

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN AND RELATING TO FILM CARTRIDGES

(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:—

The invention relates to film cartridges.
 10 Known film cartridges include a film supply chamber, a film take-up chamber, a rear wall and a front wall which includes a picture gate frame. The rear wall forms the film support and the frame the portion of the cartridge which engages with the camera for the purpose of locating the cartridge in the camera. A difficulty with such a cartridge is that the separation of the two walls determines the film position in the camera so that this separation must be accurately set up when the cartridge front and rear walls are joined together.

The invention provides a film cartridge which comprises a film-supply chamber, a film take-up chamber, a front wall which is formed with a picture gate and is located between the chambers, and means arranged to support the film in the region of the picture gate, the side of the film support means facing the picture gate being of such configuration, and the front wall being so arranged, that, when the cartridge is positioned within a camera, the said side of the film support means abuts the camera and serves to position the film support the film support means relative to the camera.

The fact that when the cartridge of the invention is positioned within the camera, the side of the film support means facing the picture gate abuts the camera, enables the film support means, and thus the film in the region of the picture gate, the position of which is determined by the support means, to be more accurately positioned within the camera in a simple manner.

[Price 25p]

Advantageously, the side of the film support means facing the picture gate is of such configuration as to provide spacer means which projects forwardly of the film so as to abut the camera, in use.

Advantageously, when the cartridge is in position in the camera, the surface of the spacer means that abuts the camera is co-planar with at least a portion of the front surface of the front wall of the cartridge and, preferably, at least a portion of the front wall is also arranged to abut the camera. The spacer means advantageously projects through aperture means in the front wall.

The spacer means may consist of at least three projecting members and advantageously there are at least two such projecting members on each side of the film path. The cartridge may have a rear wall between the supply chamber and the take-up chamber which forms the film support means and the film support means may be fixed relative to the front wall.

The invention also provides a method of making a film cartridge comprising a front member formed with a picture gate and a rear member comprising means for supporting the film in the region of the picture gate formed with spacer means, the method comprising assembling the front and rear members so that the spacer means extends through corresponding aperture means in the front member and the front surface of the spacer means is co-planar with at least a portion of the front surface of the front member, and joining the front member to the rear member, the front and rear members being of such configuration as to provide, on assembly, a film supply chamber, a film take-up chamber and a film passageway between the two chambers and the spacer means being so arranged that when the assembled cartridge is positioned within a camera, the spacer means abuts the camera

and positions the rear wall relative to the camera.

Advantageously, the rear member is formed with at least two apertures and the front and rear members are assembled by pressing the front member into contact with a plane surface, with which the said front surface of the spacer means is also in contact, by inserting pressing means through the said apertures in the rear member.

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

Figure 1 shows the front of a film cartridge;

Figure 2 shows a side view partially in section, the section being along the lines II-II of Figure 1;

Figure 3 shows a section along the line III-III of Figure 2;

Figure 4 shows a section, in a direction normal to the film transport direction, through a second form of cartridge; and

Figure 5 shows a component of the cartridge shown in Figure 4.

Referring to Figures 1 to 3, a cartridge 1 comprises a front member, indicated generally by the reference numeral 4, and a rear member, indicated generally by the reference numeral 5, joined together to provide a film-supply chamber 2 and a film take-up chamber 3. The rear member 5 provides a rear wall 5a and the front member 4 provides a front wall 4a to a film passageway between the two chambers 2 and 3. The front wall 4a is formed with a picture gate 7 having a frame 6, which has a frame surface 6a bordered by forward-projecting walls 6b and 6c. The rear wall 5a forms a film-support member having a side 5b facing the picture gate 7, which is formed with a film support surface 5c.

On the side 5b of the rear wall 5a nearest the picture gate 7 are four moulded-on bolts 8 provided as spacers, two of which are arranged adjacent to each side of the surface 5c that is parallel to the film transport direction. The bolts 8 extend through corresponding apertures 6d in the frame surface 6a and rest with their end support surfaces 8a against cartridge-support means 9 of a camera 10. The distance between the ends 8a of the bolts 8 and the rear film-support surface 5c can be produced within precise tolerances.

Due to the positioning of the rear wall 5a by means of the bolts 8 abutting the cartridge-support means 9, it is only the configuration of the rear wall 5a which includes the support surface 8a, that determines the position of the rear film-support surface 5c (and hence the position of the film) in the camera 10 since this position is determined by the distance between

the two planes formed by the film-support surface 5c and the support surface 8a of the bolts 8. The spacing is not influenced by the welding of the rear member 5 to the frame of the front member.

The frame surface 6a and the support surfaces 8a of the bolts 8 are in the same plane, the position of the frame surface 6a relative to the surface 8a of the bolts 8 being determined during the joining of the two cartridge members 5 and 6. For this purpose, mandrils of a welding apparatus are inserted through two apertures 11 provided in the rear wall 5a in the region of the frame surface 6a to press the latter onto a pressing surface of the welding apparatus on which the support surfaces 8a of the bolts 8 also come to rest during the welding operation. The film cartridge 1, due to this measure, can then rest with its whole frame surface 6a on the cartridge-support means 9 of the camera 10. The film-support surface 5c and camera support surfaces 8a in this case again are determined only by the cartridge rear wall 5a.

Referring to Figures 4 and 5, a cartridge 101 comprises front and rear members joined together to provide a film-supply chamber and a film-take-up chamber connected by an intermediate portion 102. Only one of the chambers, indicated by the reference numeral 103 is shown in Figure 4. The portion 102 comprises a front wall which consists of a frame 104 and a rear wall 105. A picture gate 106 is cut out of the frame 104 and has a surface 106a bordered by forward-projecting walls 104b, 104c.

Between the frame 104 and the rear wall 105, a film-support member which comprises a film-guide plate 107 is arranged, the construction of which is shown in greater detail in Figure 5. With reference to this Figure, the film-guide plate 107 is provided with four bayonet lugs 108 angled towards the rear wall by way of which the plate is guided in a groove 105b of a recess 105a in the rear wall 105. Compression springs 109 between the rear wall 105 and the film-guide plate 107 urge the film-guide plate 107 against the side wall of the groove 105b opposite the recess 105a. Adjacent to the bayonet lugs 108 on the film-guide plate 107 there are angled support lugs 110 on the frame side which engage through apertures 104d in the frame surface 104a of the frame 104. The support lugs 110 serve as support surfaces for the film-guide plate 107 which co-operate with a recess 111 in the camera. The sides 113 of the film-guide plate 107 which are parallel to the film-transport direction are bent over in a U-shape so that the film guide plate 107 partly engages round the film 112 and forms a film channel.

The film-guide plate 107 accordingly rests on the one hand on the rear wall 105 by

way of the springs 109 and on the other hand on the supporting surface 111 in the camera by way of the support lugs 110. The position of the film-guide plate 107 and thus of the film 112 which it guides is precisely defined in the cartridge by the length of the support lugs 110, whilst the manufacturing tolerances of the film cartridge 101 are taken up by the resilient mounting of the film-guide plate 107 on the rear wall 105. The film position in the camera is thus not influenced by the welding of the front and rear cartridge members.

In order to be able to use roll film without protective paper in the film cartridge 101 when the cartridge is to be used in a camera without a frame counter, a frame counter, which is only indicated diagrammatically in Fig. 4 by a counting disc 114, can be arranged between the rear wall 105 and the film-guide plate 107. The frame counter is supported by way of a spindle 115 on the film-guide plate 107, whilst an observation window 116 for the counting disc 114 is cut into the rear wall 105. The method of operation of frame counters is already known.

The cartridge described with reference to Figs. 4 and 5 of the drawings is described and claimed in our co-pending application No. 10569/73 (Serial No. 1326422).

WHAT WE CLAIM IS:

1. A film cartridge which comprises a film-supply chamber, a film-take-up chamber, a front wall which is formed with a picture gate, and is located between the chambers, and means arranged to support the film in the region of the picture gate, the side of the film support means facing the picture gate being of such configuration, and the front wall being so arranged, that, when the cartridge is positioned within a camera, the said side of the film support means abuts the camera and serves to position the film support means relative to the camera.

2. A film cartridge as claimed in claim 1, wherein the side of the film support means facing the picture gate is of such configuration as to provide spacer means which projects forwardly of the film so as to abut the camera, in use.

3. A film cartridge as claimed in claim 2, wherein, when the cartridge is in position in the camera, the surface of the spacer means that abuts the camera is co-planer with at least a portion of the front surface of the front wall of the cartridge.

4. A film cartridge as claimed in claim 3, wherein when the cartridge is in position in the camera, at least a portion of the front surface of the front wall is arranged to abut the camera.

5. A film cartridge as claimed in any

one of claims 2 to 4, wherein the spacer means projects through aperture means in the front wall.

6. A film cartridge as claimed in any one of claims 2 to 5, wherein the spacer means consists of at least three projecting members.

7. A film cartridge as claimed in claim 6, wherein there are at least two projecting members on each side of the film path.

8. A film cartridge as claimed in any one of claims 1 to 7, which comprises a rear wall which forms the film support means.

9. A film cartridge as claimed in any one of claims 1 to 8, wherein the film support means is fixed relative to the front wall.

10. A film cartridge as claimed in claim 9, when dependent on claim 8, wherein the rear wall is provided, in the region of the edge of the picture gate with at least two apertures for use in joining the rear wall to the front wall.

11. A film cartridge as claimed in claim 1 and substantially as hereinbefore described with reference to, and as shown in, Figs. 1 to 3 of the accompanying drawings.

12. A method of making a film cartridge comprising a front member formed with a picture gate and a rear member comprising means for supporting the film in the region of the picture gate formed with spacer means, the method comprising assembling the front and rear members so that the spacer means extends through corresponding aperture means in the front member and the front surface of the spacer means is co-planer with at least a portion of the front surface of the front member and joining the front member to the rear member, the front and rear members being of such configuration as to provide, on assembly, a film supply chamber, a film take-up chamber and a film passageway between the two chambers and the spacer means being so arranged when the assembled cartridge is positioned within a camera, the spacer means abuts the camera and positions the rear wall relative to the camera.

13. A method as claimed in claim 12, wherein the rear member is formed with at least two apertures and the front and rear members are assembled by pressing the front member into contact with a plane surface, with which the said front surface of the spacer means is also in contact, by inserting pressing means through the said apertures in the rear member.

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way of the springs 109 and on the other hand on the supporting surface 111 in the camera by way of the support lugs 110. The position of the film-guide plate 107 and thus of the film 112 which it guides is precisely defined in the cartridge by the length of the support lugs 110, whilst the manufacturing tolerances of the film cartridge 101 are taken up by the resilient mounting of the film-guide plate 107 on the rear wall 105. The film position in the camera is thus not influenced by the welding of the front and rear cartridge members.

In order to be able to use roll film without protective paper in the film cartridge 101 when the cartridge is to be used in a camera without a frame counter, a frame counter, which is only indicated diagrammatically in Fig. 4 by a counting disc 114, can be arranged between the rear wall 105 and the film-guide plate 107. The frame counter is supported by way of a spindle 115 on the film-guide plate 107, whilst an observation window 116 for the counting disc 114 is cut into the rear wall 105. The method of operation of frame counters is already known.

The cartridge described with reference to Figs. 4 and 5 of the drawings is described and claimed in our co-pending application No. 10569/73 (Serial No. 1326422).

WHAT WE CLAIM IS:

1. A film cartridge which comprises a film-supply chamber, a film-take-up chamber, a front wall which is formed with a picture gate, and is located between the chambers, and means arranged to support the film in the region of the picture gate, the side of the film support means facing the picture gate being of such configuration, and the front wall being so arranged, that, when the cartridge is positioned within a camera, the said side of the film support means abuts the camera and serves to position the film support means relative to the camera.

2. A film cartridge as claimed in claim 1, wherein the side of the film support means facing the picture gate is of such configuration as to provide spacer means which projects forwardly of the film so as to abut the camera, in use.

3. A film cartridge as claimed in claim 2, wherein, when the cartridge is in position in the camera, the surface of the spacer means that abuts the camera is co-planer with at least a portion of the front surface of the front wall of the cartridge.

4. A film cartridge as claimed in claim 3, wherein when the cartridge is in position in the camera, at least a portion of the front surface of the front wall is arranged to abut the camera.

5. A film cartridge as claimed in any

one of claims 2 to 4, wherein the spacer means projects through aperture means in the front wall.

6. A film cartridge as claimed in any one of claims 2 to 5, wherein the spacer means consists of at least three projecting members.

7. A film cartridge as claimed in claim 6, wherein there are at least two projecting members on each side of the film path.

8. A film cartridge as claimed in any one of claims 1 to 7, which comprises a rear wall which forms the film support means.

9. A film cartridge as claimed in any one of claims 1 to 8, wherein the film support means is fixed relative to the front wall.

10. A film cartridge as claimed in claim 9, when dependent on claim 8, wherein the rear wall is provided, in the region of the edge of the picture gate with at least two apertures for use in joining the rear wall to the front wall.

11. A film cartridge as claimed in claim 1 and substantially as hereinbefore described with reference to, and as shown in, Figs. 1 to 3 of the accompanying drawings.

12. A method of making a film cartridge comprising a front member formed with a picture gate and a rear member comprising means for supporting the film in the region of the picture gate formed with spacer means, the method comprising assembling the front and rear members so that the spacer means extends through corresponding aperture means in the front member and the front surface of the spacer means is co-planer with at least a portion of the front surface of the front member and joining the front member to the rear member, the front and rear members being of such configuration as to provide, on assembly, a film supply chamber, a film take-up chamber and a film passageway between the two chambers and the spacer means being so arranged when the assembled cartridge is positioned within a camera, the spacer means abuts the camera and positions the rear wall relative to the camera.

13. A method as claimed in claim 12, wherein the rear member is formed with at least two apertures and the front and rear members are assembled by pressing the front member into contact with a plane surface, with which the said front surface of the spacer means is also in contact, by inserting pressing means through the said apertures in the rear member.

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