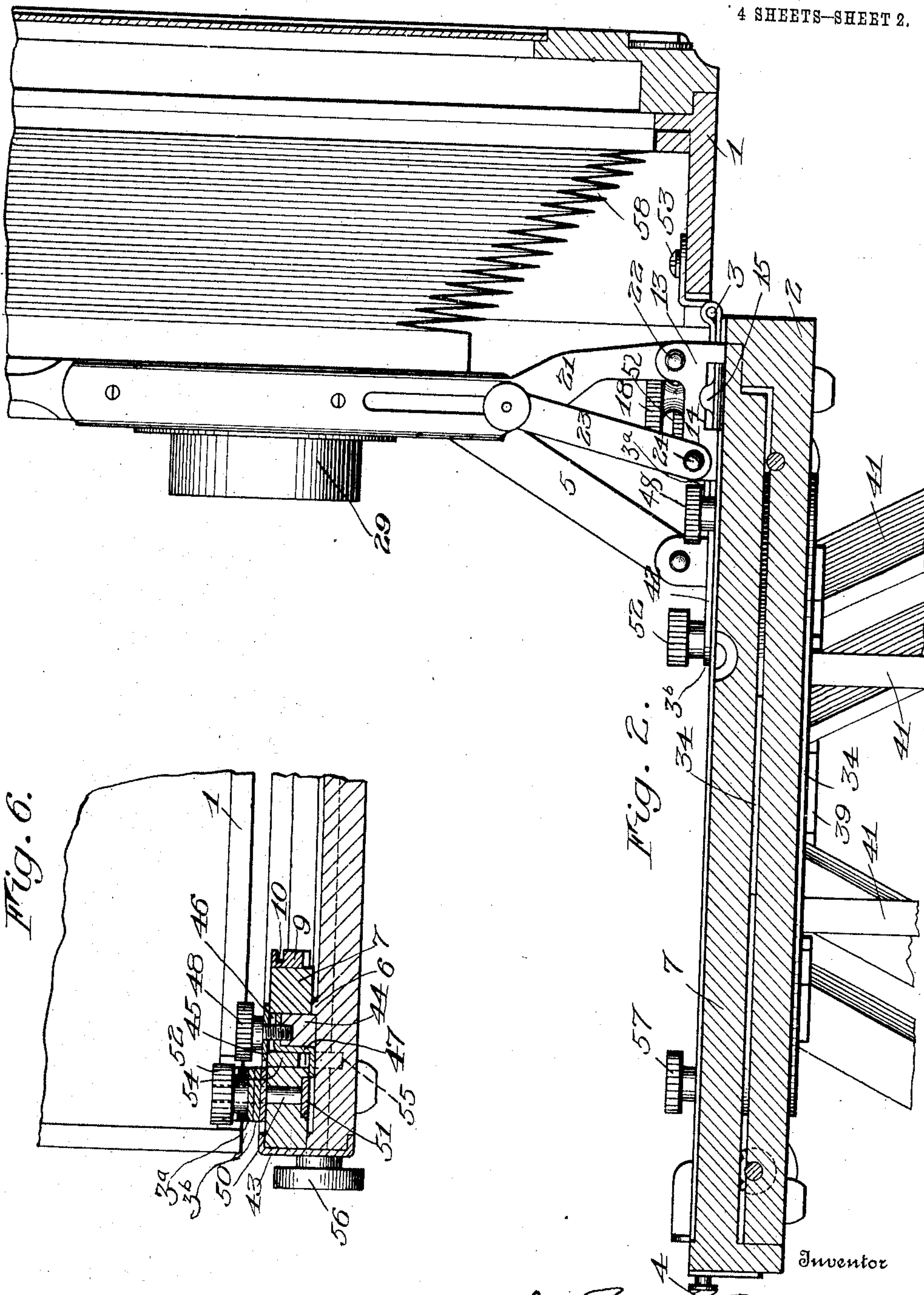


975,461.

J. A. ROBERTSON.
CAMERA.
APPLICATION FILED OCT. 2, 1907.

Patented Nov. 15, 1910.
4 SHEETS—SHEET 2.



Witnesses

Walter P. Payne
Russell B. Gifford

By

John A. Robertson
Church & Rich
his Attorneys

J. A. ROBERTSON.

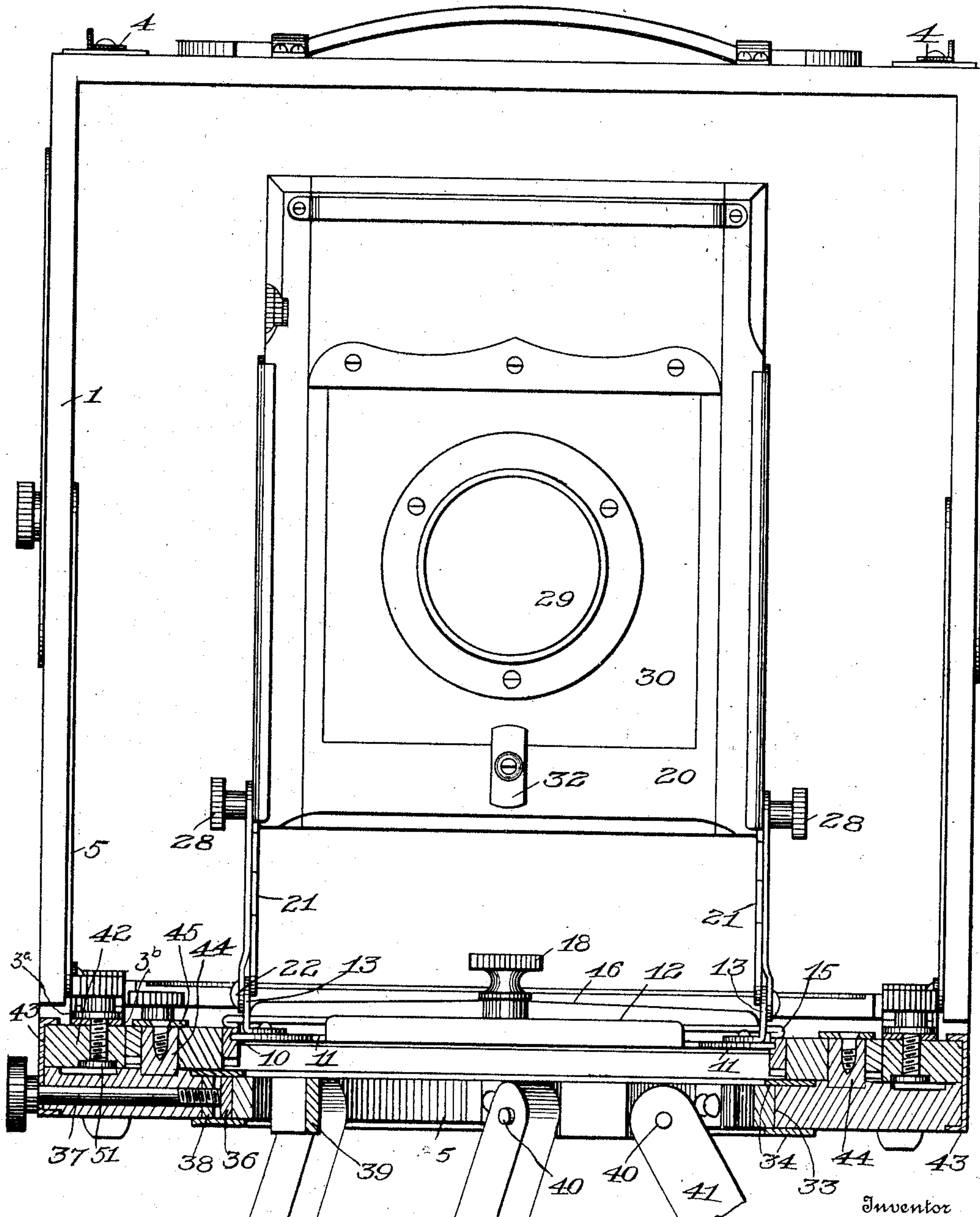
CAMERA.

APPLICATION FILED OCT. 2, 1907.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 3.

975,461.



Witnesses

H. B. Payne
Russell B. Buffalo

Fig. 3.

John A. Robertson

By

Church & Rich
his Attorneys

975,461.

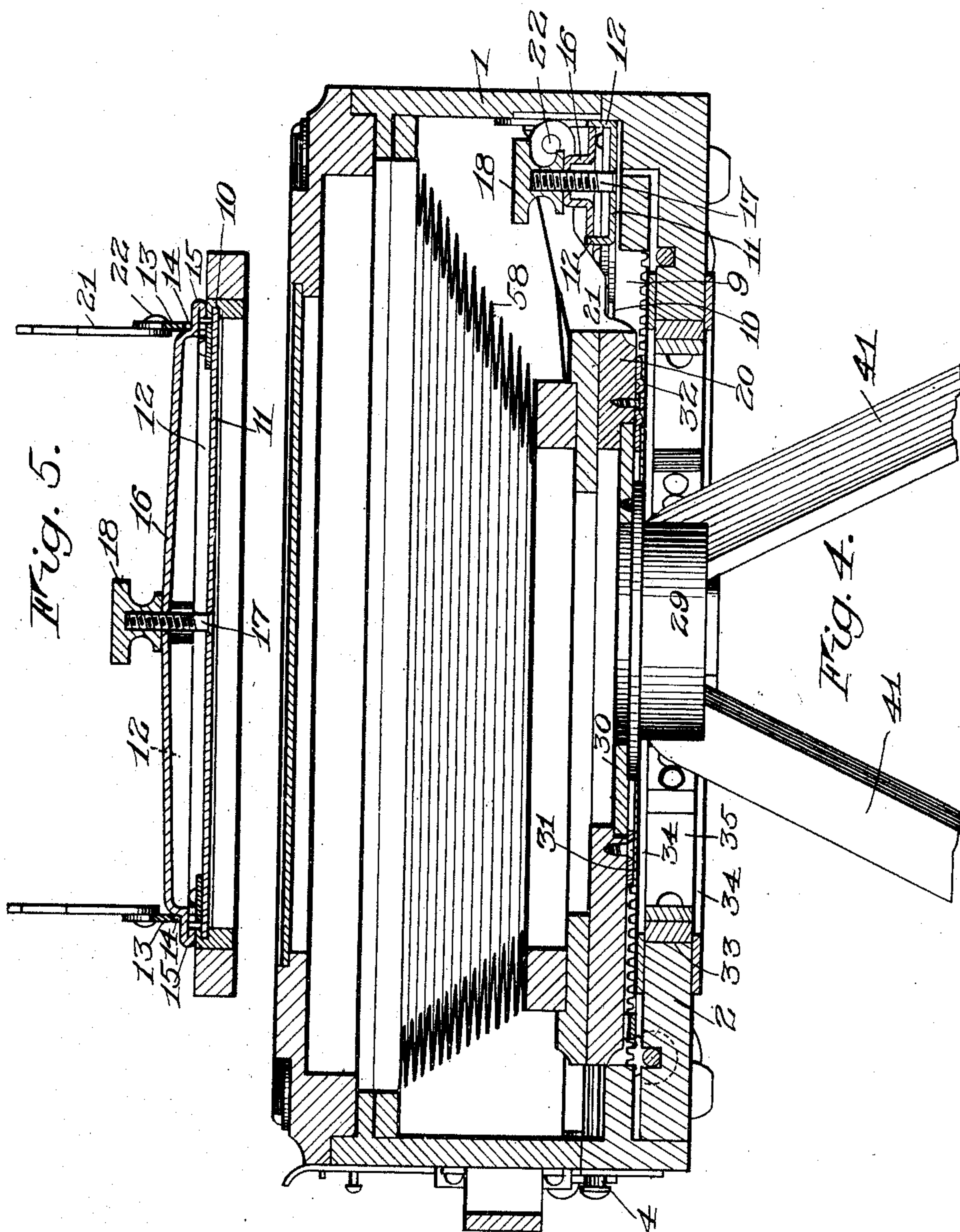
J. A. ROBERTSON.

CAMERA.

APPLICATION FILED OCT. 2, 1907.

Patented Nov. 15, 1910.

4 SHEETS—SHEET 4.



Witnesses

Malter B. Payne
Russell B. Gifford

Inventor
John A. Robertson
by Church & Rich
his Attorneys

UNITED STATES PATENT OFFICE.

JOHN A. ROBERTSON, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK CO.,
OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

CAMERA.

975,461.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed October 2, 1907. Serial No. 395,483.

To all whom it may concern:

Be it known that I, JOHN A. ROBERTSON, of Rochester, in the county of Monroe and State of New York, 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 same, reference being had to the accompanying drawings, forming a part of the specification, and to the reference-numerals marked thereon.

My present invention relates to photographic cameras and particularly to the folding type known as view cameras embodying a body, bed and front capable of being folded or collapsed into small compass and it has for its object to provide a construction which will permit these parts to be entirely or partially folded without necessitating the removal of the lens and related parts from the front, or disturbing other arrangements of the operator.

Further objects of my invention are to provide improved means for rotatably mounting the camera upon its support and the improvements are also directed to the arrangement and operation of the carriage and its clamping devices, and of the extension members and adjustments.

To these and other ends the invention consists in certain improvements and combinations 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 a top plan view of the bed of a camera embodying my improvements, the bed being extended and parts of the lens board and body being shown in horizontal section. Fig. 2 is a longitudinal vertical section through the bed and body on the line 2—2 of Fig. 1, the lens board being shown in side elevation. Fig. 3 is a transverse vertical section through the bed on the line 3—3 of Fig. 1, the lens board and body appearing in front elevation. Fig. 4 is a vertical central section, through the camera in folded position, and Fig. 5 is a detail section through the carriage taken transversely of the bed showing the clamping mechanism. Fig. 6 is a transverse section through a portion of the bed on the line 6—6 of Fig. 1.

Similar reference numerals in the several figures indicate similar parts.

The camera illustrated herein as an embodiment of my invention comprises a body 1 fitted at the back with the usual or any preferred form of plate holding and focusing attachments and a bed 2 hinged to the body at 3 and adapted to fold or close against it, as shown in Fig. 4, in which position it is secured by suitable catches 4. In its lowered position, the bed is supported by braces 5 hinged to one of the members and slidably connected to the other as is usual.

In the present construction the hinged connection 3 is made between the body and a rearward extension member 42 operating in ways arranged at opposite sides of the bed. The ways (Figs. 3 and 6) are formed in this instance by flanged side plates 43 and upwardly extending ribs 44 having overhanging plates 45 on their top surfaces, one of said ribs being provided with a cut away portion 46 within which is seated an angular clamping plate 47 bearing upon the under side of the extension member and tightened by means of a thumb screw 48, threaded therein and passing through the plate 45. At the rear end and upon both sides the extension is provided with longitudinal slots 49 within which operate the threaded posts 50 of clamping shoes 51, the upper ends of which posts extend through apertures in one of the leaves of the hinges 3 and are engaged by thumb screws 52. The said apertured leaves are, in the present instance, formed of straps doubled upon themselves as shown in side elevation in Fig. 2 forming the portions 3^a and 3^b. The under thicknesses 3^b of the straps are of sufficient length to allow of the positioning of the clamping members at well separated points on the hinges and prevent them from binding in the slot 49. The other leaves are pivotally attached to the body at 53 so that, by means of these sliding hinges and the arrangement just described the body may be adjusted for focusing purposes in different vertical planes relatively to the bed, and angularly to the axis of the lens as will be understood, each side being projected rearwardly independently of the other relatively to the extension member and secured by means of the clamping shoes. The slots 49 preferably terminate at the proper point to bring the axis of the hinge connections 3 to a correct position for folding the bed and body together when the clamping shoes

carrying with them the said hinges have been pushed rearwardly as far as the posts will permit. The extension is provided upon both sides with rack bars 54 operated simultaneously by means of pinions 55 on a thumb screw 56. Sliding upon ways 6 on the bed, also formed by the ribs 44 and plates 45, is a forward extension member preferably in the form of a frame 7 operated in any suitable manner, as by the thumb screw 8 at the side through a rack bar and pinion connection similar to that employed for the rearward extension. Secured to the inner faces of the opposite longitudinal sides of this frame are arranged guide strips 9 (also preferably constituting the rack bars) forming ways and provided with lateral longitudinal grooves or channels 10 on their adjacent faces. This forward extension may be locked in different positions of adjustment by a thumb screw 57 and a clamping member similar to the member 47.

Referring now more particularly to Fig. 5, 11 indicates the lens carriage formed preferably of a sheet metal plate extending transversely of the bed and having its ends slidably supported in the grooves 10 in the guides on the extension frame just described, while the sides are turned up to form strengthening flanges 12. Arranged near the ends of the carriage are upwardly projecting brackets 13 having openings 14 therein through which project the ends 15 of a clamp bar 16 into engagement with the upper surfaces of the guides, the said clamp bar extending transversely of the carriage between the flanges 12. A threaded post 17 on the carriage projects upwardly through an aperture in the clamp bar and receives a thumb nut 18 above the latter, which, when tightened, clamps a portion of the guide between the bar and carriage and locks the latter in any desired position upon its ways, the latter, if desired, being provided with graduations 19 to aid in this adjustment.

The front, or lens board 20, (Figs. 2 and 3) is provided with downwardly extending arms 21 by means of which it is pivotally supported at 22 upon the brackets 13 on the carriage and is of such a width as to allow its being swung or folded down within the extension frame 7 and between the guides 9, when the carriage is in its rearmost position, as shown in Fig. 4, resulting in economy of space and obviating the necessity of storing this part of the apparatus within the body and providing an additional length of track within the latter. Its connection with the body being preferably by means of the ordinary collapsible bellows 58 in no way interferes with these movements. Also, by reference to Fig. 2, it will be seen that during this operation, the axis of movement 22 of the lens board may be brought so nearly coincident with the axis of movement 3 of

the bed and body that in closing the latter, the lens board will also automatically assume its proper folded position. As a means for locking the board in its upright position or in any angular position of adjustment that may be necessary, relatively to the bed, links 23 are provided upon either side thereof, pivoted at their lower ends to the brackets 13 at 24 and carrying clamping shoes 25 at their upper ends which travel in slots 26 arranged preferably in the upper portions of the arms 21. These arrangements are shown in section in Fig. 1, the shoes being provided with threaded posts 27 which project through the slots 26 and through apertures in the links, being tightened by thumb nuts 28.

Cameras of this type are usually supplied with removable (and interchangeable) lenses, by which term I refer to both the lens proper and its tube and other connections, as the part here indicated by numeral 29, and this part is here shown fitted to the lens board by means of a plate or board 30 (Figs. 3 and 4) secured under a projecting flange 31 and by a button 32. It is customary to remove this when the camera is folded, a flat board or dummy plate normally occupying its place as folding would otherwise be impossible, no accommodations being ordinarily made for it within the instrument when closed, but inasmuch as a photographer often wishes to take a number of views from several points in one locality, for instance, without taking down his camera and again setting it up each time, yet must take the precaution of folding it upon the tripod or stand, during its movement to protect the parts, I provide an arrangement whereby this may be safely and conveniently accomplished, and at the same time, provide a desirable form of turn-table for use in focusing. About centrally thereof and between the guides or ways 9, the bed is provided with an opening 33 and with annular plates 34 on both top and bottom which overhang the opening and form a bearing support for a revoluble ring or annular member 35 which is locked in different positions of rotation by a friction shoe 36 pressed into engagement therewith, by means of a thumb screw 37 threaded through a plate 38, and operable from the side of the bed. Carried on the inner surface of this ring are a plurality of brackets 39 provided with inwardly projecting pins 40 over which connections the upper perforated ends of the tripod legs 41 are passed, making a revoluble base upon which the camera may be focused in any direction as will be understood.

When it is desired to close the camera whether attached to the tripod or stand or not, the body may be folded down upon the bed carrying the lens board to its place within the extension frame 7 while the lens,

whatever its size, within certain limits, projects through the opening 33, or within the annular member, as shown in Fig. 4, where adequate protection is afforded.

5 Another advantage incident to the folding arrangements of the lens board, as herein described, is that the entire capacity of the body may be given up to the reception of the bellows and a much longer one employed than there would otherwise be room for.

10 I claim as my invention:

1. In a camera, the combination with a body and a bed hinged thereto having ways thereon, of a carriage movable on the ways, a lens board supported on the carriage and capable of a swinging movement relatively to the bed and means for securing the lens board in an angular position relatively to the latter, said lens board being adapted to automatically fold against the bed when said securing means are released and the bed is folded against the body.

2. In a camera, the combination with a body and a bed hinged thereto having ways thereon, of a carriage movable on the ways and a lens board pivotally mounted on the carriage and adapted to swing into a folded position against the bed upon an axis movable into substantial coincidence with the axis of movement of the bed and body.

3. In a camera, the combination with a body and a bed hinged thereto having parallel guides thereon forming ways, of a carriage movable on the ways and a lens board pivoted to the carriage and foldable in a forward direction to a position against the bed and between the guides in which its pivotal connection with the carriage lies between it and the hinged connection of the bed and body.

4. In a camera, the combination with a body and a bed hinged thereto, of an extension member on the bed having ways thereon, a carriage movable on the ways and a lens board pivoted to the carriage and foldable in a forward direction against the bed in which its pivotal connection with the carriage lies between it and the hinged connection of the bed and body.

5. In a camera, the combination with a body and a bed hinged thereto, of an extensible frame carried by the bed having ways thereon, a carriage movable on the ways and a lens board pivoted to the carriage and foldable in a forward direction to a position within the frame in which its pivotal connection with the carriage lies between it and the hinged connection of the bed and body.

6. In a camera, the combination with a body and a bed hinged thereto, of an extensible frame carried by the bed having guides on opposite sides thereof forming ways, a carriage movable on the latter and a lens board pivoted to the carriage and foldable in a forward direction to a position within

the frame and between the guides in which its pivotal connection with the carriage lies between it and the hinged connection of the bed and body.

7. In a camera, the combination with a body and a bed hinged thereto provided with ways and having an opening therein, of a carriage movable on the ways, a lens board supported on the carriage and foldable against the bed in a forward direction to a position in which its pivotal connection with the carriage lies between it and the hinged connection of the bed and body, and a lens carried by the lens board and so arranged as to project through the opening in the bed when the lens board is folded against the latter.

8. In a camera, the combination with a body and a bed hinged thereto having ways thereon, of a revoluble member mounted in the bed having an opening therein, a carriage movable on the ways, a lens board supported on the carriage and foldable against the bed in a forward direction to a position in which its pivotal connection with the carriage lies between it and the hinged connection of the bed and body, and a lens carried by the lens board and so arranged as to project through the opening in the revoluble member when the lens board is folded against the bed.

9. In a camera, the combination with a body and a bed hinged thereto, of a carriage movable on the bed and a lens board pivoted to the carriage and foldable to a position against the bed in which its pivotal connection with the carriage lies between it and the hinged connection of the bed and body.

10. In a camera, the combination with a bed having separate, parallel guides thereon forming ways, of a carriage movable on the ways extending between the guides and engaging upon one side of portions thereof, a clamping bar engaging upon one side of said portions, a clamp bar engaging upon the opposite sides and a clamping element connecting the carriage and clamp bar.

11. In a camera, the combination with a bed having parallel guides thereon provided with grooves on adjacent sides, of a carriage movable on the guides and comprising a plate extending between the latter and having its ends supported in the grooves therein, a clamp bar on the carriage engaging both guides and a clamping element connecting the clamp bar and carriage.

12. In a camera, the combination with a bed having parallel guides thereon provided with grooves on adjacent sides, of a carriage movable on the guides and comprising a plate extending between the latter with its ends supported in the grooves and having upwardly projecting brackets adjacent said ends provided with openings, a lens board supported on the brackets, a clamp bar on

the carriage extending through the openings in the brackets and engaging the guides and a clamping element connecting the clamp bar and carriage.

- 5 13. In a camera, the combination with a body and a bed hinged thereto provided with parallel guides and with an opening arranged between said guides, of a carriage and a clamp bar extending between the lat-
10 ter and having a sliding engagement there-with upon opposite sides, a clamping ele-

ment connecting said members, a lens board supported on the carriage and foldable against the bed and a lens carried by the lens board and so arranged as to project 15 within the opening in the bed when the lens board is folded against the latter.

JOHN A. ROBERTSON.

Witnesses:

F. M. WARN,

C. E. HUTCHINGS.