

PATENT SPECIFICATION

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(54) PHOTOGRAPHIC CAMERA

(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:—

The present invention relates to a photographic camera for use with a percussion-ignitable flashlamp unit (hereinafter referred to as "of the kind defined") having a primer which, upon being struck, ignites the flashlamp, the means for striking the primer forming a part of the unit or a part of the camera with which the unit is used. Such flashlamp units may comprise a single lamp or a plurality of lamps each of which is provided with its own primer and, in some cases, with its own striker which may be pre-energized.

In accordance with the present invention there is provided a photographic camera comprising a holder for receiving a percussion-ignitable flashlamp unit of the kind defined and locating a flashlamp thereof in a firing position, an actuating member, a manually operable shutter releasing member and means engageable thereby for directly transmitting the manual movement of the shutter releasing member to the actuating member to fire a flashlamp located in the firing position in synchronism with operation of the shutter.

In the accompanying drawings:—

Fig. 1 shows schematically a camera mechanism constructed in accordance with one form of the present invention for firing a percussion-ignitable flashlamp unit, the parts of the mechanism being in the position they assume prior to the insertion of a flashlamp unit in a holder;

Fig. 2 is a view similar to Fig. 1 but showing the position the parts assume when a flashlamp is inserted in the holder;

Fig. 3 is a perspective view of part of a multilamp percussion-ignitable flashlamp unit showing a striker in the energized condition; and

Fig. 4 is a view similar to Fig. 3, but showing the striker in the released condition.

As illustrated, the camera mechanism comprises a manually operable shutter releasing member 1 having a lug 1a which normally blocks the path of movement of a shutter driver 2 in the direction of the arrow B. With the parts in the position shown in Fig. 1, depression of the shutter releasing member 1 will permit the shutter driver 2 to move in the direction of the arrow B under the action of a spring (not shown) to strike and actuate a shutter (not shown) in known manner.

A holder 4 is provided in the top wall 27 of the camera for receiving a multilamp percussion-ignitable flashlamp unit of the kind shown in Figs. 3 and 4.

As shown in Figs. 3 and 4 the flashlamp unit comprises a base plate 9 on which are mounted 4 flashlamps 23 (only 2 being shown in the drawings), each of which comprises a transparent bulb 24 containing a combustible flash material and a combustion supporting gas, a primer 25 extending from the bottom of each bulb. Each flashlamp is provided with its own striker which, as illustrated, comprises a spring 26 which is retained in a slot 9a in the base plate 9 and biased so that one of its angular ends 26a is lodged behind the other end 26b and extends over a slot 9b in the base 9. Each of the flashlamps 23 is provided with its own reflector (not shown) and the lamps and reflectors are enclosed in a transparent cover (not shown) in a manner usual in flashcubes.

A member 4a is slidably mounted in the holder 4 and is normally held in a position in which it is engaged by the base of an inserted flash unit by means of a pivotally mounted latch member 5 which is urged by

means of a spring 5a in a clockwise direction as viewed in Figs. 1 and 2.

As pivotally mounted lever 6 is urged in a counter clockwise direction (as viewed in Figs. 1 and 2) by means of a spring 3 and is connected to an actuating member 8 by means of a pin 8a and slot connection 6c. The free end of the lever 6 is formed with a lug 6a, for a purpose to be hereinafter described, and is provided with a projection 6b for engagement by a cam surface 7a on a member 7 mounted on a pivot 7c. The member 7 is also formed with a nose 7b which is disposed in the path of movement of a flange 1b on the shutter releasing member 1.

In the absence of a flashlamp unit in the holder 4 the parts are in the position shown in Fig. 1. That is, the latch member 5 is urged by the spring 5a into a position in which the pivotally mounted lever 6 holds the rod 8 in a retracted position and the lug 6a of the lever 6 is disposed out of the path of movement of the shutter driver 2. Moreover, the projection 6b on the lever 6 is disposed beneath the path of movement of the cam surface 7a on the pivotally mounted member 7. Therefore, upon depression of the shutter releasing member 1 the shutter driver 2 is released and moves in the direction of the arrow B to actuate the shutter.

Upon inserting the flashlamp unit in the holder 4 the member 4a is moved downwardly and turns the latch member 5 in a counterclockwise direction (as viewed in Figs. 1 and 2) thereby allowing the spring 3, which is weaker than the spring 5a, to turn the lever 6 in the direction of the arrow C. This movement is transmitted to the rod 8 which is moved into engagement with the striker 26a of a flashlamp 23 located in a firing position. The force exerted by the spring 3 is insufficient to dislodge the striker 26a from the stop 26b. In this position of the lever 6, the lug 6a thereof is disposed in the path of movement of the shutter driver 2 and the projection 6b thereof is disposed in the path of movement of the cam surface 7a on the pivotally mounted member 7. Thus, upon depression of the shutter releasing member 1 in the direction of the arrow P, the lug 1a thereof is moved out of the path of movement of the shutter driver 2 which is thereupon moved into engagement with the lug 6a on the lever 6. Further depression of the shutter releasing member 1 causes the flange 1b to engage the nose 7b of the member 7 so as to turn the latter about its pivot 7c. In this manner the cam surface 7a engages the projection 6b of the lever 6, thereby causing further pivotal movement of the lever 6 in the direction of the

arrow C so that the rod 8 is moved upwardly to dislodge the striker 26a from the stop 26b for firing the associated flashlamp 23. During this further pivotal movement of the lever 6 the lug 6a thereof is withdrawn from the path of movement of the shutter driver 2 so that the latter is enabled to move in the direction of the arrow B and release the shutter in synchronism with the firing of the flashlamp.

If desired an eccentric arrangement 8b may be provided for adjusting the operative position of the rod 8 to ensure that the firing of the lamp is synchronised with the actuation of the shutter.

WHAT WE CLAIM IS:—

1. A photographic camera comprising a holder for receiving a percussion-ignitable flashlamp unit of the kind defined and locating a flashlamp thereof in a firing position, an actuating member, a manually operable shutter releasing member and means engageable thereby for directly transmitting the manual movement of the shutter releasing member to the actuating member to fire a flashlamp located in the firing position in synchronism with operation of the shutter.

2. A photographic camera according to Claim 1 wherein the movement of the shutter releasing member is transmitted to the actuating member by means of a pivotally mounted lever coupled to the actuating member, and a pivotally mounted member having a projection disposed in the path of manual movement of the shutter releasing member and a cam surface engageable with the pivotally mounted lever.

3. A photographic camera according to Claim 2, wherein the actuating member comprises a slidably mounted rod which is coupled to the pivotally mounted lever by means of a pin and slot connection.

4. A photographic camera according to Claim 3, wherein the rod is urged into non-firing engagement with a firing element of a flashlamp located in the firing position by means of a spring acting on the pivotally mounted lever.

5. A photographic camera according to Claim 4 wherein a pivotally mounted latch member is urged by means of a spring, which is stronger than the spring acting on the pivotally mounted lever, into engagement with the pivotally mounted lever so as to hold the pivotally mounted lever in an inoperative position in which the rod is retracted from the firing position, a slidably mounted member being displaceable by the insertion of a flashlamp unit in the holder to disengage the

means of a spring 5a in a clockwise direction as viewed in Figs. 1 and 2.

As pivotally mounted lever 6 is urged in a counter clockwise direction (as viewed in Figs. 1 and 2) by means of a spring 3 and is connected to an actuating member 8 by means of a pin 8a and slot connection 6c. The free end of the lever 6 is formed with a lug 6a, for a purpose to be hereinafter described, and is provided with a projection 6b for engagement by a cam surface 7a on a member 7 mounted on a pivot 7c. The member 7 is also formed with a nose 7b which is disposed in the path of movement of a flange 1b on the shutter releasing member 1.

In the absence of a flashlamp unit in the holder 4 the parts are in the position shown in Fig. 1. That is, the latch member 5 is urged by the spring 5a into a position in which the pivotally mounted lever 6 holds the rod 8 in a retracted position and the lug 6a of the lever 6 is disposed out of the path of movement of the shutter driver 2. Moreover, the projection 6b on the lever 6 is disposed beneath the path of movement of the cam surface 7a on the pivotally mounted member 7. Therefore, upon depression of the shutter releasing member 1 the shutter driver 2 is released and moves in the direction of the arrow B to actuate the shutter.

Upon inserting the flashlamp unit in the holder 4 the member 4a is moved downwardly and turns the latch member 5 in a counterclockwise direction (as viewed in Figs. 1 and 2) thereby allowing the spring 3, which is weaker than the spring 5a, to turn the lever 6 in the direction of the arrow C. This movement is transmitted to the rod 8 which is moved into engagement with the striker 26a of a flashlamp 23 located in a firing position. The force exerted by the spring 3 is insufficient to dislodge the striker 26a from the stop 26b. In this position of the lever 6, the lug 6a thereof is disposed in the path of movement of the shutter driver 2 and the projection 6b thereof is disposed in the path of movement of the cam surface 7a on the pivotally mounted member 7. Thus, upon depression of the shutter releasing member 1 in the direction of the arrow P, the lug 1a thereof is moved out of the path of movement of the shutter driver 2 which is thereupon moved into engagement with the lug 6a on the lever 6. Further depression of the shutter releasing member 1 causes the flange 1b to engage the nose 7b of the member 7 so as to turn the latter about its pivot 7c. In this manner the cam surface 7a engages the projection 6b of the lever 6, thereby causing further pivotal movement of the lever 6 in the direction of the

arrow C so that the rod 8 is moved upwardly to dislodge the striker 26a from the stop 26b for firing the associated flashlamp 23. During this further pivotal movement of the lever 6 the lug 6a thereof is withdrawn from the path of movement of the shutter driver 2 so that the latter is enabled to move in the direction of the arrow B and release the shutter in synchronism with the firing of the flashlamp.

If desired an eccentric arrangement 8b may be provided for adjusting the operative position of the rod 8 to ensure that the firing of the lamp is synchronised with the actuation of the shutter.

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1. A photographic camera comprising a holder for receiving a percussion-ignitable flashlamp unit of the kind defined and locating a flashlamp thereof in a firing position, an actuating member, a manually operable shutter releasing member and means engageable thereby for directly transmitting the manual movement of the shutter releasing member to the actuating member to fire a flashlamp located in the firing position in synchronism with operation of the shutter.

2. A photographic camera according to Claim 1 wherein the movement of the shutter releasing member is transmitted to the actuating member by means of a pivotally mounted lever coupled to the actuating member, and a pivotally mounted member having a projection disposed in the path of manual movement of the shutter releasing member and a cam surface engageable with the pivotally mounted lever.

3. A photographic camera according to Claim 2, wherein the actuating member comprises a slidably mounted rod which is coupled to the pivotally mounted lever by means of a pin and slot connection.

4. A photographic camera according to Claim 3, wherein the rod is urged into non-firing engagement with a firing element of a flashlamp located in the firing position by means of a spring acting on the pivotally mounted lever.

5. A photographic camera according to Claim 4 wherein a pivotally mounted latch member is urged by means of a spring, which is stronger than the spring acting on the pivotally mounted lever, into engagement with the pivotally mounted lever so as to hold the pivotally mounted lever in an inoperative position in which the rod is retracted from the firing position, a slidably mounted member being displaceable by the insertion of a flashlamp unit in the holder to disengage the



latch member from the pivotally mounted lever. shown in, Figs. 1 and 2 of the accompanying drawings.

6. A photographic camera according to
Claim 1, constructed substantially as herein-
5 before described with reference to, and as

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