

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN OR RELATING TO CINE- FILM CAMERAS

(71) We, KARL VOCKENHUBER, of 118 Pötzleinsdorferstrasse, Vienna 18, and RAIMUND HAUSER, of 2 Goldeggasse, Vienna 4, both of Austria, and of Austrian nationality, 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 relates to a cine-film camera.

According to the present invention, there is provided a cine-film camera selectively capable of exposing a silent film contained in a cartridge of a first type and a sound film contained in a cartridge of a second type, comprising a cartridge compartment, a sensing device extending into the compartment for determining the type of cartridge inserted, first and second drive means for the film, a motor for providing power for at least the first drive means, first control means for maintaining the motor speed constant and second control means for maintaining a constant length of film between the first and second drive means, the sensing device being arranged to render one or other of the two control means inoperative in dependence upon the type of cartridge inserted.

The invention will now be described further, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows in sketches A and B two film cassettes, respectively, that shown in sketch A being for a silent film and that shown in sketch B being for a sound film;

Figure 2 is a side view, partially broken away, of a film camera having a cassette reception chamber in which is located a sound film cassette shown cooperating with tracers which sense the shape of the cassette casing;

Figure 3 shows a part of a cassette reception chamber modified to respond to the external shape of a cassette when fitted

therein by altering connections inside the apparatus to make them suitable for the film loaded in the cassette;

Figure 4 is a fragmentary view of Figure 3 as viewed from the left in that Figure;

Figure 5 shows one way of controlling the spacing between a pinch roller and a sound spindle in accordance with the external contour of a cassette fitted in the reception chamber;

Figure 6 is a plan view of Figure 5;

Figure 7 shows the arrangement of Figure 5 as viewed from the left hand side; and

Figure 8 shows a governor control circuit for a motor.

The cassette 1 shown in Figure 1A has no recess but the cassette 2 which is shown in Figure 1B is longer by an amount "a" and has a recess 3 in this zone.

A camera 18 is illustrated in Figure 2 having a cassette reception space 4 with tracing means 47 adapted to detect the kind of cassette inserted. Figure 3 shows the construction in detail of a possible tracing device. The cassette reception space 4 is provided on its underside with a movable bottom plate 25 which is guided in side walls 26, 27 of the reception space 4. Springs 28 maintain the plate 25 in the illustrated position which is also assumed when the silent film cassette 1 is inserted into the space 4. Levers 31, 42 which are pivotable about axes 29, 30 that are fixed in relation to the apparatus and bear resiliently on the rear of the bottom plate 25 remain in the position illustrated in Figure 3. The lever 31 is associated via a pin 33 with a slide 32 which is slidable on one casing wall 34 of the camera 18 in the zone of a socket 35 for an external microphone. When a silent film cassette 1 is inserted the slide 32 covers an aperture 36 in the housing wall 34 thus preventing the insertion of a plug 37 (Figure 2) for the microphone into the socket 35. Part of the slide 32 is constructed as an indicating device, one image 38 shown

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in Figure 4 appearing in silent film operation and one image 39 appearing in sound film operation in a window 40 which is adjacent to the socket 35.

5 If a sound cassette 2 is inserted into the camera 18 it will depress the bottom plate 25 against the springs 28 shown in Figure 3. The lever 31 pivots in the clockwise direction and moves the slide 32 into a position in which an aperture 41, that is provided on the slide 32, is in alignment with the aperture 36 thus enabling the microphone plug 37 to be connected to the socket 35. Sound film operation is likewise indicated by the image 39 which is moved into the window 40.

10 The second lever 42 which also bears resiliently on the underside of the bottom plate 25 is pivoted in the anti-clockwise direction about the axis 30 during the traversing upward motion of the slide 32 in Figure 3. This closes a switch 43 which is adapted to switch on, for example, an amplifier 44 for a sound recording device. The sound recording device in the illustrated example comprises a sound recording lamp 45 but this function could also be performed by the magnetic head 46 as illustrated in Figure 2. The sound recording device could also be directly switched on.

15 The system according to Figure 2 in which the tracing device comprises two tracers 47 in the limiting zone of the two cassettes 1, 2 and which utilizes a sound roller, shown but not referenced, in the form of a serrated drum, can also be replaced by a system according to Figures 5 to 7 which only shows the parts required to understand the system. The tracers 47, of which only one is shown, are again provided. The tracer 47 is disposed in a corner of a wall 48 which has been omitted from Figure 5 for the sake of clarity. A lever 49 bears under the action of a relatively strong spring on the rear of the tracer 47. The tracer 47 which extends through an opening 51 of the wall 48 is prevented from dropping out by an angled portion 52. The lever 49 is disposed on a spindle 53 on which a relatively short lever 54 is also mounted and is adapted to project in the forward direction through an opening in the wall 48.

20 A conventional sound spindle 55 on which a flywheel mass can be mounted behind the wall 48 in conventional manner is provided in place of the sound roller of Figure 2. The sound spindle 55 cooperates with a pinch roller 56 which is supported on a lever 57 that is pivotable about an axis 58. The lever 57 is loaded by a spring 59 in the sense of thrusting the roller 56 against the sound spindle 55 but the action of the spring 59 is less than that of the spring 50

(or of both springs 50 because the tracers 47 are provided in pairs according to Figure 2).

The lever 57 is provided with an eye through whose opening the lever 54 extends. Normally both tracers 47 are thrust by the springs 50 into the cassette chamber, the springs 50 overcoming the force of the spring 59 so that the pinch roller 56 is lifted off the sound spindle 55. However, if a cassette 2 is inserted into the camera 18 the cassette thrusts against both tracers 47, the levers 49, 54 are pivoted in a direction such that lever 57 pivots in the anti-clockwise direction (Figure 5) under the action of the spring 59 so that the pinch roller 56 bears upon the sound spindle 55.

The arrangement of the tracers 47 in the manner illustrated in Figure 2 is particularly advantageous because it also assists in providing better retention for a cassette 1.

25 An embodiment showing the characteristics of the invention is illustrated in Figure 8. It is known that the tape of a tape recorder is driven by a speed-stabilized motor which is advantageously also associated with a speed governor. A motor 20 of this kind for the sound spindle 55 is illustrated diagrammatically in Figure 2. In silent film operation this motor 20 would not be engaged with the film so that the film is driven exclusively by the claw 8. The claw 8 is associated with a motor 62, the indexing frequency of the claw being maintained constant by a centrifugal governor 63. The position of the governor 63 illustrated in Figure 8 corresponds to silent film operation, the motor 62 being connected via the terminals 64, 65 to a voltage source which is not shown. A switch 66 cooperates with the centrifugal governor 63 in known manner so that the motor circuit is interrupted in the event of an excess motor speed until the nominal speed is again restored. Interruption is provided by a nose 67 disposed on the centrifugal governor 63 and adapted to operate with the switch part 66b.

30 In sound film operation the film is additionally driven by the motor 20. Since this motor operates at a constant speed as already mentioned it follows that any additional speed regulation of the motor 20 would have a detrimental effect on the running of the film. Accordingly, the cassette tracer 47 connects a further regulating device 68 for the motor 62 in place of the regulating device 63. The regulating device 63 is switched off simply by the regulating range being set to a speed which is never reached in operation. To this end an arm 69 of the tracer 47 pivots the switch 66 into a position in which the centrifugal governor 63 would be switched

only with a speed above the operating speed (position of the switch 66 in Figure 8 shown in dotted lines). A further arm 70 of the cassette tracer 47 additionally operates a selector switch 71 through which the regulating device 68 is connected to the motor circuit. The regulating device 68 may be a known tracer adapted to trace the magnitude of the film loop which is formed between the claw 8 and the sound spindle 55, the motor 62 being briefly switched off if the loop is too large. The regulating device 68 may of course also comprise a device adapted to trace, for example, the number of perforations between the claw 8 and the sound spindle 55. In general however the regulating device 68 will maintain a constant length of film between them.

comprising a cartridge compartment, a sensing device extending into the compartment for determining the type of cartridge inserted, first and second drive means for the film, a motor for providing power for at least the first drive means, first control means for maintaining the motor speed constant and second control means for maintaining a constant length of film between the first and second drive means, the sensing device being arranged to render one or other of the two control means inoperative in dependence upon the type of cartridge inserted.

2. A cine-film camera as claimed in claim 1 and substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

20 WHAT WE CLAIM IS:—

1. A cine-film camera selectively capable of exposing a silent film contained in a cartridge of a first type and sound film contained in a cartridge of a second type,

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