

G. S. DEY.
FEEDING MECHANISM FOR CAMERAS.
APPLICATION FILED MAY 2, 1910.

1,057,412.

Patented Apr. 1, 1913.
2 SHEETS—SHEET 1.

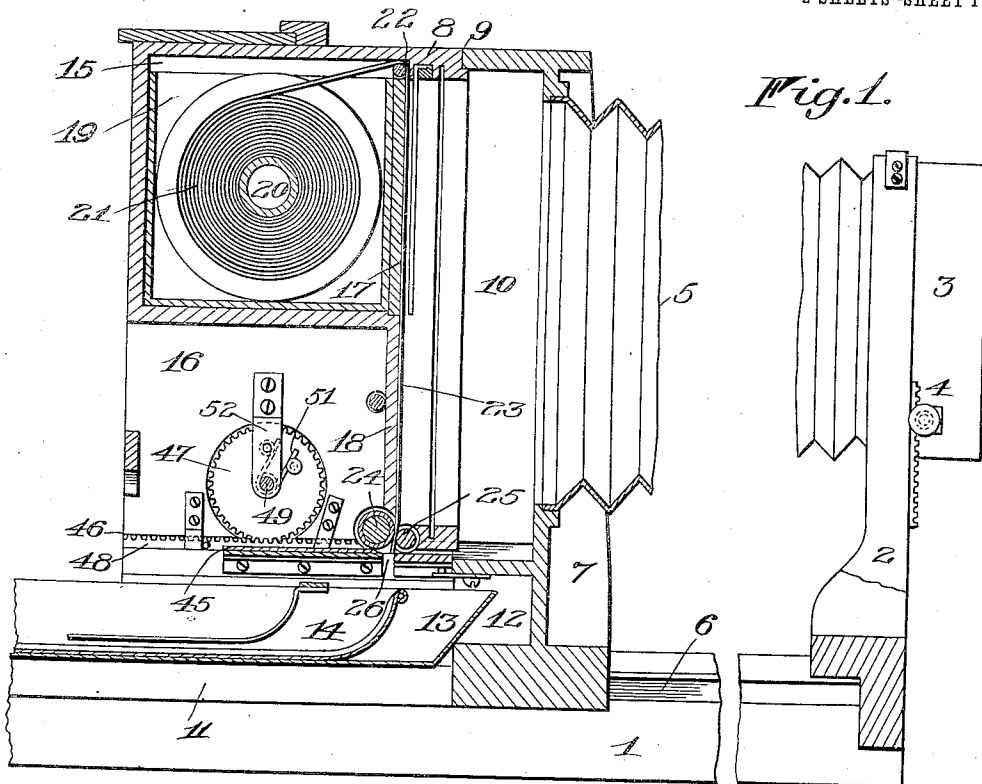


Fig. 1.

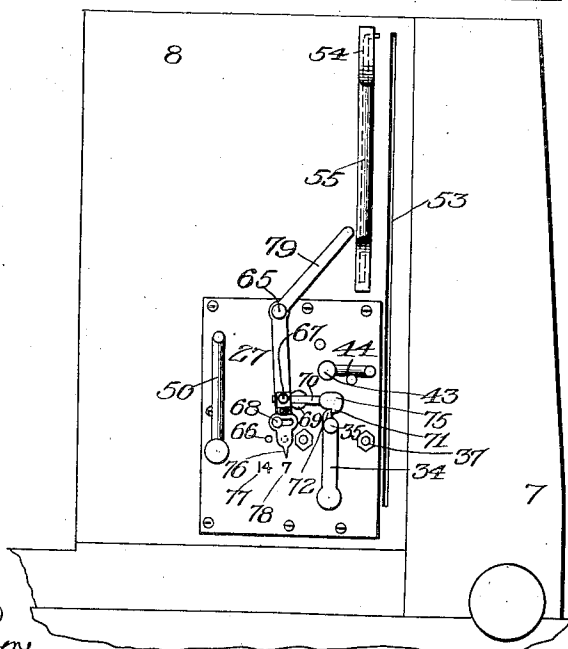


Fig. 2.

Witnesses

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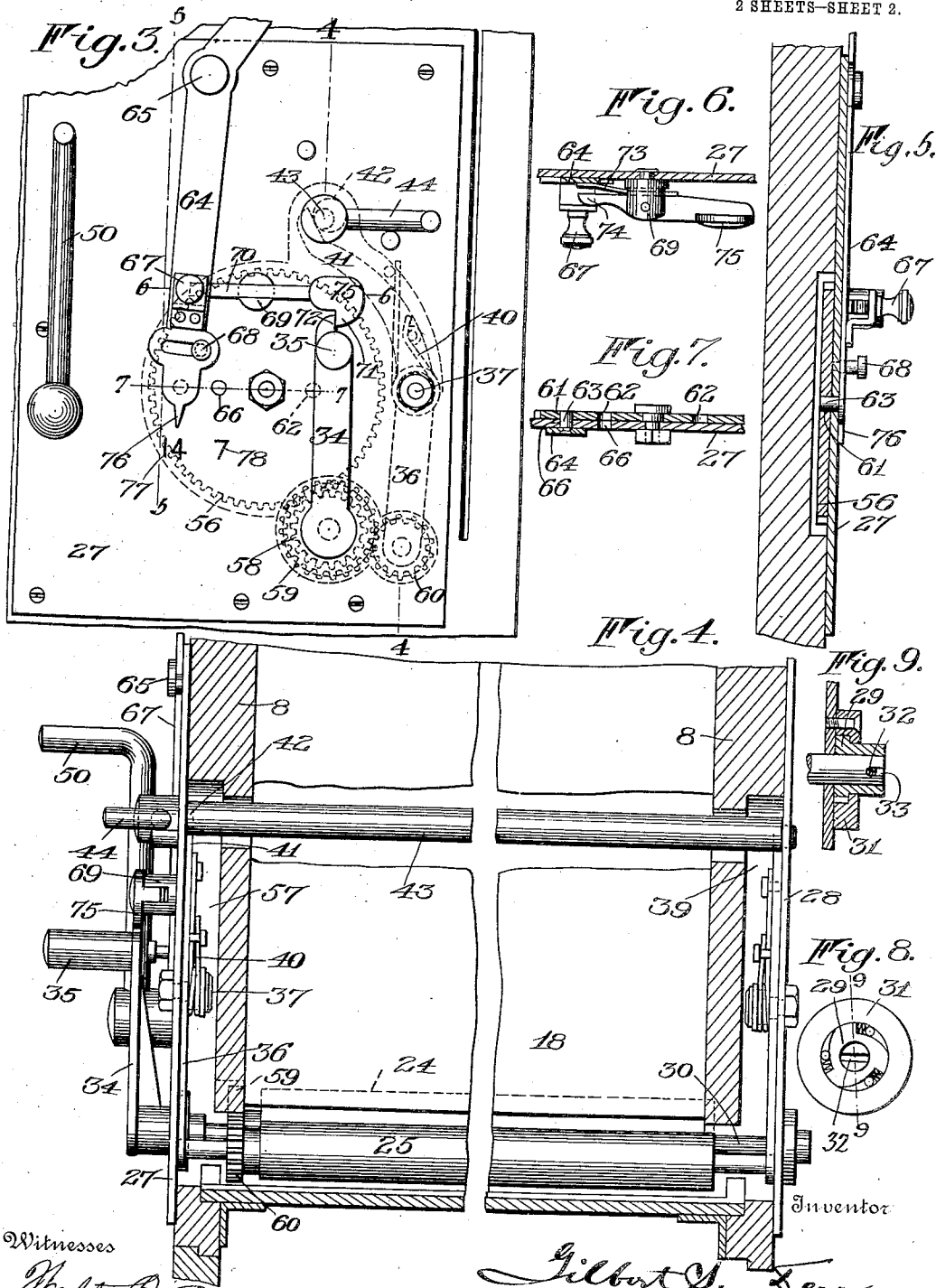
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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM FOR CAMERAS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GILBERT S. DEY, of Rochester, in the county of Monroe and State of New York, have invented certain
5 new and useful Improvements in Feeding Mechanism for 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,
10 forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to photography and it has for its object to provide a
15 photographic camera with simple and convenient means for feeding the sensitized material across the field of exposure and with mechanism for accurately controlling the areas fed and exposed so that, among other things, a minimum amount of waste is made
20 necessary, particularly in taking pictures of different sizes.

The improvements are further directed toward preventing mistakes on the part of the operator in adjusting the parts for these
25 purposes and toward providing means for conveniently making the adjustments and controlling the inner arrangements from the exterior of the apparatus.

To these and other ends the invention
30 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.

35 In the drawings: Figure 1 is a central vertical section through a camera constructed in accordance with and illustrating one embodiment of my invention; Fig. 2 is a side elevation of the body portion thereof; Fig.
40 3 is an enlarged elevation of the feed operating and controlling parts, as mounted on the exterior of the casing; Fig. 4 is a section taken substantially on the line 4—4 of Fig. 3; Fig. 5 is a section taken substantially
45 on the line 5—5 of Fig. 3; Fig. 6 is a detail of the feed arresting device taken in section through the mounting plate substantially on the line 6—6 of Fig. 3; Fig. 7 is a detail section taken substantially on the line 7—7
50 of Fig. 3; Fig. 8 is a detail elevation of the clutch in the feed roller, and Fig. 9 is a cen-

tral section through the same on the line 9—9 of Fig. 8.

Similar reference numerals throughout the several figures indicate the same parts. 55

The camera illustrated in the present embodiment of the invention is of a type wherein the sensitized material is fed in a continuous strip from a roll across the focal plane and the previously exposed portion simultaneously fed into a receptacle for developing
60 or storage purposes and severed simultaneously with the disposal of a fresh portion of the strip in the focal plane. Its main parts comprise a bed 1 to which the front
65 2 is rigidly attached and provided with a suitable lens mount 3 adjustable vertically thereon by a rack bar and pinion 4. The front is connected to the main casing of the camera by the usual bellows 5 and the casing is movable on the bed in suitable guides
70 6 for focusing in the well known manner.

The casing is constituted of a body portion 7 in rear of which is fitted a movable
75 back 8 that coöperates with the body at 9 to form an exposure chamber 10. The lower portion of the body is extended rearwardly, as at 11 to form a storage chamber 12 having a lining 13 and preferably arranged to accommodate a pan or other receptacle 14 into
80 which are received the negatives or pictures immediately after the exposure is made for immediate development or for the purpose of storing them for future development.

The back 8 is divided into upper and
85 lower chambers 15 and 16, respectively, the former constituting the roll holding or the storage chamber for the sensitized material previous to exposure and the front walls 17 and 18, respectively, of both being preferably arranged in the same plane to form a
90 backing or support for that portion of the material which is disposed in the focal plane of the camera during exposure. The roll holder 19 contains a reel or spool 20 upon
95 which a strip of sensitized material 21 is coiled and withdrawn as needed from the chamber 15 through an exit opening 22 at the top of the wall 17 from which point it is led downwardly across the walls 17 and 18,
100 as indicated at 23, and entered between rollers 24 and 25 that feed it through an

opening or passage 26 at the bottom of the back into the storage chamber 12 or the receptacle 14 therein.

In the practice of my invention the line of contact between these rollers 24 and 25 is substantially in the plane of the backing 17, 18, the forward roller 25 being in front of the wall 18 and the roller 24 in rear of the wall at the lower front corner of the chamber 16. The last mentioned roller constitutes the feed roller and is preferably journaled in plates 27 and 28 secured on opposite sides of the back portion 8 of the main casing of the camera being prevented from turning in a reverse direction preferably by means of a ball clutch, such as that shown in Fig. 8, the inner member 29 thereof being carried by the shaft 30 of the roller and the outer member 31 being mounted on the plate 28. The shaft 30 is locked with the inner member 29 by means of a pin 32 on the said member that enters a slot 33 in the end of the shaft so that the latter can be removed from its bearings when necessary without disturbing the clutch as a whole. The opposite exteriorly projecting end of the roller shaft 30 is fitted with a suitable operating crank 34 having a handle portion 35.

The roller 25 is in the nature of a pressure roller and is preferably mounted on an arm 36 pivoted to the plate 28 at 37 to operate within a chamber 39 formed by a recess in the wall of the casing or back 8 beneath the plate, which arm holds the roller in contact with or against the feed roller 24 under the influence of a suitable spring 40. The arm is extended beyond the pivot as at 41, whereat it is engaged by a cam 42 on a shaft 43 spanning the chamber 16 and journaled in the plates 27 and 28, partial rotation being given thereto by an exteriorly arranged handle or crank 44 in such manner that the cam 42 oscillates the arm or lever 36 and separates the rollers 24 and 25 when it is desired to insert the end of the strip of sensitized material 23 between them or release it from their engagement.

After an exposed length of sensitized material has issued from between the rollers through the passage 26 it is preferably severed by a knife 45 reciprocating in guides 46 in the walls of the chamber 16 beneath the rollers, the knife being, in the present instance, operated by a pinion 47 meshing with a rack 48 thereon, said pinion being carried on a shaft 49 spanning the chamber 16 and provided with an exteriorly arranged operating crank 50. A spring 51 acting between the pinion 47 and a bearing support 52 of the shaft 49 operates to return the knife after the severing operation when the crank 50 is released and to return the latter also.

An opening 53 is provided in a side wall of the back portion 8 through which a suit-

able slide or shutter (not shown) is introduced when it is desired to separate the back from the body the function of the shutter being to seal the back so that its sensitized contents cannot be destroyed. There is also provided, preferably in the same wall, an opening 54 through which a shutter member 55 may be introduced. The normal area of the field of exposure of the camera, which is the maximum area, is defined by the entire expanse of the backing support 17, 18 forming the rear wall of the exposure chamber 10, but it is sometimes desired to make a picture covering less than this area: In such a case it is the function of the shutter 55 to screen or mask off a portion of the sensitized length 23 that has been drawn into the focal plane against the backing 17, 18 and reserve that portion for subsequent exposure.

In the camera of the present embodiment the maximum length of the strip that can be exposed is fourteen inches and the shutter 55 is designed to mask the upper half thereof and leave an area of seven inches in position for exposure. To properly record the photograph thereon it is, of course, necessary to recenter the lens with relation to this area and it is for this reason that the lens mount 3 is made vertically adjustable upon the front 2.

When a picture of the maximum size is taken, the feed roller 24 must, of course, reel off the total fourteen inches into the pan 14 before the knife is operated, a fresh fourteen inch area of the strip being simultaneously drawn into the field of exposure from the chamber 15, but when a half-size photograph is made it must reel off only seven inches so that the knife may sever only that portion lying between the rollers and the lower edge of the shutter 55 and the portion lying behind the latter may be drawn into the restricted field of exposure.

In order that the operator may conveniently accomplish this measurement and judge of the interior adjustments from the exterior, I provide suitable mechanism for controlling the feed roller 24, which mechanism is, in the present instance, mounted on the plate 27 and comprises a toothed wheel or disk 56 arranged within a chamber 57 formed by recessing a wall of the casing beneath the plate, which disk is geared with a pinion 58 on the roller 24 or its shaft 30 to turn therewith, the latter also carrying a gear 59 meshing with a gear 60 on the pressure roller 25 to cause the positive operation of the latter. This disk 56 is provided with an aperture 61 and with two other apertures 62 both arranged nearer the center of rotation and to the same degree than the aperture 61. These apertures form stops with which is adapted to engage an abutting pin 63 on a laterally movable spring arm 64 pivoted at 65 to permit the abutment to be

5 moved selectively into the path of the stop 61 or that of the stops 62, with any of which it can snap into engagement through openings 66 in the plate 27. The lever 64 is operated by means of a handle portion 67 and its outward movement limited by the headed pin 68. Also pivoted on the plate 27 at 69 to oscillate laterally is a lever 70, one end of which is provided with an abutment 71 movable into and out of the path of a portion 72 on the feed operating crank 34, while the other end 74 has a sliding engagement with the lever 64, being confined between the handle portion 67 thereof and the body of the lever, lost motion being preferably prevented by the interposition of a leaf spring 73.

10 The gearing between the rotary disk 56 and the feed roller 24 is such in the present instance that the former makes one complete revolution while the latter is reeling off the full fourteen inch length of the sensitized strip while it correspondingly makes but a half revolution when a half length of seven inches is fed by the roller. The series of stops 61 and 62 are therefore all on the same diameter of the disk and when a full length picture is made the lever 64 is adjusted on its pivot 65 so that the abutment 63 lies in the path of the stop 61 and in engagement therewith. To reel off the exposed area, the abutment is disengaged by a lateral movement of the lever 64 either through manipulation of the handle portion 67 or inward pressure upon a thumb piece 75 on the lever 70 and the crank 34 of the feed roller turned. The thumb piece can then be released and the abutment 63 will ride on the face of the disk throughout a full rotation of the latter, the abutting portion 71 of the lever 70 being held out of the path of the feed roller crank 34, but when such rotation is completed the abutment 63 again snaps into engagement with the stop 61 and prevents further feeding. The abutment 71 on the lever 70 is simultaneously operated back into the path of the crank 34 and engages the latter, at 72, in the vicinity of the operating handle 35 to act as an arresting device, for the crank individually so as to prevent undue strain from being communicated to the gearing should the operator continue the revolving pressure. The knife 45 is then operated, as before described, to sever the exposed area and a repetition of the operation may take place.

55 A pointer 76 on the arm 64 coöperates with a suitable character 77 on the plate 28 when the abutment 63 is set for the full feed and to a character 78 when set for a half feed. In the latter position it is in the path of the stops 62 with which it engages alternately allowing a half revolution of the disk 56 each time, the action of the parts being otherwise the same as before.

65 In the event that the operator might

otherwise neglect to move the arm 64 over to the character 78 to effect a limited feed when he places the shutter 55 into position for a small sized picture, I provide a locking device 79 that blocks the opening 54 against the passage of the shutter automatically when the controlling devices are adjusted for the full feed, preventing, in such instance, variation between the area of the sensitized material fed and the area of the field of exposure that would result in the severing of the area of the strip behind the shutter without its being exposed. This locking member in the present instance is provided in the form of an extension on the arm 64 which moves across the opening with the limiting adjustment of the arm. Conversely, when the shutter 55 is in place it prevents the movement of the locking extension 79 across the opening and renders it impossible to move the arm 64 back for a maximum feed until it is withdrawn thus preventing the feed of fourteen inches when only seven inches can be exposed.

I claim as my invention:

1. The combination with a camera, provided with means for feeding sensitized material across the field of exposure of a shutter adapted to be set to control the size of the field of exposure, a feed controlling mechanism adapted to be set for a predetermined feed of material, and a device operating on one of said controlling elements according to the adjustment of the other to prevent a resetting of one independently of the other and a resulting variation between the area of the material fed and the area of the field of exposure.

2. The combination with a camera provided with means for feeding sensitized material across the field of exposure, of a movable shutter for controlling the size of the field, an adjustable controlling mechanism arranged to limit to different degrees corresponding with the size of the field the amount of material fed at one operation, and a locking device for the shutter operated by the adjustment of such mechanism to prevent a change in the size of the field of exposure without a corresponding readjustment of the field controlling mechanism.

3. The combination with a camera provided with means for feeding sensitized material across the field of exposure, of a movable shutter for controlling the size of the field, an adjustable controlling mechanism arranged to limit to different degrees corresponding with the size of the field the amount of material fed at one operation, and a locking device held in position by the shutter to lock the feed controlling mechanism against readjustment without a corresponding change in the size of the field of exposure.

4. The combination with a camera having an opening in the casing thereof and a shutter adapted to be passed through the opening to reduce the size of the field of exposure of the camera, of means for feeding sensitized material across the field of exposure, an adjustable controlling mechanism arranged to limit to different degrees corresponding with the size of the field the amount of material fed at one operation, said mechanism embodying a movable arm and a second arm movable with the first into and out of a position in which it obstructs the opening in the casing against the passage of the shutter to prevent a change in the size of the field of exposure without a corresponding adjustment of the feed controlling mechanism.

5. The combination with a camera having an opening in the casing thereof and a shutter adapted to be passed through the opening to reduce the size of the field of exposure of the camera, of means for feeding sensitized material across the field of exposure, an adjustable controlling mechanism arranged to limit to different degrees corresponding with the size of the field the amount of material fed at one operation, said mechanism embodying a movable arm, and a second arm movable within the first and held in position by engagement with the shutter when the latter is in operative position to lock the arm of the feed controlling mechanism against readjustment without correspondingly changing the field of exposure through manipulation of the shutter.

6. The combination with a camera, of a roller for feeding sensitized material across the field of exposure thereof and controlling mechanism for the roller for regulating the amount of feed comprising a member rotating with the roller and provided with a plurality of stops arranged at different distances from the center of rotation and a spring actuated arm provided with an abutment movable into the paths of the several stops, selectively.

7. The combination with a camera, having an opening in the casing thereof and a shutter adapted to be passed through the opening to reduce the size of the field of exposure of the camera, of a roller for feeding sensitized material across the field of exposure, a member rotating with the roller and provided with a plurality of stops arranged at different distances from the center of rotation, a spring actuated arm provided with an abutment movable into the path of the several stops, selectively, to limit

to different degrees corresponding with the size of the field the amount of material fed at one operation and an extension on the arm movable with the adjustments thereof into and out of a position in which it obstructs the opening in the casing against the passage of the shutter to prevent a change in the size of the field of exposure without a corresponding adjustment of the means controlling the feed roller.

8. The combination with a camera, of a roller for feeding sensitized material across the field of exposure thereof and controlling mechanism for the roller for regulating the amount of the feed comprising a member rotating with the roller and provided with a plurality of stops arranged at different distances from the center of rotation, a pivoted arm provided with an abutment movable laterally into the paths of the several stops selectively, an arm on the feed roller, and an arresting device having a sliding connection with the pivoted arm and operated into and out of the path of the roller arm with the lateral movements of the pivoted arm abutment into and out of engagement with the stops on the rotary member.

9. The combination with a camera, of a roller for feeding sensitized material across the field of exposure thereof and controlling mechanism for the roller for regulating the amount of the feed comprising a member rotating with the roller and provided with a stop, an arm provided with an abutment in the path of the stop and movable into and out of engagement with the latter, an arm on the feed roller and an arresting device actuated into and out of the path of the roller arm with the movement of the abutment into and out of engagement with the stop on the rotary member.

10. The combination with a camera, of a roller for feeding sensitized material across the field of exposure thereof and controlling mechanism for the roller for regulating the amount of the feed comprising a member rotating with the roller and provided with a stop, an arm having an abutment in the path of the stop and movable into and out of engagement with the latter, a crank on the feed roller for turning the same and an arresting device actuated into and out of the path of the crank with the movement of the arm abutment into and out of engagement with the stop on the rotary member.

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Witnesses:

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