

No. 709,995.

Patented Sept. 30, 1902.

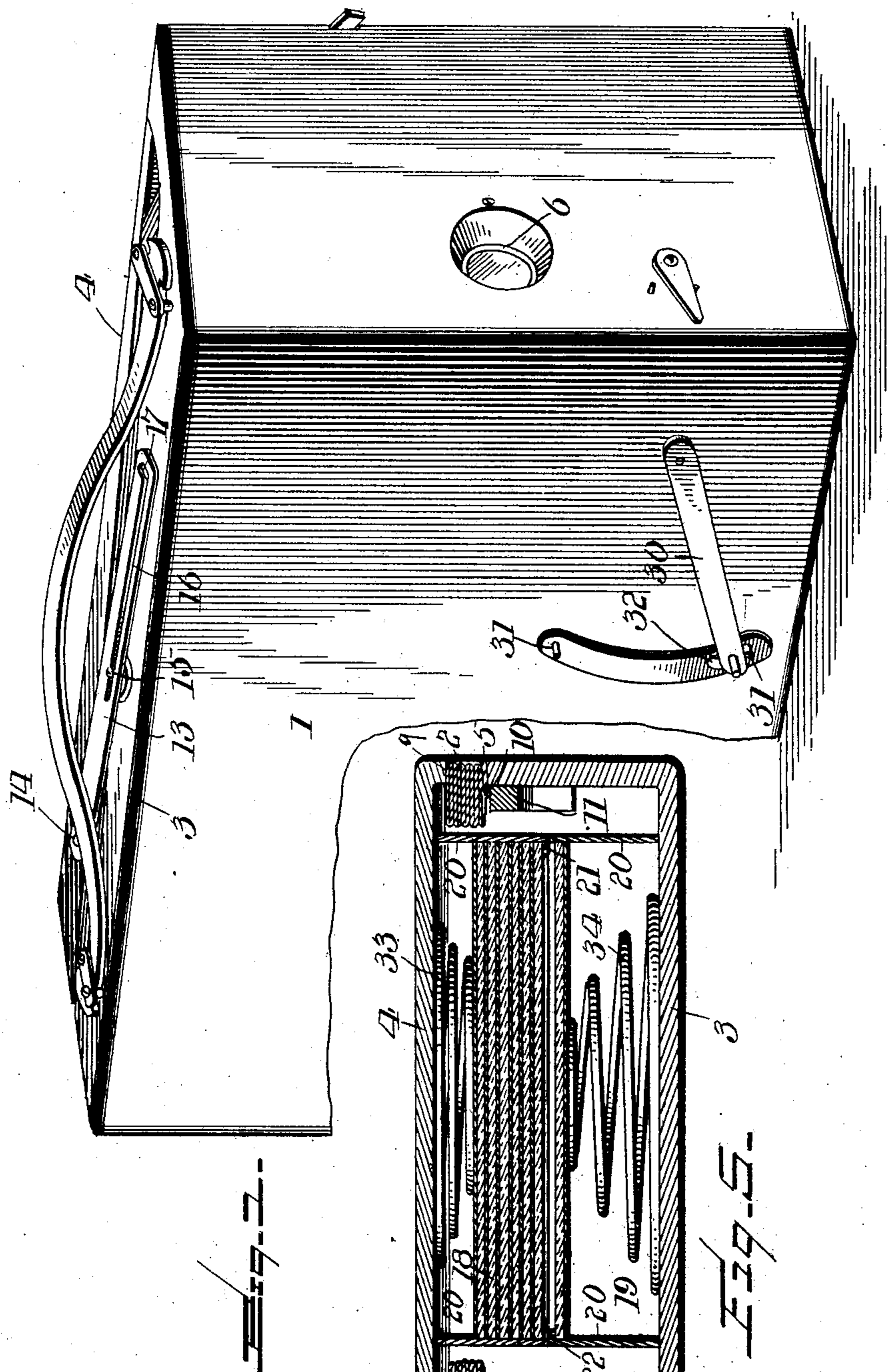
E. H. MORSE.

FOLDING MAGAZINE HAND CAMERA.

(Application filed May 13, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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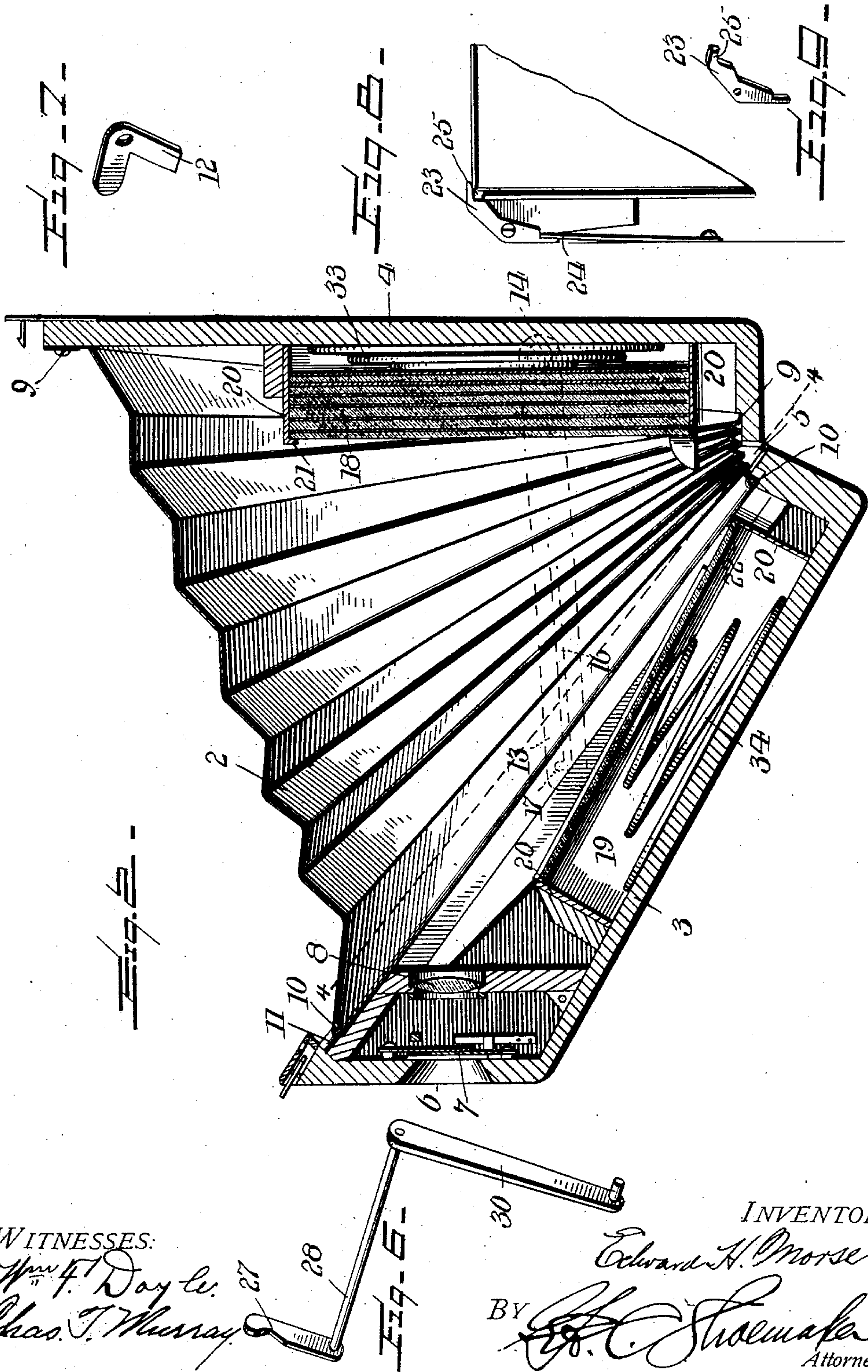
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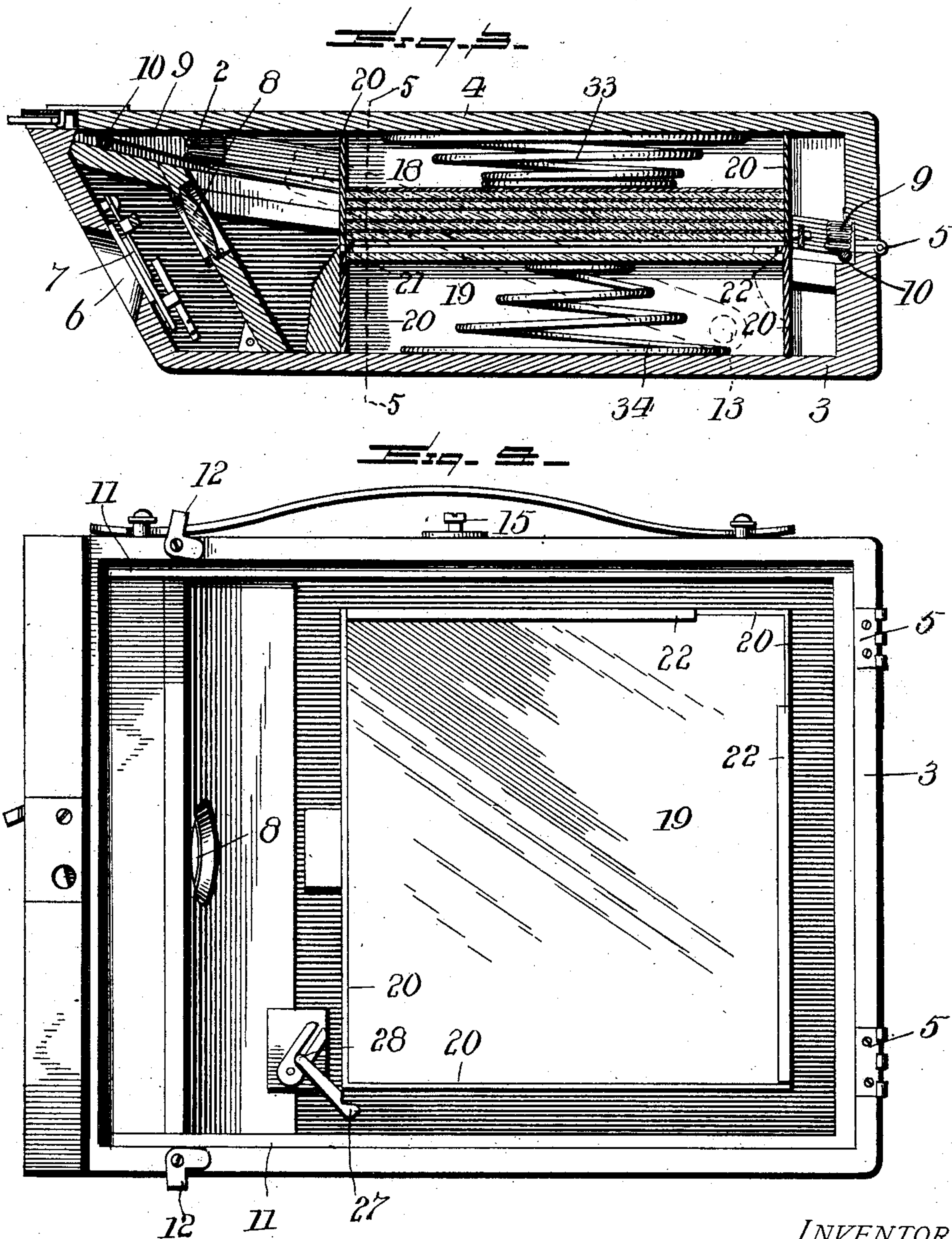
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UNITED STATES PATENT OFFICE.

EDWARD HAYES MORSE, OF NEW ORLEANS, LOUISIANA.

FOLDING MAGAZINE HAND-CAMERA.

SPECIFICATION forming part of Letters Patent No. 709,995, dated September 30, 1902.

Application filed May 13, 1901. Serial No. 60,023. (No model.)

To all whom it may concern:

Be it known that I, EDWARD HAYES MORSE, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Folding Magazine Hand-Cameras; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to photographic cameras, and has special reference to that type of cameras commonly known as "magazine hand-cameras," which may be conveniently carried about and manipulated in the hands, while at the same time comprising means for effecting a number of exposures.

To this end the invention has in view the construction of a magazine hand-camera in which the different parts thereof shall be very compactly arranged, whereby the camera may be made of a minimum size and when folded will occupy an exceedingly small compass, so that the same will be, in effect, a pocket-camera.

While the invention has in view a very compact arrangement of parts, at the same time it comprehends improved mechanism for effecting a positive and accurate changing of the plates or films after each exposure. In the accomplishment of this latter object the invention contemplates a novel construction of camera-box of a folding type and having the separate sections thereof so related to the magazines as to provide for a shifting or changing of the plates partly by the manipulation or movement of the folding box itself.

Another object of the invention is to provide a novel disposition of the separate magazines for the exposed and unexposed plates, whereby after a transferal of an exposed plate to the magazine therefor and the opening up of the camera-box a fresh unexposed plate will lie directly beyond and in the angle of the lens, while the exposed plates will be disposed at one side of the angle of the lens in such a position as not to be affected by the rays of light entering the camera.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the invention, especially in the folding action of the box assisting in the shifting operation of the plates, are necessarily susceptible to modification without departing from the spirit or scope of the invention, but the preferred embodiment of the improvements is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a magazine hand-camera constructed in accordance with the present invention and shown in its closed condition, a portion thereof being broken away. Fig. 2 is an enlarged sectional view of the camera opened up with the parts in position ready for an exposure. Fig. 3 is a sectional view of the camera, showing the folding box closed, thereby bringing the open sides of the two magazines in matched relation to permit of the shifting of the exposed plate into the magazine therefor. Fig. 4 is a sectional view on the line 4 4 of Fig. 2, showing in elevation the magazine for the exposed plates and also illustrating the fastenings for the detachable side of the bellows which serves to close the interval between the box-sections when the latter are opened up. Fig. 5 is a sectional view on the line 5 5 of Fig. 3. Fig. 6 is a perspective view of the plate-shifting device removed from the camera. Fig. 7 is a view of one of the fastenings for the detachable side of the bellows. Fig. 8 is a view illustrating one corner of a magazine, showing the engaged position of the spring-pressed plate-retaining latch. Fig. 9 is a view illustrating the retaining-latch removed from the camera.

Like numerals of reference designate corresponding parts in the several figures of the drawings.

In carrying out the invention it is of course understood that any desired size of camera may be constructed, according to the size of plates or films to be used therein; but in all forms of the invention and in all sizes of camera one essential feature is preserved

throughout—namely, that of constructing the camera-box 1 of a folding type, whereby the same may be opened and closed on the principle of a book, the separate portions or sections thereof carrying separate parts of the camera mechanism. An exemplification of this construction is shown in the drawings, and referring particularly thereto it will be seen that the camera-box 1 when closed is of a general rectangular form and when opened is, in connection with the closure-bellows 2, of an approximately triangular form, with the unexposed plates in the base of the triangle and the exposed plates arranged for support at one of the sides of the triangle. With this general idea of the shape of the camera in its open and closed positions, specifically speaking, the box 1 consists of the separate folding sections 3 and 4, respectively, which are hinged together at one end by the hinge connection 5, thus leaving the opposite ends of the separate sections free to be swung toward and away from each other in the opening and closing operation.

The box as an entirety is preferably bisected on a bias or diagonally in order to effect a greater compactness, as may be clearly seen in the drawings, and at the same time providing each section with side flanges to inclose or form compartments therein. In addition to the inclosing side flanges one of the box-sections (designated by the numeral 3) is provided with a shutter-head 6, equipped with a suitable shutter 7, of any improved type, and cooperating with the lens 8, fitted to the inner side of the said head, and thus carried by the box-section 3. As already indicated, when the box-sections 3 and 4 are spread apart to open up the camera the bellows 2 serves to close the interval between said sections, and at the same time serves as a detachable flexible side therefor, which may be conveniently manipulated to provide ready access to the interior of the camera-box for loading and unloading purposes. The said side bellows 2 is of the usual construction, such as commonly employed in photographic cameras; but in the present invention the bellows is permanently fastened at one end, as at 9, to the inner side of the box-section 4, which constitutes the base of the triangle, while the other end of the bellows has fitted thereto a detachable attaching-frame 10, which is adapted to be removably held within the bellows-seat 11, formed at the inner side of the box-section 3, which carries the shutter mechanism and the lens. Any suitable means may be utilized for effecting the detachable connection of the bellows with the box-section 3; but a simple expedient consists in employing the pivotal bell-crank latches 12, pivotally fitted to opposite side edges of the box-sections 3 and adapted to be turned in and out of engagement with the side portions of the bellows-frame 10. When the latches 12 are thus engaged with said frame, the bellows 2 is firmly connected with both of the box-sections, so as

to render the open side of the box perfectly light-tight, while at the same time permitting the free folding or opening and closing of the box in the manipulation of the plates or films. An unfastening of the latches 12 permits the open side of the box to be uncovered, so as to facilitate loading and unloading.

When the camera-box is spread open, the same is held rigidly in such position by means of a brace 13, pivoted at one end, as at 14, to one side of the box-section 4 and having a slidable interlocking engagement with a holding-stud 15, projecting from one side of the other box-section 3. Said brace 13 may be provided with a longitudinally-disposed slot 16, having at the end opposite the pivot 14 for the brace a keeper-notch 17, adapted to be engaged with the holding-stud 15 when the box is spread open. By moving the brace 13 so as to bring the longitudinal slot 16 thereof in alinement with the stud 15 the camera-box may be readily closed, and the brace 13 will fold therewith, as may be readily understood from the drawings.

To provide for the proper disposition and holding of the unexposed and exposed plates or films, the camera-box is provided with separate magazines 18 and 19, which are respectively fitted within the box-sections 4 and 3, the magazine 18 being designed for holding a number of unexposed plates, while the magazine 19 receives the plates and holds the same after exposure until it is desired to remove the same from the camera for developing. The said magazines 18 and 19 essentially consist of rectangular compartments, open at their inner sides and closed at their outer sides by the walls of the box-sections to which they are fitted. Each compartment is formed principally by an inclosing rim 20, provided at adjacent angularly-related edges with inturned holding-flanges or equivalent retaining devices, the said flanges of the magazine 18 being designated by the reference-number 21 and the complementary and corresponding flanges of the magazine 19 being designated by the reference-number 22. Of course it will be understood that projections or any equivalent devices subserving the function of the flanges 21 and 22 may be utilized for properly retaining the plates in their respective magazine, and the latter—that is, the plates—may or may not be fitted in separate holders or reinforced at their edges to cooperate with the retaining devices of the magazines; but the simplest embodiment of the invention is shown in the drawings, the same simply consisting of the flanges 21 and 22, adapted to engage the edges of the plates.

As already indicated, the rim of each magazine is provided with the holding-flanges or equivalent retaining devices only at two of its edges, with said flanges or retaining devices projecting beyond the plane of the remaining edges in order to permit of the ready shifting of the plates over the said remaining plane edges. It should be further observed that

the holding-flanges or retaining devices of one magazine are arranged in opposite relation to the holding-flanges or retaining devices of the other, so that when the camera-box is closed or folded and the magazines brought into superposed matched relation the holding-flanges of one magazine will overlap the free edges of the outermost plate of the other magazine, thus permitting of the ready shifting of a plate from one magazine to the other. This is plainly shown in Fig. 3 of the drawings.

In addition to the holding-flanges or retaining devices 21 of the magazine 18 there is associated with such magazine, contiguous to one corner thereof, an angular pivotally-supported retaining-latch 23, engaged by a pressure-spring 24 at one end and having an engaging notch 25 at its other end to yieldingly engage with one corner of the outermost plate in the magazine 18 to assist in properly holding it in place. The diagonally opposite corner of said plate is adapted to be engaged by the notched end of a swinging shifting-arm 27, carried at the inner end of a rock-shaft 28, journaled in suitable bearings within the box-section 3 and carrying at its outer end an exterior operating-lever 30, playing between stop-pins 31 on the exterior of the box-section 3 and also adapted to engage with a holding stud or pawl 32, which serves to hold the lever in a position for normally positioning the shifting-arm 27 back out of the way of the two magazines when brought together by the folding of the camera-box.

The magazine 18 is designed to have arranged therein back of the unexposed plates a pressure-spring 33, which is stronger than the comparatively weak pressure-spring 34, arranged in the magazine 19.

From the foregoing the shifting of the exposed plate from the magazine 18 to the magazine 19 will be readily understood. After an exposure has been made the box is folded or closed, so as to bring the two magazines into matching superposed relation, as shown in Fig. 3. As the box-sections are pressed together the superior pressure of the spring 33 will press back the outermost plate in the magazine 18, so as to bring the freshly-exposed plate inside of the plane of the holding-flanges 22 of the magazine 19. By then manipulating the lever 30 the shifting-arm 27 bears in a diagonal direction upon the freshly-exposed plate, causing the same to move out from beneath the flanges 21 and under the flanges 22, thus effecting a transferal of the plate from one magazine to the other. When the camera is again opened up, a new plate is in position for exposure.

The plates employed in the camera are preferably paper-backed, so as to be light-proof after being placed in the magazine 19, although it will be understood that in carrying out the invention any suitable kind of plates or cut films may be employed.

Various changes in the form, proportion,

and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a camera, a folding box comprising separate hinged sections, a magazine arranged in each of said box-sections and provided at two of its angularly-related edges with plate-holding projections, said plate-holding projections of one magazine being arranged in opposite relation to those of the other so that the said projections of one magazine will overlap the edges of the outermost plate in the other, plate-displacing means carried by one of the magazines, a shifting device coöperating with the said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor, a bellows permanently fitted to one of the box-sections and detachably secured to the other box-section, a brace having a longitudinal slot terminating in a notch, said brace being pivoted to one of the box-sections, a stud disposed upon the other box-section, and upon which the said brace is adapted to slide for holding the box-sections in their spread-apart positions.

2. In a camera, a folding box comprising separate hinged box-sections, a magazine arranged in each box-section and provided with plate-retaining means, auxiliary plate-retaining means, plate-displacing means carried by one of the magazines, means coöperating with said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor, and a bellows arranged to detachably cover the open side of the box between the separate sections thereof.

3. In a camera, a folding box comprising separate hinged box-sections, a magazine arranged in each box-section and provided with plate-retaining means, auxiliary spring-actuated plate-retaining means, plate-displacing means carried by one of the magazines, and a shifting device coöperating with said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor.

4. In a camera, a folding box comprising separate hinged sections, a magazine arranged in each of said sections, and provided at two of its angularly-related edges with plate-holding projections, said plate-holding projections of one magazine being arranged in opposite relation to those of the other so that the said projections of one magazine will overlap the edges of the outermost plate in the other, springs of different strength arranged respectively in the separate magazines, and a plate-shifting device.

5. In a camera, a folding box comprising separate hinged sections, a magazine arranged in each of said sections, and provided at two of its angularly-related edges with plate-holding projections, a spring-pressed retaining-latch supported for yielding engagement with

one corner of the outermost plate in one magazine, and a shifting device having a swinging shifting-arm adapted to engage with the diagonally opposite corner of the said plate.

5 6. In a camera, a folding box comprising separate hinged box-sections, a magazine arranged in each box-section and provided with plate-retaining means, plate-displacing means carried by one of the magazines, a shifting
10 device cooperating with said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor, a bellows permanently fitted to one of the box-sections and carrying a rectangular-shaped frame at
15 its free end, angular levers pivoted upon the inner face of the other box-section, adapted to swing over said frame and secure the free end of the bellows thereto, and a brace for holding the box-sections in their spread-apart
20 positions.

7. In a camera, a folding box having in each of its separate sections a magazine provided with plate-retaining means, said magazines being brought into superposed matched relation by the folding action of the box-sections,
25 plate-displacing means in one of the magazines, means for shifting a plate from one magazine to the other when brought into said

superposed matched relation, a bellows permanently fitted to one of the box-sections 30 and having a reinforced free end, levers disposed upon the inner face of the other box-section and adapted to detachably secure the free end of the bellows thereto, and a brace for holding and locking the box-sections in 35 their spread-apart positions.

8. In a camera, a folding box comprising separate hinged box-sections, each having a magazine provided with plate-retaining means, plate-displacing means carried by one 40 of the magazines, means cooperating with the said plate-displacing means for effecting a transferal of a plate from one magazine to the other, a bellows permanently fitted to one of the box-sections and having a reinforced free 45 end, means disposed upon the other box-section adapted to detachably secure the free end of the bellows thereto, and means for holding the box-sections in their spread-apart positions. 50

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD HAYES MORSE.

Witnesses:

J. GROSS,

SAMUEL WEBB.