will stand vertical; but in avoiding the use of the swinging back, it then becomes necessary to arrange and mount the lens so that the operator may be able to adjust it horizontally as well as vertically with respect to the plate, in order to bring the desired objects thereon. Hence I have provided a pivotal extension-frame furnished with a rack and pinion, by means of which the lens is moved toward or away from the plate in the act of focusing. This frame, as before premised, is pivoted and is capable of horizontal or vertical swinging movements.

My improvements further consist in providing the camera-box with a swinging lid adapted to serve as a cover to the front of the camera-box when the latter is closed; but when said camera is to be actively used it is then swung out at right angles, or thereabout, to said box and co-operates with the pivotal frame by a rod and locking-nut. By the latter device the lens, after being adjusted, is held in the proper position so long as it is desired, while the frame is supported and braced.

The drawings accompanying this specification represent, in Figure 1, a perspective elevation of a camera-box embodying my invention with the swinging cover partially removed to more clearly show the operating parts. Fig. 2 is a horizontal section on line *x x* in Fig. 1.

In said drawings, Fig. 1 represents a camera-box as an entirety, formed of a rectangular open box, A, fitted with a back, B, within which is secured the ground glass *a*. This back is united by links *b b* to the box, and thus, without the removal of said glass from the camera, permits the introduction of the plate-holder, which contains the sensitized plate or plates. The front of the camera-box is furnished with a solid cover, C, hinged at *c c*, and adapted to swing outwardly when the camera-box is in use, and co-operates with an open frame, D. This extension-frame is laterally and longitudinally provided with guides *d d*. Upon the latter and in engagement therewith is vertically disposed a rectangular frame or standard, E, in which is mounted and secured the lens F, adjustable vertically therein by means of the set-screw *e*. To the back side of the standard E is secured the ordinary extension-bellows G, which extends rearwardly and is fitted snugly to the box A, and thus renders the latter impervious to light. The cover C, being vertical, opens into a position at right angles to the front of the box A, and parallel to the bellows G and standard E. When locked to the frame D, as hereinafter described, it becomes a side protector for said bellows-standard and frame with the parts attached thereto.

Adjustment of the lens toward or away from the ground glass *a*, in the act of focusing, is accomplished by means of a rack, H, arranged centrally lengthwise of the swinging extension-frame D. This serves as a fixed point of leverage for a pinion, *f*, which meshes therewith, and is mounted upon a transverse shaft, *h*, the latter loosely secured to the standard E, and operated by means of the knob I. Thus movement of the latter rotates the pinion, which travels along the rack and causes the standard E, with the lens F, to be brought to any desired point. Further adjustment of the lens laterally in either direction is effected as

follows: At *g* is represented the pin, by means of which the camera-box is secured to the tripod (not shown) and about which it revolves when so desired. In the present instance I cause this pin to project inwardly of and above the bottom *J* of the camera-box, and have secured thereon a metallic plate, *K*, to which is hinged, at *s s*, the extension-frame *D*. Thus it will be seen that the plate *K* and frame *D*, with all their operative mechanism, are capable of swinging movement upon the pin *g*, as a center, as shown in the dotted lines in Fig. 2, while the frame can be tilted up obliquely, if desired, the camera-box not being moved or altered from its first position.

To determine and quickly fix the frame *D* in a position precisely at right angles to the focusing-glass *a* and to lock the same, I have arranged a spring, *j*, armed with a catch, *k*, which engages the bottom *J*. Thus no difficulty occurs in securing this normal position of these parts.

In view of the oscillating movements of the plate *K*, frame *D*, and lens, some additional device is necessary to lock and hold the above-mentioned parts when swung to one side or the other. To effect this object in connection with the cover *C*, which forms one part of the locking device, I have secured beneath the frame *D* a piece, *L*, which extends beyond the frame on that side adjacent to the cover, the extremity thereof being slightly rounded to provide for the oblique position which at times it assumes with respect to said cover *C*. Against the latter it is securely locked by means of a rod, *l*, which extends beyond the cover through a vertical slot, *m*. This rod is screw-threaded at its free end, and is furnished with a locking-nut, *M*, which engages its extremity outside of the cover. The opposite end is formed with a head, which engages with and pivots on the side of the frame *D*. This rod *l* is arranged transversely of the frame *D*, and extends through the longitudinal pieces forming the said extension-frame. Furthermore, said pieces are slotted at *n n n* to permit lateral movement of the rod *l* whenever the frame *D* and lens *F* are swung in either direction horizontally.

In the event of a desire to raise the lens without changing its position in the standard *E*, as before premised, the cover *C* is constructed with the slot *m*; hence upon loosening of the locking-nut *M* the frame can be tilted up obliquely to a horizontal plane, (see Fig. 1,) while the rod *l* moves upward in the slot *m*. When the desired elevation of the lens is attained, the nut is again screwed up tightly and the parts are locked together, and so remain until further adjustment of some kind becomes necessary.

Having thus described the relation of the several component parts, I will now proceed to show their co-operation in the event of adjusting a camera-box which embodies my improvements. Premising that the camera-box is now closed and secured upon a tripod, the

first step is to unfasten and swing outwardly the cover *C*, and then turn down the extension-frame *D*, which is of a length to fit within said box *A*. It then becomes necessary to lock the frame *D* and cover *C* firmly together, and thus fix their position. This is effected by thrusting the screw-threaded end of the rod *l* through the slot *m* and inserting thereon the locking-nut *M*, which is now screwed up until it bears against a metallic plate, *p*. This act brings the inside of the cover *C* firmly against the piece *L*, and the parts are locked together, the position of the longitudinal axis of the frame *D* at right angles to the glass *a* being predetermined by the spring *j* and catch *k*. To prevent loss of the nut *M* when not in use, I have placed a screw-threaded pin, *q*, upon the frame *D*, and said nut, when removed from the rod *l*, is screwed thereupon, and its safety is thus assured and its location known.

It will be observed that the rod *l* extends beyond the side of the camera-box when actively employed, and hence after disengagement of the nut *M* said rod is thrust back a short distance to permit entrance of the frame *D* within the box *A*. To prevent loss or escape of said rod from its frame, I have inserted a pin, *r*, located transversely in it. (See Fig. 2.) Premising, then, that the frame *D* is in a horizontal plane and locked in position, the lens-standard *E* is pushed forward slightly until it has engaged the guides *d d*, while the pinion *f* at the same time is meshed with the rack *H*, the actuating-knob *I* is revolved, and the lens is advanced, positioned, and focused upon the object to be photographed.

Supposing the bottom *J* of the camera-box now revolves in a horizontal plane and it is desired to raise the lens in order to change the position of the object upon the ground glass. The operator unfastens the locking-nut *M*, withdraws the spring *j* and catch *k*, and swings the cover *C*, frame *D*, and plate *K*, with the lens, about the pin *g*, as shown in the broken lines, Fig. 2. This movement effects change in the position of objects laterally of the glass, consequently on the sensitized plate, when exposed; but in the present instance I will assume that a slight movement of the object is desired vertically, in which event the frame *D* is tilted up, swinging on the hinges *s s*, while the rod *l* moves in the slot *m*. When the change in the position of the object or objects is attained, the locking-nut *M* is turned home, when the parts retain this position relatively one to the other until released.

It will be readily understood that the cover *C*, the locking-rod *l*, the frame *D*, and plate *K* all support and strengthen each other. The rod *l* prevents any change of the frame with respect to the cover, while the latter serves as a rigid brace to the frame. Thus by the adjustments above described there is no need to move either the camera-box or tripod, as now practiced, in the act of properly locating an object upon the ground glass.

I claim—

1. The combination, with a camera opening in front and provided with a frame on which the lens is advanced or withdrawn, of a hinged cover arranged at the side of said frame, and a locking device connecting said cover in its open position to said frame, substantially as set forth.

2. In photographic cameras, the box A, provided with the swinging cover C, slotted at *m*, in combination with an extension-frame, D, carrying the lens-standard E, with its lens F, and the rod *l*, with its locking-nut M, all co-operating substantially as stated.

3. The lens-standard E, movable upon a frame, the frame D, with its piece L, and the pivotal plate K, to which said frame is hinged, in combination with the box A, the swinging cover C, locking-nut M, and transverse rod *l*, pivotally attached to the frame D, and which serves to lock the latter in any desired position, substantially as described.

4. The lens-standard E, its pinion *f* and rod *h*, the frame D, with its rack H, and re-

cesses *n n n*, in combination with the swinging rod *l*, pivoted to said frame and locked with the cover C of the camera-box by the nut M, as and for the purposes set forth.

5. In combination, the box A, with its focusing-glass *a*, and swinging cover C, the lens-standard E, connected by the bellows with said box and mounted upon the frame D, the pivotal plate K, uniting said frame to the camera-box, and the rod *l*, with its locking-nut M, all operating as herein stated.

6. The combination, with the camera-box, its hinged cover C, the rod L, its nut M, and frame D, of the plate K, pivotally secured to said camera-box, and provided with the spring *j*, and catch *k*, which engages said box, substantially as herein described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS H. BLAIR.

Witnesses:

H. E. LODGE,
F. CURTIS.