352-82

No. 835,209. PATENTED NOV. 6, 1906.

J. W. ANDERSON.

MULTIPLE VIEW CAMERA.

APPLICATION FILED NOV. 6, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

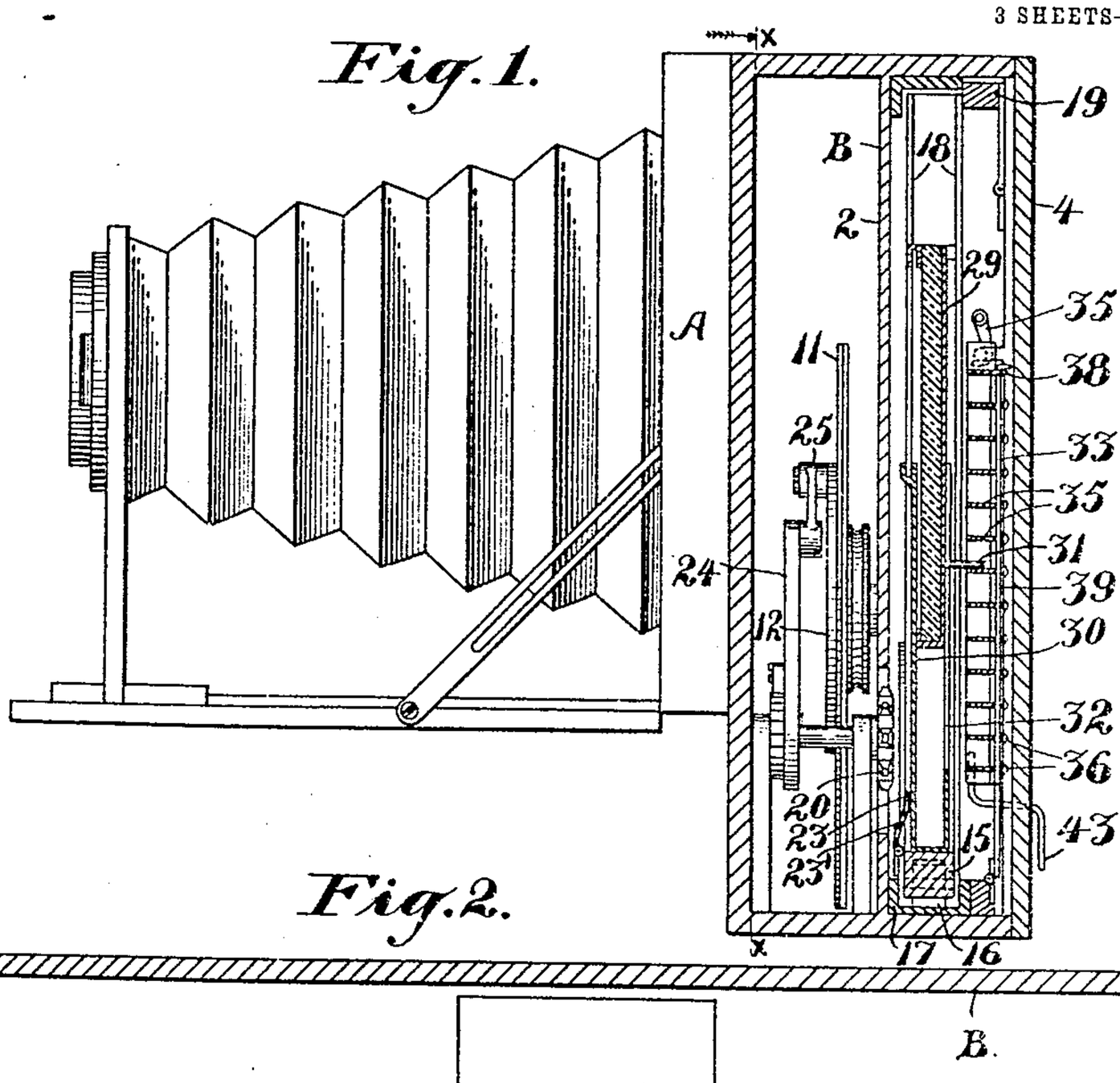
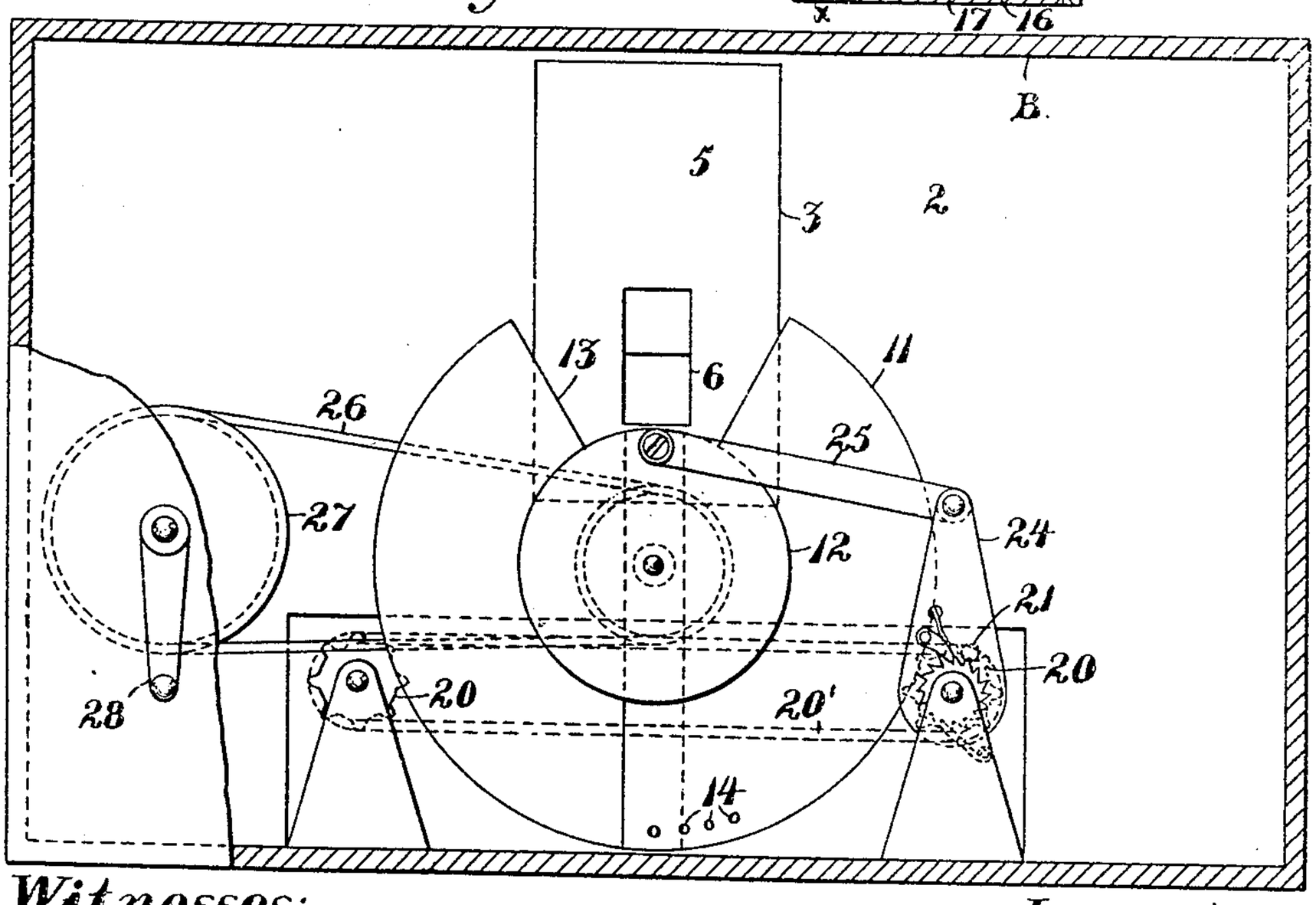


Fig. 2.



Witnesses:-
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J. Turner

Inventor;
James W. Anderson
By Geo H Strong. Atty

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3 SHEETS—SHEET 2.

Fig. 3.

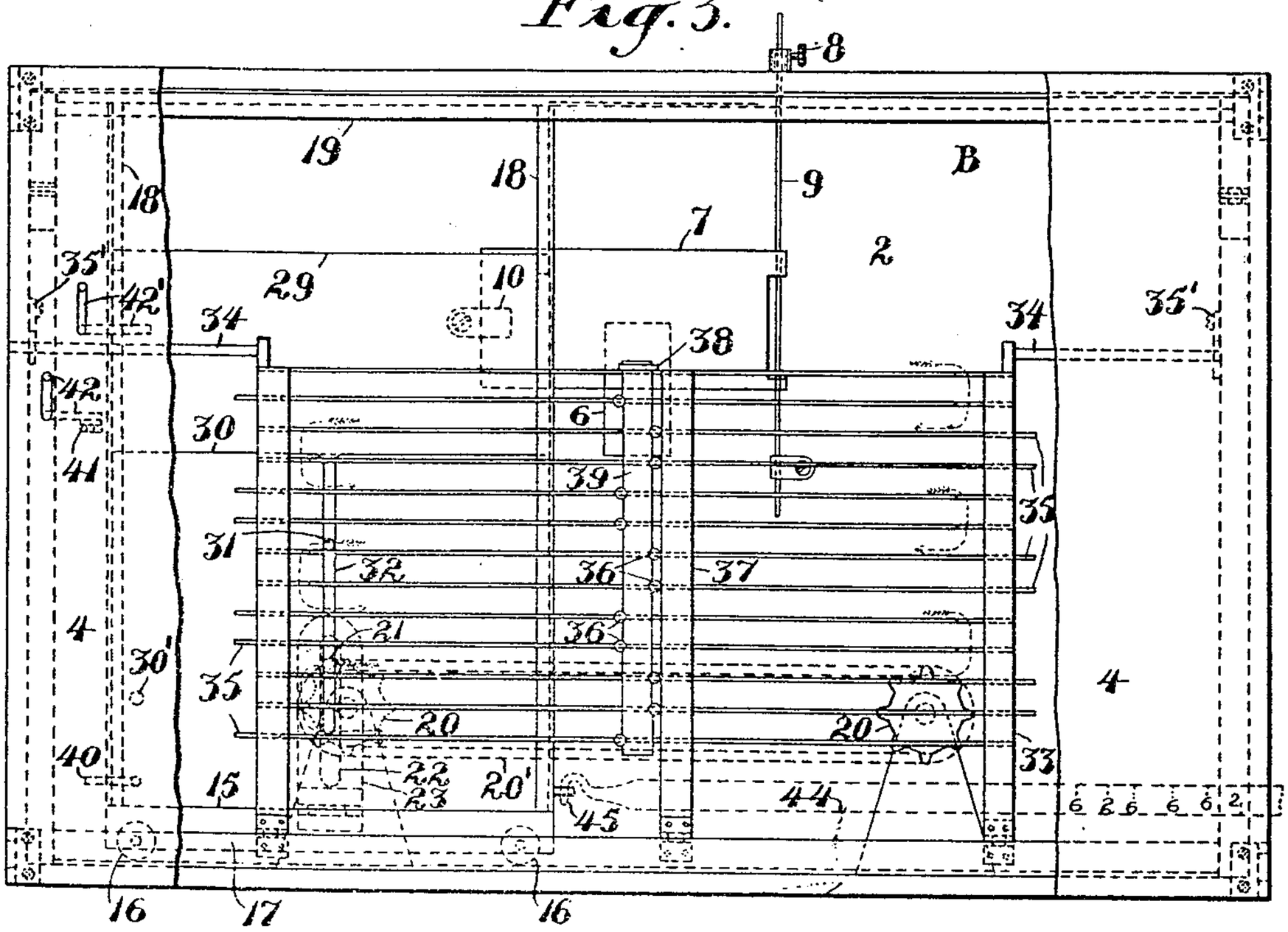


Fig. 4.

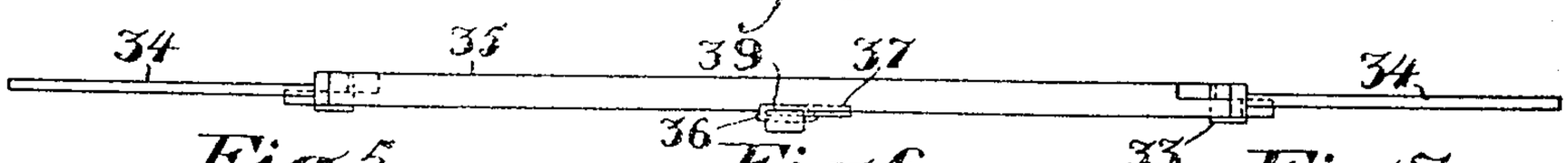


Fig. 5.

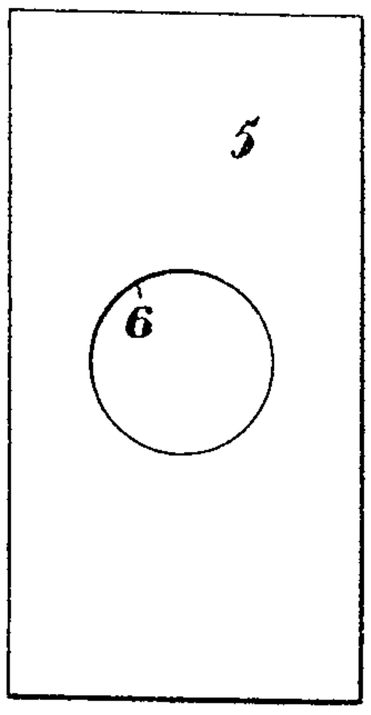


Fig. 6.

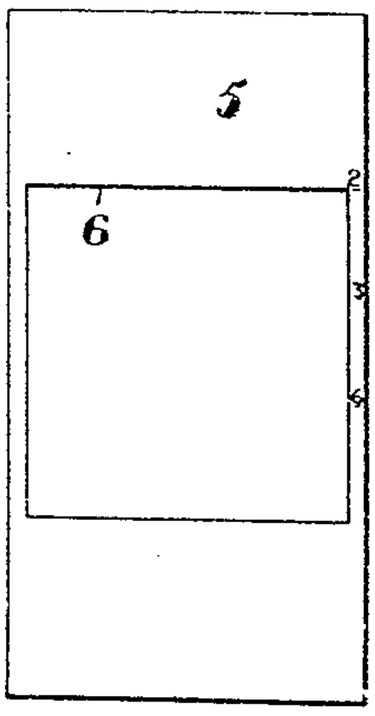
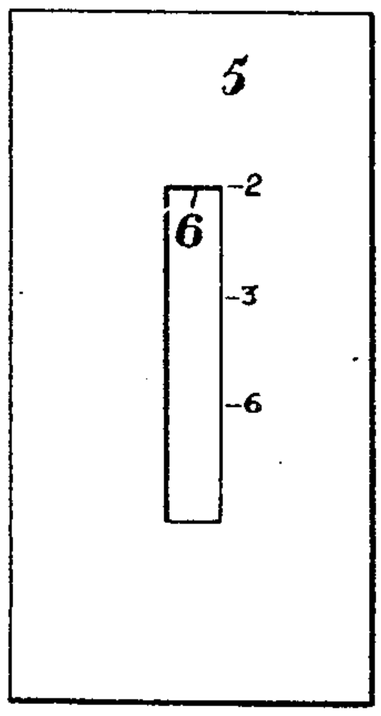


Fig. 7.



Witnesses:-

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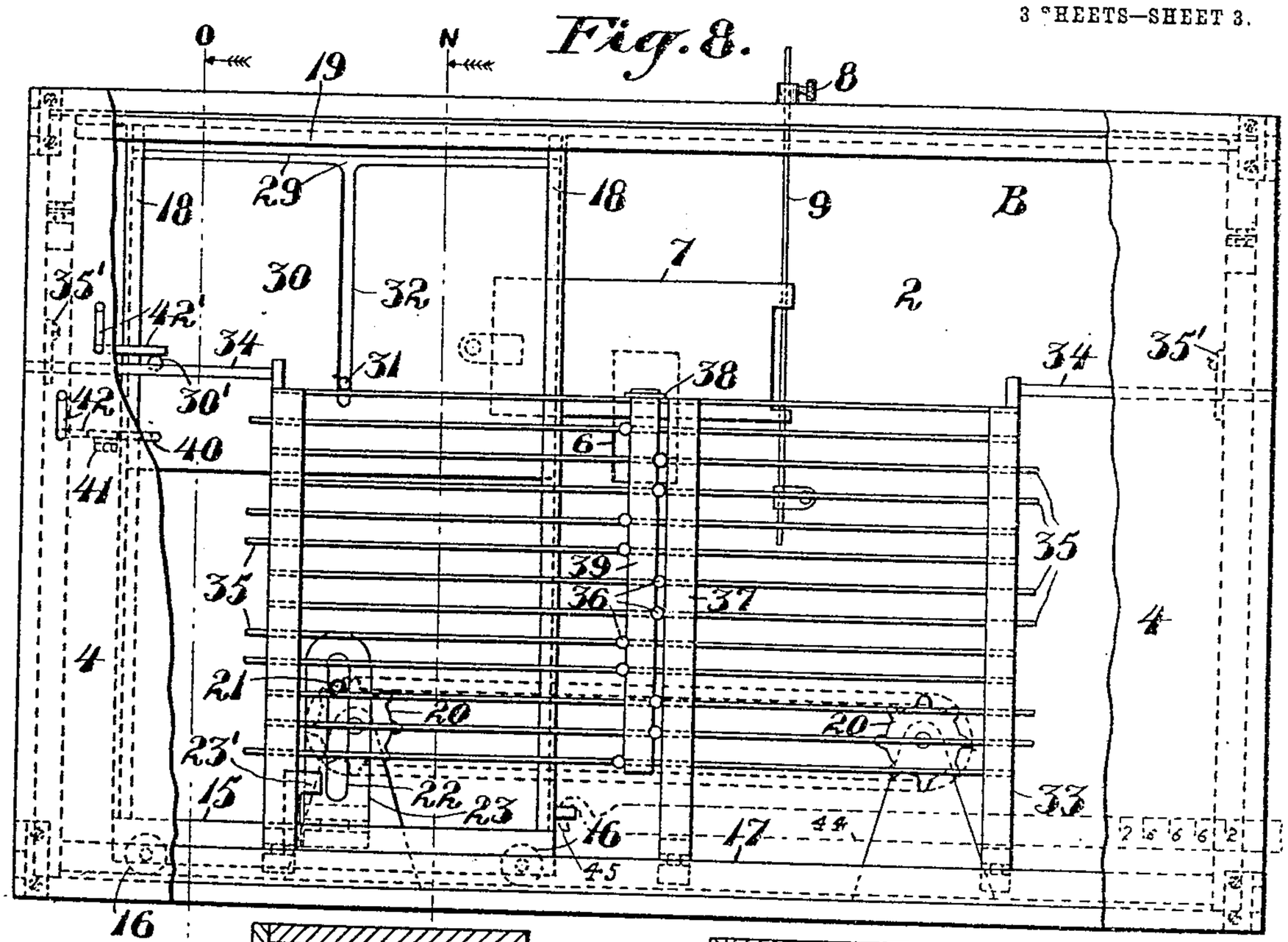
3 SHEETS—SHEET 3.

Fig. 8.



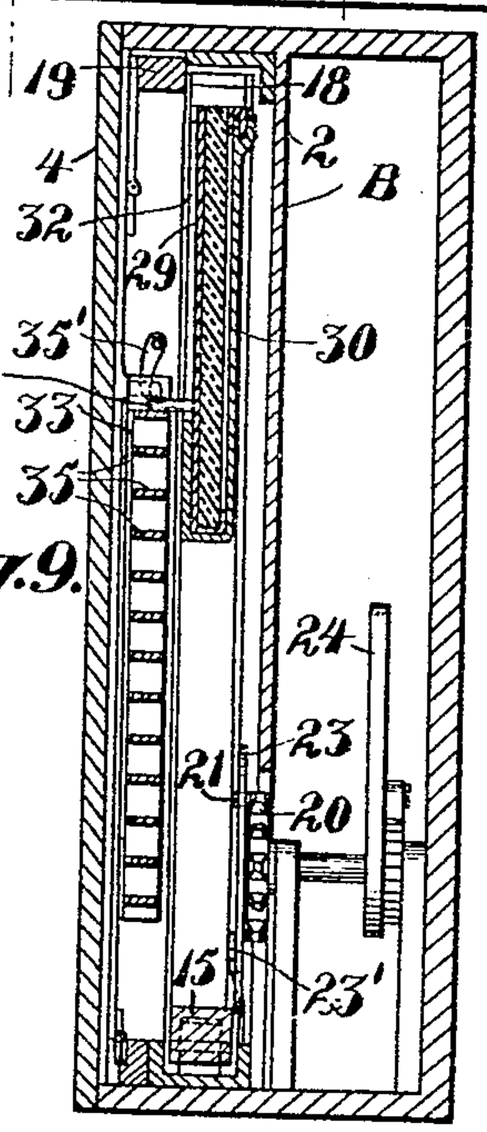


Fig. 9.

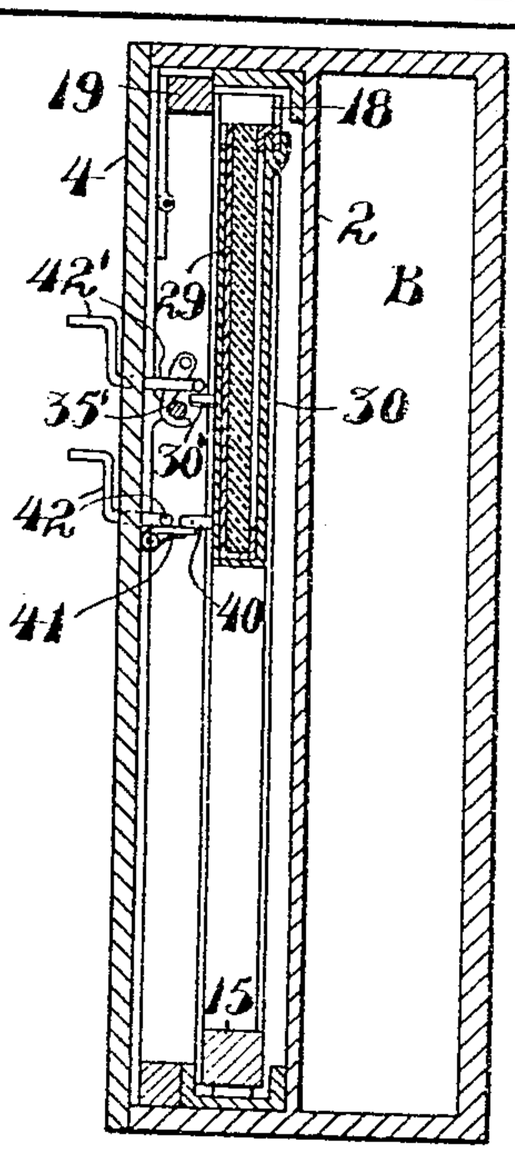


Fig. 10.

Witnesses:-

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UNITED STATES PATENT OFFICE.

JAMES WILLIAM ANDERSON, OF SANTA CRUZ, CALIFORNIA.

MULTIPLE-VIEW CAMERA.

No. 835,209. Specification of Letters Patent. Patented Nov. 6, 1906.

Application filed November 6, 1905. Serial No. 285,992.

To all whom it may concern:

Be it known that I, JAMES WILLIAM ANDERSON, a citizen of the United States, residing at Santa Cruz, in the county of Santa Cruz and State of California, have invented new and useful Improvements in Multiple-View Cameras, of which the following is a specification.

My invention relates to photographic apparatus, and especially to multiple or consecutive view cameras.

The object of my invention is to provide a simple practical camera or camera attachment for taking a series of pictures of moving or stationary objects in more or less rapid succession on a single plate.

The invention consists of the parts and the construction and the combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my camera in partial section. Fig. 2 is a section on line X X of Fig. 1. Fig. 3 is a rear view with the doors partly broken away to show the interior mechanism. Fig. 4 is a top plan view of the spacing-frame. Figs. 5, 6, and 7 show diaphragms with different shaped openings. Fig. 8 is a rear view similar to Fig. 3. Fig. 9 is a vertical section on the line N of Fig. 8. Fig. 10 is a vertical section on the line O of Fig. 8.

A represents a camera of any suitable description having the back case B, which may be a fixed part of the camera or may be in the nature of an attachment. The case B, with its included parts, constitutes my invention. The case has a front 2 with a light-aperture 3, and the rear of the case may be closed by suitable means, as the hinged doors 4, to form, when aperture 3 is closed, a darkened light-tight chamber. The size of the aperture 3 may be varied by the use of suitable removable diaphragms 5, having appropriate openings 6, different diaphragms with different openings being used according to the size, number, or shape of the picture or pictures to be taken on a single plate.

With a diaphragm in place the aperture may be enlarged or restricted by means of the vertically-adjustable hinged flap 7, according to the number of rows of exposures to be made on the plate, as will be explained later. The flap is adjusted by the thumb-nut 8 on the rod 9, which carries the flap and forms the hinge thereof. The flap is locked in place by suitable means, as the catch 10. On the front side of the front 2 of the case and between the lens and aperture 3 is a rotary shutter 11, comprising two substantially semicircular segments, both mounted on the hub or fly-wheel 12, one segment being fixed to the hub and the other turning in a groove therein, so that both segments may be opened out into the form of a disk with a restricted light-aperture 13, as shown in Fig. 2, or made to lie one behind the other, as where a time or a full-plate exposure is to be made. The two segments have suitable interlocking means 14, by which their relative position may be maintained once they are set for a particular piece of work.

The shutter is so disposed relative to aperture 3 in the case that at each revolution of the shutter the aperture 13 in the shutter will be brought into line with the lens and aperture 3 to allow a flash of light to penetrate to the interior of the case and affect a proportionate area of the contained sensitized plate. The intensity of the light admitted to the plate may be varied by moving one segment of the shutter relative to the other to enlarge or contract the aperture 13. The lighted area of the plate is varied by means of the diaphragm 5 and the flap 7.

If a full-plate exposure is to made, the diaphragm 5 may be omitted. If a time exposure is to be made, the shutter-segments are folded to uncover the aperture 3 and the shutter is not revolved, the exposure being made by manipulating the cap on the lens.

To take multiple-view or moving pictures, for which the machine is especially designed, a plate-holder carrier 15 is arranged on the diaphragm or rear side of the case-front. This carrier comprises a rectangular frame with one end omitted, the retained end forming a base provided with the rollers 16 to run in the guide-groove 17 in the bottom of the case and the two sides forming standards with guide-grooves 18, in which the plate-holder is receivable and slidable.

The upper end of the carrier is removably held in place parallel with the front 2 of the case by means of the hinged bar 19, which is foldable backward when the back 4 is open or removed to allow the carrier to be tilted and permit the insertion or removal of a plate-holder. When the guide-bar is close against the ends of the vertical standards of

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the carrier, it forms a trackway in front of which the carrier may move and be guided. The locking-bar 19 is securely held in place by the closure 4.

The carrier is reciprocal in the guide-groove 17 across the aperture 3 and coördinately with the rotative movement of the shutter by the following appropriate means: Two sprocket-wheels 20, suitably housed and spaced apart equal to the length of a reciprocation of the carrier, are employed, around which passes a chain 20. One of the links of the chain has a lateral projection 21 to engage the slot 22 of a hinged member 23 on the carrier. An intermittent rotative movement is imparted to one of the sprockets by suitable ratchet mechanism whose lever 24 is connected by a link 25 with the shutter. The latter may be given a rotative movement by means of the chain or cord 26, passing over a sprocket or pulley on the shutter-hub and around a corresponding drive-sprocket or drum 27, having the handle 28 arranged exterior to case B, so as to be conveniently operated. By turning the drum 27 a constant rotative movement may be given to the shutter and a corresponding intermittent reciprocatory movement simultaneously imparted to the carrier.

The plate-holder comprises two telescoping, preferably metal, parts 29 30, the inner one 29 being open at one side and adapted to receive and hold a sensitized plate or film and the other part 30 forming an envelop or cover to protect the plate from the light when the parts are slid one into the other. The back of the holder part 29 has a pin 31, slidable in a slot 32 in one side of the envelop part 30.

The width vertically of the plate-holder is about half of the height of the carrier, and the bottom of aperture 3 is the width of the plate-holder above the bottom of the inside of case B, for the reason that during exposure the holder part 29 is supported above and out or partly out of the cover or envelop part 30, according to the extent of the exposed surface of the plate, the holder part 29 and plate being reciprocated across aperture 3 one or more times, according to the number of rows of pictures to be made on the one plate. As soon as all the exposures are made and before removal from the camera the part 29 is dropped into the envelop, thus automatically cutting off all light from the plate without the use of slides. The step-by-step horizontal movement of the plate across aperture 3 is effected, as has been seen, by the intermittent movement of the carrier. The vertical step movement of the plate to expose for one or more rows is done by the following means.

A spacing-frame 33 is hinged inside the case B and between the back 4 and the carrier and is adapted to be opened out when the back 4 is open or to be folded up parallel with the carrier and held in operative position by the engagement of the projections 34 with suitable catches 35′ in the ends of the case. This frame 33 is preferably of metal, like many of the other parts of the apparatus, so as to take up as little room as possible and not increase the bulk of the camera unnecessarily. The frame carries a series of horizontally-arranged parallel bars 35, which are capable of a limited reciprocatory movement in suitable guides in the frame. The up and down width of the series of bars corresponds to the width of the plate, and the number of bars corresponds to the maximum number of rows of pictures which may be taken on one plate. Thus if twelve horizontal rows of pictures can be taken on the largest plate intended for the camera then there are twenty bars, since the pin 31 is designed to travel the length consecutively of each bar from top to bottom of the series.

The bars are disposed flatwise and are shown as having narrowed ends to slide in guide-slots in the frame 33. If all the bars are shifted to one side of the frame as far as they can go, they will all have one terminal in the same vertical line and their other terminal in a second vertical line. The result will be that with pin 31 resting on any one bar the holder part 29 may be reciprocated once across aperture 3 and on reaching the end of the bar will drop off, and, meeting no obstruction, the part 29 will be received into the envelop. In other words, with all the bars shifted, as described, only one row of pictures will be taken on the plate.

To take two rows of pictures on the plate, the upper half of the series of bars is shifted in one direction as far as they will go and the lower half in the opposite direction, so that with the pin 31 resting on the top bar of the upper half of the series and the plate reciprocated in the right direction the pin will travel to the end of that bar and then drop onto the projecting end of the seventh bar, assuming twelve bars in the series. The carrier being moved now in the opposite direction, a second series of exposures is made on the upper half of the plate. Reaching the end of the seventh bar, the part 29 drops into the cover 30, and the plate and holder may then be removed from the camera to the dark room.

If four rows of pictures are to be taken on one plate, the bars are alternately shifted in series with three bars in each series. Likewise any other number of rows of pictures in multiple with the total number of bars could be taken by shifting groups of bars accordingly. Thus if three rows are to be taken the first four bars and the last four are shifted to one side and the intermediate four are shifted in the reverse direction. The several bars are locked against accidental move-

ment by any appropriate means. As here shown, each bar is shown as having a headed pin projection 36 arranged in suitable relation to a transverse bar 37, rigid with frame 33. The topmost bar 35 is provided with a guide-stirrup 38 to receive a movable locking-bar 39, which is adapted to pass between the two vertical rows of projections 36 when the bars 35 are shifted in alternating fashion for taking in two or more rows. If all the bars 35 are shifted to one side of frame 33, then all the projections 36 stand in line; but if some are shifted one way and some the other the projections 36 will stand in two parallel rows spaced apart a distance just equal to the width of the locking-bar 39. The heads on the projections coöperate with stirrup 38 to hold the bar 39. If only one row of pictures is to be taken, then the bar 39 may be omitted.

In operation the plate-holder is filled and placed in the carrier 15 from the top of the latter. The locking-bar 19 is turned up against the ends of the carrier to press the ends in toward the front 2 of the case B and hold and guide the top of the carrier. The bars 35 are then shifted into one or more series, according to the number of rows of pictures to be taken on the plate, and locked by bar 39 in the manner described in case there are two or more rows to be taken.

The plate-holder is lifted in its guides 18 to bring pin 31 on the holder in suitable position to engage the top bar 35 when the frame 33 is closed up behind the carrier and locked. However, temporarily the plate-holder is supported in elevated position on the carrier by means of the projection 40 on the envelop 30 engaging the hinged bracket 41 on the case B. The projection 21 on the chain is then engaged in the slot 22 of the part 23. A spring 23′ holds the part 23 in engagement with the projection 21. The doors 4, constituting the back of the case, are then closed and locked, and no light is thenceforth admissible into the case except through the lens and aperture 3.

When ready to make the exposure or exposures, the operator turns a little crank 42 in the back 4, which trips the bracket 41, allowing the envelop 30 to drop by gravity to the bottom of the carrier 15 and leaving the plate-holding part 29 supported by pin 31 on the topmost bar 35.

If for any reason the envelop should stick and not drop when released from bracket 41, a crank 42′, carried by the rear closure 4, may be turned to press down on a pin 30′ on the envelop to start the latter.

By operating the crank 28 on drum 27 in the proper fashion the shutter is rotated and the carrier reciprocated back and forth across aperture 3 to make the desired number of exposures, the carrier moving step by step as actuated by the ratchet and the plate-holding part 29 following the zigzag guides provided by the bars or slats 35. Leaving the last guide-slat 35, the part 29 drops into the cover 30, which is carried by the carrier during the entire time. On the next reciprocation the pin 31 trips an indicator 43, and the operator knows the exposures have all been made and that he can open the case and remove his plate-holder. This construction and mode of operation of shutter, carrier, and plate-holder enables a great number of images of moving objects to be taken in rapid succession on one plate.

If it is desired to make time exposures and still take a number of pictures, like "stamp-pictures," on the same plate, the carrier is not connected with the chain. The shutter is turned to allow the uninterrupted passage of the light from the lens to the plate when the cap is off the lens, the exclusion of light being effected by the cap or by the ordinary lens-shutter. The movement of the carrier is effected by means of a draw-bar 44 sliding in a guide-slot in the end of case B and engageable, as by a hook 45, with a part on the carrier. The bar 44 is graduated to indicate the number of pictures to be printed in a row on the plate and to indicate the space each image is to occupy on the plate. The different diaphragms 5 are correspondingly graduated adjacent to their apertures 6, as shown, and the flap 7 is adjusted accordingly to increase or decrease the illuminated area of the plate.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In photographic apparatus the combination of a case having a light-aperture, a plate-holder, a hinged frame having a series of horizontally-disposed staggered trackways, means for supporting the plate-holder on said trackways, means for causing the holder to travel along successive of said trackways, a shutter, and means to operate the shutter synchronously with the travel of the plate-holder.

2. In photographic apparatus the combination with a case having a light-aperture, a plate-holder, a hinged frame having a series of independent shiftable horizontally-arranged track-bars, means for supporting the plate-holder on said track-bars, and means for causing the holder to travel along succeeding bars.

3. In photographic apparatus the combination of a case having a light-aperture in its front, and a closure for the back, a hinged frame supported independent of said closure and having a series of independently-shiftable track-bars, a plate-holder means for supporting the plate-holder on said track-bars, and means for causing the holder to travel along succeeding bars.

4. In photographic apparatus the combi-

nation of a case having a light-aperture in its front, a rear closure for the case, a frame supported in the case independent of said closure, said frame having a series of independently-shiftable track-bars, a plate-holder means for supporting the plate-holder on said track-bars, and means for causing the holder to travel along successive bars.

5. In photographic apparatus the combination of a case having a front provided with a light-aperture, a closure for the back of the case, a frame hinged at the bottom and inclosable therein, trackways supported by said frame, a plate-holder traversable across said aperture, means for supporting the holder on said trackways, means for reciprocating the holder, a rotary shutter, and means to rotate the shutter synchronously with the movement of the plate-holder.

6. In photographic apparatus the combination of a case having a front provided with a light-aperture, a closure for the back of the case, a frame hinged at the bottom and inclosable therein, trackways supported by said frame, a plate-holder traversable across said aperture, means for supporting the holder on said trackways, means for giving the holder a step-by-step horizontal movement along said trackways, said trackway adapted to pass the holder from one trackway to a succeeding one, a rotary shutter, and means to rotate the shutter synchronously with the movement of the plate-holder.

7. In photographic apparatus the combination of a case having a light-aperture in front, and a rear closure, a plate-holder carrier reciprocal along guides in said case, said carrier comprising vertical guide members capable of a limited tilting movement to and from the front of the case, a locking-bar for said guide members, a plate-holder slidable on the latter, and means for reciprocating the carrier across said light-aperture.

8. In photographic apparatus the combination of a case having a light-aperture in front, and a rear closure, a plate-holder carrier reciprocal along guides in said case, said carrier comprising vertical guide members capable of a limited tilting movement to and from the front of the case, a locking-bar for said guide members, a plate-holder slidable on the latter, means for reciprocating the carrier across said light-aperture, and means for supporting the plate-holder at different levels during said reciprocations of the carrier.

9. In photographic apparatus the combination of a case having a light-aperture, a reciprocating plate-holder carrier, said carrier having vertical standards, a plate-holder slidably supported by said standards, a hinged locking-bar for the top of said standards, said locking-bar coöperating as a trackway along which the carrier is reciprocal, and means for reciprocating the carrier.

10. In photographic apparatus the combination of a case having a light-aperture, a plate-holder carrier reciprocal across said aperture, said carrier comprising vertical standards supported on a movable base, said standards having opposed grooves, a plate-holder slidably supported in said grooves, and a locking-bar movable to and from the standards to support the carrier in operative position in the apparatus, and means for reciprocating the carrier.

11. In photographic apparatus the combination of a case having a light-aperture in front, a plate-holder carrier reciprocal across the aperture, said carrier comprising vertical standards supported on a movable base, a plate-holder supported on said standards, and a movable locking-bar for the upper ends of the standards permitting the latter to be maintained in operative upright position in the apparatus and to be tilted relative to the front of the case to permit the insertion or withdrawal of the plate-holder, and means for reciprocating the carrier.

12. In photographic apparatus the combination of a case having a light-aperture, a reciprocating plate-holder carrier, a plate-holder on the carrier, a frame having a series of independently-shiftable horizontal track-bars, projections on said bars, locking means coöperating with said projections to hold said bars against shifting, means for supporting the plate-holder on the bars, means for reciprocating the carrier, and means for causing the plate-holder to travel along successive of said track-bars.

13. In photographic apparatus the combination of a case having an apertured front and a rear closure, a reciprocating plate-holder carrier, a plate-holder, a frame supported independent of the closure and having a series of independently-shiftable horizontal track-bars, means for locking the bars against movement, means for supporting the plate-holder on said bars, means for reciprocating the carrier, and said track-bars adapted to pass the plate-holder from one track-bar to a succeeding one during the reciprocation of the carrier.

14. In photographic apparatus the combination of a case having an apertured front and a rear closure, a reciprocating plate-holder carrier supported at its bottom in guides in the case and tiltable in a plane at right angles to the front of the case, a plate-holder, a locking-bar movable to and from the carrier and limiting said tilting movement, and means for reciprocating the carrier.

15. In photographic apparatus the combination of a case having an apertured front and a rear closure, a reciprocating plate-holder carrier supported at its bottom in guides in the case and tiltable in a plane at right angles to the front of the case, a plate-holder, a locking-bar movable to and from

the carrier and limiting said tilting movement, a rotary shutter, means for operating the shutter and carrier coördinately, and means for supporting the plate-holder at different levels during the operation of the shutter and carrier.

16. In photographic apparatus the combination of a case having an apertured front and a rear closure, a reciprocating plate-holder carrier tiltable to and from the front, a hinged locking-bar limiting said tilting movement, a plate-holder, a hinged frame supported independent of the closure and provided with a series of horizontal trackways, means for supporting the plate-holder on the trackways, and means for reciprocating the carrier.

17. In photograpic apparatus the combination of a case having a light-aperture, a reciprocating plate-holder carrier, a plate-holder supported by said carrier, a rotary shutter comprising a grooved hub portion, and coöperating segments supported and adjustable in the groove in said hub, and means for operating the shutter and carrier coördinately.

18. In photographic apparatus the combination of a case having a light-aperture, of a plate-holder carrier, a plate-holder supported by said carrier, a rotary shutter comprising a grooved hub portion, and two coöperating segments adjustable in the groove in said hub, and means for giving the shutter a rotative movement and for giving the carrier a step-by-step reciprocatory movement.

19. In photographic apparatus the combination of a case having a light-aperture, a plate-holder carrier, a plate-holder supported by said carrier, a rotary shutter, a pulley carried by the shutter-shaft, a second pulley mounted exterior to the case and provided with a crank-handle, a flexible connection between the two pulleys, and connections between the shutter and carrier for giving the latter a movement coördinate with the movement of the shutter.

20. In photographic apparatus the combination of a case having a light-aperture, a plate-holder carrier, a plate-holder supported by said carrier, a rotary shutter, spaced sprockets, a chain passing around said sprockets, connections between the chain and carrier, a ratchet connected with one of the sprockets, a ratchet-lever, a link connecting the shutter and lever, a pulley carried by the shutter, a drive-pulley exterior to the case, and a flexible connection between said pulleys.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES WILLIAM ANDERSON.

Witnesses:
H. E. MaKinney,
Eugene B. Anderson.