

PATENT SPECIFICATION (11)

1 468 687

1 468 687

- (21) Application No. 28790/74 (22) Filed 28 June 1974 (19)
(31) Convention Application No. 2 333 011
(32) Filed 28 June 1973 in
(33) Fed. Rep. of Germany (DT)
(44) Complete Specification published 30 March 1977
(51) INT. CL.³ G03B 31/02
(52) Index at acceptance
G5R B12 B264 B373 B37Y B383 B38Y B444 B788



(54) CINEMATOGRAPHIC CAMERAS

(71) We, AGFA-GEVAERT AKTIENGESSELLSCHAFT, 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 cinematographic cameras, and especially to those for film having a sound track and with means for transferring the sound information onto the sound track of the film.

The invention provides a cine camera for film having a sound track, which includes an electrical damping (or muting) device for muting the signal path for sound information, which muting device is capable of being rendered operative at the beginning of a take and of remaining operative for a period lasting at least until the drive motor for film transport has reached normal running speed.

The arrangement according to the invention tends to prevent sound distortion and interfering noises at the beginning of a take, since the recording is not carried out in full strength until the end of the stated period. Such distortion and noises would occur in a cine camera with no muting device while the film advance means was starting, and if the motor is driven by a battery, the output of the motor cannot be increased beyond a certain amount and it takes a certain time before the film advance means reaches its normal running speed.

Advantageously, the muting device comprises a semi-conductor arrangement which is controlled by a timing circuit to vary its resistance and which is arranged to shunt the sound signal path. The advantage produced by this is that the sound recording does not begin suddenly, but as a steady increase. This is advantageous particularly when there is a change in scene.

Advantageously, the semi-conductor arrangement comprises a field-effect transistor, preferably with the gate electrode of the transistor connected to the timing circuit and the timing circuit being arranged to be

rendered operative by operating the camera release, so as to gradually switch the transistor off. The timing circuit may include a capacitor and a resistor. The transistor may be arranged to be rendered conducting by switching on a battery contact of the camera. The timing circuit may be rendered operative by connecting it to a voltage source. The motor for film transport may be an electric motor, and the same battery may be used for the motor, the muting device, the field-effect transistor and the timing circuit.

According to a further advantageous arrangement, the muting device is arranged to remain operative for a period substantially equal to that required for the section of film that is adjacent the means for recording the sound onto the film at the beginning of a take to run through to the picture gate. This makes it possible to ensure that the muting lasts at least until the film advance means has reached normal running speed, and has the advantage that, for example, after cutting the film at the points where there is a change in scene, there are no residual sound recordings associated with the removed piece of film present in the remaining pieces of film.

In an advantageous manner, the semi-conductor arrangement shunts the input of an amplifier arranged in the sound signal path, the output of the amplifier is connected to a magnetic recording head, and the output of a high-frequency generator is also connected to the recording head.

Advantageously, there are provided a microphone and a microphone amplifier connected thereto, in which the output of the microphone amplifier is fed through a resistor to the sound signal path where the muting device is connected to it, the resistance of the resistor being high compared with that of the semi-conductor arrangement when the muting device is operative.

A cine camera constructed in accordance with the invention will now be described, by way of example, with reference to the accompanying drawing, which is a schematic representation of the circuit of the camera

and of a microphone arrangement for the camera.

Referring to the Figure, a housing of a cinematographic camera is indicated by the reference numeral 1. A picture gate is indicated by the reference numeral 2, a film by the reference numeral 3, and a magnetic recording head by the reference numeral 4. A winding 5 is connected via a resistor 6 to the output of an amplifier 7. In addition, the winding 5 is connected via a resistor 8 to the output of a high-frequency generator (bias oscillator) 9.

The camera includes an electrical muting device for muting the signal path for sound information at the beginning of a take; the muting device comprises a field-effect transistor 10 which shunts the sound signal path at the input of the amplifier 7, and a timing circuit comprising resistors 12 and 13 and a capacitor 14.

The input of the amplifier 7 is connected to a main electrode of the field-effect transistor 10. A resistor 11 of high resistance is located in the main electrode circuit of the field-effect transistor 10. The gate electrode of the field-effect transistor 10 is connected to the timing circuit at a tapping between the two resistors 12 and 13. A voltage source 16 is connected in circuit by means of a battery contact (not shown in the drawings) which is closed when the camera is to be used. When this is done the entire circuit, and in particular the generator 9, is switched on ready for operation. The voltage source 16 may be connected to the timing circuit to render it operative by means of a release contact 15; the release contact 15 is associated with the camera release and is closed when the camera release is operated to begin filming.

The field-effect transistor 10 is arranged to conduct when the gate electrode is at zero potential but to be blocked when the gate electrode is at a positive potential. When the contact 15 is open, the gate electrode is at a negative potential and so the transistor is conducting. On closing the contact 15, the transistor 10 is slowly switched off by the timing circuit as the capacitor 14 charges. The transistor 10 is switched off over a period which is determined by the time constants of the timing circuit, that is, by the values of the resistors 12 and 13 and by the value of the capacitor 14. These values are so chosen that the field effect transistor 10 is rendered non-conducting after a period which corresponds to the time required for a point P on the film 3 that is adjacent the head 4 at the beginning of a take to pass to the picture gate 2 (by which time the film advance means and motor therefor will be at normal running speed).

The reference numerals 17, 18 and 19 indicate the connections in the camera for

the microphone arrangement 20. The connections in the microphone arrangement are indicated by the reference numerals 21, 22 and 23. The microphone arrangement 20 contains the actual microphone 24 and an amplifier 25. The output of the amplifier 25 of the microphone arrangement 20 passes via the connections 23 and 19 and via the resistor 11 to the input of the amplifier 7.

To commence a take, the battery contact is closed to connect the voltage source in circuit. Then the release is operated, so that the contact 15 is closed, and the drive circuit for the drive motor, which is not shown, is closed. Since the field effect transistor 10 is then switched on, the sound signal path is muted and no sound information can pass onto the sound track (not illustrated) of the film 3. Only when the capacitor 14 has been charged to such an extent that the field-effect transistor 10 is switched-off (blocked) is the muting stopped so that the sound information can, after amplification in the amplifier 7, pass onto the sound track of the film 3. At the end of a take, the switch 15 is opened again, to be closed again when there is a new take. If the muting device were not provided, high frequency interference noises would be heard at the beginning of a take on reproducing the film at a constant projection speed.

WHAT WE CLAIM IS:—

1. A cine camera for film having a sound track, which includes an electrical muting device for muting the signal path for sound information, which muting device is capable of being rendered operative at the beginning of a take and of remaining operative for a period lasting at least until the film advance means has reached normal running speed.

2. A cine camera as claimed in claim 1, in which the muting device comprises a semi-conductor arrangement which is controlled by a timing circuit to vary its resistance and which is arranged to shunt the sound signal path.

3. A cine camera as claimed in claim 2, in which the timing circuit includes a capacitor and a resistor.

4. A cine camera as claimed in claim 2 or claim 3, in which the semi-conductor arrangement comprises a field-effect transistor.

5. A cine camera as claimed in claim 4, in which the gate electrode of the field-effect transistor is connected to the timing circuit, and the timing circuit is arranged to be rendered operative by operating the camera release.

6. A cine camera as claimed in any one of claims 2 to 5, in which a magnetic sound recording head is arranged to receive the sound signal.

and of a microphone arrangement for the camera.

Referring to the Figure, a housing of a cinematographic camera is indicated by the reference numeral 1. A picture gate is indicated by the reference numeral 2, a film by the reference numeral 3, and a magnetic recording head by the reference numeral 4. A winding 5 is connected via a resistor 6 to the output of an amplifier 7. In addition, the winding 5 is connected via a resistor 8 to the output of a high-frequency generator (bias oscillator) 9.

The camera includes an electrical muting device for muting the signal path for sound information at the beginning of a take; the muting device comprises a field-effect transistor 10 which shunts the sound signal path at the input of the amplifier 7, and a timing circuit comprising resistors 12 and 13 and a capacitor 14.

The input of the amplifier 7 is connected to a main electrode of the field-effect transistor 10. A resistor 11 of high resistance is located in the main electrode circuit of the field-effect transistor 10. The gate electrode of the field-effect transistor 10 is connected to the timing circuit at a tapping between the two resistors 12 and 13. A voltage source 16 is connected in circuit by means of a battery contact (not shown in the drawings) which is closed when the camera is to be used. When this is done the entire circuit, and in particular the generator 9, is switched on ready for operation. The voltage source 16 may be connected to the timing circuit to render it operative by means of a release contact 15; the release contact 15 is associated with the camera release and is closed when the camera release is operated to begin filming.

The field-effect transistor 10 is arranged to conduct when the gate electrode is at zero potential but to be blocked when the gate electrode is at a positive potential. When the contact 15 is open, the gate electrode is at a negative potential and so the transistor is conducting. On closing the contact 15, the transistor 10 is slowly switched off by the timing circuit as the capacitor 14 charges. The transistor 10 is switched off over a period which is determined by the time constants of the timing circuit, that is, by the values of the resistors 12 and 13 and by the value of the capacitor 14. These values are so chosen that the field effect transistor 10 is rendered non-conducting after a period which corresponds to the time required for a point P on the film 3 that is adjacent the head 4 at the beginning of a take to pass to the picture gate 2 (by which time the film advance means and motor therefor will be at normal running speed).

The reference numerals 17, 18 and 19 indicate the connections in the camera for

the microphone arrangement 20. The connections in the microphone arrangement are indicated by the reference numerals 21, 22 and 23. The microphone arrangement 20 contains the actual microphone 24 and an amplifier 25. The output of the amplifier 25 of the microphone arrangement 20 passes via the connections 23 and 19 and via the resistor 11 to the input of the amplifier 7.

To commence a take, the battery contact is closed to connect the voltage source in circuit. Then the release is operated, so that the contact 15 is closed, and the drive circuit for the drive motor, which is not shown, is closed. Since the field effect transistor 10 is then switched on, the sound signal path is muted and no sound information can pass onto the sound track (not illustrated) of the film 3. Only when the capacitor 14 has been charged to such an extent that the field-effect transistor 10 is switched-off (blocked) is the muting stopped so that the sound information can, after amplification in the amplifier 7, pass onto the sound track of the film 3. At the end of a take, the switch 15 is opened again, to be closed again when there is a new take. If the muting device were not provided, high frequency interference noises would be heard at the beginning of a take on reproducing the film at a constant projection speed.

WHAT WE CLAIM IS:—

1. A cine camera for film having a sound track, which includes an electrical muting device for muting the signal path for sound information, which muting device is capable of being rendered operative at the beginning of a take and of remaining operative for a period lasting at least until the film advance means has reached normal running speed.

2. A cine camera as claimed in claim 1, in which the muting device comprises a semi-conductor arrangement which is controlled by a timing circuit to vary its resistance and which is arranged to shunt the sound signal path.

3. A cine camera as claimed in claim 2, in which the timing circuit includes a capacitor and a resistor.

4. A cine camera as claimed in claim 2 or claim 3, in which the semi-conductor arrangement comprises a field-effect transistor.

5. A cine camera as claimed in claim 4, in which the gate electrode of the field-effect transistor is connected to the timing circuit, and the timing circuit is arranged to be rendered operative by operating the camera release.

6. A cine camera as claimed in any one of claims 2 to 5, in which a magnetic sound recording head is arranged to receive the sound signal.



(2)

7. A cine camera as claimed in claim 6, in which an amplifier is arranged in the sound signal path, the output of the amplifier being connected to the recording head, and the output of a high-frequency generator also being connected to the recording head.

8. A cine camera as claimed in claim 6, in which the input of the amplifier is shunted by the semi-conductor arrangement.

9. A cine camera as claimed in any one of claims 2 to 8, in which there is provided a microphone and a microphone amplifier connected thereto, in which the output of the microphone amplifier is fed through a resistor to the sound signal path where the muting device is connected to it, the resistance of the resistor being high compared with that of the semi-conductor arrange-

ment when the muting device is operative. 20

10. A cine camera as claimed in any one of claims 1 to 9, in which the muting device is arranged to remain operative for a period substantially equal to that required for the section of film that is adjacent the means for recording the sound onto the film at the beginning of a take to run through the picture gate. 25

11. A cine camera substantially as hereinbefore described with reference to, and as shown in, the accompanying drawing. 30

ABEL & IMRAY,
Chartered Patent Agents,
Northumberland House,
303—306 High Holborn,
London, WC1V 7LH.

Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1977.
Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY
from which copies may be obtained.

