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BY A. P. C.

C. KALLUSCH

PHOTOGRAPHIC ROLL FILM CAMERAS

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2 Sheets-Sheet 1

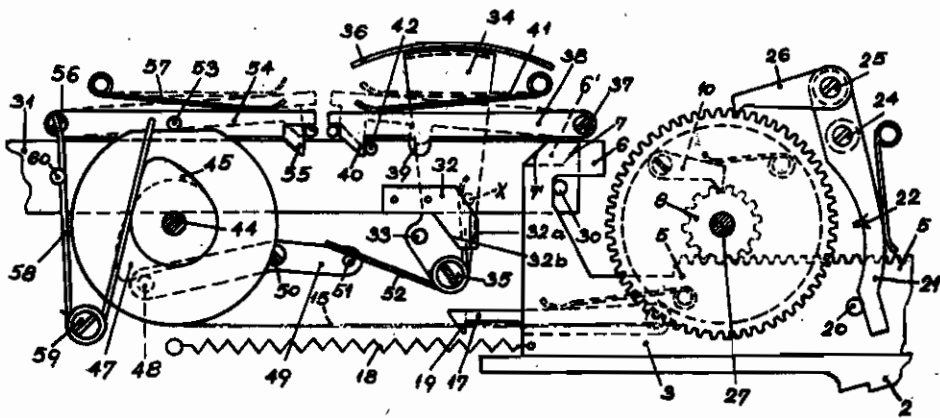
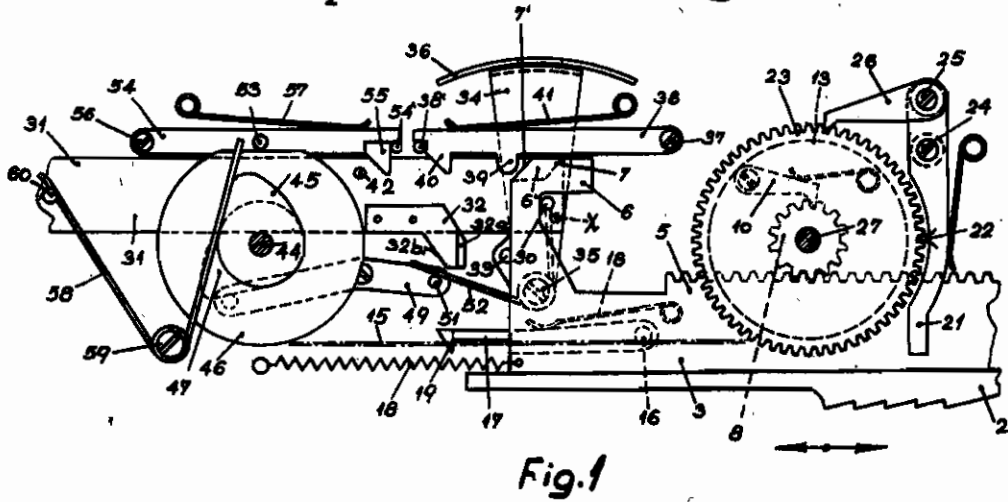
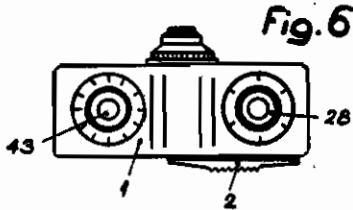


Fig. 2

INVENTOR
Camillo Kallusch

BY

E. F. Oudart

ATTORNEY

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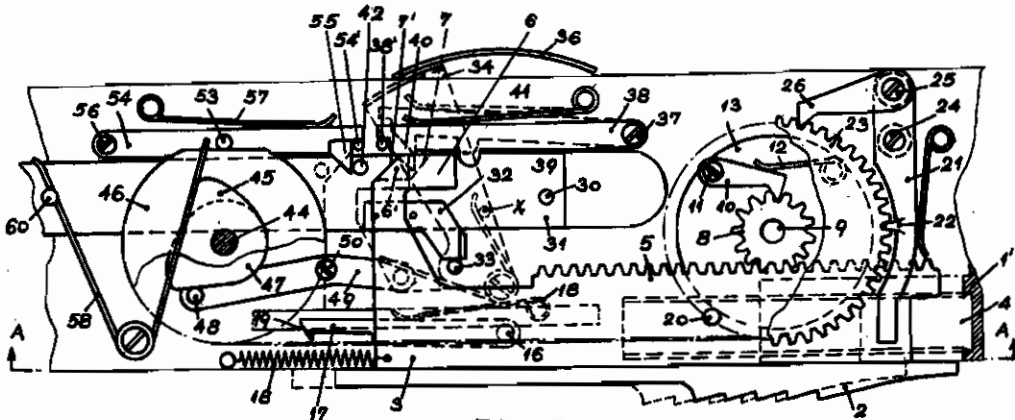


Fig. 3

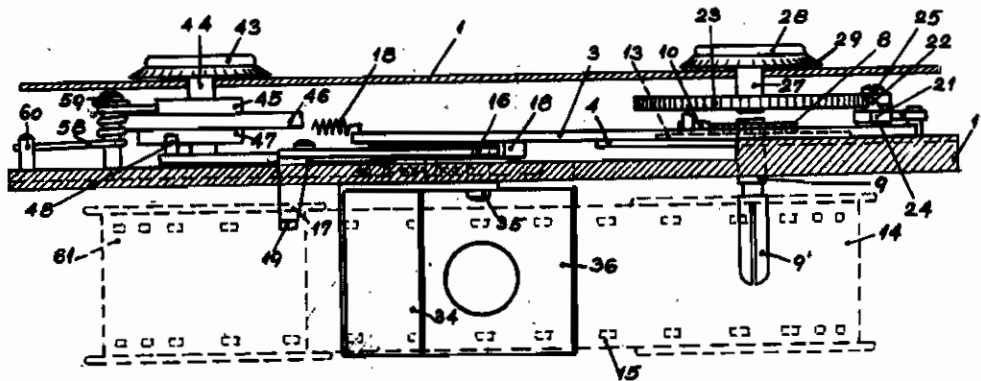


Fig. 4

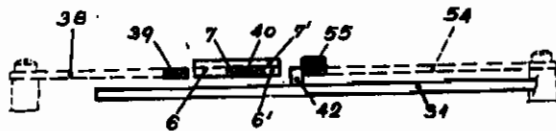


Fig. 5

INVENTOR
Camillo Kallusch

BY *C. F. Schroth*

ATTORNEY

ALIEN PROPERTY CUSTODIAN

PHOTOGRAPHIC ROLL FILM CAMERAS

Camillo Kallusch, Prerau, Moravia; vested in the
Alien Property Custodian

Application filed October 27, 1941

The present invention relates to a photographic roll film camera with a shutter for any time of exposure and a winding up spool for film, both to be actioned by hand. The aim of this invention is to produce a photographic camera of small dimensions, the actioning and steering device thereof being of a simple construction and may easily be contained in a very small space without impeding the handling and the access to these devices which are so strongly constructed that they cannot be easily damaged.

The qualities required by such a miniature photographic camera are met by an arrangement in which, according to the present invention, the camera is equipped with a single movable actioning device, which when moved in one direction puts the mechanism for advancing respectively for winding up the film, the counter of pictures and the shutter mechanism into action, whilst when moving in the contrary direction it steers the movement of releasing the mechanism of the shutter at which movement the releasing of the actioning device during which the advance respectively the winding up of the film and the actioning of the mechanism of the shutter when it is set takes place is necessarily done during the actioning of the device by hand, whereas the backward movement of the actioning device and the movement of releasing the mechanism of the shutter takes place automatically by means of springs which have been put in tension during the first movement. According to a further device of this invention the mechanism of the shutter consists in a movable steering slider pressed by a spring and locking levers actioned by this steering slider. In this manner it will be possible to form all devices and the steering connection between the actioning device and the different mechanisms very simply, without being obliged to employ the disadvantageous forms of levers and transmissions in use up to now. Another advantage is that with respect to the sliding movements executed by the devices, these devices may be constructed flat so as to use advantageously the space of the camera. Finally there is a considerable advantage in the arrangement according to the present invention because its handling is a very simple one for to execute all functions only one handle is used.

An embodiment of a photographic roll film camera is illustrated by way of example in the accompanying drawings.

Fig. 1 is the top view of the principal mechanism taken out of the camera in a position in which the system of levers is set on "time" and the actioning device showing the movement of adjusting the mechanism of the shutter.

Fig. 2 shows the same view of the same mechanism as in Fig. 1 but with the actioning device

in the final position after the film has been moved by one picture field and the actioning device in tension.

Fig. 3 shows a partial longitudinal section of the same mechanism as the preceding figures in top view but with the actioning device released.

Fig. 4 is a transverse section along the line A—A in Fig. 3.

Fig. 5 shows diagrammatically and in part section the steering part of the steering slider with the stop pawls of the locking levers.

Fig. 6 shows diagrammatically a top view of the whole camera and

Fig. 7 is an end view of the same.

1 is the casing of the camera (Figs. 6 and 7), 3 is the actioning device consisting of a movable slider placed by means of the guide 4 (Figs. 3 and 4) on the transverse wall 1'. To the slider 3 is fixed a handle 2 which is provided with a roughened surface or notches. The handle 2 is arranged movably on the outer wall of the casing 2. The actioning slider 3 has a rack 5 and a nose 6 provided with surfaces working together with the stop pawls of the locking levers and the steering movements of the steering slider 3. These steering surfaces 7 and 7' are formed partially by slanting the edge of the nose 6, partially by the slanting wall of the cutting 6' in the nose 6. In this manner are the steering surfaces 7, 7' arranged in unequal heights.

The rack 5 of the actioning slider 3 engages into a toothed wheel 6 freely rotatory arranged on the shaft 9 supported in a bore of the transverse wall 1'. The position of the toothed wheel 6 is fixed by means of a stop pawl 10 that may be swivelling about the pin 11, which is kept engaged by a spring 12. The pin of the stop pawl 10 is arranged on a disk 13, which is fixed to the shaft 9, the end 9' of which is split and forming part of a friction coupling for the winding spool 14 for the film 15 to be put on.

To the actioning slider 3 is pivoted by means of the pin 16 a clip lever 17, which is pressed by means of a spring 18 into a position in which the clip tooth 19 of the lever engages in the opening of the perforated film 15 which is wound off the film cartridge 21.

To the actioning slider 3 is moreover arranged a pin 20, which is moving the actioning device 2 and at the same time the slider 3 in one direction, touches the one end of a double closing lever 21 with a tooth 22 engaging into the teeth of a wheel 23. This toothed wheel 23 is keyed on a shaft 27 which is pivoted in the wall of the casing of the camera 1, (Fig. 4). This shaft 27 is provided with an actioning button 28 bearing a scale 29 and thus forms counter of exposure. The locking lever 21 is swivelling fixed about a pin in the wall of the casing of the camera. To the second arm of the locking lever 21 is fixed by

means of a pin 25 a stop pawl 26 which is pressed by a spring (not shown) and engages in the toothed wheel 23. The button 28 of the counter is normally, when the camera is not used, secured against every revolution by the tooth 22, which engages into the toothed wheel 23.

The mechanism of the shutter consists of a steering slider 31, arranged so that it may be shifted, the pin 30 of which is coacting with the nose 6 of the actioning slider 3. To the steering slider 31 is fixed a plate 32, the free end of which is bent over the slider 31. The spring 32 is cut into a slanting edge 32b, which during the movement of the slider 31 in one direction is coacting with the pin 33, which is fixed to a locking part 34 bent into an angular shape, which may be swivelling around a pin 35 and is shifted along a screen plate 36.

To the wall of the casing of the camera are pivoted two locking levers 38 and 54 of which the lever 38 is for snapshots and may be swivelling around the pin 37. This lever pressed by a spring 41 bears an extension 39 and a pawl 40 coacting with the steering surface 7 and the nose 6 of the actioning slider 3. The second locking lever 54 is used for time-exposures. This lever is pressed by a plate spring 57 and may be swivelling about a pin 56. The stop pawl 55 of the locking lever 58 is higher than the stop pawl 40 and is coacting with the steering surface 7' of the nose 6 respectively with the pin 42 in the locking position. 38' and 54' are stop pins limiting the swivelling of the levers 38 and 54.

The steering of the exposure is made by a system of notches 45, 46, 47 which are keyed on a common shaft 44 and are actuated by a button 43. The notch 47 is in touch with a pin 48 which is arranged on a double lever 49 moving around a pin 50 on the second arm of which is fixed a pin 51 on which is pressing the one end of a spring 52 pressing on the shutter 34. The other end of this spring 52 presses against a pin x which is fixed to the shutter 34. With the notch is coacting a pin 53 which is arranged on the locking lever 54 for time-exposure. The steering slider 31 is pressed by a spring 58 fixed to a pin 59 on the casing of the camera, in which the one end of the spring 58 is pressed against a pin 60, which is arranged on the slider 31, whilst the other end presses on the notch 45 by the swivelling of which the tension of the spring 58 is steered.

The process of the mechanism in adjusting and releasing the shutter and in winding up the film is the following one—

By displacing the handle 2 to the right (Fig. 1) is at the same time also displaced the acting lever 3 and the rack 5, by which the toothed wheel 8 is turned and by means of the stop pawl 10 takes along the disk 13, which on the shaft 9 is set in revolution in the same direction. This occasions a revolution of the winding up spool 14 and the winding off film cartridge 61 and the film is advanced by the length of one picture field. The exact advancing of the film is secured by the clip lever 17, the stop pawl 9 of which enters the perforation of the film 15. Towards the end of the movement of advancing of the actioning slider 3 (Fig. 2) touches its pin 20 the end of the lever 21 and swivels it in such a manner that the tooth 22 is disengaged from the

wheel 23 and this toothed wheel is thus set free. By means of the stop pawl 26 makes at the same time the wheel 23 a revolution corresponding to the angle of one picture so that the scale 29 of the button 28, which forms the counter of exposures shows one number more.

When displaced into the position shown in Fig. 2 the steering slider 31 is also displaced into the right final position and both locking levers 54 and 38 swivel under the action of the springs 57 and 41 as their extension becomes continuously disengaged from the nose 6 of the steering slider 3, respectively its steering surfaces 7, 7'.

During this movement of the steering slider 31 passes the pin 33 at the shutter 34 on account of the bent up onset part 32a, relatively under the bent surface of the spring 32, so that after the accomplished displacement of the slider 31 the pin 33 is on that side of the spring 32 on which is the slanting edge 32b.

At the backward releasing movement of the actioning slider 3, occasioned by the spring 18 in tension, the edge 32b of the spring 32 hurts the pin 33 of the shutter 34 and it swivels. At the same time the surface 7 hurts the extension 39, swivels the locking lever 38 so that the stop pawl 40 is put out of the trajectory of the pin 42 which hurts the stop pawl of the locking lever 54.

As the notch system 45, 46, 47 may also be set on "time" the shutter 34 remains open till the pin 42 touches the stop pawl 55. Should the shutter be closed, then passing the actioning slider 3 (by pressure of hand) constrainedly by means of the handle into the position marked by a chain line (Fig. 3), in which the slanting steering surface 7 of the nose 6 hurts the stop pawl 55 of the locking lever 54, swivels it so that the steering lever 31 can return to the position indicated in Fig. 1 and the shutter 34 actuated by the spring 52 in tension returns to the closing position. The time of exposure may also be regulated by the speed of the movement of releasing of the steering slider 31.

If the steering button 43 is set on snapshots, at which the notch 46 presses off the lever 54 in such a manner that its stop pawl 55 passes from the backward trajectory of the pin 42 of the steering slider 31 (marked by a chain line in Fig. 3) than is the movement of tension of the steering slider 31 the same as before, i. e. the pin 33 of the shutter 34 passes under the plate spring 32 and the stop pawl 40 of the locking lever 38 catches the pin 42, by which both parts 31 and 38 are locked. At the backward releasing movement of the actioning slider 3 hurts the steering surface 7 of the nose 6 the extension 39 of the locking lever 38, the steering slider 31 is disengaged and by the action of the springs 58 and 52 in tension it is pushed back and swivels at the same time the shutter 34, for the pin 33 follows the slanting edge 32b of the spring 32, so that the shutter can easily execute the exposure.

The roll-film camera shown and described is merely an example and its details may be differently altered without passing the limit of the invention. In the object of this invention may be for instance used a blade shutter a focal plane shutter and so on.

CAMILLO KALLUSCH.