

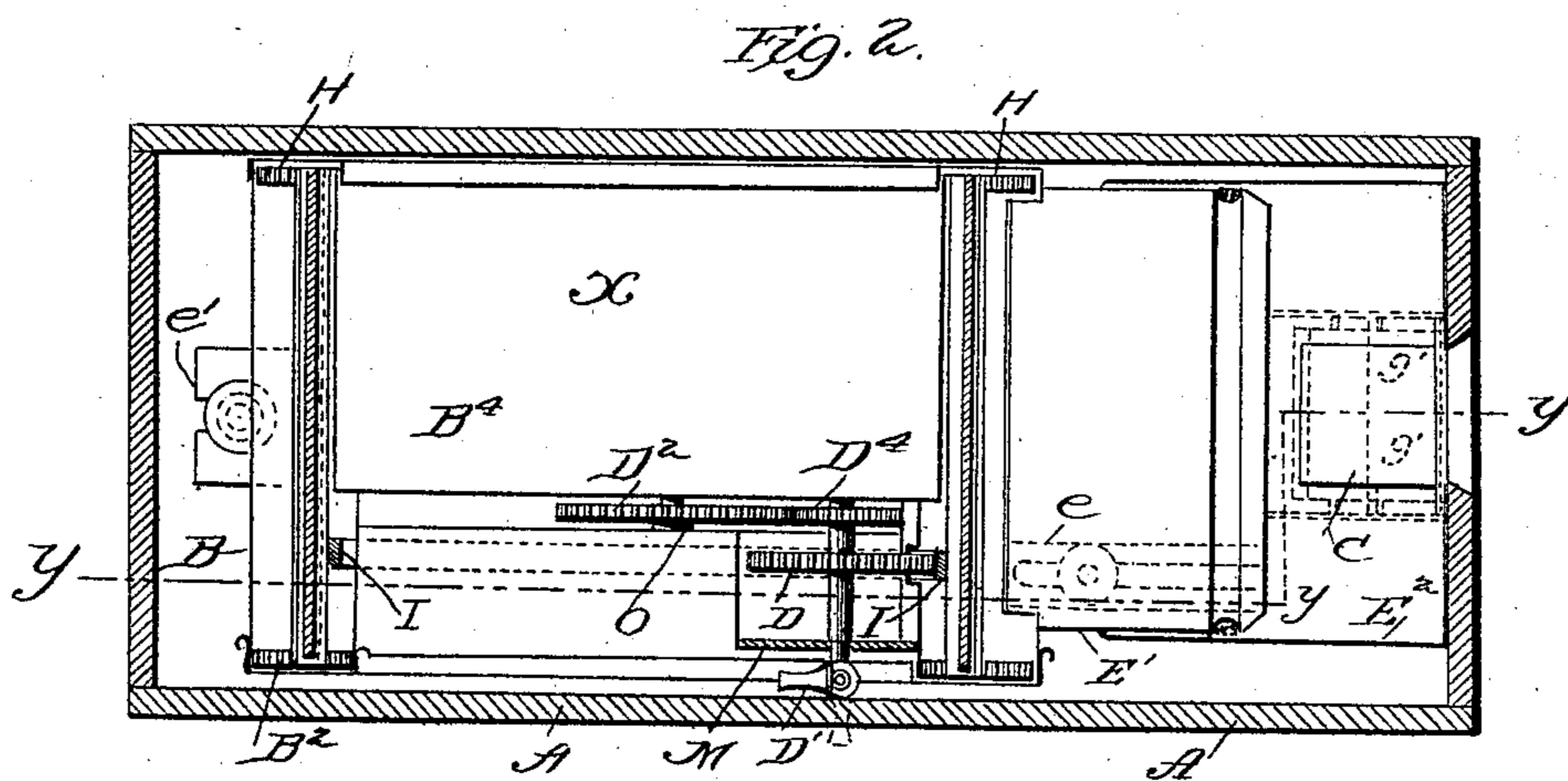
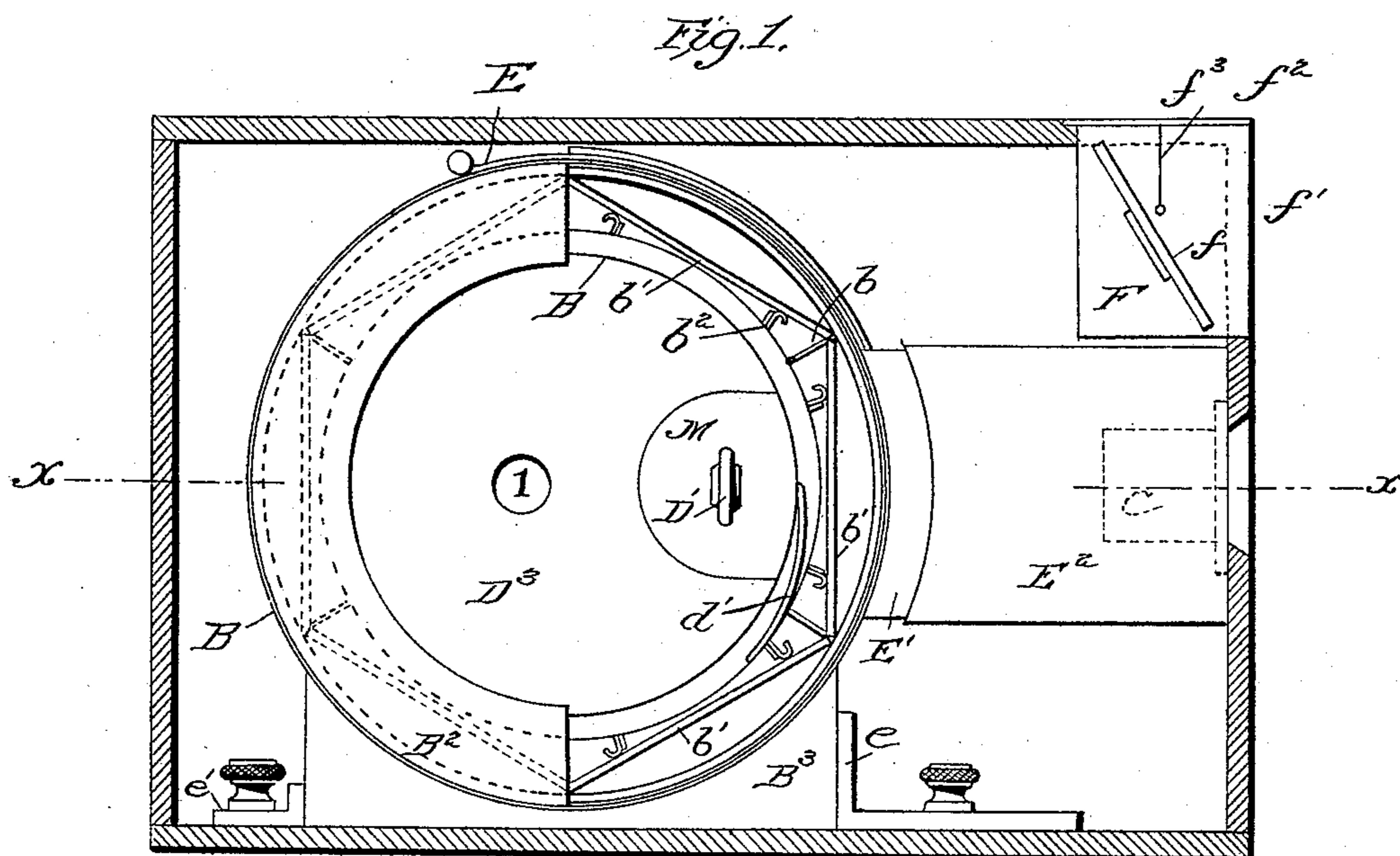
(No Model.)

2 Sheets—Sheet 1.

F. NOWLAN.
CAMERA.

No. 441,018.

Patented Nov. 18, 1890.



Attest
Miller & Malson
James McSparr

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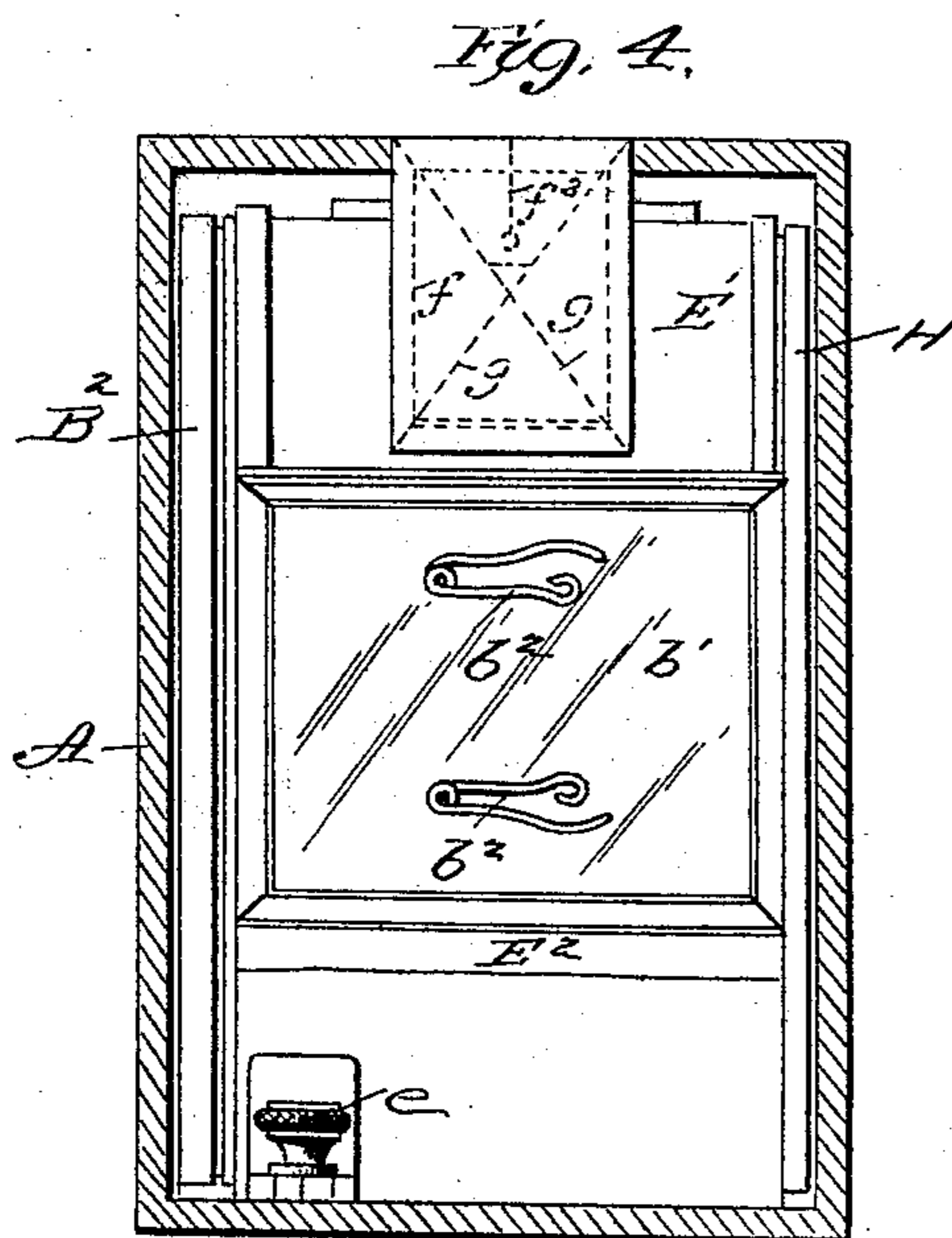
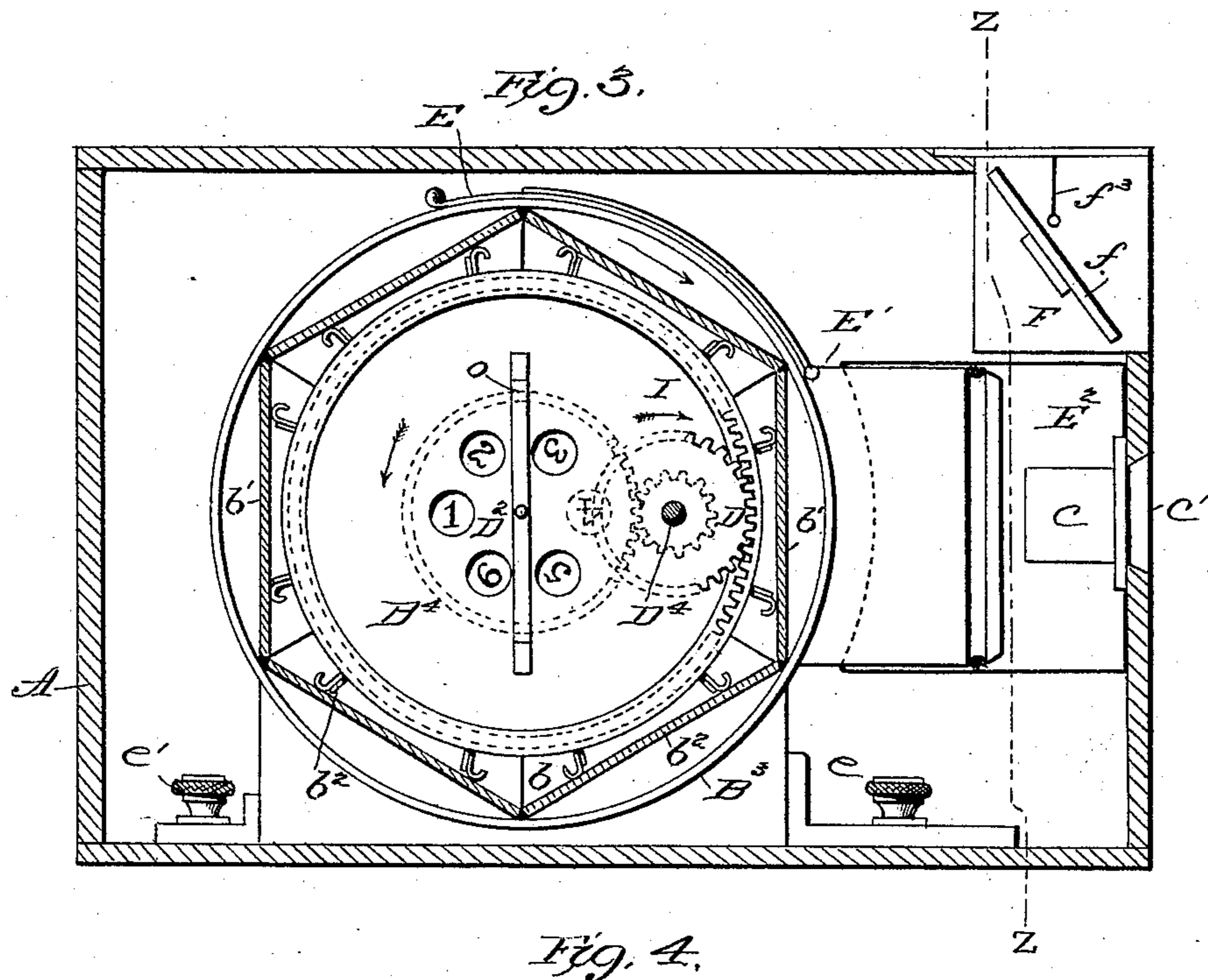
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2 Sheets—Sheet 2.

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CAMERA.

No. 441,018.

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UNITED STATES PATENT OFFICE.

FRANCIS NOWLAN, OF LONDON, ENGLAND.

CAMERA.

SPECIFICATION forming part of Letters Patent No. 441,018, dated November 18, 1890.

Application filed April 9, 1889. Serial No. 306,622. (No model.) Patented in France December 8, 1888, No. 194,671; in England January 22, 1889, No. 4,248; in Belgium April 20, 1889, No. 85,911, and in Switzerland April 23, 1889, No. 883.

To all whom it may concern:

Be it known that I, FRANCIS NOWLAN, a British subject, residing at London, England, have invented certain new and useful Improvements in Cameras for Obtaining Photographs of Moving and other Objects, (for which I have obtained patents in France under date of December 8, 1888, No. 194,671; in England under date of January 22, 1889, No. 4,248; in Belgium under date of April 20, 1889, No. 85,911, and in Switzerland under date of April 23, 1889, No. 883,) of which the following is a specification.

My invention relates to certain details in and connected with the construction of cameras for photographic purposes, particularly such as are now known by the terms of "secret," "detective," and "instantaneous" cameras.

The invention consists of certain improvements, as hereinafter more particularly pointed out and claimed, reference being made to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents an elevation partly in section. Fig. 2 represents a cross-section on the line xx of Fig. 1. Fig. 3 represents a cross-section on the line yy of Fig. 2, and Fig. 4 represents a cross-section on the line zz of Fig. 3.

To render the views more explicit, an outer box or case A is indicated in all the figures; but as this forms no part of the present invention the details thereof are omitted. Within a fixed drum or annular casing B is a secondary drum or movable frame B', divided by suitable partitions b , adapted to hold sensitive plates b' of any given size. Said plates may be held against the cross-heads of b in position so as to be presented at right angles to the axis of lens C by springs b^2 , or they may be held in grooves formed in the partition-walls. The drum B is permanently closed at one end by the ring or cap H, which connects together the inner and outer walls of same, and is covered over at the other end by a removable ring or cover B³. Drum B' is caused to move by means of gear-wheel or pinion D, which engages with a circular rack I inside of same, said pinion D being actuated

by the hand through its connected spindle and handle D'. Said shaft carries a second smaller pinion D⁴, which engages with the disk D², marked with numbers corresponding to the number of plates capable of being carried by drum B', the gear being so arranged that a half-turn of the handle D' will enable each plate successively to be brought in front of the lens, the corresponding number being indicated by the disk, say as shown in Fig. 1, where disk D² is only seen through the opening in a removable cover-plate D³, which serves to cover the pinions and gears. The spindle of the pinions D and D⁴ finds a bearing at one end in the plate M of a semi-circular casing forming part of the cover-plate D³, and at the other end in a plate B⁴, forming part of the casing B. The disk D² also finds a bearing in this plate B⁴, it being held in place by a bridge-piece O, as shown in Fig. 3. When the plate B⁴ is in the position as shown in Fig. 2, a receptacle X is formed, which will be found convenient for many purposes. A spring-catch d may be secured to drum B', the point of said catch passing into recesses in drum B, so that as the plate to be exposed reaches its proper position the drum B' will be automatically held sufficiently firm for practical use.

A sliding shutter E is arranged so that the lens-opening in drum B may be closed when desired. Said lens-opening is preferably the same size as the sensitive plate to be carried. The telescopic necks E E² carry the lens C, and when the external box A is employed the lens will be permanently held at the front of the case.

To find the proper focus of the lens employed, the drums and part E' of the neck are removed from the back of the case A, a ground glass being placed therein and shifted about until the desired focus is obtained, the position thus obtained being then indicated by an adjustable stop e , against which the focusing-glass is caused to abut. The focusing-glass is then removed, and the drums are replaced and run forward until the base portion B³ strikes against the stop e , which indicates that the plate-line is in the same plane as that to which the focusing-glass was ad-

justed. A second stop e' may be then placed at the back of the drum to hold it to its position.

To insure the accurate projection upon the plate of the object to be photographed, a "finder" or sight is attached to the camera or case. The said finder consists, essentially, of a small mirror f , either flat or convex, preferably the latter, as may be selected, of such a curvature as will give reflections corresponding in size with the image projected on the plate. The said mirror f is adjusted and fixed at an angle of about forty-five degrees in a box F , the front f' and top f^2 of which are of glass, provided with cross wires or lines $g g g' g'$, and these are reflected on the glass. The entire adjustment should be such that any object in front of camera visible in the mirror, in conjunction with the intersecting wires or lines, and viewed from the proper angle in relation to the reflecting-surface of the mirror, will be projected by the lens on the plate in the camera, the intersecting point of the wires $g g$ corresponding to the center of the sensitive plate. To enable the operator to view the mirror from the proper angle, the top wires $g' g'$ are placed in such relation to the mirror that when the operator's position is correct he can see the reflection or line of the cross wires or lines $g g$ central with the cross-wires $g' g'$. The operator need not have his eye close to the mirror, but may view it from the farthest point his eyesight will allow, no screening of the surrounding light being necessary, it being simply a reflection in a mirror having the correct angles regulated by a given combination of the top wires with the reflection of the cross-wires $g g$. This arrangement allows the operator to obtain photographs of objects on either side of him without turning his head or body in the direction of the object to be photographed and to follow such objects till he finds a pose or action to suit him.

In order that the camera may be held in proper position, a small flexible line f^3 may be suspended over the mirror, such line carrying a cross-arm with small balls or knobs at the ends. If the camera be tilted in any given direction, the fact will at once be apparent, owing to the knobs on the cross-arms not coinciding with the reflection of the cross-lines $g g$ on the mirror, as the adjustment is intended to be such that the knobs and reflection of lines $g g$ will coincide when the camera is level, as is most clearly indicated

in Fig. 4. For suspending the cross-arms and knobs, I judge worsted will be servicable, as while flexible it is also rather sluggish in its movements. Any suitable instantaneous shutter may be used for effecting the exposure, and as it may be fixed in various ways and forms no part of my invention no description or illustration of same is deemed necessary.

I am aware that it is not new to have a revolving sensitive plate upon different parts of which a series of pictures may be taken, and I lay no claim to any such construction of camera; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In combination, the outer casing A , the lens C , the revoluble drum within the casing- A , carrying sensitive plates, and the stationary drum B , having an opening for the admission of light, said drum closely confining said revoluble drum to exclude the light from the same on each side of the opening, and a shutter E , substantially as described.

2. In combination, the revoluble drum having a number of seats for receiving a number of plates, means for rotating the drum, and indicating means for showing the number of the plate being used, substantially as described.

3. In combination, the revoluble drum having a number of seats for receiving a number of plates, means for rotating said drum, and a disk D^2 , having numbers corresponding to the numbers of the seats, said disk being in connection with the drum-driving mechanism, substantially as described.

4. In combination, the plate-holding drum having movement toward and from the lens, and the holding means for retaining the drum in its adjusted position, substantially as described.

5. In combination, the camera-casing, the plate-holder therein and the lens, and the view-finder situated to one side of said lens and consisting of a mirror set at an angle to the lens and combined with cross-wires, substantially as described.

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

FRANCIS NOWLAN.

Witnesses:

HORATIO A. LEE,
ALLEN P. JONES.