

March 13, 1928.

1,662,427

R. KROEDEL ET AL
CAMERA FOCUSING MECHANISM

Filed Sept. 8, 1922

2 Sheets-Sheet 1

Fig. 1.

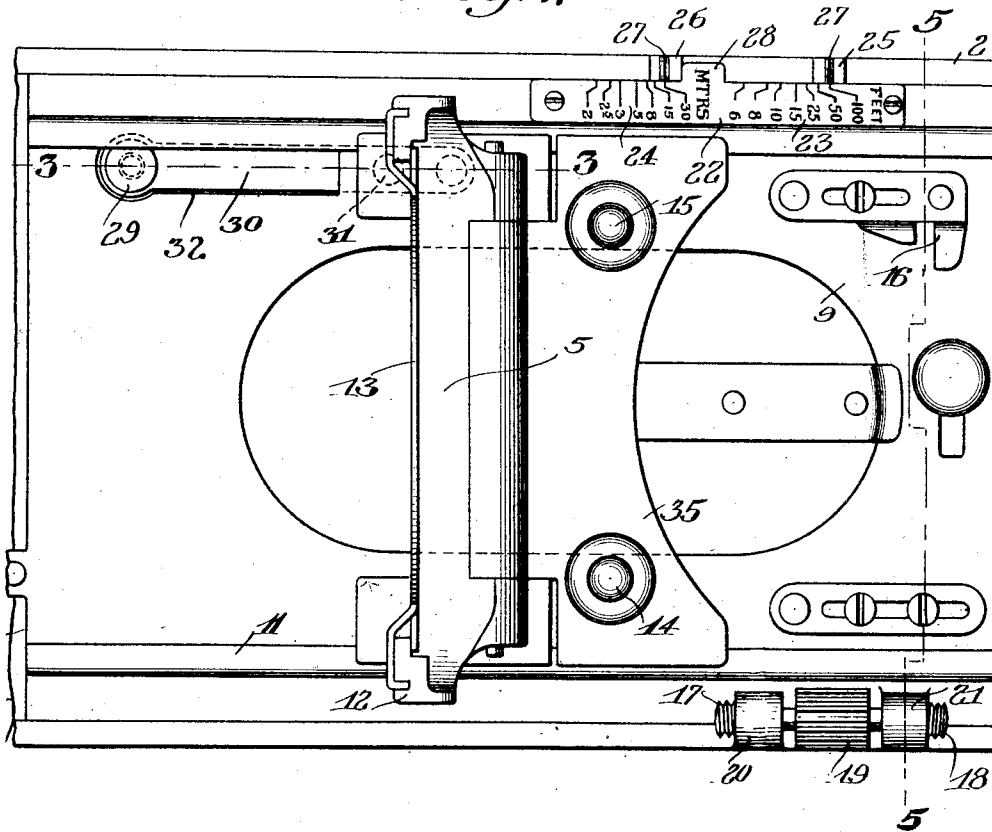


Fig. 3

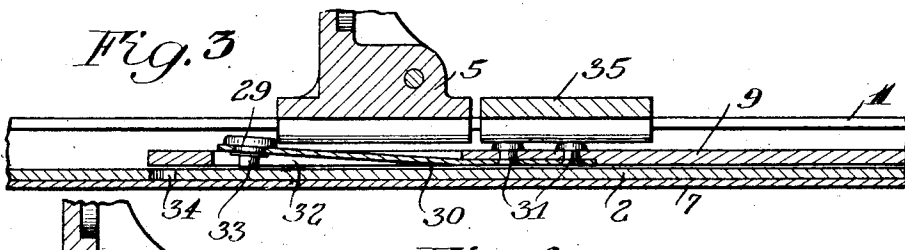
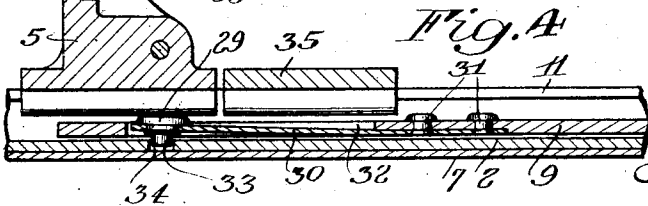


Fig. 4



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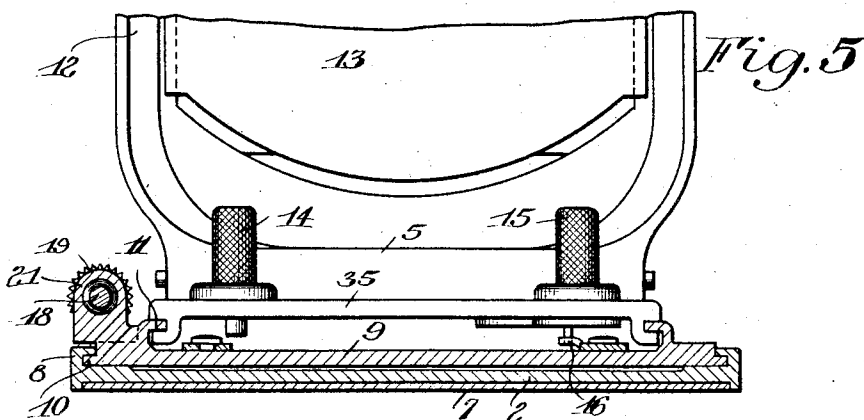
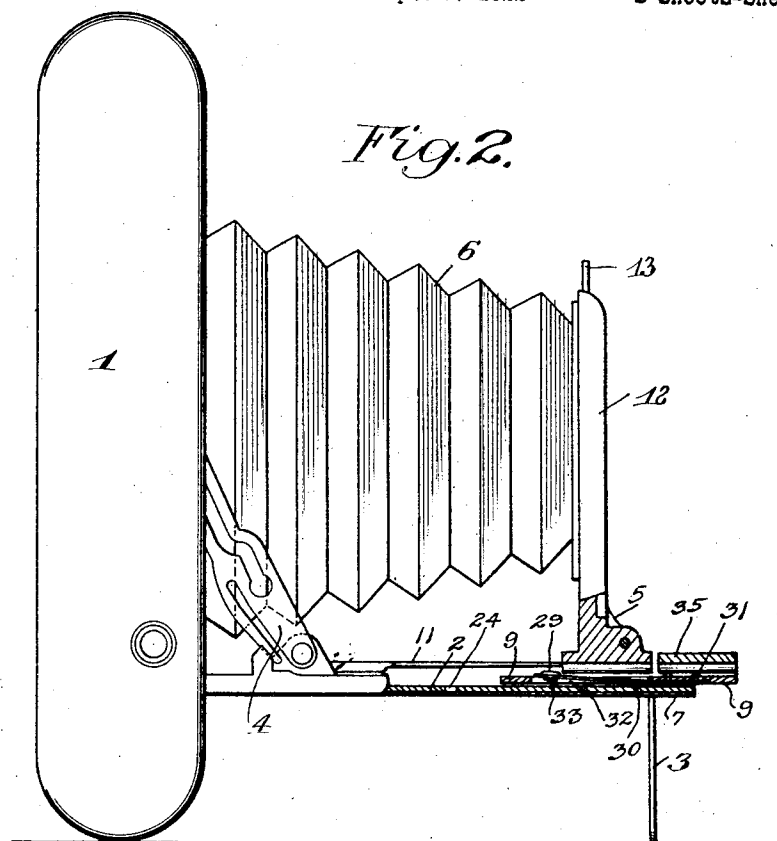
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UNITED STATES PATENT OFFICE.

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TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF
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CAMERA FOCUSING MECHANISM.

Application filed September 8, 1922. Serial No. 586,990.

Our present invention relates to photography, and, more particularly to the focusing mechanism of cameras, and it has for its object to provide simple, efficient and convenient arrangements whereby the extension bed and the lens carriage that is movable thereon exercise reciprocal control over each other to prevent movements of one that are out of keeping with positions of the other.

To these and other ends the invention consists in certain improvements and combination of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Figure 1 is an enlarged top plan view of the bed of a folding camera provided with a focusing mechanism constructed in accordance with and illustrating one embodiment of our invention;

Figure 2 is a side view of the camera partly broken away in vertical section to show the focusing mechanism in extended position;

Figure 3 is a fragmentary section on the line 3—3 of Figure 1 showing the extension bed latch in retracted position;

Figure 4 is a similar view showing the extension bed latch in engaging position;

Figure 5 is a transverse section through the bed on the line 5—5 of Figure 1.

Similar reference numerals throughout the several views indicate the same parts.

Our improved focusing mechanism is particularly applicable to folding pocket cameras of a familiar type and we have illustrated it in connection with such a camera which, as shown in Figure 2, comprises generally a body 1 and a hinged main bed 2 at the front thereof which when closed constitutes a door, and which when extended as in the figure performs the function of a bed and support being fitted with a folding leg 3 at its forward end. Locking braces 4 hold the bed rigidly extended and a lens carriage 5 connected to the body by a bellows 6 travels on the bed in connection with an extension bed hereinafter described between an extended focusing position such as that shown and a folding position within the body 1 wherein the bellows and front

are normally stored. It is the mechanism whereby this extension bed is positioned with which the present invention is concerned.

Referring more particularly to Figures 1 and 5, the main bed 2 (leather covered at 7) is provided at its sides with lateral or inturned tracks 8 to slidably receive an extension bed 9 having runners 10 at its edges fitting the tracks. The extension bed, normally and when retracted, is substantially coincident with the main bed and the extension bed is in turn also provided with tracks 11 on and between which slides a carriage 5 carrying the front frame 12 and lens board 13. The carriage and front is drawn in and out by grasping the finger pieces 14 and 15, the former of which is fixed and the latter movable to release a suitable clamp for locking the carriage in any position in which it is left on the extension bed 9, but these details are of no consequence here. A suitable stop on the extension bed indicated at 16 in Figure 5 limits the forward movement of the camera while in moving rearwardly to folding position it rides off of the rear end of the extension bed 9 and onto aligned tracks within the body 1 (not shown) as usual.

In the practice of our invention we prefer to move the extension bed 9 relatively to the main bed 2 by means of a device constituting the subject matter of a division of this application which has resulted in Patent No. 1,621,935, dated March 22, 1927. Such a device comprises a double screw having a right hand threaded portion 17 at one end, a left hand threaded portion 18 at the other end and an intermediate thumb piece or knurled operating knob 19. The screw portion 17 is threaded into an upwardly and inwardly projecting lug 20 on the side of the main bed 2 while the screw portion 18 is similarly threaded into an upstanding lug 21 on the extension bed 9 and which is aligned with the first mentioned lug. This arranges the thumb piece 19 conveniently to be rotated by overshoot pressure of the thumb of the user as he holds the camera by grasping the bed, and it is obvious that the right and left hand screw arrangement causes the beds to move relatively just twice

as fast as would be the case if a single screw were used which gives a rapid adjustment and yet a sensitive one when desired.

To prevent the screw from jamming on the one hand and from becoming detached from its lugs on the other, we prefer to otherwise limit the resulting movement of the extension bed 9. Referring to Figure 2 there is attached to one side of the extension bed a scale plate 22 bearing two scales 23 and 24 graduated in terms of different units of linear measurement as, for instance, feet and meters for selective use. Spaced lugs 25 and 26 on the adjoining edge of the bed plate 2 are provided with marks 27 constituting indicators one for each scale. A laterally projecting lug 28 near the center of the scale plate 22 travels between these lugs 25 and 26 with the relative movements of the beds and engages them alternatively as stops.

In devices of this kind it is desirable to prevent the operator from moving the carriage 5 rearwardly toward folding position until the extension bed has been retracted from the positions of Figure 2 because otherwise a gap is left between the rear end of the track therefor on the extension bed 9 and the front end of the track within the camera body where the carriage belongs before folding and it is apt to jam and also because the door 2 cannot be closed until the extension bed is retracted. We therefore provide improved means under the control of the focusing mechanism for the bed for locking or blocking the rearward movement of the carriage beyond a certain point until the extension bed 9 has been drawn in. This consists of a catch button 29 (Figures 3 and 4) carried on the rear end of a spring finger 30 secured to the under side of the extension bed 9 at 31 and normally holding itself raised and within an opening 32 in the said bed, this inoperative position of the button 29 being shown in Figure 3. It is so inoperative only with respect to one of its functions because as shown in said figure it is in the path of the carriage 5 and prevents the latter from moving rearwardly beyond it while the engagement of its lower portion 33 with the top face of the main bed 2 prevents it from moving downwardly while the extension bed 9 is in extended position with reference to the main bed as in Figure 3. When however the extension bed is retracted to its full extent the lower point 33 of the button or catch becomes aligned with a stop opening 34 in the main bed 2 as shown in Figure 4. It can then be depressed into this opening by the rearward movement of the carriage 5 which passes over it and holds it there, the arrangement being such that a hinged portion 35 of the carriage remains over the button when the car-

riage is within the body 1, which hinged portion 35 folds with the bed and door as the latter is closed. By this action the button 29 through its engaging portion 33 being longitudinally immovable with respect to the extension bed 9, locks the two beds together and prevents the extension bed from being extended by the operating device 19 until the front has been drawn out to focusing position and the carriage 5 has cleared the button and allowed it to spring up again to the position of Figure 3. In this way the movements of the extension bed through its operating mechanism are controlled by the position of the carriage and movement of the latter is controlled by the position of the extension bed.

We claim as our invention:

1. In a photographic camera, the combination with a main bed and an extension bed guided thereon, of a pair of indicators on one of said elements having the form of shouldered lugs, two scales on the other element graduated in different units of linear measurement and with which the indicators respectively cooperate, and a projection on said last mentioned element adapted to cooperate with the indicators as stops to limit the relative movement of the beds in both directions.
2. In a photographic camera, the combination with a main bed, an extension bed, a carriage movable on the latter between folding and focusing positions, and focusing mechanism for operating the extension bed, of means under the control of the focusing mechanism for locking the carriage against movement to folding position while when the extension bed remains extended, said means being also controlled by the carriage when in folding position to lock the extension bed against being extended.
3. In a camera, the combination with a main bed, an extension bed, and a carriage movable on the latter between folding and focusing positions, of a spring latch controlled by the carriage when in folding position to lock the extension bed against movement.
4. In a camera, the combination with a main bed, an extension bed, and a carriage movable on the latter between folding and focusing positions, of a spring latch controlled by the carriage when in folding position to lock the extension bed against movement and arranged to block movement of the carriage relatively to the extension bed to folding position except when the extension bed is retracted.
5. In a camera, the combination with a main bed, an extension bed, and a carriage movable on the latter between folding and focusing positions, of a normally retracted spring latch for locking the extension bed to the main bed, said latch being actuated

to operative position by the movement of the carriage to folding position.

6. In a camera, the combination with a main bed, an extension bed, and a carriage
5 movable on the latter between folding and focusing positions, of a normally retracted spring latch for locking the extension bed

to the main bed, said latch being actuated to operative position by the movement of the carriage to folding position and being so
10 actuatable only when the extension bed is in retracted position.

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