

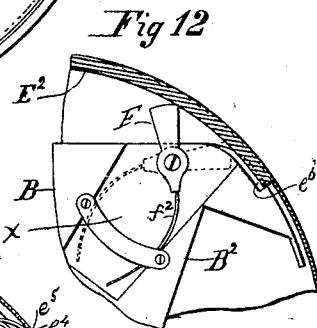
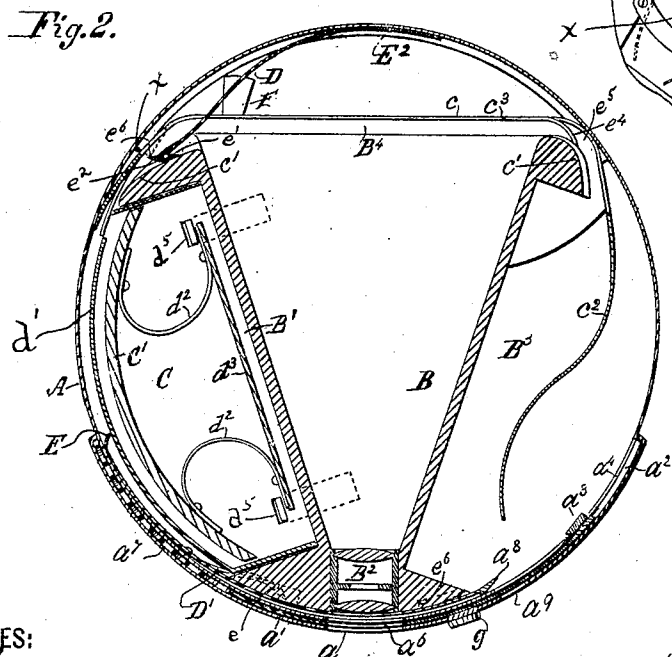
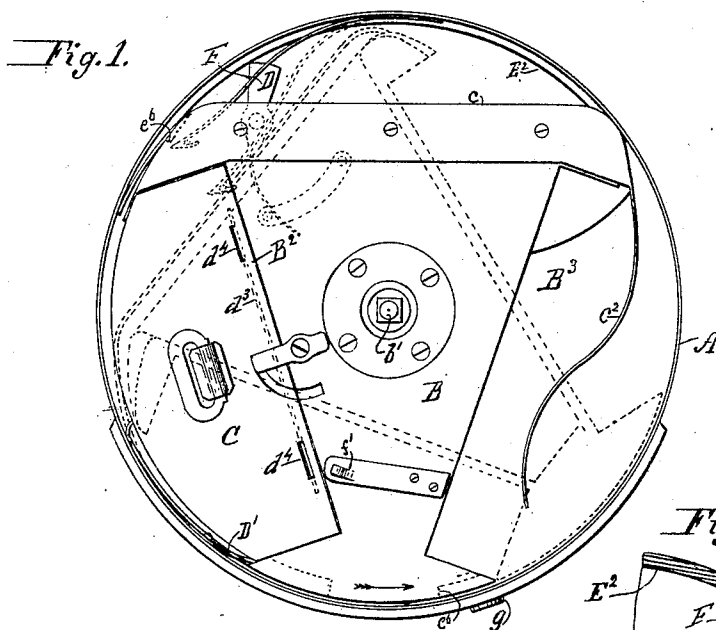
(Model.)

5 Sheets—Sheet 1.

F. WHITNEY.
MAGAZINE CAMERA.

No. 552,654.

Patented Jan. 7, 1896.



WITNESSES:

C. R. Ferguson
J. C. King

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Frank Whitney

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(Model.)

5 Sheets—Sheet 2.

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Fig. 3.

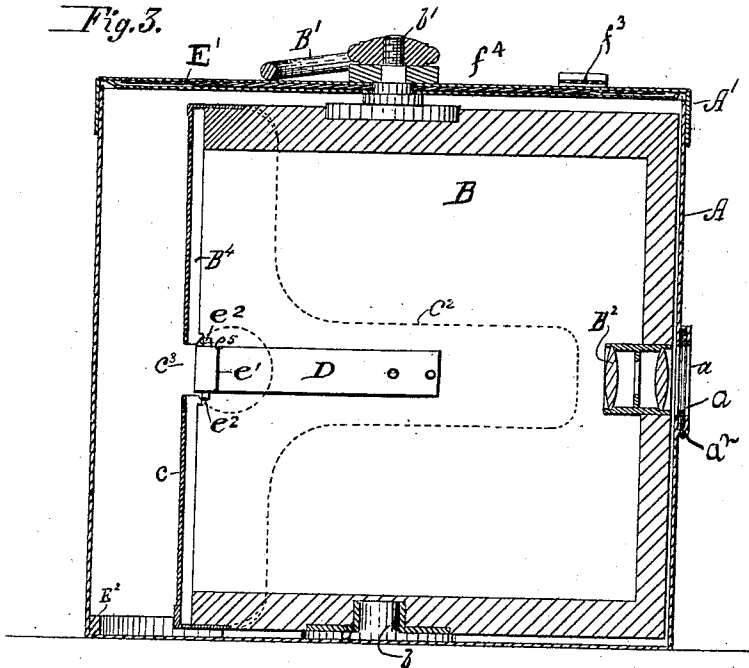


Fig. 11.

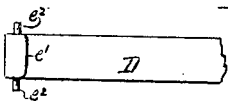
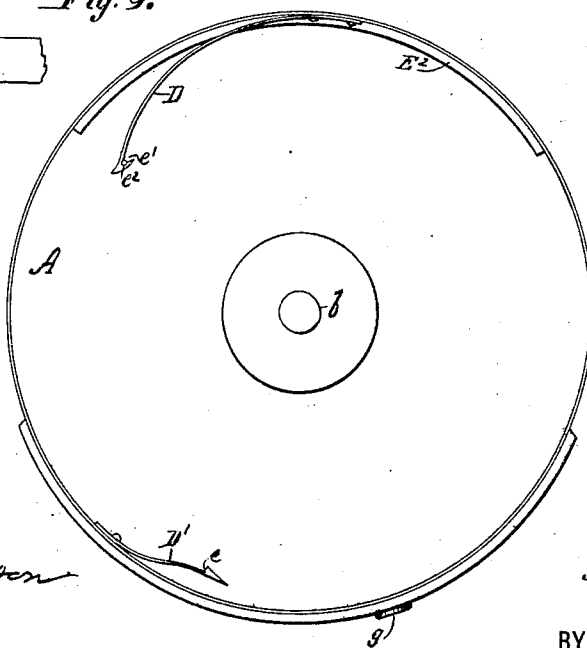


Fig. 9.



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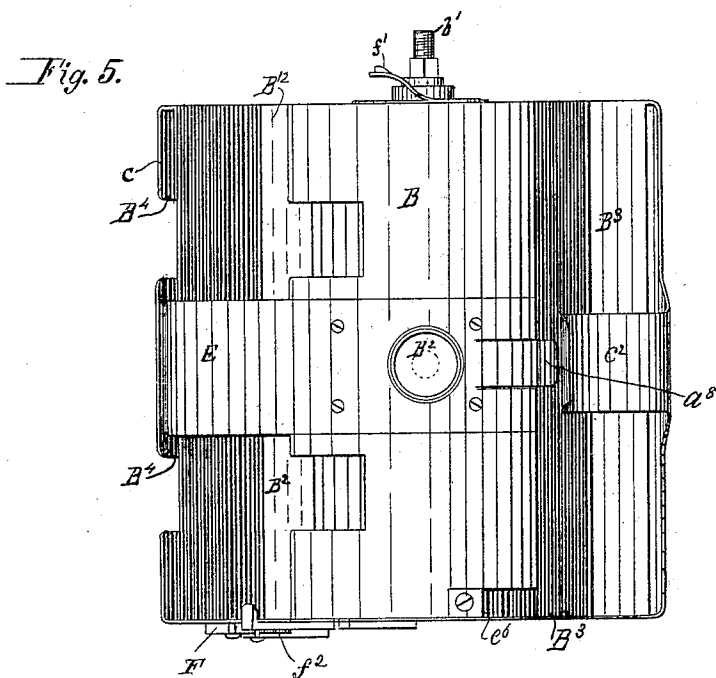
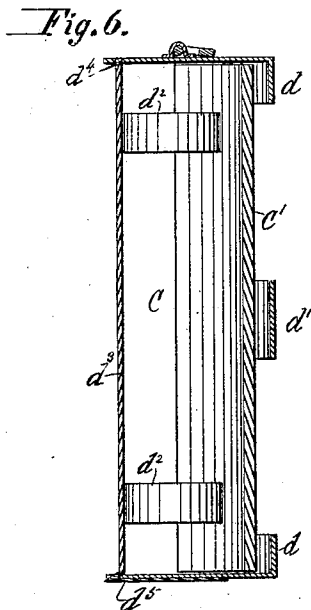
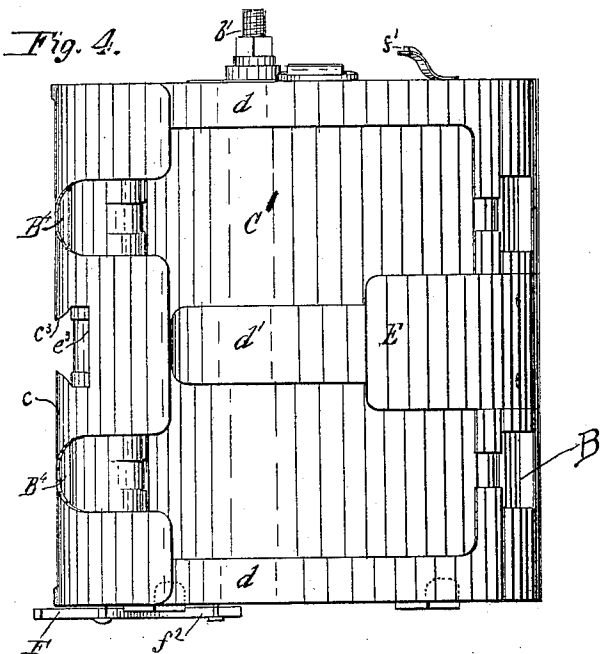
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Fig. 8.

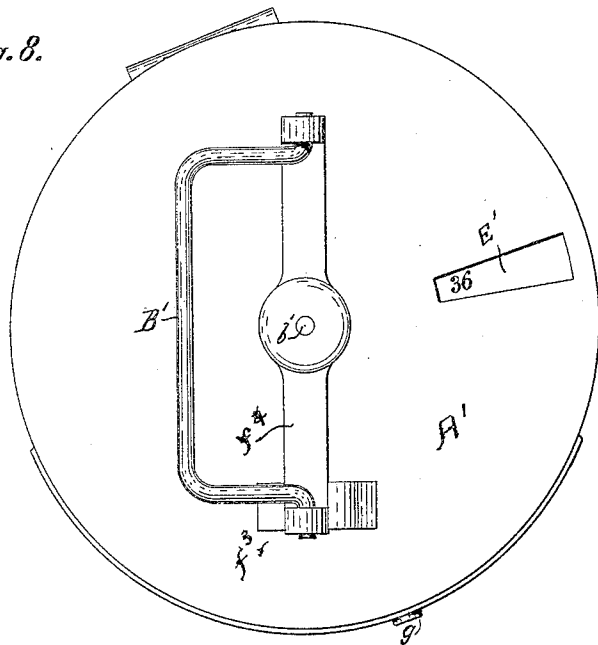


Fig. 10.

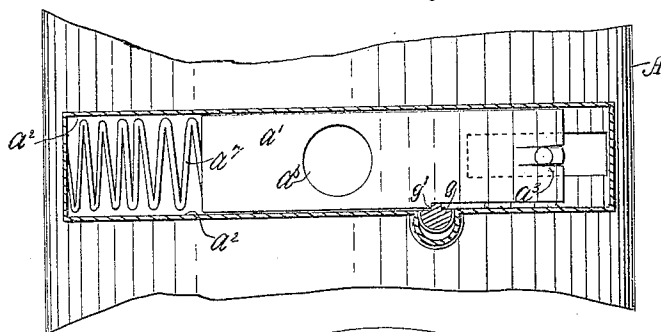
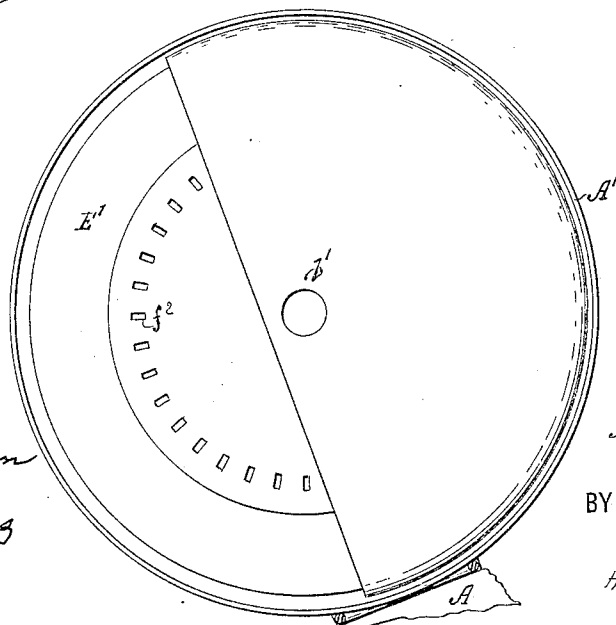


Fig. 7.



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Fig. 13

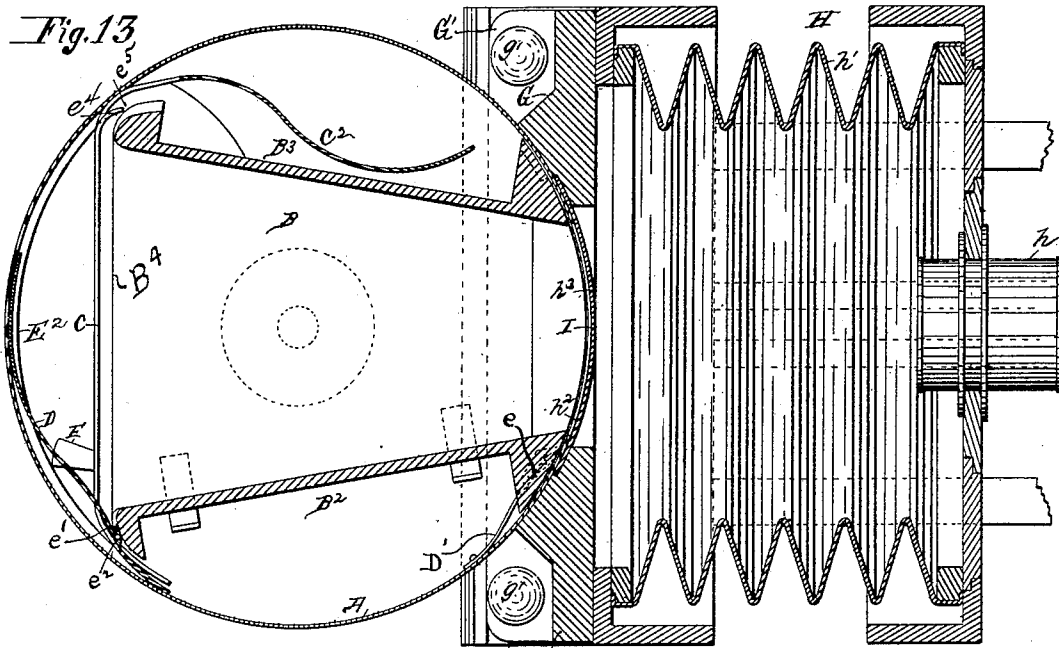
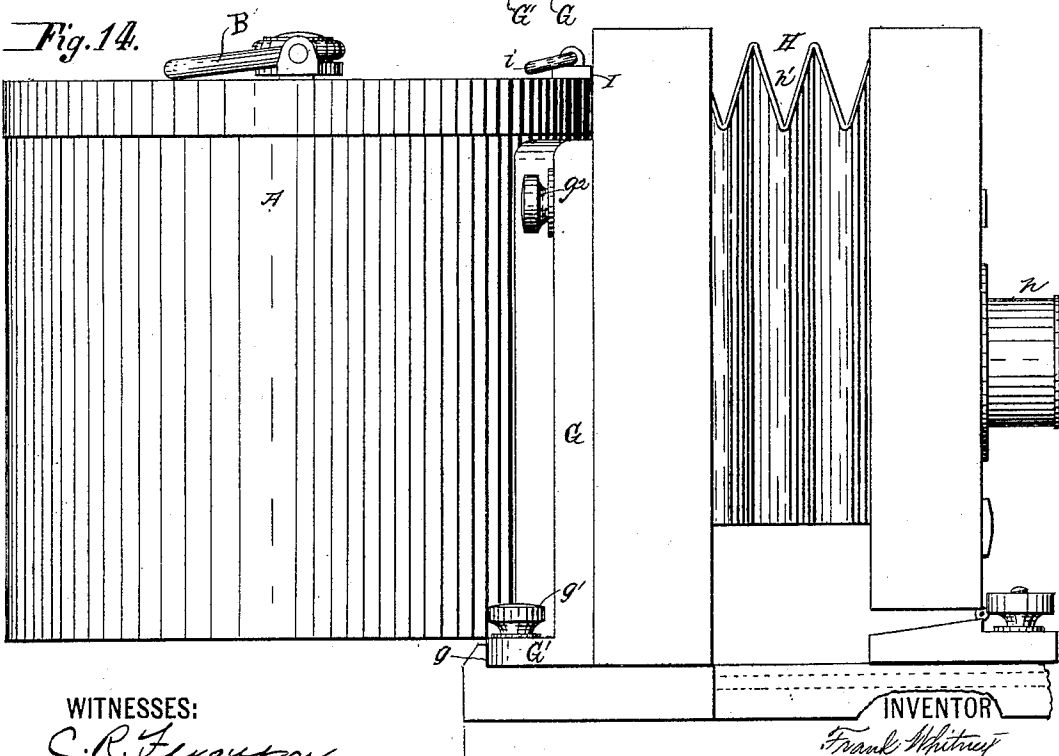


Fig. 14



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UNITED STATES PATENT OFFICE.

FRANK WHITNEY, OF WINNETKA, ILLINOIS.

MAGAZINE-CAMERA.

SPECIFICATION forming part of Letters Patent No. 552,654, dated January 7, 1896.

Application filed October 8, 1891. Serial No. 408,166. (Model.)

To all whom it may concern:

Be it known that I, FRANK WHITNEY, a citizen of the United States, residing at Winnetka, in the county of Cook and State of Illinois, have invented a new and useful Photographic Camera, of which the following is a specification.

This invention relates to photographic cameras in which films are automatically transferred from one position to another. I will describe a camera embodying my invention, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a top view of a camera embodying my improvement with the cover removed. Fig. 2 is a central horizontal section. Fig. 3 is a central vertical section. Fig. 4 is a side view of a movable part or carrier with a plate-holder or magazine in place. Fig. 5 is a front view of said part with the magazine removed. Fig. 6 is a transverse vertical section of a film-magazine. Fig. 7 is a bottom plan view of a cover, showing recording mechanism. Fig. 8 is a top view of the camera. Fig. 9 is an interior view of the camera-case. Fig. 10 is a detail, partly in section, showing a shutter mechanism. Fig. 11 is a detail of a certain operating-arm. Fig. 12 is an enlarged detail. Fig. 13 is a horizontal section of my invention applied to an ordinary camera. Fig. 14 is a side elevation thereof.

Similar letters of reference designate corresponding parts in all the figures of the drawings.

Referring by letter to the drawings, A designates a camera-case, here shown as cylindrical in form. This case may be made of any suitable material, but I find sheet metal covered with leather to be a preferable material. The case is closed at its bottom and is provided with cover A', which may be connected to the case by a hinge. A lens-opening *a* in the case is provided with a shutter *a'*, which is movable in a slideway *a²* formed in the case. A lug *a³* on the shutter projects into a horizontal slot *a⁴* in the case for a purpose hereinafter described.

B designates a movable part or carrier within the case A. The part B is hollow and is substantially triangular in cross-section. It is pivotally mounted on a stud *b* extending upward from the bottom of the case A and

has at its upper end a stem *b'* which extends through an opening in the cover A', and to which a handle B' is removably secured. By means of the handle B' the part B may be oscillated to expose and transfer films carried thereby, and the handle also serves as a means by which the camera may be carried. When the part B is moved in the proper position for an exposure, it and the handle B' will be automatically locked to prevent an accidental displacement of the piece of film under exposure. This automatic lock consists of a spring-catch *f³* secured to the cover, and with which one end of the bar portion *f⁴* of the handle engages when the part B is in the proper position. A lens B² is secured in an opening in the front or apex of the movable part in a plane with the opening *a* in the case. At one side the movable part or carrier B has a recess to receive a magazine C, at the opposite side a receptacle or storage-chamber B³ for exposed films, and at the rear, or opposite the lens, a plate-holder B⁴, in which films are held during an exposure.

The holder B⁴ for films consists of a metal plate *c*, secured at its top and bottom edges to the movable part B, and there is a space between the curved ends of the plate *c* and the rounded surfaces *c'* of the part B sufficiently wide for the passage of a film. After an exposure of a film in the holder B⁴ the film is transferred to the receptacle or storage-chamber B³, and as a means for retaining the film in said chamber I provide a clamp *c²*, here shown as a spring-plate extending from the plate *c*. The plate *c* is horizontally slotted, as at *c³*, through which slot a shifting-arm D extends to shift a film from the holder to the storage-chamber, as hereinafter explained.

The magazine C consists of a frame, preferably metal, and a follower C' within the frame. The frame has retaining-strips *d* *d'* secured to its front, the center one, *d'*, being of spring metal and the end ones, *d*, being secured rigidly to the magazine-frame. At the side of the magazine C adjacent to the holder B⁴ is a space between the frame and remaining strips sufficiently wide for the passage of a film to the holder B⁴. It will be seen that the retaining-strips are longitudinally curved to correspond substantially to

the circle of the case A and that the follower C' is correspondingly curved.

It is to be understood that the films employed in this camera are thin films of flexible material, such as celluloid, and that a number of them may be stored in the magazine C, from which they are discharged one at a time by mechanism hereinafter described.

The follower C' is pressed forward as the films are removed by means of springs d^2 , secured at one end to said follower and at the other end to a plate d^3 , which is removably secured to the frame by means of lugs d^4 thereon engaging in holes in the magazine-frame and a spring-catch d^5 . The springs d^2 are preferably of C form and four in number. By employing C-form springs the follower is kept parallel with the front of the magazine-frame.

I will now describe means for shifting films from the magazine to the exposure chamber or holder B¹ and from the holder B¹ to the storage-chamber.

D' designates shifting-arms for moving a film from the magazine to the exposure chamber or holder. These arms are of resilient metal secured at one end to the case A and having a hook e at the free end adapted to engage with the edge of a film. As before stated, a shifting-arm D is provided for shifting a film from the exposure-chamber or film-holder to the storage-chamber. This arm D consists of resilient metal secured at one end to the case A and having a hook e' at its free end to engage with the edge of a film. This hook e' is provided with transverse lugs e^2 . When the part B is in its normal position to expose a film, the hook end of the arm D will enter the slot c^3 through its enlarged end C³, so that the hook e' will engage with the edge of a film to transfer it when the part B is rotated. At the end of its rotation and upon the return movement of the part B the lugs e^2 of the arm D will ride over the spring-guides e^4 and through the enlarged opening c^3 to the outer side of the plate c .

A film having been exposed and it is desired to put a new one in its place the operation is as follows: The movable part B is oscillated by means of the handle B' in the direction indicated by the arrow, Fig. 1. The shifting-arm D engages with the rear edge of a film, and as said arm is stationary the movement of the part B will cause the film to be shifted into the storage-chamber. At the same time the arms D' engage with the edge of the outer film in the magazine and cause it to be moved into the exposure-chamber or plate-holder. Then the movable part is returned by a reverse movement to its original position so that the second film may be exposed. In dotted line in Fig. 1 I have shown the part B a portion of the way on its return movement, which also shows the position of the arm D.

As a means to prevent a too extended movement of the part B in either direction, I provide

stops, consisting of a metal strip E², secured in the bottom of the case in such position that shoulders e^6 on post B will come in contact with the end of strip E².

To prevent an accidental backward movement of the part B while being manipulated to set a film, I provide it with a dog F, which is here shown as pivoted in a recess in the bottom of the part B, so that its edge will bear against the strip E². As shown, a spring f^2 serves to hold the dog in contact with the strip. When the part B reaches the end of its movement, the dog will run off the end of the strip, and on the reverse movement of the part B will ride over the strip E², as shown in dotted line, Fig. 12. This dog F is in effect a friction-stop.

The shutter a' is automatically set by the backward rotation of the movable part B. The shutter a' consists of a metal plate having a hole a^6 in it and movable across the opening a in one direction by means of a spring a^7 and in the opposite direction by means of a hook a^8 on the part B engaging with the lug a^3 .

When the part B is turned to bring a film into focus the hook a^8 will engage with the lug a^3 and move the shutter in the slideway a^2 in a direction to close the opening a and set the shutter. At this time the lens will be opposite the opening a . By pressing inward on the shutter through a hole a^9 the shutter will be released and the spring a^7 will carry the shutter toward the opposite end of the slideway, thus causing the opening a^6 to rapidly cross the opening a , and thus expose the plate.

The shutter operated as above is for instantaneous work, but I provide a time-stop for the shutter so that its hole a^6 may be held coincident with the opening a for any desired length of time. This stop consists of a bolt g , movable in a slot in case A to a position in line with a shoulder g' on the shutter.

When the shutter is set as before described, the bolt g is pushed to its upward position. Then by pressing the plate through the hole a^9 the shutter will be moved by its spring against the stop g , with the openings a a^6 coincident to allow an exposure of the film. After the film shall have been sufficiently exposed the bolt or stop g is moved downward, which will allow the shutter to close the opening a .

The movable part B also carries a plate E longitudinally curved and fitting snugly against the inner surface of the case A. This plate E serves to close the opening a should the shutter a' accidentally be left open. While the shutter a' is being set, the shutter E also serves to close the openings a a^6 to prevent the entrance of light to the films in the magazine.

I will now describe a means for automatically registering the number of films exposed.

E' is a rotary disk of any suitable material pivoted on the stem b' , but is removable therefrom with the cover A'. The disk has numerals marked upon its upper surface, and so ar-

ranged that they may be disclosed through an opening f in the cover A' . The disk is rotated one step at a time by the backward rotation of the movable part B by means of a dog f' of resilient metal secured at one end to the top of said movable part and engaging in one of the depressions or holes f^{12} in the disk E. Obviously a backward movement of the part B will cause the dog to engage in one of the depressions f^{12} and move the disk; but upon a reverse movement of the part B the dog, owing to its resilience, will ride over the surface of the disk without imparting motion thereto.

It is understood that I do not confine my invention to a circular form, and in Figs. 13 and 14 I have shown how the case, exposure-chamber, &c., heretofore described may be applied to a camera of the ordinary form. In this example of my improvement the case A has laterally-extending plates G secured to it at its front side. These plates G are connected at the lower portion by a strip G' adapted to fit within the slideway g of a camera-body H, from which the ordinary plate-holder has been removed. Thumb-screws g' , extending through holes in the strip G' into the floor of the slideway, and thumb-screws g^2 , extending through holes in the plates G into the framing of the camera-body H, serve to secure the case A and its parts to the camera-body H. It will be seen that the case A and its parts take the place of an ordinary plate-holder in a camera-body H.

I have not deemed it necessary to show all the parts of the camera H. I have shown, however, that it has a lens-tube h and an exposure-chamber formed by the bellows h' . In this example of my improvement the case A has an opening h^2 in its front and the exposure-chamber in the movable part or carrier B has an opening h^3 in its front of a size equal to that of the opening h^2 in the case A.

I is a shutter for the openings h^2 h^3 , here shown as movable vertically in ways formed in the pieces C and having a finger-piece i at its top.

What I claim, and wish to secure by Letters Patent for my invention, is—

1. In a photographic camera, the combination with a case of an exposure chamber adapted to oscillate within the case, and carrying magazines on its outer sides, said magazines adapted to contain films, a handle outside of the case and connected to the exposure chamber whereby the exposure chamber may be oscillated, means provided within said case adapted to engage a film for transferring it from one magazine to the other, substantially as described.

2. A photographic camera comprising in combination cylindrical case A, oscillating

compartment B, magazines C and B^3 , holder B^4 , shifting arms D and D' , shutter A' , handle B' , lens B^2 , register E' and dog E, substantially as and for the purpose specified.

3. In a photographic camera, having a cylindrical case and an oscillating exposing compartment, a reciprocating shutter consisting of a flat curved bar with exposure hole in the middle adapted to be set by the movement of the oscillating compartment and to shut off the light from the lens opening by either end, substantially as described.

4. In a photographic camera an oscillating exposure compartment carrying storage magazines, a case provided on its inside with retaining arms, said arms adapted to engage and retain a film, and said oscillating compartment adapted to receive the film from said retaining arms in its exposure holder for exposure, and from said holder to its storage magazine, substantially as described.

5. In a photographic camera, a light tight cylindrical case adapted to contain a triangular exposure compartment having magazines for the storage of films on its sides, a film-holder at its base and a lens at its apex, said exposure compartment provided with means outside the case whereby it may be oscillated, retaining arms attached to said case adapted to engage a film by the movement of said oscillating compartment, substantially as described.

6. In a photographic camera, the combination with a case of a carrier having an exposure chamber fitted to oscillate within the body of said case, a magazine carried by said carrier and adapted to contain films before exposure, a magazine also carried by said carrier adapted to contain films after exposure and a handle outside of the case having connection with the carrier adapted to produce a relative oscillation between the carrier with its appurtenances and the body of the case, substantially as specified.

7. In a photographic camera a cylindrical case adapted to contain a triangular exposing compartment, said compartment provided with film supports at each of its sides and at its base and having a lens at its apex, it being also provided with a friction dog at its bottom end and means at its top end for operating a rotating registering plate and also provided with means at its apex for operating a reciprocating shutter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK WHITNEY.

Witnesses:

C. WHITNEY,
KATE MCKEE.