No. 715,125. Patented Dec. 2, 1902.

C. F. J. NISS.

CAMERA.

(Application filed Feb. 15, 1902.)

(No Model.) 2 Sheets—Sheet I.

Fig. 3.

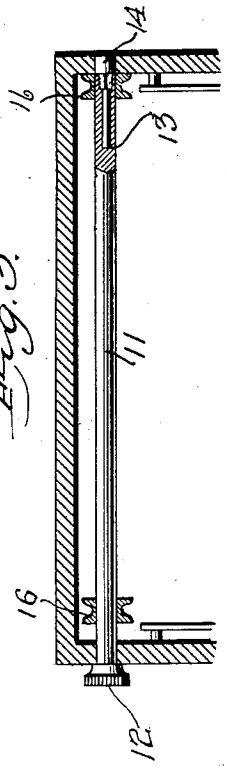
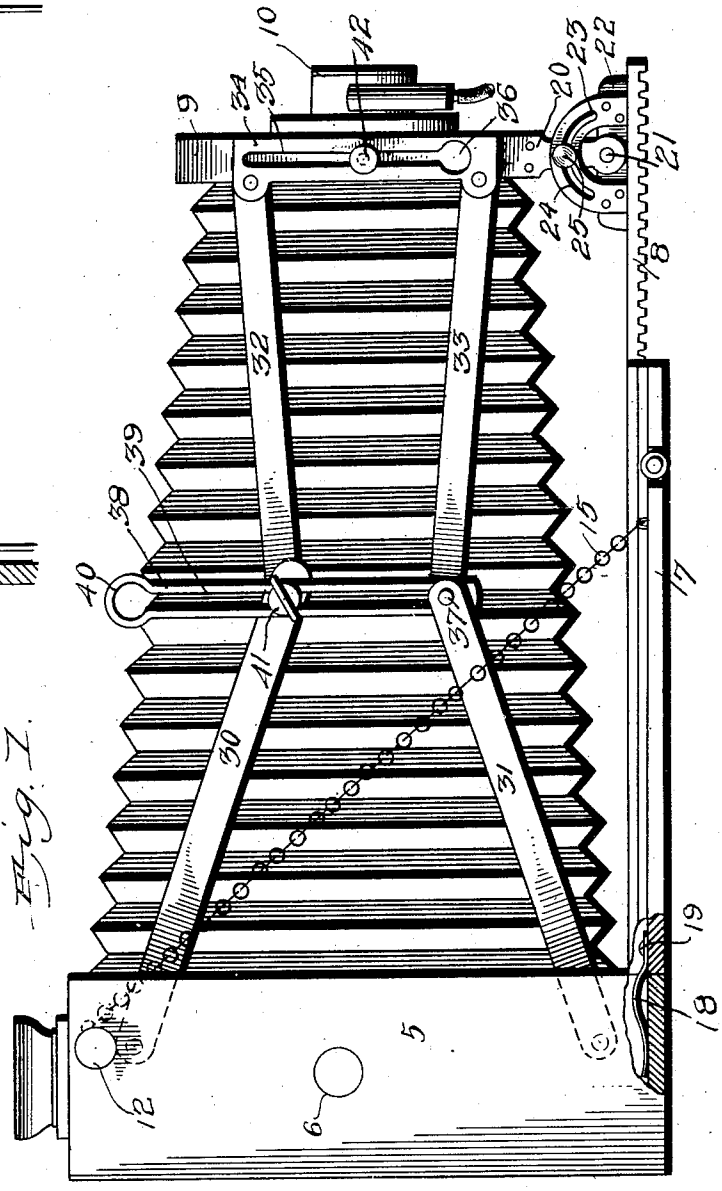


Fig. 1.



Witnesses
E. F. Stewart
Jno. E. Parker

C. F. J. Niss, Inventor.
by Cushman & Co
Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 4.

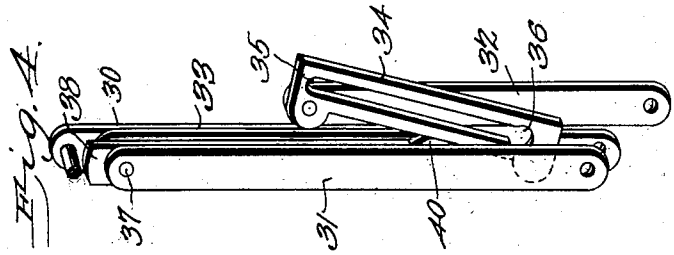
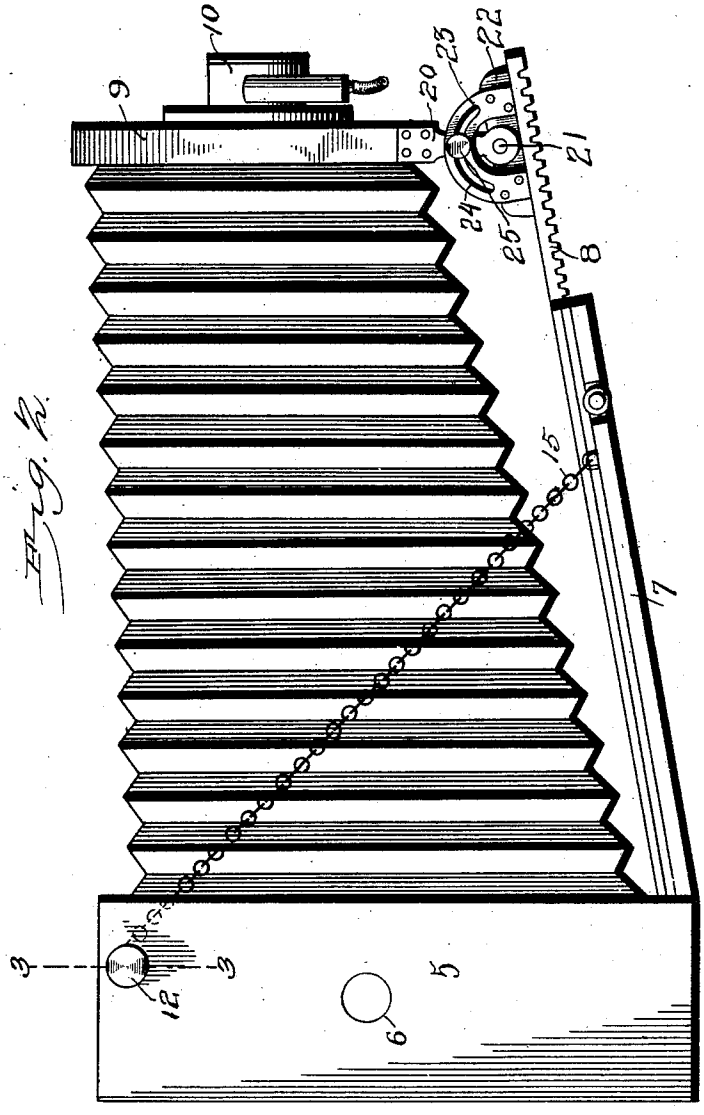


Fig. 2.



Witnesses
E. F. Stewart
Jno. E. Parker

C. F. J. Niss, Inventor.
by C. A. Snow & Co
Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHRISTIAN FREDERIK JULIUS NISS, OF HINCKLEY, ILLINOIS.

CAMERA.

SPECIFICATION forming part of Letters Patent No. 715,125, dated December 2, 1902.

Application filed February 15, 1902. Serial No. 94,270. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN FREDERIK JULIUS NISS, a subject of the King of Denmark, residing at Hinckley, in the county of Dekalb and State of Illinois, have invented a new and useful Camera, of which the following is a specification.

My invention relates to certain improvements in photographic cameras, and has for its principal object to construct a camera in which the lens may be readily adjusted with respect to the sensitized plate or film for the purpose of including more or less of the sky or foreground or for the purpose of photographing tall buildings without the distortion which results from placing the lens and plate out of parallel with the object.

A further object of my invention is to provide an attachment for maintaining the focus during the adjustment of the lens and camera-front, the device being more especially adapted for use in connection with film-cameras, the construction of which prevents the use of a ground-glass focusing-screen.

With these and other objects in view the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of a photograph-camera provided with a lens-adjusting mechanism in accordance with my invention. Fig. 2 is a similar view illustrating the lens and camera-front elevated to increase the vertical range of the lens, the side frames being removed. Fig. 3 is a transverse sectional elevation on the line 3 3 of Fig. 2, illustrating the construction of the chain-rollers and locking mechanism. Fig. 4 is a detail perspective view of one of the side frames in folded position.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

5 indicates the camera-box, which is provided with a side tripod-socket 6 in order that pictures may be taken in either the horizontal or the vertical line of the plate. To the front of the camera-box is connected a bed 7 of the usual construction, the bed carrying an adjustable rack 8, by which the camera-front 9 and lens 10 may be adjusted with respect to the plate or film, this constituting the focusing mechanism in ordinary use.

In the upper portion of the camera-box, at a point above the bellows, is a horizontally-disposed shaft 11, having at one end a milled knob 12, arranged outside the camera-box for convenience in rotating the shaft. The opposite end of the shaft is provided with a recess 13, polygonal in form for a portion of its length and circular for the remaining portion, said recess being adapted for the reception of a partly-round and partly-polygonal pin 14, carried by the opposite wall of the camera-box. Connected to the movable bed are side chains or cords 15, the upper ends of which are wound on the shaft 11 or on small grooved rollers 16, carried by said shaft, the turning of the shaft by the milled knob 12 effecting a raising or lowering of the swinging bed to include either sky or foreground, as may be desired. The weight of the bed, camera-front, and bellows will tend to depress the bed when the shaft 11 is turned to permit of a downward movement; but to insure the holding of the bed in adjusted position I employ one or more springs 18, pivoted on pins 19 on the bed and adapted to bear on the adjacent face of the camera-box, the springs being turned out of the way when the bed is to be folded to close the camera.

When the shaft 11 is to be turned, it is pulled outwardly from the pin 14 until the polygonal portions of the pin and socket are disengaged, the shaft being supported by the circular portion of the pin and being turned either to wind or unwind the side chains. The bed may in this manner be elevated to any angle; but in cameras as ordinarily constructed such a movement would result in moving the lens out of parallel with the plate and result in distortion. To overcome this objection, I mount the camera-front 9 on side arms 20, pivoted at 21 to a block 22, carried by the adjustable rack, this construction permitting of the adjustment of the camera-front and lens to a vertical position. To lock the front in its adjusted position, I employ a semicircular plate 23, having a slot 24 for the reception of a locking-screw 25, the slot per-

mitting of the adjustment of the camera-front to any desired position.

In film-cameras, where the construction precludes the employment of the usual ground-glass focusing-screen, I employ a frame of the construction illustrated in Figs. 1 and 4 to keep the view in focus while raising or lowering the lens. After the camera has been adjusted to conform to the focusing-scale the frame, which is normally folded within the box, is pulled out to lock the camera front and box in proper focusing position. This frame comprises a number of bars 30, 31, 32, and 33, pivotally connected in pairs, the inner ends of the bars 30 and 31 being pivoted to the side of the camera-box and the outer ends of the bars 32 and 33 being pivoted, respectively, to the upper and lower ends of a front bar 34, having a vertical slot 35, terminating at its lower end in an enlarged opening 36. The pivot-pin 37 of the bars 31 and 33 also serves to connect to said bars a vertical bar 38, having an elongated slot 39, terminating in an enlarged opening 40, through which a locking-screw 41 may pass, said screw forming the pivot-pin of the bars 30 and 32 or being arranged directly in alinement with and carried by said pivot-pin. After the lens has been adjusted the frame is extended and a pin 42, carried by the side of the camera-front, is passed through the opening 36 until its shank portion enters the vertical slot 35. The screw 41 is then passed through the opening 40 and moved down in the slot 39 as near as possible to the pivot-pin 37. The screw 41 is then turned to clamp on the bar 38 and hold all of the parts of the frame rigidly in place. In practice a single frame has been found sufficient for the purpose, although I may employ a similar frame on the opposite side of the camera.

The frame or frames will maintain the focusing distance between the lens and the film without regard to the vertical movement of the camera-front, the slot 35 of the frame permitting free vertical movement of the front and lens as the bed is raised or lowered.

As the frame and camera-front are elevated the latter will be slightly tilted, without, however, altering the distance between the lens and the film, and after the desired vertical adjustment has been attained the camera-front may be restored to a position parallel with the camera-box and film by adjustment through the rack 8 in the usual manner.

By constructing the camera in the manner described I dispense with the usual swing-back and am enabled to adjust the lens to any desired vertical distance, the range of movement being limited only by the capacity of the lens, and the construction is such that the adjustment may be readily effected by a simple turning of the milled knob at one side of the camera while the operator is under the focusing-cloth.

As shown in the drawings, the camera-box is provided with an extra tripod-socket 6, so that the camera may be mounted on its side when desired, the bed being then moved to the right or left to obtain a side-swing effect.

While the construction herein described is the preferred form of the device, it is obvious that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of my invention.

Having thus described my invention, what I claim is—

1. The combination in a camera, of the vertically-adjustable bed, means for raising and lowering said bed, and means for adjusting the camera-front to maintain the same in parallel relation with the sensitized surface.

2. The combination in a camera, of the bed, an adjustable camera-front carried by the bed, a revoluble shaft carried by the camera-box, a flexible connecting device extending therefrom to the camera-bed, and means for adjusting the camera-front to maintain the same in parallel relation with the sensitized surface.

3. The combination in a camera, of the box, a bed connected thereto, a shaft carried by the box and having an operating knob or handle, a flexible connecting device extending from the bed to the shaft, a pivoted camera-front supported by the bed, and means for locking said camera-front in an adjusted position.

4. The combination in a camera, of the box, a rotatable shaft having at one end a recess partly round and partially polygonal in form, a stationary pin carried by the camera-box and having round and polygonal surfaces for engagement in the recessed end of the shaft, a turning knob arranged on said shaft exterior of the box, grooved winding-wheels disposed on said shaft and forming stops for limiting the longitudinal movement thereof, a camera-bed, flexible connecting devices extending from the winding-wheels to the opposite sides of said bed, a camera-front, and means for adjusting the same, substantially as specified.

5. The combination in a camera, of the box and bed, a flexible connection between the box and bed for effecting a movement of the bed in one direction, and a spring extending between the box and bed and tending to move said bed in the opposite direction.

6. The combination in a camera having a box, a camera-front, and an adjustable bed, of a frame comprising a series of pivoted bars connecting the camera-box to the front and adjustable to accommodate varying focal distances, and means for rigidly securing the frame in an adjusted position.

7. The combination in a camera having a box, a camera-front, and an adjustable bed, of a frame comprising a series of pivotally-connected bars, one of which is provided with

a vertically-disposed slot and adapted for connection to the camera-front, and a second bar, slotted to permit of the adjustment of the frame, and a locking-screw adapted to said slotted bar and serving to lock the frame in an adjusted position.

8. The combination in a camera having a box, a camera-front, and an adjustable bed, a foldable frame comprising a series of pivotally-connected bars 30, 31, 32, 33, 34, there being a vertically-disposed slot in the bar 34, a pin carried by the camera-front and adapted to said vertical slot, a slotted bar 38 pivotally connected to the bars 31 and 33, and a locking-screw 41 adapted to said slotted bar and serving to lock the same to the pivot-pin of the bars 30 and 32, substantially as specified.

9. The combination in a camera, of the bed, an adjustable camera-front carried by the bed, means for raising the bed and camera-front, and a spring bearing on the bed and serving to depress the bed and camera-front, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHRISTIAN FREDERIK JULIUS NISS.

Witnesses:
JAMES M. POSTLE,
ELLA HEINEMEIER.