

PATENT SPECIFICATION

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(54) CAMERA HAVING A CARTRIDGE EJECTOR

(71) We, AGFA-GEVAERT AKTIEN-GESELLSCHAFT, 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:—

- 10 The invention provides a camera having a back that can be opened by a pivotal movement to permit the insertion and removal of a film cartridge, which includes an ejection member and a back member
 15 connected to, or forming, the camera back, the ejection member and the back member being formed in one piece from synthetic plastics material and the arrangement being such that when the back is pivoted
 20 from the closed position to an open position the ejection member is arranged to displace the cartridge into a position, in which the cartridge can be gripped manually for removal.
 25 In this way the ejector is particularly simple to construct and to assemble with the camera.

- Advantageously, the ejection member is directly connected to the back member.
 30 Preferably, the ejection member and the back member are flexibly interconnected to allow a cartridge to be urged into the operative position when the back is open. Thus a cartridge may be urged into the
 35 operative position while the camera back is maintained open without any damage being caused to the ejection member.

- Advantageously, the camera includes a member connected to the camera body and
 40 formed in one piece with the ejection member and the back member, the arrangement being such that the back member and the body member are flexibly interconnected so that the back can be
 45 pivoted between its open and closed posi-

tions. Preferably, the thickness of the material joining the aforementioned member is reduced to provide the flexible interconnection between them.

Advantageously, the camera includes a 50 member connected to the body and formed in one piece with the ejection member and the back member, the ejection being connected to the back member, both the back member and the ejection member being 55 flexibly interconnected with the body member, and there is provided a control member formed in one piece with the aforementioned members and so coupling the back and the ejection member that the 60 ejection member tends to displace the cartridge when the back has been pivoted through more than a predetermined angle from its closed position. Preferably, the control member is arranged to move with 65 the back member and is arranged to engage the ejection member only when the back has been pivoted through more than a predetermined angle from its closed position. Thus it is possible for a cartridge 70 to be urged into the operative position and to be correctly positioned, without any tendency of the ejection member to displace the cartridge, when the back is open.

Several forms of camera constructed in 75 accordance with the invention will now be described by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a sectional plan view of part 80 of a first form of camera particularly relating to a cartridge ejector device;

Fig. 2 is a similar view to Fig. 1 of part of a second form of camera;

Fig. 3 is a similar view to Fig. 1 of part 85 of a third form of camera;

Fig. 4 is a similar view to Fig. 1 of part of a fourth form of camera;

Fig. 5 shows part of the camera shown in Fig. 4; 90

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Fig. 6 shows part of a fifth form of camera particularly relating to the ejector device;

Fig. 7 is a further view of the part of the camera shown in Fig. 6; and

Fig. 8 is a section on the line VIII-VIII of Fig. 7.

In the drawings, where shown, the back of a camera is indicated by 1, the camera housing by 2, a cartridge chamber by 3 and a film cartridge by 4.

Referring to Fig. 1, the ejector device consists of a plastics member 5 which is of one piece construction and comprises three members 5a, 5b and 5c, the member 5a being the actual cartridge ejection member, projecting into the cartridge chamber 3, whilst the member 5b is connected to the back 1, by glueing, rivetting or screwing, for example, and the member 5c is attached to the camera body 2, by being slidably inserted in a slot 2a in the camera body 2, for example. Between the individual members 5a, 5b, 5c, the thickness of the plastics is greatly reduced, so that flexible areas 5d and 5e are produced. When the back 1 is opened, the member 5b is pivoted also raising the cartridge ejection member 5a, so that a cartridge lying upon it is lifted out of the cartridge chamber 3. Owing to the flexibility of the area 5d and the sliding of the member 5c in the slot 2a, the relative angular positions of the members 5b and 5c can alter sufficiently to permit opening of the back.

The form of camera shown in Fig. 2 differs from that in Fig. 1 in that the member 5b is not connected to the back 1 but itself forms the camera back.

Referring to Fig. 3 the members 5a and 5b are each provided with an extension 5f or 5g, which extensions have hook-like ends 5h and 5i which face one another. The areas 5d and 5e are made so flexible that the back member 5b can at first be opened without moving the ejecting member 5a. Not until the back member 5b has been opened far enough for the hook 5h to engage the hook 5i is the ejecting member 5a pivoted in a clockwise direction, as shown in Fig. 3, by way of the extensions 5f, 5g in order to lift out a cartridge.

The form of camera shown in Figures 4 and 5 differs from that shown in Fig. 3 only in the method of connection between the extensions 5g and 5f. The extension 5g has a plunger with two projections 5k and the extension 5f has two hooks 5l which engage behind the projections 5k. The connection 5k, 5l allows a certain play between the parts 5a, 5b, but this is less than in the camera shown in Fig. 3. In the camera shown in Figs. 2 to

5 the member 5b could also be connected to the back 1, as shown in Fig. 1, instead of itself forming the back.

In the form of camera shown in Figs. 6 to 8, the material of an ejection device 6 between an ejection member 6a, a member 6b fixed to the lid 1, a member 6c attached to the housing 2, and a control member 6d for the ejection member 6a, which are all formed in one piece from a plastics material, is of reduced thickness and the plastics is such that flexible areas 6e, 6f and 6g of reduced thickness are produced. Two edges 6h are formed on the control member 6d and engage behind the edges of a slot 6i in the ejection member 6a. The method of operation is in this case the same as for the camera shown in Fig. 3. When the back 1 is opened, the control member 6d is first moved until the edges 6h engage with the edges of the slot 6i to pivot the ejecting member 6a, and with it the cartridge 4. This ejection position is shown in Fig. 7.

Several possibilities exist for the connection of the ejector 5 or 6 to the camera body 2. The member 5c may be welded or glued to the camera; it may be fitted into it as shown in Fig. 1, and it may be screwed to the camera 2 as shown in Fig. 6. In addition, further forms of camera, which have not been shown in the Figures for the sake of simplicity, are possible. An ejector could, for example, include only an ejection member, a member connected to or forming the back, and possibly also a control member, with flexible areas of reduced material thickness between them.

WHAT WE CLAIM IS:—

1. A camera having a back that can be opened by a pivotal movement to permit the insertion and removal of a film cartridge, which includes an ejection member and a back member connected to, or forming, the camera back, the ejection member and the back member being formed in one piece from synthetic plastics material and the arrangement being such that when the back is pivoted from the closed position to an open position the ejection member is arranged to displace the cartridge into a position in which the cartridge can be gripped manually for removal.

2. A camera as claimed in claim 1, wherein the ejection member is directly connected to the back member.

3. A camera as claimed in claim 2, wherein the ejection member and the back member are flexibly interconnected to allow a cartridge to be urged into the operative position when the back is open.

4. A camera as claimed in claim 2 or claim 3, which includes a member connected to the camera body and formed in

Fig. 6 shows part of a fifth form of camera particularly relating to the ejector device;

Fig. 7 is a further view of the part of the camera shown in Fig. 6; and

Fig. 8 is a section on the line VIII-VIII of Fig. 7.

In the drawings, where shown, the back of a camera is indicated by 1, the camera housing by 2, a cartridge chamber by 3 and a film cartridge by 4.

Referring to Fig. 1, the ejector device consists of a plastics member 5 which is of one piece construction and comprises three members 5a, 5b and 5c, the member 5a being the actual cartridge ejection member, projecting into the cartridge chamber 3, whilst the member 5b is connected to the back 1, by glueing, rivetting or screwing, for example, and the member 5c is attached to the camera body 2, by being slidably inserted in a slot 2a in the camera body 2, for example. Between the individual members 5a, 5b, 5c, the thickness of the plastics is greatly reduced, so that flexible areas 5d and 5e are produced. When the back 1 is opened, the member 5b is pivoted also raising the cartridge ejection member 5a, so that a cartridge lying upon it is lifted out of the cartridge chamber 3. Owing to the flexibility of the area 5d and the sliding of the member 5c in the slot 2a, the relative angular positions of the members 5b and 5c can alter sufficiently to permit opening of the back.

The form of camera shown in Fig. 2 differs from that in Fig. 1 in that the member 5b is not connected to the back but itself forms the camera back.

Referring to Fig. 3 the members 5a and 5b are each provided with an extension 5f or 5g, which extensions have hook-like ends 5h and 5i which face one another. The areas 5d and 5e are made so flexible that the back member 5b can at first be opened without moving the ejecting member 5a. Not until the back member 5b has been opened far enough for the hook 5h to engage the hook 5i is the ejecting member 5a pivoted in a clockwise direction, as shown in Fig. 3, by way of the extensions 5f, 5g in order to lift out a cartridge.

The form of camera shown in Figures 4 and 5 differs from that shown in Fig. 3 only in the method of connection between the extensions 5g and 5f. The extension 5g has a plunger with two projections 5k and the extension 5f has two hooks 5l which engage behind the projections 5k. The connection 5k, 5l allows a certain play between the parts 5a, 5b, but this is less than in the camera shown in Fig. 3. In the camera shown in Figs. 2 to

5 the member 5b could also be connected to the back 1, as shown in Fig. 1, instead of itself forming the back.

In the form of camera shown in Figs. 6 to 8, the material of an ejection device 6 between an ejection member 6a, a member 6b fixed to the lid 1, a member 6c attached to the housing 2, and a control member 6d for the ejection member 6a, which are all formed in one piece from a plastics material, is of reduced thickness and the plastics is such that flexible areas 6e, 6f and 6g of reduced thickness are produced. Two edges 6h are formed on the control member 6d and engage behind the edges of a slot 6i in the ejection member 6a. The method of operation is in this case the same as for the camera shown in Fig. 3. When the back 1 is opened, the control member 6d is first moved until the edges 6h engage with the edges of the slot 6i to pivot the ejecting member 6a, and with it the cartridge 4. This ejection position is shown in Fig. 7.

Several possibilities exist for the connection of the ejector 5 or 6 to the camera body 2. The member 5c may be welded or glued to the camera; it may be fitted into it as shown in Fig. 1, and it may be screwed to the camera 2 as shown in Fig. 6. In addition, further forms of camera, which have not been shown in the Figures for the sake of simplicity, are possible. An ejector could, for example, include only an ejection member, a member connected to or forming the back, and possibly also a control member, with flexible areas of reduced material thickness between them.

WHAT WE CLAIM IS:—

1. A camera having a back that can be opened by a pivotal movement to permit the insertion and removal of a film cartridge, which includes an ejection member and a back member connected to, or forming, the camera back, the ejection member and the back member being formed in one piece from synthetic plastics material and the arrangement being such that when the back is pivoted from the closed position to an open position the ejection member is arranged to displace the cartridge into a position in which the cartridge can be gripped manually for removal.
2. A camera as claimed in claim 1, wherein the ejection member is directly connected to the back member.
3. A camera as claimed in claim 2, wherein the ejection member and the back member are flexibly interconnected to allow a cartridge to be urged into the operative position when the back is open.
4. A camera as claimed in claim 2 or claim 3, which includes a member connected to the camera body and formed in



one piece with the ejection member and the back member, the arrangement being such that the back member and the body member are flexibly interconnected so that the back can be pivoted between its open and closed positions.

5. A camera as claimed in claim 3 or claim 4, wherein the thickness of the material joining the aforementioned member is reduced to provide the flexible inter-connection between them.

6. A camera as claimed in claim 1, which includes a member connected to the body and formed in one piece with the ejection member and the back member, the ejection being connected to the back member only through the body member, both the back member and the ejection member being flexibly interconnected with the body member, and there is provided a control member formed in one piece with the aforementioned members and so coupling the back and the ejection member that the ejection member tends to displace the cartridge when the back has been pivoted through more than a predetermined angle from its closed position.

7. A camera as claimed in claim 6, wherein the control member is arranged to move with the back member and is arranged to engage the ejection member only when the back has been pivoted through more than a predetermined angle from its closed position.

8. A camera as claimed in claim 7, wherein the ejection member is formed with a projection so arranged in the path of movement of the control member that the control member engages the ejection mem-

ber only when the back member has been pivoted through a predetermined angle from its closed position.

9. A camera as claimed in claim 6, wherein there is provided an aperture in the ejection member the control member being arranged to project through the aperture and to engage portions of the ejection member adjacent to the aperture during the opening movement of the back.

10. A camera as claimed in any one of claims 4 to 9, wherein the body member is connected to the body by being screwed or welded to the body.

11. A camera as claimed in any one of claims 4 to 9, wherein the body member is connected to the body by being slidably mounted in a socket in the camera body.

12. A camera having a cartridge ejector substantially as hereinbefore described with reference to, and as shown in, any one of Figs. 1 to 3 of the accompanying drawings.

13. A camera having a cartridge ejector substantially as hereinbefore described with reference to, and as shown in, Figs. 4 and 5 of the accompanying drawings.

14. A camera having a cartridge ejector substantially as hereinbefore described with reference to, and as shown in Figs. 6, 7 and 8 of the accompanying drawings.

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