United States Patent [19]

Blaschek

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[45] **Mar. 26, 1974**

[54] **CASSETTE ADAPTED TO BE EXTERNALLY ATTACHED TO A MOTION PICTURE CAMERA**

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[73] Assignee: **Arnold & Richter KG**, Munich, Germany

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** ..... **352/78 R**, 352/159

[51] **Int. Cl.** **G03b 23/02**

[58] **Field of Search** 352/72, 78, 157, 158, 159; 242/71.2; 226/55, 57, 58

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Attorney, Agent, or Firm—Fleit, Gipple & Jacobson

[57] **ABSTRACT**

The cassette comprises film path means and a loop former detachably mounted on the film path means.

7 Claims, 11 Drawing Figures

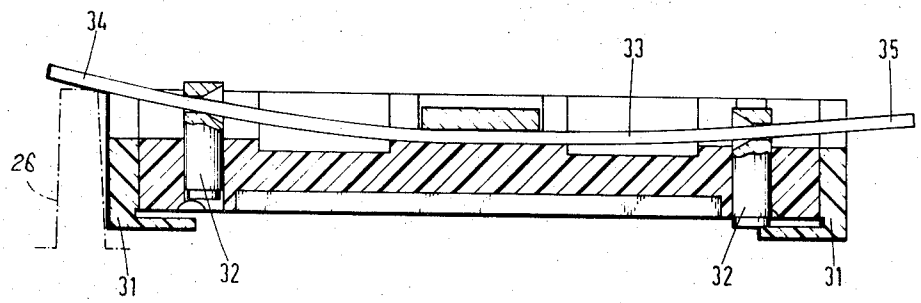


Fig. 1

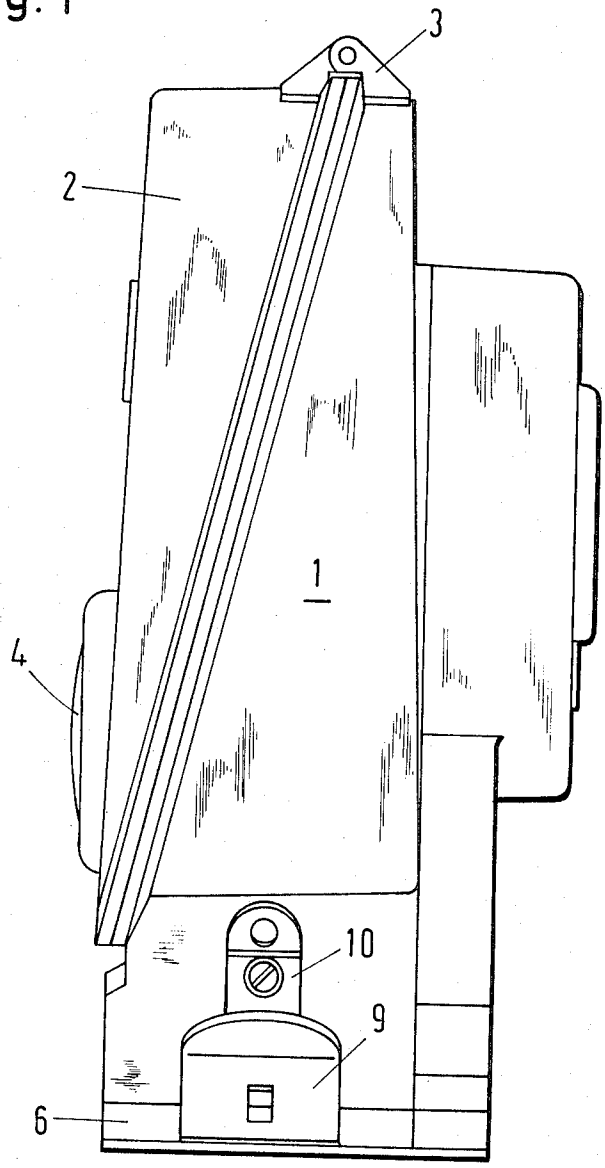


Fig. 2

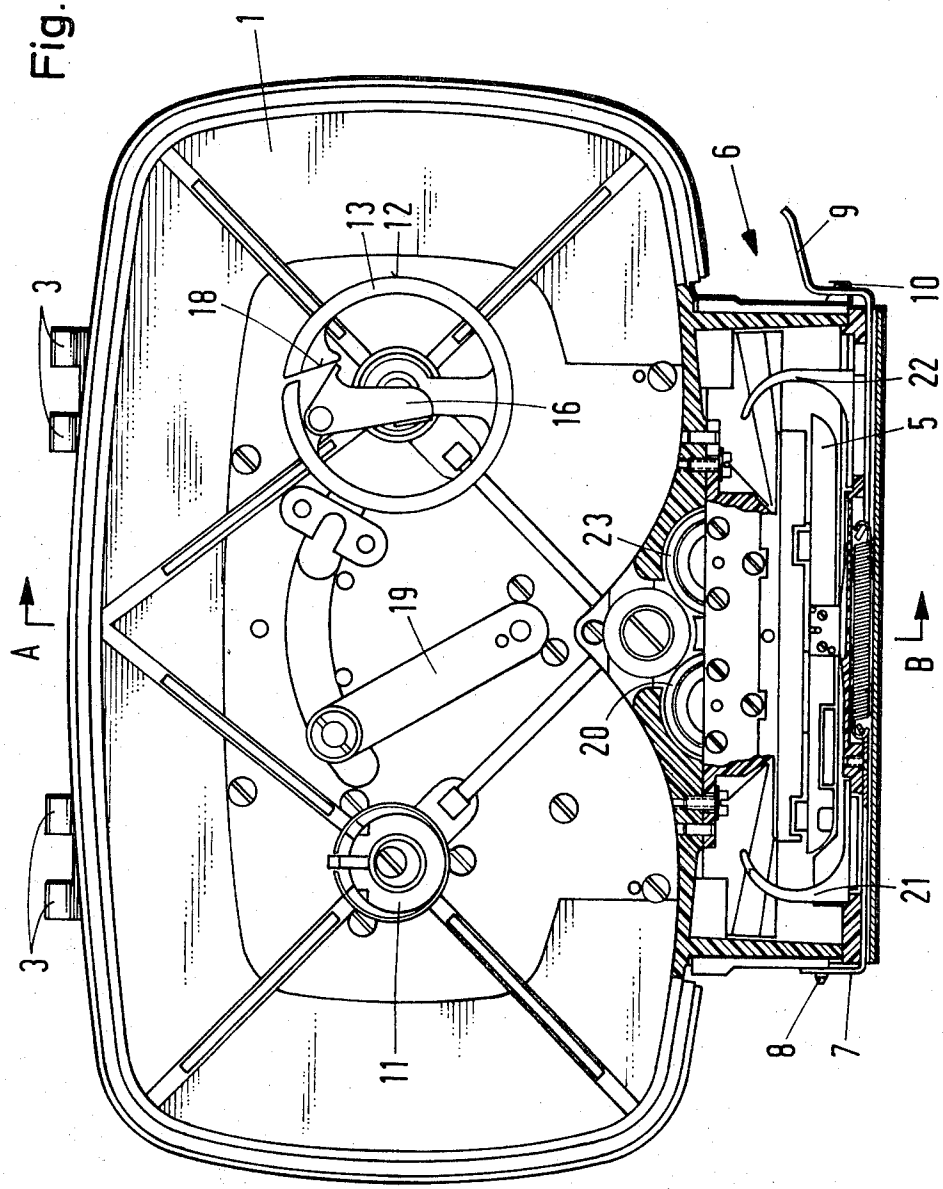


Fig. 3

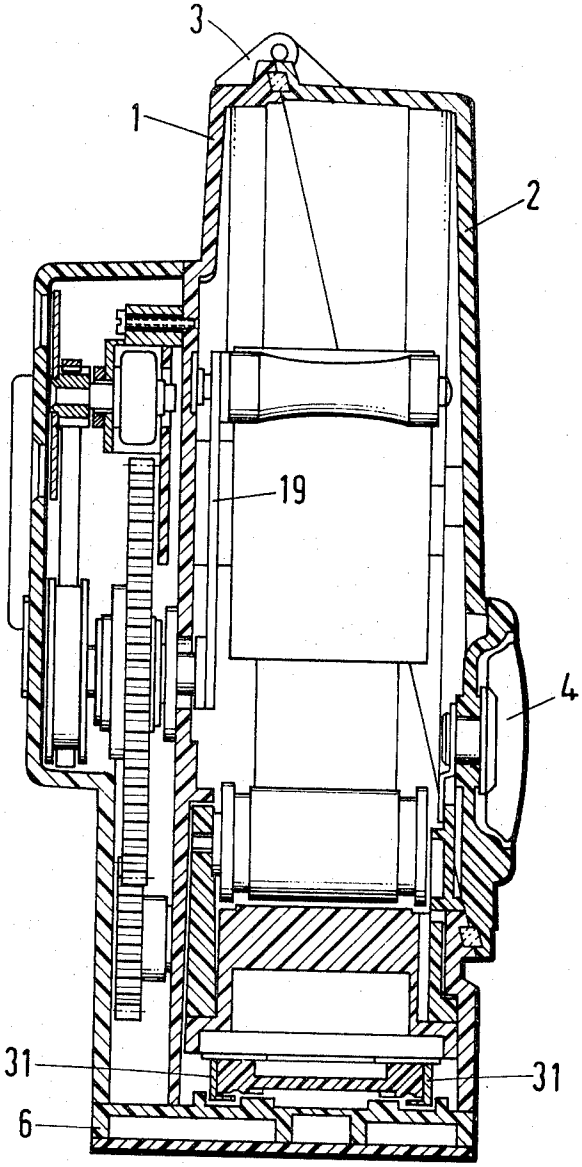
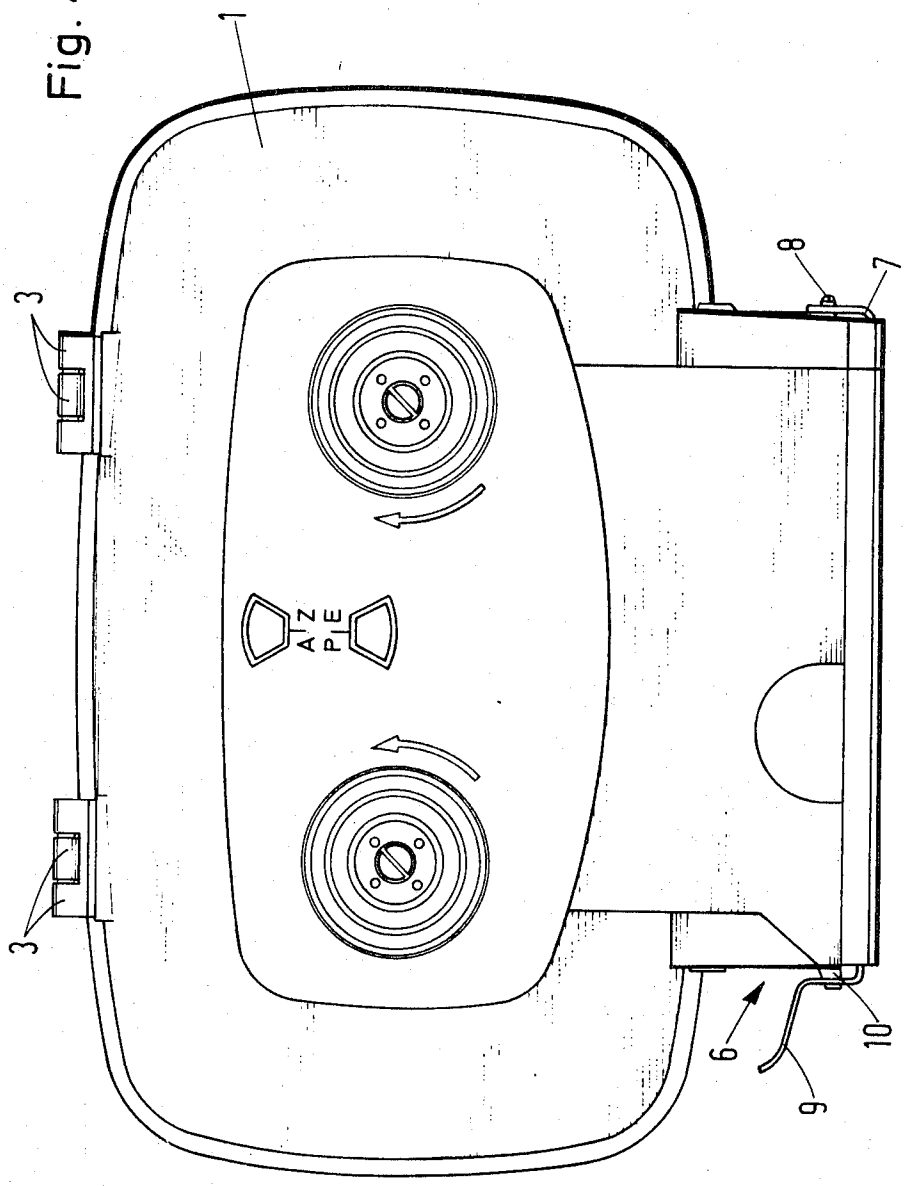


Fig. 4



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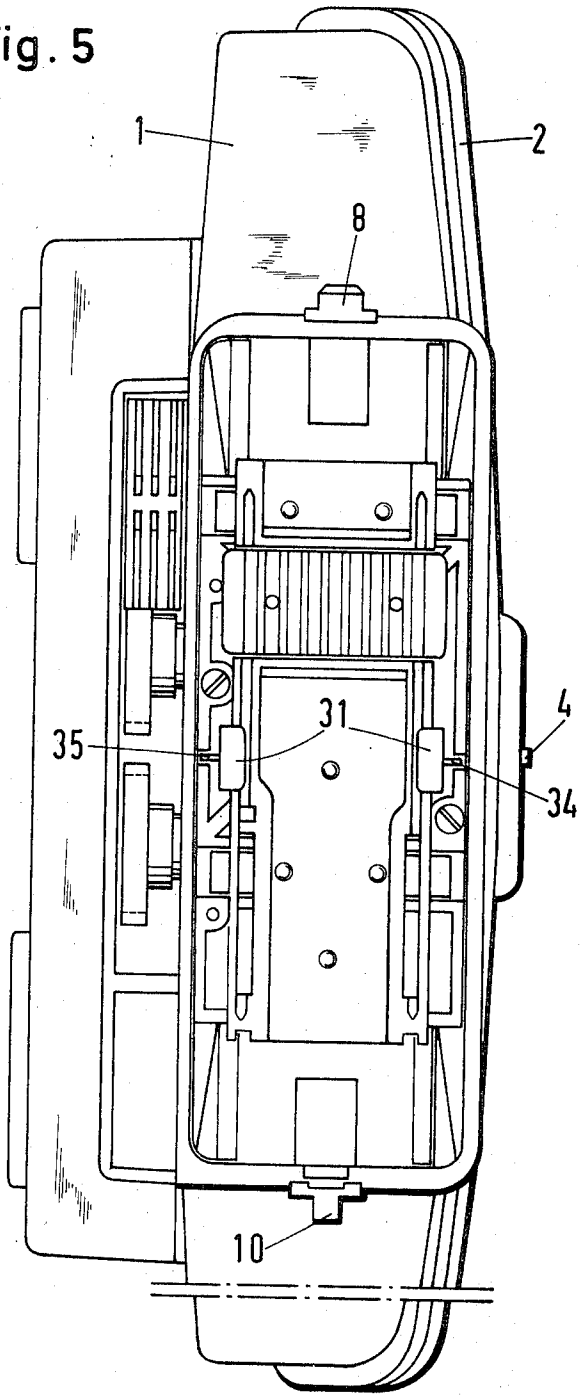


Fig. 6

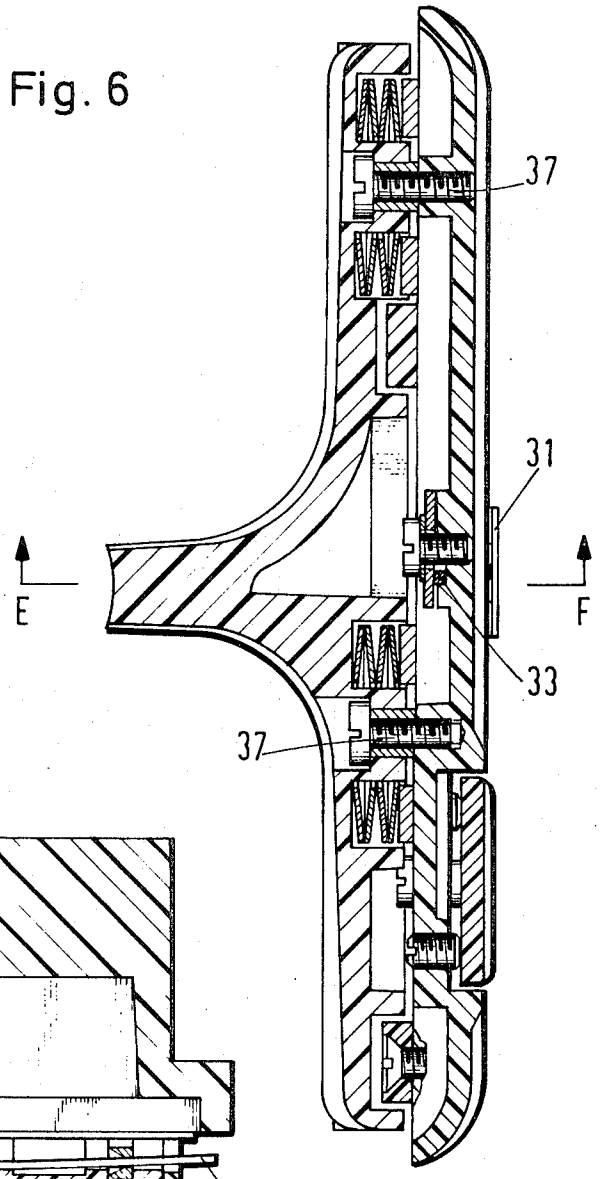
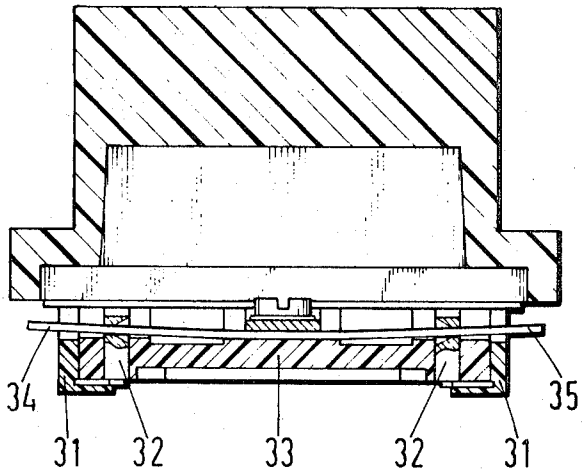


Fig. 7



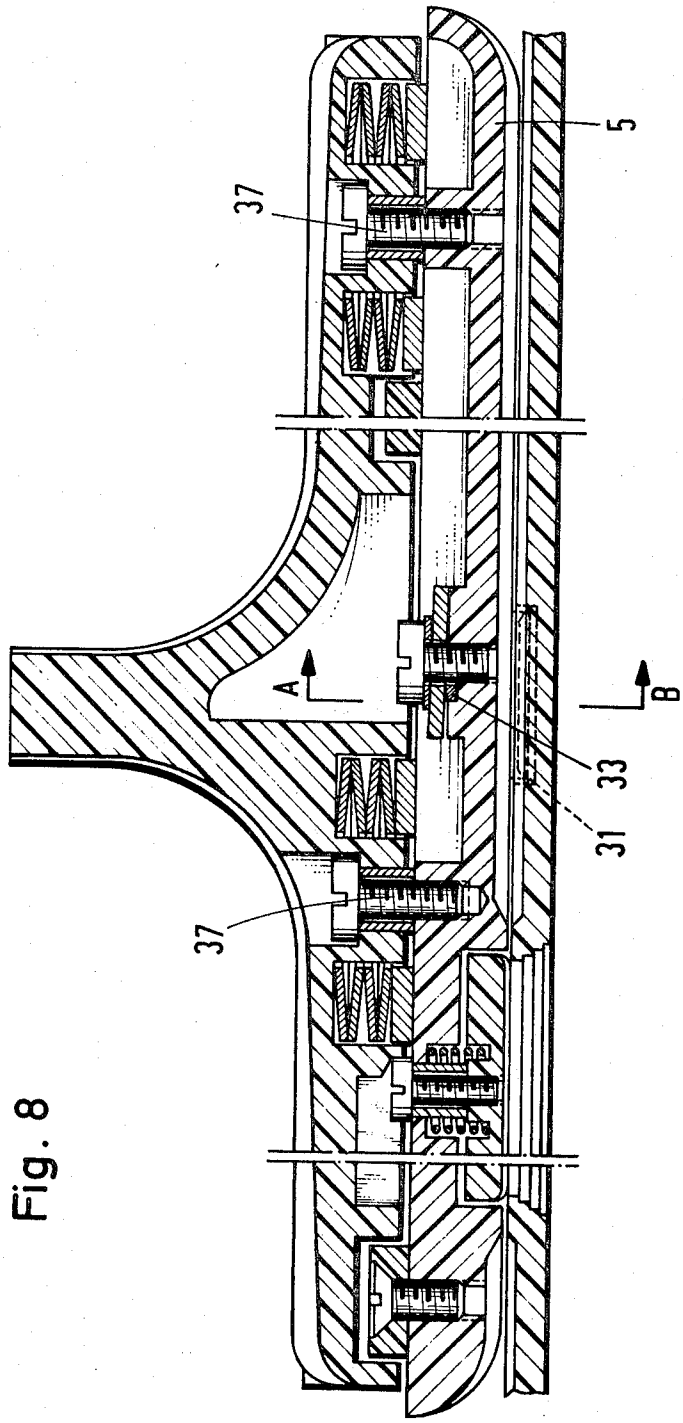


Fig. 8

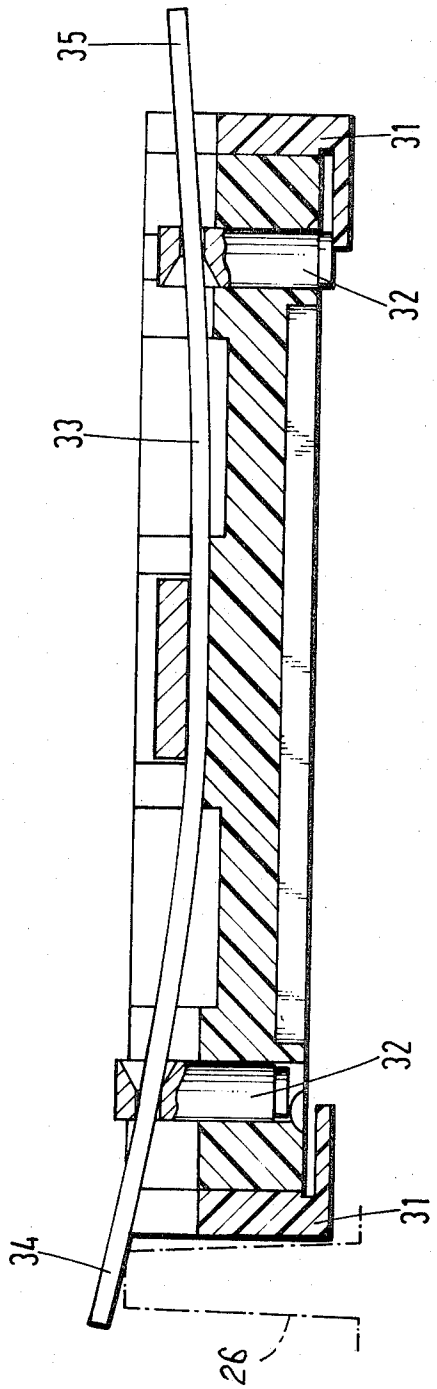


Fig. 9

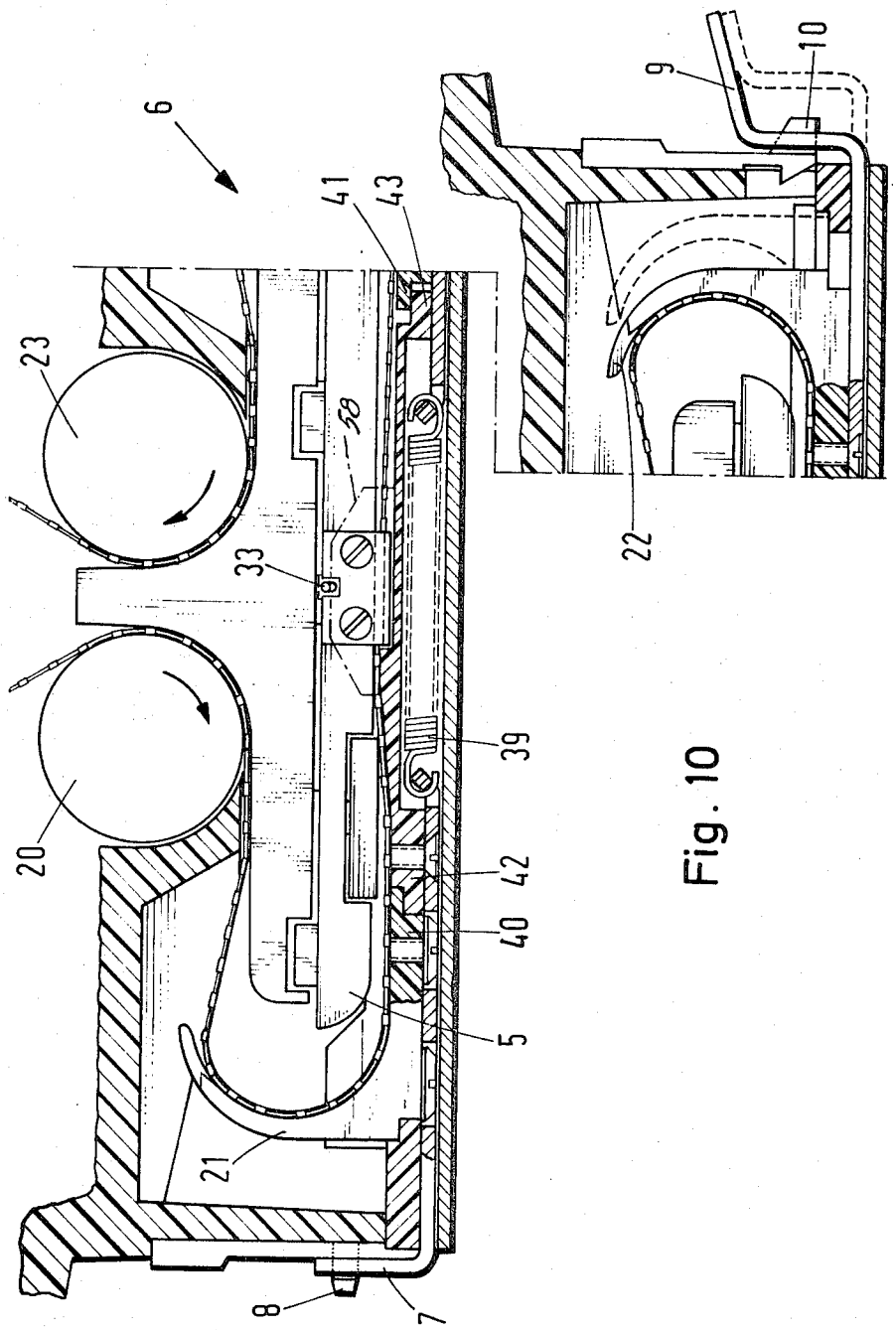
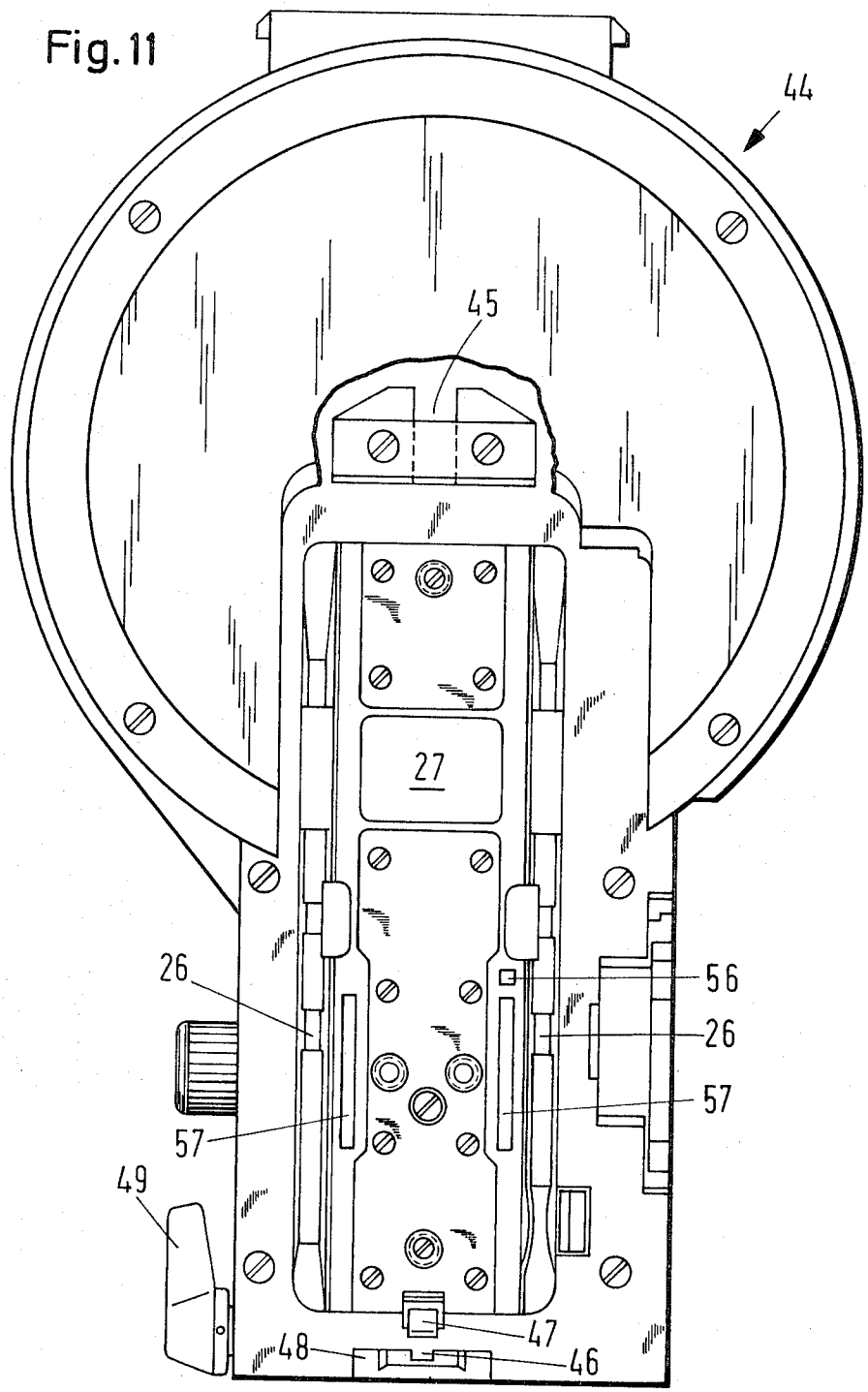


Fig. 10

Fig. 11



CASSETTE ADAPTED TO BE EXTERNALLY ATTACHED TO A MOTION PICTURE CAMERA

This invention relates to a cassette which is adapted to be externally attached to a motion picture camera and comprises film path means.

It is often difficult to load the film into known film cassettes of this kind. Besides, the film path means are not protected and for this reason may suffer damage so that the subsequent operation of the camera to which the cassette is externally attached may be adversely affected.

It is an object of the invention to provide a device by which the loading of the film into the cassette is facilitated and the film path means are protected.

This object is accomplished according to the invention in that a loop former is detachably mounted on the film path means. This loop former automatically guides the film over the film path means and also ensures the formation of the loop which is required and which could otherwise be formed only by complicated manipulations.

In a desirable development, the loop former is designed to interengage with the detent means which serve to connect the cassette to the camera body.

In another desirable development of the invention resides in that the film path means of the cassette are provided with detent pins for fixing the film loop in position when the loop former has been removed. These detent pins ensure the proper position of the film in the cassette relative to the camera body. When the loaded cassette has been attached to the camera body, the pull-down claws provided in the camera body can enter the perforations of the film in the proper orientation. The invention provides means which disengage the detent pins from the perforations of the film in response to the mounting of the loop former and to the application of the cassette to the camera body.

An embodiment of the invention will now be explained more fully and by way of example with reference to the drawing, in which

FIG. 1 is a side elevation showing the cassette,

FIG. 2 is a front elevation showing the cassette without a cassette cover,

FIG. 3 is a sectional view taken on line A-B in FIG. 2,

FIG. 4 is a rear elevation showing the cassette,

FIG. 5 is an top plan view showing the film path means of the cassette without a loop former,

FIG. 6 is a side sectional view showing the film path means of the cassette,

FIG. 7 is a sectional view taken on line E-F of FIG. 6.

FIG. 8 is an enlarged side sectional view of the film path means,

FIG. 9 is a sectional view taken on line A-B of FIG. 8,

FIG. 10 is a side sectional view showing the loop former, and

FIG. 11 is an elevation showing the film guide of the camera body.

As is apparent from FIG. 1, a cassette cover 2 of a cassette 1 can be swung about a hinge 3. As is apparent from FIGS. 1 and 3, the cassette is diagonally divided by the cassette cover 2 along a diagonal which extends approximately from the hinges 3 disposed at the lower edge of the top of the cassette to locking means 4 provided in the lower portion of the forward face of the cassette 1.

FIG. 2 is a front elevation showing the cassette 1 with the cassette cover 2 removed. The housing provided adjacent to the film path means 5 and to a loop former 6 detachably mounted thereon is shown partly in section. An angled arm 7 is formed with an eyelet, which is not shown and with which the loop former 6 is hooked on the detent projection 8 of the cassette 1. The loop former is then forced onto the cassette until a detent spring 9 having an aperture 9, which is not shown, snaps at said aperture into a detent projection 10 of the cassette 1. A holder 11 serves to receive a supply coil of film. The film is withdrawn from the supply coil and is wound up on a take-up core 12.

When a pressure lever 19 has been swung back and a supply coil of film is placed on the holder 11, the free end of the film can be automatically guided by a guide roller 20 and a curved arm 21 of the loop former 6 over the film path member 5 until the film end slides over an oppositely curved arm 22 of the loop former 6 to a guide roller 23 and is guided back by the latter into the cassette chamber. The free end of the film can then easily be inserted into a slot in a ring 13 of the take-up reel 12 and by means of a clamping lever 16 can be clamped against an abutment 18.

FIG. 10 shows the loop former 6 entirely in section. The arcuate arms 21 and 22 of the loop former 6 are braced against each other by a coil spring 39 and at their ends 40 and 41 bear on associated stops 42 and 43. The coil spring 39 produces the required contact pressure ensuring that the loop former will be reliably held on the detent pins 8 and 9 of the cassette 1.

Film guide elements 31 are provided laterally of the film path means. Detent pins 32 are disposed under these film guide elements, which enter the perforations of the film in the cassette when the same has been removed from the camera body and when the loop former has been removed. The detent pins 32 are slidably mounted in bores and are held in position by a resilient wire member 33, which forms legs 34 and 35 which laterally protrude from the film path means. As is apparent from the right in FIG. 9, the resilient wire member 33 holds the pins 32 in the perforations of the film. As the camera body or the loop former 6 is applied to the cassette 1, the pin 32 is moved out of the perforations of the film in the cassette by means of guide strips 26 (FIG. 9) or lugs 58 (FIG. 10), respectively.

FIG. 11 shows a registration pin 56, which holds the film in position during the exposure. The pull-down claws move in slots 57. The detent pins 32 provided in the film path means of the cassette ensure that the film will be properly positioned when the cassette has been attached to the camera body so that the registration pin 56 and the pull-down claws can enter the perforations of the film. FIG. 11 also shows catches 45 and 46 into which detent projections 10 and 8, respectively, fit for connecting cassette 1 to the camera body.

In single-chamber cassettes and two-chamber cassettes having built-in supply and take-up sprockets, the outer film loop facing the camera must have a predetermined size, which depends on the type of equipment. When the loop former 6 has been applied to the cassette 1, the film can be most easily loaded into the cassette and the proper length of film will be automatically provided for outside the film chamber of the cassette. When the loop former 6 has been removed, the film is

hedl in a predetermined position by means of two pins **32**, as has been described hereinbefore, in such a manner that a tip **56** with which the registration pin protrudes from the film plane of the camera body enters the associated perforation of the film as the cassette **1** is attached to the camera body. As a result, the film loops disposed above and below the film gate **27** have the desired sizes. The loop former **6** does not only facilitate the loading of the film into and the fixation of the film in the cassette but also covers the film path means to protect the same from being soiled.

What is claimed is:

1. In a cassette which is adapted to be externally attached to a motion picture camera and comprises film path forming means, the improvement comprising a loop former detachably mounted on the film path forming means for automatically guiding the film over the film path forming means and for ensuring the formation of the film loop, the film path forming means of the cassette being provided with detent pins for fixing the film loop in position when the loop former is not attached to the cassette, and means for disengaging the detent pins from the perforations of the film in response to the mounting of the loop former and to the attachment of the cassette to the camera body.

2. A cassette according to claim **1**, in which the cassette includes detent means which serve to connect the cassette to the camera body and which interengages with the loop former.

3. A cassette according to claim **1**, in which the detent pins are adapted to ensure the proper position of the film in the cassette relative to the camera body.

4. A cassette according to claim **1** in which the detent pins are mounted laterally of the film path forming means.

5. A cassette according to claim **1** in which the detent pins are mounted in bores in film guide elements mounted laterally of the film path forming means.

6. A cassette according to claim **1** in which the means for disengaging the detent pins from the perforations of the film comprises a resilient wire member having legs which protrude laterally of the film path forming means and which extend through bores provided in the detent pins.

7. A cassette according to claim **1** in which the loop former has lugs adapted to cooperate with the means for disengaging the detent pins from the perforations of the film when the loop former is mounted in the cassette.

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