

PATENT SPECIFICATION (11)

1 436 081

1 436 081

- (21) Application No. 28492/74 (22) Filed 27 Jun. 1974
(31) Convention Application No. 9474/73 (32) Filed 27 Jun. 1973 in
(33) Switzerland (CH)
(44) Complete Specification published 19 May 1976
(51) INT. CL.² G03B 1/00
(52) Index at acceptance G2E A14X



(54) A CINEMATOGRAPHIC CAMERA

(71) We, BOLEX INTERNATIONAL S.A. of 18, Avenue des Alpes, CH-1450 STE-CROIX, Switzerland, a Swiss Company, 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 concerns a cinematographic camera.

At the present time Super 8 cinematographic films may have a sound track added after their development by splicing a magnetic tape along the unperforated edge. There are several drawbacks to this procedure mainly due to the fact that however carefully the operation is carried out, the sound track may become detached from the film.

It is advantageous to be able to use a cinematographic film contained in a cassette and having a sound track welded onto the film before its exposure to light. Such cassettes exist and are intended for use in a cinematographic camera fitted with a sound recording device. They have an open chamber through which the film passes to record the sound and a dark chamber in which the film is rolled before and after exposure. These cameras are costly and furthermore not all shots are suitable for simultaneous sound recording. However, the advantages of a pretracked film contained in a cassette are worthy of consideration even in a silent camera.

The use of such cassettes in a silent camera is not at present possible without risk of damage to the delicate emulsion coating on the film. For instance, when the film is drawn by the receiving spool into the open chamber where, in a sound camera, the sound recording device would normally be found, the film tends to have its delicate emulsion scratched on the sharp edges of the openings in the walls between the dark chamber and the open chamber. These openings are narrow and the passage which leads into the inside of the dark

chamber also commonly has several sharp bends to prevent light from entering and which are also capable of scratching the film emulsion.

In accordance with the present invention, there is provided a silent cinematographic film camera having a recess adapted to receive a sound film cassette having a dark chamber and an open chamber between which the film passes through narrow slots having edges capable of damaging the emulsion layer on the film, the camera being provided in the recess and at a position for registering with said open chamber, with guiding means shaped and arranged such that when the camera is in use the film section in the open chamber is deflected to follow a sinuous path between the two narrow slots, the end-portions of the path adjacent the slots extending in such a direction that the film travels through the slots with its emulsion layer held clear of the edges of the slots.

The means of guiding may be fixed or mobile, particularly rotating on an axle placed at the bottom of the recess for the cassette. These may be for example the extremities of the axles terminating in truncated cones which facilitate the location of the film when fitting the cassette into the recess. In another embodiment the guiding means are moulded to define between them a passage through which the film passes and which does not have sharp corners.

In another form the guiding means are fixed at the extremity of a pivoted arm which swings between a first, rest position and a second, working position in which it guides the film through the slots between the chambers of the cassette. The arm may be positionally controlled by the action of closing a lid, locking it, by putting the cassette in position, or by an outside switch, e.g. the main camera switch.

The invention will now be described in more detail, by way of examples, with reference to the accompanying drawings, in which:—

Figure 1 is an exploded view, in perspective and partly in section, of a silent cinemato-

50

55

60

65

70

75

80

85

90

graphic camera to be used with a pretracked film cassette showing guiding devices fixed in the camera;

5 Figure 2 is a schematic view of a cassette showing a variation of the guiding device mounted on a pivot;

Figure 3 is a schematic view showing another form of guiding device comprising an eccentric wheel;

10 Figure 4 is a schematic view of a guiding slot in the camera; and

Figure 5 is an enlarged view of rollers shown in Figures 2 and 3.

15 In Figure 1, a camera 1 has a case 2, a lens 3 and a lid 4. Inside the case there is a recess 5 into which fits a cassette 6 of pretracked cinematographic film 7. At the back of the recess 5 is a driving mechanism 8 for a roll of film in the cassette 6. On one of the inner walls of the
20 recess 5 are springs 9, in the form of resilient blades which push the cassette 6 towards a film-gate. The springs 9, preferably two, hold the cassette in its place. Two pins 10 which
25 are either fixed or rotating round their axes project into the recess 5 from the back. They are partially cylindrical and have frusto-conical tips which facilitate the correct location of the film when a cassette is introduced into the recess 5.

30 In Figures 2 and 3 the parts which are analogous with parts shown in Figure 1 are referred to by the same reference numbers.

A pivoted arm 21 with a roller 22 at its extremity, pivots round an axle 23 between a rest position, partly shown in dotted lines, and a working position shown in continuous lines. A second roller 24, which may be fixed or mobile, is placed in such a way that the exposed film 7 does not rub against a sharp
35 edge 25; when it moves from a dark chamber into an open chamber before returning to the dark chamber. The film follows the path shown in dots and dashes. The roller 22 lifts the loop of film thus preventing the emulsion from
40 rubbing against a second sharp edge 26 which is to be found flanking a slot through which the film passes from the open chamber into the dark chamber.

45 The lever 21 can be moved by various known means, e.g. by closing the lid 4, locking it, or by putting the cassette 6 in place or by means of the main switch.

50 Figure 3 shows a variation in which the roller mounted on a pivoting arm is replaced by an eccentric wheel 31 operated by known means such as those used to control the arm 21 in Figure 2.

55 Figure 5 shows, in perspective, the profiles of the rollers used in Figures 2 and 3 to guide motion of the film. The roller, referenced 51, rotates round an axle 52, and has a cylindrical slightly concave bearing surface 53 which ensures it does not come into contact with the emulsion coating of the film 7. Only two
60 narrow bands 54 and 55 touch the outer

margins of the film.

Figure 4 shows another form of guiding mechanism. It is made up essentially of two blocks 41 and 42 which are preferably moulded and which together form a narrow passage 43. A first film loop 44 is formed near a film-gate by the action of a claw mechanism (not shown) which pushes the film in the direction of the arrow in Figure 4 into the passage 43. Beyond the outlet end of the passage 43 the film strip encounters a friction drive (not shown) which, with the claw mechanism, ensures that the path of the film through the passage 43 is such that it travels from the dark chamber to the open chamber and back without coming into contact with sharp edges 46 and 26. In practice, the actual path followed by the film between the two blocks 41 and 42 can have any shape between the first extreme at which it encounters the block 41 only and a second extreme shape at which it encounters the block 42 only.

WHAT WE CLAIM IS:—

1. A silent cinematographic film camera having a recess adapted to receive a sound film cassette having a dark chamber and an open chamber between which the film passes through narrow slots having edges capable of damaging the emulsion layer on the film, the camera being provided in the recess and at a position for registering with said open chamber, with guiding means shaped and arranged such that when the camera is in use the film section in the open chamber is deflected to follow a sinuous path between the two narrow slots, the end-portions of the path adjacent the slots extending in such a direction that the film travels through the slots with its emulsion layer held clear of the edges of the slots. 90
2. A cinematographic camera as claimed in Claim 1, in which the guiding means comprises fixed parts in the camera. 95
3. A cinematographic camera as claimed in Claim 1, in which the guiding means comprises rollers. 100
4. A cinematographic camera as claimed in Claim 1, in which the guiding means includes a part fixed to a lid for closing the recess. 105
5. A cinematographic camera as claimed in Claim 1, in which the guiding means includes a part mounted on a pivoting arm and displaceable between a rest and a working position at which said path is formed. 110
6. A cinematographic camera as claimed in Claim 5, in which the pivoting arm is brought from its rest position to its working position by the action of closing a lid of the recess. 115
7. A cinematographic camera as claimed in Claim 6, in which the pivoting arm is brought from its rest position to its working position by the action of locking of a lid of the recess in its closed position. 120
8. A cinematographic camera as claimed in Claim 5, in which the pivoting arm is brought from its rest position to its working position by 125 130

graphic camera to be used with a pretracked film cassette showing guiding devices fixed in the camera;

5 Figure 2 is a schematic view of a cassette showing a variation of the guiding device mounted on a pivot;

Figure 3 is a schematic view showing another form of guiding device comprising an eccentric wheel;

10 Figure 4 is a schematic view of a guiding slot in the camera; and

Figure 5 is an enlarged view of rollers shown in Figures 2 and 3.

15 In Figure 1, a camera 1 has a case 2, a lens 3 and a lid 4. Inside the case there is a recess 5 into which fits a cassette 6 of pretracked cinematographic film 7. At the back of the recess 5 is a driving mechanism 8 for a roll of film in the cassette 6. On one of the inner walls of the recess 5 are springs 9, in the form of resilient blades which push the cassette 6 towards a film-gate. The springs 9, preferably two, hold the cassette in its place. Two pins 10 which are either fixed or rotating round their axes project into the recess 5 from the back. They are partially cylindrical and have frusto-conical tips which facilitate the correct location of the film when a cassette is introduced into the recess 5.

20 In Figures 2 and 3 the parts which are analogous with parts shown in Figure 1 are referred to by the same reference numbers.

25 A pivoted arm 21 with a roller 22 at its extremity, pivots round an axle 23 between a rest position, partly shown in dotted lines, and a working position shown in continuous lines. A second roller 24, which may be fixed or mobile, is placed in such a way that the exposed film 7 does not rub against a sharp edge 25, when it moves from a dark chamber into an open chamber before returning to the dark chamber. The film follows the path shown in dots and dashes. The roller 22 lifts the loop of film thus preventing the emulsion from rubbing against a second sharp edge 26 which is to be found flanking a slot through which the film passes from the open chamber into the dark chamber.

30 The lever 21 can be moved by various known means, e.g. by closing the lid 4, locking it, or by putting the cassette 6 in place or by means of the main switch.

35 Figure 3 shows a variation in which the roller mounted on a pivoting arm is replaced by an eccentric wheel 31 operated by known means such as those used to control the arm 21 in Figure 2.

40 Figure 5 shows, in perspective, the profiles of the rollers used in Figures 2 and 3 to guide motion of the film. The roller, referenced 51, rotates round an axle 52, and has a cylindrical slightly concave bearing surface 53 which ensures it does not come into contact with the emulsion coating of the film 7. Only two narrow bands 54 and 55 touch the outer

margins of the film.

45 Figure 4 shows another form of guiding mechanism. It is made up essentially of two blocks 41 and 42 which are preferably moulded and which together form a narrow passage 43. A first film loop 44 is formed near a film-gate by the action of a claw mechanism (not shown) which pushes the film in the direction of the arrow in Figure 4 into the passage 43. Beyond the outlet end of the passage 43 the film strip encounters a friction drive (not shown) which, with the claw mechanism, ensures that the path of the film through the passage 43 is such that it travels from the dark chamber to the open chamber and back without coming into contact with sharp edges 46 and 26. In practice, the actual path followed by the film between the two blocks 41 and 42 can have any shape between the first extreme at which it encounters the block 41 only and a second extreme shape at which it encounters the block 42 only.

WHAT WE CLAIM IS:-

1. A silent cinematographic film camera having a recess adapted to receive a sound film cassette having a dark chamber and an open chamber between which the film passes through narrow slots having edges capable of damaging the emulsion layer on the film, the camera being provided in the recess and at a position for registering with said open chamber, with guiding means shaped and arranged such that when the camera is in use the film section in the open chamber is deflected to follow a sinuous path between the two narrow slots, the end-portions of the path adjacent the slots extending in such a direction that the film travels through the slots with its emulsion layer held clear of the edges of the slots.

2. A cinematographic camera as claimed in Claim 1, in which the guiding means comprises fixed parts in the camera.

3. A cinematographic camera as claimed in Claim 1, in which the guiding means comprises rollers.

4. A cinematographic camera as claimed in Claim 1, in which the guiding means includes a part fixed to a lid for closing the recess.

5. A cinematographic camera as claimed in Claim 1, in which the guiding means includes a part mounted on a pivoting arm and displaceable between a rest and a working position at which said path is formed.

6. A cinematographic camera as claimed in Claim 5, in which the pivoting arm is brought from its rest position to its working position by the action of closing a lid of the recess.

7. A cinematographic camera as claimed in Claim 6, in which the pivoting arm is brought from its rest position to its working position by the action of locking of a lid of the recess in its closed position.

8. A cinematographic camera as claimed in Claim 5, in which the pivoting arm is brought from its rest position to its working position by



the action of locating the cassette in its operating position in the recess.

9. A cinematographic camera as claimed in Claim 6, in which the arm is biased towards its rest position by a spring and is displaced to its working position against the spring bias by an exterior switch.

10. A cinematographic camera as claimed in Claim 1, in which the guiding means comprise pins each having a tapered tip over which the film slides to its guided position when the cassette is introduced and/or the lid is closed.

11. A cinematographic camera as claimed in Claim 3, in which the rollers rotate around their axes and have concave lateral surfaces so that the emulsion coated side of the film only touches the rollers at their edges.

12. A cinematographic camera as claimed in Claim 1, in which the guiding means include an eccentric roller which is rotatable between a rest position when the cassette is introduced

into the recess working position.

13. A cinematographic camera as claimed in Claim 1, in which the guiding means comprises a passage which determines the path followed by the film in the open chamber and which is formed between two smooth surfaces.

14. A cinematographic camera as claimed in Claim 13, in which the smooth surfaces of the passage are provided by the opposed faces of two mouldings fixed in the recess.

15. A cinematographic camera as claimed in Claim 1, arranged and adapted to operate substantially as described with reference to any one of the embodiments shown in the accompanying drawings.

MARKS & CLERK
Chartered Patent Agents
57-60 Lincoln's Inn Fields
London WC2A 3LS
Agents for the Applicant(s)

Printed for Her Majesty's Stationery Office, by Croydon Printing Company Limited, Croydon, Surrey, 1976.
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.



* C L M S *