2 Sheets—Sheet 1.

S. L. BERGSTRESSER.

Camera.

No. 210,445. **Patented Dec. 3, 1878.**

Fig. 1.

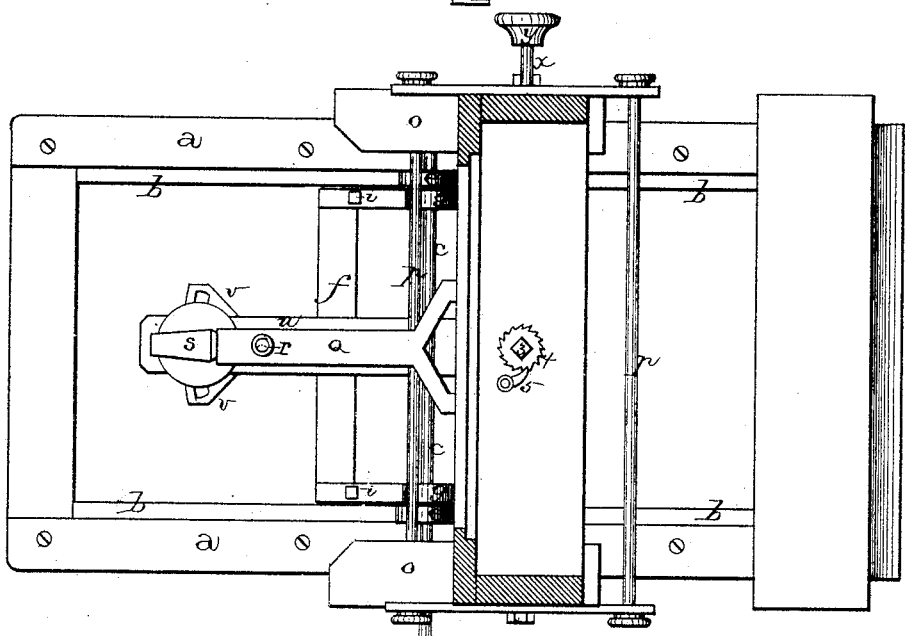
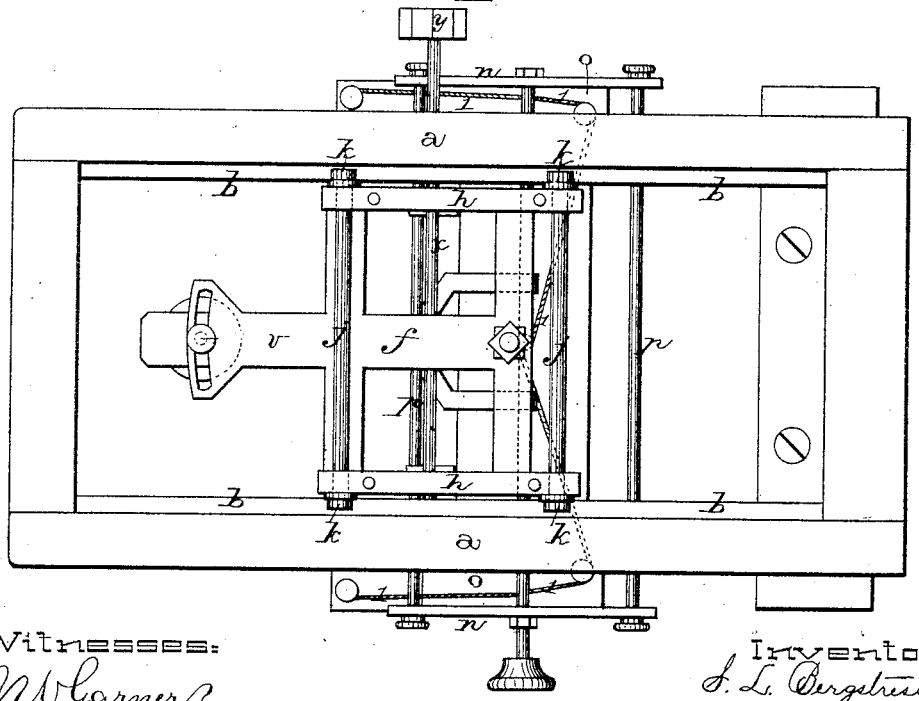


Fig. 2.



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S. L. BERGSTRESSER.

Camera.

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Fig. 3.

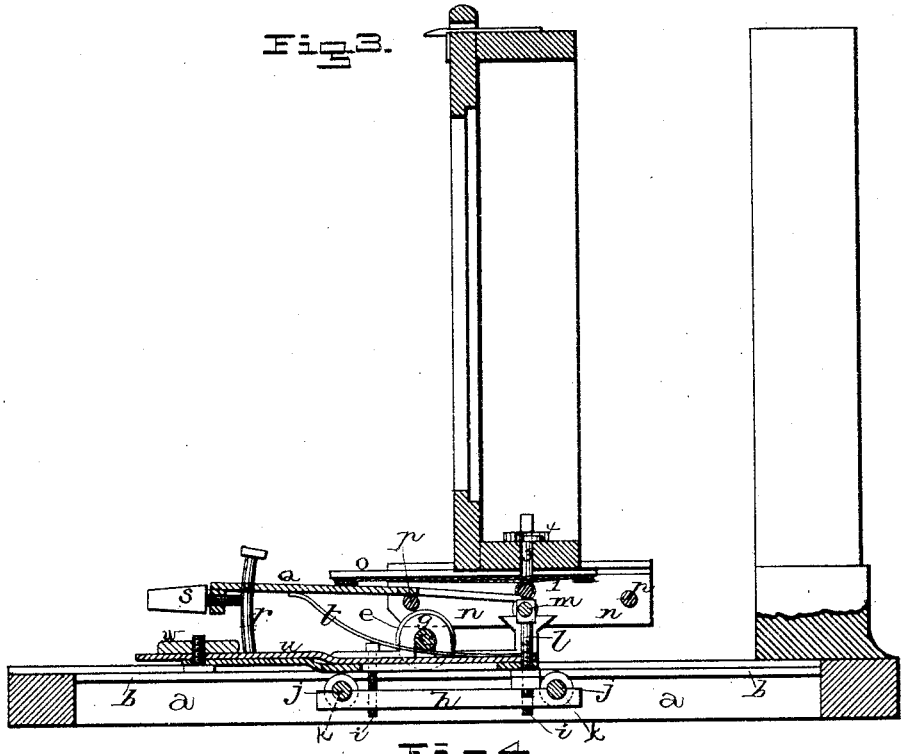
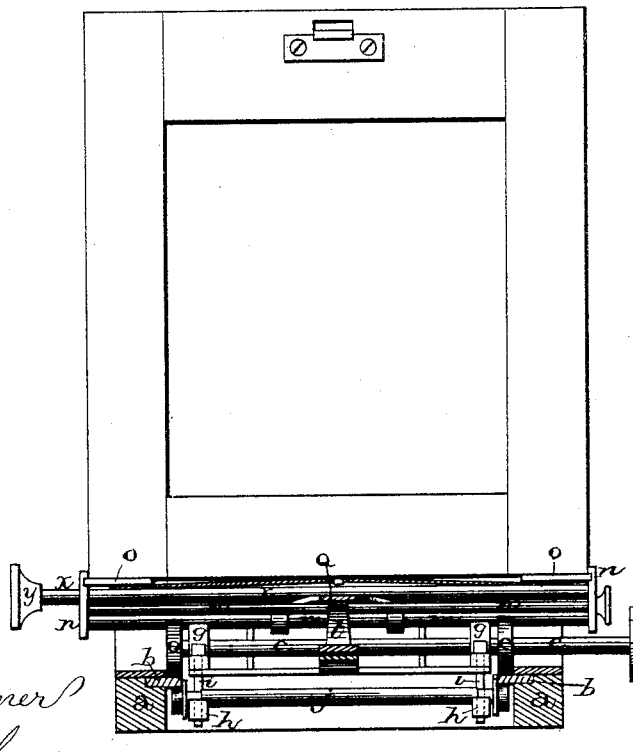


Fig. 4.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CAMERAS.

Specification forming part of Letters Patent No. **210,445**, dated December 3, 1878; application filed May 2, 1878.

To all whom it may concern:

Be it known that I, S. L. BERGSTRESSER, of Coudersport, in the county of Potter and State of Pennsylvania, have invented certain new and useful Improvements in 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in photographic cameras; and it consists in the arrangement and combination of parts whereby the ground-glass frame can be adjusted back and forth, tilted backward and forward, and moved around from side to side, as will be more fully described hereinafter.

The accompanying drawings represent my invention.

a represents a light rectangular wooden frame, which forms the base upon which my invention is placed. This wooden frame forms the only part of my whole machine that is made of wood, with the exception of the camera-frames, as I have dispensed entirely with the use of wood for the purpose of making the operating parts much lighter, stronger, and more compact than can possibly be done when wood is used. Where wood is used the frame is made large, heavy, and bulky, and cannot be adjusted so readily and easily; and to overcome these defects I have substituted metal in every part, as will be more fully shown hereinafter. Upon the top of this wooden frame are secured the two plates *b* in any suitable manner, so that their inner edges project out over the inner edges of the frame, and thus form a track, upon which the operating parts move.

Extending across the top of the frame is the shaft *c*, which is provided with the thumb-wheel *d* on one end, and has secured to it the two smooth rollers *e*, which bear down and move upon the track *b*. Passed over and bearing upon the top of this shaft *c* are the castings *g*, the outer ends of which are secured together by the double T plates or frame *f*. Passing down through these castings *g* are set-screws *i*, the lower ends of which screw into the longitudinal bearings or bars *h*, and upon these bars are journaled the shafts *j*, having the rollers *k* upon their ends. These rollers bear upward against the under side of the track *b*, and, together with the rollers *e*, form a carriage, by means of which the frame having the ground glass is moved back and forth for the purpose of adjustment.

By thus using friction-rollers instead of cogs and racks or bands for the adjustment of the ground-glass frame, not only am I enabled to produce a much cheaper, stronger, and more durable mechanism, but the parts are much less liable to get out of order, and in case they should need repairing they are so simple that any person, however little of a mechanic he may be, can repair it himself.

By means of the screws *i* the rollers can be made to bear with any desired amount of force against the opposite sides of the track *b*, and thus the frame can be made to move very lightly or heavily, as may be preferred.

Should the rollers at any time not bite upon the track with sufficient force, they can be made to take hold with any degree of force by tightening the screws *i*.

Passing upward through the inner end of the double T-plate is the standard *l*, which forms a part of the cross bar or rod *m*, which connects together the side pieces *n*, in which the frame moves back and forth, the said side pieces being provided with grooves in their inner sides to receive the horizontal flat plates *o*, that are secured to the bottom edge of the frame. The side pieces *n* are also connected together by two other cross bars or rods, *p*, which have thumb-nuts upon their ends, so that they can be tightened into position.

Pivoted upon the fixed rod or bar *m* is the lever *q*, which is rigidly fastened to the outer cross-bar *p*, and extends backward, so as to pass down over the curved standard *r*. Through the end of this lever *q* is passed the set-screw *s*, which bears against the curved rod or standard *r* and holds the lever in any desired position. As this lever is connected to the cross-bar *p*, which unites the frame in which the ground glass is placed, and as the lever is pivoted upon the bar *m*, it will readily be seen that the frame can be tilted back and forth at will. Secured to the standard *l* is

the curved flat spring *t*, the outer end of which bears upward against the lever *q*, so that as soon as the set-screw is loosened this spring will tilt the ground-glass frame forward. The curved standard or rod upon which the lever *q* is adjusted up and down by means of the set-screw rises upward from a lever, *u*, which is also pivoted upon the standard *l*, and reaches outward to the rear end of the wooden frame *a*, or to any other point that may be desired. Upon the outer end of the double T-frame *f* is formed an extension, *v*, which has a circular slot formed through it. Passing down through the lever *u* and through the slot in the extension *v* is a screw, upon which is placed the clamping thumb-nut *w*. By tightening this nut the lever *u* and the extension *v* are fastened rigidly together, and then the ground-glass frame cannot be adjusted to either side. When these two levers are not clamped rigidly together the ground-glass frame can be adjusted from side to side to any extent that may be desired.

Passing through the side pieces *n* is a shaft, *x*, which is provided with a thumb-nut, *y*, upon the opposite side from the hand-wheel *d* on the shaft *c*. Fastened to the outer end of the pieces *n*, and wrapped a number of times around the shaft *x*, is the operating-cord 1, which, after leaving the shaft, passes forward around projections secured to the inner ends of the slides *o*, and then passes inward through an adjusting-shaft, 3. This shaft passes through the ground-glass frame, and has a ratchet, 4, fastened to it, and in this ratchet catches the dog 5. By turning this shaft the cord can be drawn up to any desired degree and made to wrap around the shaft, and thus the distance the ground-glass frame may move can be regulated.

One great improvement in my machine over all others consists in having a shaft to move the whole frame-work and the ground-glass frame back and forth, and then having a separate and distinct shaft, *x*, for moving the ground-glass frame back and forth independently of every other movement. By thus having the two shafts the ground-glass frame can be adjusted in two different directions at once, or can have a double movement backward and forward, if so desired. By thus enabling the operator to use both of his hands at once a great deal of time is saved, and an adjustment can be secured with greater rapidity and ease than with any other camera now in the market. This quick and easy adjustment is especially desirable where children and sick persons are sitting for their pictures, and it is imperatively necessary that the picture should be taken quickly.

Having thus described my invention, I claim—

1. In a camera-frame provided with the ground glass, the combination of the shaft *c*, provided with rollers *e*, castings *g*, double T-plate *f*, shafts *j*, and friction-rollers *k*, substantially as described.

2. The combination of the castings *g*, which serve as bearings for the shaft *c*, set-screws *i*, bearings *h*, shafts *j*, and friction-rollers *k*, whereby the rollers are clamped against both sides of the track *b*, and can be made to bite upon it with any desired force, substantially as set forth.

3. The combination of a plate, *f*, having an extension, *v*, with the lever *u*, and a clamping device for securing them together, whereby the frame provided with the ground glass can be adjusted from side to side, substantially as specified.

4. The combination of the lever *q*, pivoted upon the rod *m* and connected to the side pieces *n*, with the curved rod *r* and set-screw *s*, substantially as shown.

5. The combination of the lever *q*, connected to the side pieces *h*, rod *v*, set-screw *s*, and a spring for throwing the lever upward as soon as the set-screw is released, substantially as described.

6. The combination of the shaft *x*, provided with a thumb-screw, side pieces *n*, slides *o*, and an adjusting-cord, substantially as specified.

7. The combination of the movable end of a camera, and mechanism for adjusting it back and forth, with a frame provided with the ground glass, and mechanism for adjusting the same back and forth upon the movable end of the camera, whereby the said frame containing the ground glass can be given a double adjustment at the same time, substantially as set forth.

8. The combination of the cord 1, shaft *x*, adjusting-shaft 3, ratchet 4, and dog 5, whereby the distance the frame provided with the ground glass may move can be regulated, substantially as shown.

9. The combination of the side pieces *n*, slides *o*, connected to the frame, provided with the ground-glass cross-bar *m* upon the standard *l*, whereby the ground-glass frame is connected to the mechanism for moving back and forth upon the track *b*, substantially as described.

10. In a camera-frame, the combination of a mechanism for moving the frame-work back and forth upon the tracks *b*, a mechanism for moving the frame independently back and forth in the side pieces *n*, a lever for tilting the ground-glass frame back and forth, and a lever for adjusting it from side to side, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of April, 1878.

S. L. BERGSTRESSER.

Witnesses:
C. L. PECK,
ARTHUR D. MANN.