

PATENT SPECIFICATION

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(54) AN IMPROVED CLAW-FEED MECHANISM

(71) We, EASTMAN KODAK COMPANY, a Company organized under the Laws of the State of New Jersey, United States of America of 343 State Street, Rochester, New York 14650, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a claw-feed mechanism for use in a self-processing camera for transporting individual sheet elements out of a cartridge.

Self-processing cameras are known which are adapted for receiving a cartridge having an exposure aperture and a stack of photographic sheet elements therein located relative to the exposure aperture. These sheet elements are fed through an opening provided at an upper end part of the cartridge, and conveyed to a pair of rollers. The transport of the sheet elements occurs via a reciprocable claw mechanism. The cartridge also has a long, narrow slot arranged beside the exposure aperture. The slot is so dimensioned that the claw can move therein. The claw engages with one of a plurality of perforation holes of an uppermost sheet element and pulls the sheet element over a certain distance in the direction of the transport rollers. This process may be repeated until the sheet element is seized by transport rollers.

It is the object of the present invention to provide an improved claw mechanism which functions in a reliable manner and whereby a sheet element can be conveyed out of a cartridge by a single stroke movement.

According to the present invention, there is provided a claw-feed mechanism for use in a self-processing camera for transporting individual sheet elements out of a cartridge, the claw mechanism having a cam disc controlling the claw stroke and a control lever, lying transverse to the direction of stroke of the claw, chordally of the cam disc, and

sensing the cam values, arranged between the cam disc and the claw to transmit the cam values to the claw.

The invention will be described further, by way of example, with reference to the accompanying drawing, in which the single figure is a schematic representation of a claw mechanism according to the present invention.

In the drawing, a cartridge 9, of which only the upper and the lower part is shown, comprises several photographic sheet elements 10 which extend in the longitudinal direction and are stacked behind a rigid cartridge cover foil (not illustrated) covering the exposure aperture 9c of the cartridge in a light-proof manner. An exit slot 9a, for feeding out the cartridge cover foil and the sheet elements 10, is provided in an end wall, while an engagement slit 9b enabling the claw to feed out the cartridge cover foil and the sheet elements, extends from the edge of an opposite end wall of the cartridge.

A claw mechanism is provided in the camera and extends along the longer side of the space wherein the cartridge is received. The mechanism comprises a cam disc 1 with an eccentrically-arranged groove cam 1a, a transverse control lever 3 and a claw arm 6.

The length of the control lever 3 corresponds approximately to the diameter of the cam disc 1. The lever 3 is pivotally mounted by one end, on a mounting pin 5 and, with its free end, connected to the claw arm 6 via a pin-slot-connection 4 and 3a. The control lever 3 lies chordally of the cam disc 1 and comprises, moreover, a sensing pin 2 which extends into the groove cam 1a and which is arranged centrally between the mounting point 5 and the pin-slot-connection 4, 3a.

The end of the claw arm 6 opposite the pin-slot-connection comprises a U-shaped bent-over portion 6a in which a claw hook 6c is formed. A further arm 6d is arranged on the claw arm 6. A guide slot 6e into

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which a pin 8 extends is provided between the arms 6, 6*d*. A spring 7 tends to pivot the claw arm about the pin 8 in the direction of the arrow "C". This movement is prevented by a cam 1*b* secured to the cam disc 1, and against which the second arm 6*d* bears.

The arrangement operates as follows:--

When a shutter trigger of the camera has been released, the cam disc 1 is, *via* a coupling means not illustrated, connected to a motor drive and is disconnected again after one revolution of the cam disc 1. During this rotation, in the direction of the arrow "A", the groove cam 1*a* of the cam disc 1 moves *via* the sensing pin 2, the control lever 3 in a counterclockwise direction about its mounting pin 5, the claw arm 6 being pushed in the direction of the arrow "B" *via* the pin-slot-connection 4 and 3*a*.

The cam 1*b* which rotates with the cam disc 1, moves off the arm portion 6*d* of the claw arm 6. During its movement in the direction of the arrow "B", the claw arm 6 also rotates due to the spring 7 — about the pin 8 in the direction of the arrow "C" and reaches the position shown in the Fig. by dash-dotted lines relative to the engagement slit 9*b* of the cartridge 9. This stage is reached after half a revolution of the cam disc 1.

During the second half revolution where the claw arm 6 is moved opposite to the direction of the arrow "B", the surface 6*b* of the bent-over portion 6*a* first slides past the edge of a sheet element 10, then into the sheet in order subsequently to engage it with the protruding, moulded hook 6*c*. The sheet element 10 is pushed through the exit slot 9*a*.

When the claw arm 6 has almost reached its maximum feed position, the cam 1*b* of the cam disc 1 moves into contact with the arm 6*d* of the claw arm 6 and pivots it

about the pin 8, opposite to the direction of the arrow "C" and against the force of the spring 7 into its initial position shown in the drawing. The cycle of operations can be repeated after the sheet element 10 has been withdrawn completely from the cartridge by transport rollers or the like (not shown) of the camera.

WHAT WE CLAIM IS:—

1. A claw-feed mechanism for use in a self-processing camera for transporting individual sheet elements out of a cartridge, the claw mechanism having a cam disc controlling the claw stroke and a control lever, lying transverse to the direction of stroke of the claw, chordally of the cam disc, and sensing the cam values, arranged between the cam disc and the claw to transmit the cam values to the claw.

2. A mechanism as claimed in Claim 1, wherein the cam disc has a cam for controlling movement of the claw transverse to its stroke.

3. A mechanism as claimed in Claim 1 or 2, wherein the length of the control lever corresponds approximately to the diameter of the cam disc.

4. A claw-feed mechanism for use in a self-processing camera, substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.

5. A self-processing photographic camera arranged to receive a cartridge containing a stack of sheet elements, for sequentially exposing said sheet elements and for moving each sheet element after exposure to the exterior of the camera, and for initiating such movement, a claw-feed mechanism as claimed in any preceding claim.

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which a pin 8 extends is provided between the arms 6, 6d. A spring 7 tends to pivot the claw arm about the pin 8 in the direction of the arrow "C". This movement is prevented by a cam 1b secured to the cam disc 1, and against which the second arm 6d bears.

The arrangement operates as follows:--

When a shutter trigger of the camera has been released, the cam disc 1 is, via a coupling means not illustrated, connected to a motor drive and is disconnected again after one revolution of the cam disc 1. During this rotation, in the direction of the arrow "A", the groove cam 1a of the cam disc 1 moves via the sensing pin 2, the control lever 3 in a counterclockwise direction about its mounting pin 5, the claw arm 6 being pushed in the direction of the arrow "B" via the pin-slot-connection 4 and 3a.

The cam 1b which rotates with the cam disc 1, moves off the arm portion 6d of the claw arm 6. During its movement in the direction of the arrow "B", the claw arm 6 also rotates due to the spring 7 — about the pin 8 in the direction of the arrow "C" and reaches the position shown in the Fig. by dash-dotted lines relative to the engagement slit 9b of the cartridge 9. This stage is reached after half a revolution of the cam disc 1.

During the second half revolution where the claw arm 6 is moved opposite to the direction of the arrow "B", the surface 6b of the bent-over portion 6a first slides past the edge of a sheet element 10, then into the sheet in order subsequently to engage it with the protruding, moulded hook 6c. The sheet element 10 is pushed through the exit slot 9a.

When the claw arm 6 has almost reached its maximum feed position, the cam 1b of the cam disc 1 moves into contact with the arm 6d of the claw arm 6 and pivots it

about the pin 8, opposite to the direction of the arrow "C" and against the force of the spring 7 into its initial position shown in the drawing. The cycle of operations can be repeated after the sheet element 10 has been withdrawn completely from the cartridge by transport rollers or the like (not shown) of the camera.

WHAT WE CLAIM IS:—

1. A claw-feed mechanism for use in a self-processing camera for transporting individual sheet elements out of a cartridge, the claw mechanism having a cam disc controlling the claw stroke and a control lever, lying transverse to the direction of stroke of the claw, chordally of the cam disc, and sensing the cam values, arranged between the cam disc and the claw to transmit the cam values to the claw.

2. A mechanism as claimed in Claim 1, wherein the cam disc has a cam for controlling movement of the claw transverse to its stroke.

3. A mechanism as claimed in Claim 1 or 2, wherein the length of the control lever corresponds approximately to the diameter of the cam disc.

4. A claw-feed mechanism for use in a self-processing camera, substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.

5. A self-processing photographic camera arranged to receive a cartridge containing a stack of sheet elements, for sequentially exposing said sheet elements and for moving each sheet element after exposure to the exterior of the camera, and for initiating such movement, a claw-feed mechanism as claimed in any preceding claim.

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