

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) PHOTOGRAPHIC CAMERA

(71) We, AGFA-GEVAERT AK-TIENGESELLSCHAFT, a body corporate recognised under German Law, of Leverkusen, Germany, 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 invention relates to a photographic camera.

It is an object of the invention to provide, in a photographic camera of the kind which includes an electrically powered functional element, a battery housing, constructed in a simple and convenient manner, for the battery which provides the power for the functional element.

The invention provides a photographic camera which includes an electrically-powered functional element, a battery compartment in the form of a sliding drawer into which, when in an open position, a battery can be inserted, and contact means which are arranged for contacting the terminals of a battery contained in the drawer when the drawer is in a closed position so that current from the battery can be supplied to the functional element. The electrically-powered functional element may comprise, for example, an electronic exposure control means.

Advantageously, when the functional element includes discrete electrical components, at least some of which are mounted on a printed circuit board, there is provided, in the region of the camera housing, an approximately U-shaped aperture for receiving the said sliding drawer. The contact means may, for example, comprise plug or clamp members.

In order to hold the drawer component in the closed position, according to a further development, at least one leaf spring attached to the printed circuit board and which presses against the drawer is provided.

According to a further embodiment of the camera according to the invention, the contact

means comprises at least two leaf springs made of electrically conductive material which springs are also arranged for holding the drawer in the closed position.

The drawer is preferably at least partly open in a direction normal to the insertion direction, so that on the one hand a battery can be inserted into the drawer in a simple manner and on the other hand the leaf springs, when the drawer component is pushed in, can press from its open side against the terminals of the battery.

In order to lock the drawer component in the pushed-in position the latter may advantageously be provided with at least one aperture in which at least one of the leaf springs engages.

According to a further embodiment, a control is provided in the camera housing which is accessible to the user from outside and by means of which the drawer can be moved at least partially out of the closed position. Thus, for example, the drawer may be provided with an extension by way of which it can be moved out of the pushed-in position by means of a pin provided on the said control.

The control can be arranged in an advantageous manner on the printed circuit board. It may also be used simultaneously to set the film sensitivity or the guide number. This is of particular advantage if different resistors are switched into the circuit of the exposure control means by means of the control as required.

According to a further advantageous embodiment of the photographic camera according to the invention, adjustable elements of the exposure control means are so arranged on the printed circuit board that after withdrawal of the drawer component they are easily accessible from outside.

A camera constructed in accordance with the invention will now be described by way of example with reference to the accompanying drawing in which:—

Fig. 1 is a sectional plan view of a camera with a printed circuit board and a battery drawer.

5 Fig. 2 is a sectional side view of the arrangement shown in Fig. 1.

10 For the sake of clarity, only some of the electrical components which are arranged with their leads on the printed circuit board are shown. Referring to Figures 1 and 2, there is arranged beneath the top 1 of a photographic camera 2 a printed circuit board 3. The printed circuit board 3 has an approximately U-shaped aperture 4, the opposite side edges of which serve to accommodate and guide a drawer-like component 7. For this purpose the drawer component 7 is provided with guide grooves 8 on the sides adjacent to the edges 5 and 6 of the board 3. The drawer component 7 can be pushed onto the printed wiring board 3 through an opening 9 in the top 1 of the camera and is provided with an opening 10 of circular cross-section through which the battery 11 is inserted into the drawer 7. Attached one to the top and one to the underside of the printed circuit board 3 are electrically conductive springs 12 and 13. When the drawer component 7, containing a battery 11, is pushed into the camera in the direction of the arrow A the springs 12 and 13 press against the two poles of the battery 11. The springs 12 and 13 are connected to leads 14 and 15 which are in turn connected to electrical components of the exposure control means. In the interests of clarity the leads are only shown in part in the diagrams. On the underside of the drawer component 7 a notch 16 is provided with which an extension 17 of the spring 13 engages when the drawer 7 is pushed in. Resistors 18, 19, 20, 21 and 22 which can be connected into the circuit to take account of different guide numbers are arranged beneath the spring 13.

45 Of the adjustable electrical components of the exposure control means, only a potentiometer 23 is shown which is so arranged on a retaining means 24 that after withdrawal of the drawer 7 it is easily accessible through the opening 9 and can be adjusted in a simple manner. Further adjustable members, which are not shown, can be arranged on the printed circuit board 3 in a similar manner. Also provided on the printed circuit board 3 is a setting disc indicated by 25 which has a knurled edge 26 and which can be adjusted by the camera user through a further opening 27 provided in the top housing 1. The setting disc 25 serves to set the required guide number settings for flashlight exposures by way of a slider 28 located on the underside of the disc and arranged for contacting contact segments 29, 30, 31, 32, 33 and 34 of the printed circuit board which segments are connected to the resistors 18, 19, 20, 21 and 22 any one of which can be connected into the current circuit of the exposure control means in accordance with the

setting of the disc 25. A marker drum 35 on which, for example, the guide number values L1, L2, L3 are marked is provided on the setting disc 25. The guide number which has been set in each case is visible through a window 36 provided in the camera top 1. Attached to the setting disc 25 in the region of the drawer 7 is a pin 37 by means of which the drawer 7 can be moved at least partially out of the housing in the opposite direction to the arrow A by way of an extension 38 provided on the drawer component 7 when the disc 25 is rotated in the direction of the arrow B. Thus, it is made possible in a simple manner for the camera user to pull out the drawer 7 further. The pin 37 is so arranged on the setting disc 25 that it only comes into contact with the extension 38 of the drawer 7 when the setting disc 25 is rotated in the region of its end position.

85 When the battery 11 is to be changed, for example, the drawer 7 is moved off the guides 5 and 6 of the printed circuit board 3, the used battery 11 is exchanged for a new one, and then the drawer 7 containing the new battery is pushed back onto the guides of the printed circuit board 3 again. The leaf spring 12 thereby presses against one pole and the leaf spring 13 against the other pole of the battery.

WHAT WE CLAIM IS:—

1. A photographic camera which includes an electrically powered functional element, a battery compartment in the form of a sliding drawer into which, when in an open position, a battery can be inserted, and contact means which are arranged for contacting the terminals of a battery contained in the drawer when the drawer is in a closed position so that current from the battery can be supplied to the functional element.

2. A camera as claimed in claim 1, wherein the electrically powered functional element comprises an electronic exposure control means.

3. A camera as claimed in claim 1 or claim 2, wherein the contact means comprises plug or clamp members which contact the terminals of a battery contained in the drawer when the drawer is in the closed position.

4. A camera as claimed in any one of claims 1 to 3, wherein the said functional element includes discrete electrical components, at least some of which are mounted on a printed circuit board which, in the region of the camera housing, is provided with an approximately U-shaped aperture for receiving the said sliding drawer.

5. A camera as claimed in claim 4, which includes at least one control located on the printed circuit board which is accessible to the user from outside the camera and by means of which the drawer can be moved at least partially out of the closed position.



Fig. 1 is a sectional plan view of a camera with a printed circuit board and a battery drawer.

Fig. 2 is a sectional side view of the arrangement shown in Fig. 1.

For the sake of clarity, only some of the electrical components which are arranged with their leads on the printed circuit board are shown. Referring to Figures 1 and 2, there is arranged beneath the top 1 of a photographic camera 2 a printed circuit board 3. The printed circuit board 3 has an approximately U-shaped aperture 4, the opposite side edges of which serve to accommodate and guide a drawer-like component 7. For this purpose the drawer component 7 is provided with guide grooves 8 on the sides adjacent to the edges 5 and 6 of the board 3. The drawer component 7 can be pushed onto the printed wiring board 3 through an opening 9 in the top 1 of the camera and is provided with an opening 10 of circular cross-section through which the battery 11 is inserted into the drawer 7. Attached one to the top and one to the underside of the printed circuit board 3 are electrically conductive springs 12 and 13. When the drawer component 7, containing a battery 11, is pushed into the camera in the direction of the arrow A the springs 12 and 13 press against the two poles of the battery 11. The springs 12 and 13 are connected to leads 14 and 15 which are in turn connected to electrical components of the exposure control means. In the interests of clarity the leads are only shown in part in the diagrams. On the underside of the drawer component 7 a notch 16 is provided with which an extension 17 of the spring 13 engages when the drawer 7 is pushed in. Resistors 18, 19, 20, 21 and 22 which can be connected into the circuit to take account of different guide numbers are arranged beneath the spring 13.

Of the adjustable electrical components of the exposure control means, only a potentiometer 23 is shown which is so arranged on a retaining means 24 that after withdrawal of the drawer 7 it is easily accessible through the opening 9 and can be adjusted in a simple manner. Further adjustable members, which are not shown, can be arranged on the printed circuit board 3 in a similar manner. Also provided on the printed circuit board 3 is a setting disc indicated by 25 which has a knurled edge 26 and which can be adjusted by the camera user through a further opening 27 provided in the top housing 1. The setting disc 25 serves to set the required guide number settings for flashlight exposures by way of a slider 28 located on the underside of the disc and arranged for contacting contact segments 29, 30, 31, 32, 33 and 34 of the printed circuit board which segments are connected to the resistors 18, 19, 20, 21 and 22 any one of which can be connected into the current circuit of the exposure control means in accordance with the

setting of the disc 25. A marker drum 35 on which, for example, the guide number values L1, L2, L3 are marked is provided on the setting disc 25. The guide number which has been set in each case is visible through a window 36 provided in the camera top 1. Attached to the setting disc 25 in the region of the drawer 7 is a pin 37 by means of which the drawer 7 can be moved at least partially out of the housing in the opposite direction to the arrow A by way of an extension 38 provided on the drawer component 7 when the disc 25 is rotated in the direction of the arrow B. Thus, it is made possible in a simple manner for the camera user to pull out the drawer 7 further. The pin 37 is so arranged on the setting disc 25 that it only comes into contact with the extension 38 of the drawer 7 when the setting disc 25 is rotated in the region of its end position.

When the battery 11 is to be changed, for example, the drawer 7 is moved off the guides 5 and 6 of the printed circuit board 3, the used battery 11 is exchanged for a new one, and then the drawer 7 containing the new battery is pushed back onto the guides of the printed circuit board 3 again. The leaf spring 12 thereby presses against one pole and the leaf spring 13 against the other pole of the battery.

WHAT WE CLAIM IS:—

1. A photographic camera which includes an electrically powered functional element, a battery compartment in the form of a sliding drawer into which, when in an open position, a battery can be inserted, and contact means which are arranged for contacting the terminals of a battery contained in the drawer when the drawer is in a closed position so that current from the battery can be supplied to the functional element.

2. A camera as claimed in claim 1, wherein the electrically powered functional element comprises an electronic exposure control means.

3. A camera as claimed in claim 1 or claim 2, wherein the contact means comprises plug or clamp members which contact the terminals of a battery contained in the drawer when the drawer is in the closed position.

4. A camera as claimed in any one of claims 1 to 3, wherein the said functional element includes discrete electrical components, at least some of which are mounted on a printed circuit board which, in the region of the camera housing, is provided with an approximately U-shaped aperture for receiving the said sliding drawer.

5. A camera as claimed in claim 4, which includes at least one control located on the printed circuit board which is accessible to the user from outside the camera and by means of which the drawer can be moved at least partially out of the closed position.

6. A camera as claimed in claim 5, wherein the drawer is provided with an extension by way of which it can be moved out of the closed position by engagement with a pin provided on the said control. 25
7. A camera as claimed in any one of claims 4 to 6, wherein at least one adjustable component of the functional element is so located on the printed circuit board as to be readily accessible from outside the camera when the drawer is removed. 30
8. A camera as claimed in any one of claims 4 to 7, which includes at least one leaf spring attached to the printed circuit board and arranged for holding the drawer in the closed position. 35
9. A camera as claimed in any one of claims 1 to 7, wherein the contact means comprises at least two leaf springs made from electrically conductive material which springs are also arranged for holding the drawer in the closed position.
10. A camera as claimed in claim 9, wherein the drawer is at least partially open in a direction normal to its direction of movement, and wherein the leaf springs, when the drawer is in its closed position, press from the said open side of the latter against the terminals of a battery contained in the drawer.
11. A camera as claimed in any one of claims 8 to 10, wherein the drawer is provided with at least one aperture in which at least one of the leaf springs engages for the purpose of holding the drawer in the closed position.
12. A photographic camera substantially as described herein with reference to and as shown in the accompanying drawings.

ABEL & IMRAY,
Chartered Patent Agents,
Northumberland House,
303—306 High Holborn,
London, W.C.1.

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