

PATENT SPECIFICATION

(11) 1 545 037



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- (21) Application No. 51010/77 (22) Filed 7 Dec. 1977
(44) Complete Specification published 2 May 1979
(51) INT. CL.⁸ G03B 15/04
(52) Index at acceptance
G2A 214 217 C17 C1 DC
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(54) IMPROVEMENTS IN OR RELATING TO CAMERAS

(71) We, W. HAKING ENTERPRISES LIMITED, formerly known as W. HAKING INDUSTRIES (MECHANICS & OPTICS) LIMITED, a Hong Kong Body Corporate, of Haking Building, 981 King's Road, Hong Kong, 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 cameras and is particularly although not exclusively, applicable to compact "pocket size" cameras such as 110 cameras.

The invention provides a camera having an elongate housing with an objective lens in one side of the housing and a manually rotatable flash socket for a flash cube disposed in one end wall of the housing, with a striker for the flash cube adjacent the socket, the objective lens being spaced apart along said one side of the housing away from said one end wall of the housing.

It will be understood that by providing the flash socket at an end of the housing, the camera can be designed so that the flash cube is sufficiently far from the objective lens in use to avoid any "red-eye" effect which arises when the flash cube is located too close to the objective lens. The "red-eye" effect is a well known phenomenon which is attributed to the incidence on a camera objective of red light from the flash cube reflected by the retina of the eyeball of a person being photographed and results in a red tint on the pupils of the eyes of the person being photographed in the finished photograph when the camera is used for flash photography.

The flash socket may be mounted for free rotation in the housing and index means may be provided for defining angularly spaced positions of rotation in which the socket is releasably held corresponding to positions in which, in use, successive sides of

a flash cube in the socket face in the same direction as the objective lens.

More specifically, the socket may have a square section spigot within the camera and a spring blade or blades may bear on the flats of the spigot to hold the socket releasably in any one of four rotational positions corresponding to the four sides of a flash cube.

It is preferred that the socket includes means to render the striker inoperative if there is no flash cube in the socket. More specifically, the means to render the striker inoperative if there is no flash cube in the socket may comprise a detent for preventing operation of the striker and an element or elements in the socket which are displaceable on insertion of a flash cube in the socket to release the striker detent.

The detent may be spring-loaded towards a striker engaging position. Similarly the displaceable elements in the socket may be spring loaded towards extended positions for engagement by the flash cube.

It is further preferred that the striker is formed on or as part of an elongate member extending the length of the camera housing and mounted for limited slidable movement along the housing to extend and retract the striker, a shutter release mechanism of the camera being arranged to cause the member to move in a direction to extend the striker in appropriate timed relationship with opening of the shutter.

More specifically a further detent may be provided for holding the member against movement to extend the striker, the further detent being released by movement of the shutter release mechanism in timed relationship with the shutter opening.

The shutter release mechanism may include a shutter release member and means may be provided for applying a force to the striker member in response to operation of the shutter release member to urge the

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member in a striker extending direction to operate the flash cube so that when the shutter controlled detent is released, the force propels the member in a direction to extend the striker and operate the flash cube.

The means for applying force to the striker member may comprise a bell crank lever one limb of which is engageable by the shutter release member and the other member of which carries one end of a tension spring, the other end of which is connected to the striker, the arrangement being such that movement of the shutter release member to operate the shutter moves the bell crank lever in a direction to tension the spring to provide the force for moving the member in a striker extending direction when the shutter control detent is released.

The shutter release member may comprise a push-button located on a side of the camera housing remote from said one end of the housing in which the rotatable flash socket is provided.

The camera housing may also enclose a view-finder extending through the housing disposed adjacent the other end of the housing.

The following is a description of a specific embodiment of the invention, reference being made to the accompanying drawings in which:

Figure 1 is a front perspective view of a camera according to the invention;

Figure 2 is a side view of the camera;

Figure 3 is a front perspective view of the camera frame and operating mechanism with the housing removed;

Figure 4 is a front view of the camera frame and operating mechanism;

Figures 5 and 6 are detailed views of part of the front of the frame and mechanism; and

Figure 7 is an underplan view of the camera frame and operating mechanism.

Referring firstly to Figures 1 and 2 of the drawings, there is shown a camera for use with a 110 cartridge film comprising a compact rectangular section housing 10 having a front wall 11 in the centre of which is an aperture 12 in which there is an objective lens 13. One end wall 14 of the camera has an aperture 15 therein in which there is a rotatable socket 16 for receiving a conventional flash cube (not shown). To one side of the aperture 15 there is a slit 17 in which a flash cube striker 18 is slidable for striking the contact of the flash cube to ignite the forwardly directed side of the flash cube. The construction of the striker and flash cube socket will be described in greater detail below.

Adjacent the other end 19 of the camera the camera front wall has a lens 20 forming the forward part of a view finder, the view finder is completed by a further lens (not

shown) mounted within the camera housing adjacent the rear wall of the camera and an opening in the rear wall of the housing (not shown).

The top wall of the housing is formed with a rectangular aperture 21 adjacent the end wall 19 of the camera in which a rectangular shutter release push-button 22 is mounted, the shutter release button also controlling operation of the flash cube striker 18 as described later.

Reference is now made to Figures 3 to 7 for the detailed construction of the camera mechanism. The camera frame is indicated at 25 and includes mounting flange 26 which is located adjacent the said one end 14 of the camera housing and is provided with a hole 27 in which the flash cube socket 16 is rotatably mounted. At the rear of the socket there is a square section portion 28 (see Figures 5 and 6) which engages between a pair of spring blades 29 formed integrally on a common base 30 secured to the camera frame. The engagement of the spring blades with the square section portion defines four rotational positions of the socket to which the socket may be rotated manually against the resistance of the springs, each position holding a flash cube with one of its side faces facing in the same direction as the objective lens 13 to be flashed when the shutter is released.

The socket 16 contains a hollow square section central pillar 16a and a pin 16b located within the pillar has two laterally extending flanges which project through slots on opposite sides of the pillar. The pin is spring urged towards the front of the socket and, on insertion of the flash cube in the socket, the flanges are depressed down the socket. The pin extends through the bottom of the socket into a tubular member 31 formed integrally with the camera frame. The tubular member has a side slot from which an arm 33 connected to the pin 16b projects laterally for engaging a control detent 37 for the striker 18 to engage or release the detent with the striker according to the presence or absence of a flash cube in the socket as described below.

The mounting flange 26 has a slot adjacent the flash cube socket in which the striker 18 is slidable, the slot being positioned at an appropriate location to engage the contact of the flash cube for the forwardly directed face of the flash cube. The striker is formed integrally with an elongate striker member 35 extending the full length of the underside of the camera frame. The striker member is constrained to slide linearly along the frame by the slot in the mounting flange 26 and by a further slot in the member 35 in which a Screw 36 fixed on the frame engages.

The striker member 35 is formed with a notch 35a adjacent the striker 18 to receive a detent 37 formed on an arm 38 sprung

loaded into engagement with the striker member by a wire spring 39. The arm 38 also carries a ramp 38a which is engageable with the laterally projecting arm 33 at the rear of the flash cube socket so that when a flash cube is inserted in the socket and the pin is displaced rearwardly of the socket, the arm 33 acting on the ramp 38a pivots the detent 37 out of engagement with the striker member 35 to permit the striker member to be moved to strike the contact of a flash cube. Thus the striker member only moves when a flash cube has been inserted in the socket and the detent 37 has been released from the striker member.

The push-button 22 for releasing the shutter mechanism is mounted on a spring plate 40 which carries a dependent leg 41. The leg 41 engages one arm of a bell crank lever 42 the other end of which is connected by a tension spring 43 to the end of the striker member remote from the striker. Thus when the push button is depressed, the bell crank lever is pivoted to extend and thereby tension the spring to provide force required to move the striker member to strike the flash cube contact. The striker member is held against movement until an appropriate point in relation to the opening of the shutter by a further spring loaded detent 45 which is engageable with a tag 35b on a member 35. The arm 45 is pivoted by a post 46 forming part of the shutter blade opening mechanism indicated generally at 47. The post is carried on one of a pair of spring loaded levers 48, 49 which are held in a "cocked" condition by a lever 50 mounted on the camera frame. The lever 50 is pivoted by movement of the aforesaid bell crank lever 42 to release the spring loaded arms when the push button is depressed, the arms move under the action of the spring loading to open the shutter and to release the detent 45 from the striker member to permit the striker member to move under the influence of the pre-tensioned spring 43 to strike the flash cube.

When the push button is released, the bell crank lever is restored to its initial position by a light spring 51 and, in so doing, the coils of the tension spring 43 are closed and the lever draws the striker member back to its initial position retracting the striker 18 into the end 14 of the housing.

When the film is wound on, a film feeler member (not shown) engages an aperture in the film and moves with the film drawing with it the levers 48, 49, re-cocking the arms ready for the next film exposure.

WHAT WE CLAIM IS:-

1. A camera having an elongate housing with an objective lens located in one side of the housing and a manually rotatable flash socket for a flash cube disposed in one end wall of the housing, with a striker for the

flash cube adjacent the socket, the objective lens being spaced apart along said one side of the housing away from said one end wall of the housing.

2. A camera as claimed in claim 1 wherein the flash socket is mounted for free rotation in the housing and index means are provided for defining angularly spaced positions of rotation in which the socket is releasably held corresponding to positions in which, in turn, successive sides of a flash cube in the socket face in the same direction as the objective lens.

3. A camera as claimed in claim 2 wherein the socket has a square section spigot within the camera and a spring blade or blades bear on the flats of the spigot to hold the socket releasably in any one of four rotational positions corresponding to the four sides of a flash cube.

4. A camera as claimed in any of claims 1 to 3 wherein the socket includes means to render the striker inoperative if there is no flash cube in the socket.

5. A camera as claimed in claim 5 wherein the means to render the striker inoperative if there is no flash cube in the socket comprise a detent for preventing operation of the striker and an element or elements in the socket which are displaceable on insertion of a flash cube in the socket to release the striker detent.

6. A camera as claimed in claim 5 wherein the detent is spring loaded towards a striker engaging position.

7. A camera as claimed in claim 5 or claim 6 wherein the displaceable elements in the socket are spring loaded towards extended positions for engagement by the flash cube.

8. A camera as claimed in any of the preceding claims wherein the striker is formed on or as part of an elongate member extending the length of the camera housing and mounted for limited slidable movement along the housing to extend and retract the striker, a shutter release mechanism of the camera being arranged to cause the member to move in a direction to extend the striker in appropriate timed relationship with opening of the shutter.

9. A camera as claimed in claim 8 wherein a further detent is provided for holding the striker member against movement to extend the striker, the further detent being released by movement of the shutter release mechanism in timed relationship with the shutter opening.

10. A camera as claimed in claim 9 wherein the shutter release mechanism includes a shutter release member and means are provided for applying a force to the striker member in response to operation of the shutter release member to urge the member in a striker extending direction to



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loaded into engagement with the striker member by a wire spring 39. The arm 38 also carries a ramp 38a which is engageable with the laterally projecting arm 33 at the rear of the flash cube socket so that when a flash cube is inserted in the socket and the pin is displaced rearwardly of the socket, the arm 33 acting on the ramp 38a pivots the detent 37 out of engagement with the striker member 35 to permit the striker member to be moved to strike the contact of a flash cube. Thus the striker member only moves when a flash cube has been inserted in the socket and the detent 37 has been released from the striker member.

The push-button 22 for releasing the shutter mechanism is mounted on a spring plate 40 which carries a dependent leg 41. The leg 41 engages one arm of a bell crank lever 42 the other end of which is connected by a tension spring 43 to the end of the striker member remote from the striker. Thus when the push button is depressed, the bell crank lever is pivoted to extend and thereby tension the spring to provide force required to move the striker member to strike the flash cube contact. The striker member is held against movement until an appropriate point in relation to the opening of the shutter by a further spring loaded detent 45 which is engageable with a tag 35b on a member 35. The arm 45 is pivoted by a post 46 forming part of the shutter blade opening mechanism indicated generally at 47. The post is carried on one of a pair of spring loaded levers 48, 49 which are held in a "cocked" condition by a lever 50 mounted on the camera frame. The lever 50 is pivoted by movement of the aforesaid bell crank lever 42 to release the spring loaded arms when the push button is depressed, the arms move under the action of the spring loading to open the shutter and to release the detent 45 from the striker member to permit the striker member to move under the influence of the pre-tensioned spring 43 to strike the flash cube.

When the push button is released, the bell crank lever is restored to its initial position by a light spring 51 and, in so doing, the coils of the tension spring 43 are closed and the lever draws the striker member back to its initial position retracting the striker 18 into the end 14 of the housing.

When the film is wound on, a film feeler member (not shown) engages an aperture in the film and moves with the film drawing with it the levers 48, 49, re-cocking the arms ready for the next film exposure.

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1. A camera having an elongate housing with an objective lens located in one side of the housing and a manually rotatable flash socket for a flash cube disposed in one end wall of the housing, with a striker for the

flash cube adjacent the socket, the objective lens being spaced apart along said one side of the housing away from said one end wall of the housing.

2. A camera as claimed in claim 1 wherein the flash socket is mounted for free rotation in the housing and index means are provided for defining angularly spaced positions of rotation in which the socket is releasably held corresponding to positions in which, in turn, successive sides of a flash cube in the socket face in the same direction as the objective lens.

3. A camera as claimed in claim 2 wherein the socket has a square section spigot within the camera and a spring blade or blades bear on the flats of the spigot to hold the socket releasably in any one of four rotational positions corresponding to the four sides of a flash cube.

4. A camera as claimed in any of claims 1 to 3 wherein the socket includes means to render the striker inoperative if there is no flash cube in the socket.

5. A camera as claimed in claim 5 wherein the means to render the striker inoperative if there is no flash cube in the socket comprise a detent for preventing operation of the striker and an element or elements in the socket which are displaceable on insertion of a flash cube in the socket to release the striker detent.

6. A camera as claimed in claim 5 wherein the detent is spring loaded towards a striker engaging position.

7. A camera as claimed in claim 5 or claim 6 wherein the displaceable elements in the socket are spring loaded towards extended positions for engagement by the flash cube.

8. A camera as claimed in any of the preceding claims wherein the striker is formed on or as part of an elongate member extending the length of the camera housing and mounted for limited slidable movement along the housing to extend and retract the striker, a shutter release mechanism of the camera being arranged to cause the member to move in a direction to extend the striker in appropriate timed relationship with opening of the shutter.

9. A camera as claimed in claim 8 wherein a further detent is provided for holding the striker member against movement to extend the striker, the further detent being released by movement of the shutter release mechanism in timed relationship with the shutter opening.

10. A camera as claimed in claim 9 wherein the shutter release mechanism includes a shutter release member and means are provided for applying a force to the striker member in response to operation of the shutter release member to urge the member in a striker extending direction to

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operate the flash cube so that when the shutter controlled detent is released, the force propels the member in a direction to extend the striker and operate the flash cube.

- 5 11. A camera as claimed in claim 10 wherein the means for applying force to the striker member comprise a bell crank lever one limb of which is engageable by the shutter release member and the other member
- 10 of which carries one end of a tension spring, the other end of which spring is connected to the striker, the arrangement being such that movement of the shutter release member to operate the shutter moves the
- 15 bell crank lever in a direction to tension the spring to provide the force for moving the member in a striker extending direction when the shutter control detent is released.

12. A camera as claimed in claim 10 or 11 wherein the shutter release member comprises a push button located on one side of the camera housing remote from said one end of the housing in which the rotatable flash socket is provided.

13. A camera as claimed in any of the preceding claims wherein the housing also encloses a view finder extending through the housing disposed adjacent the other end of the housing.

14. A camera substantially as described with reference to and as illustrated in the accompanying drawings.

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