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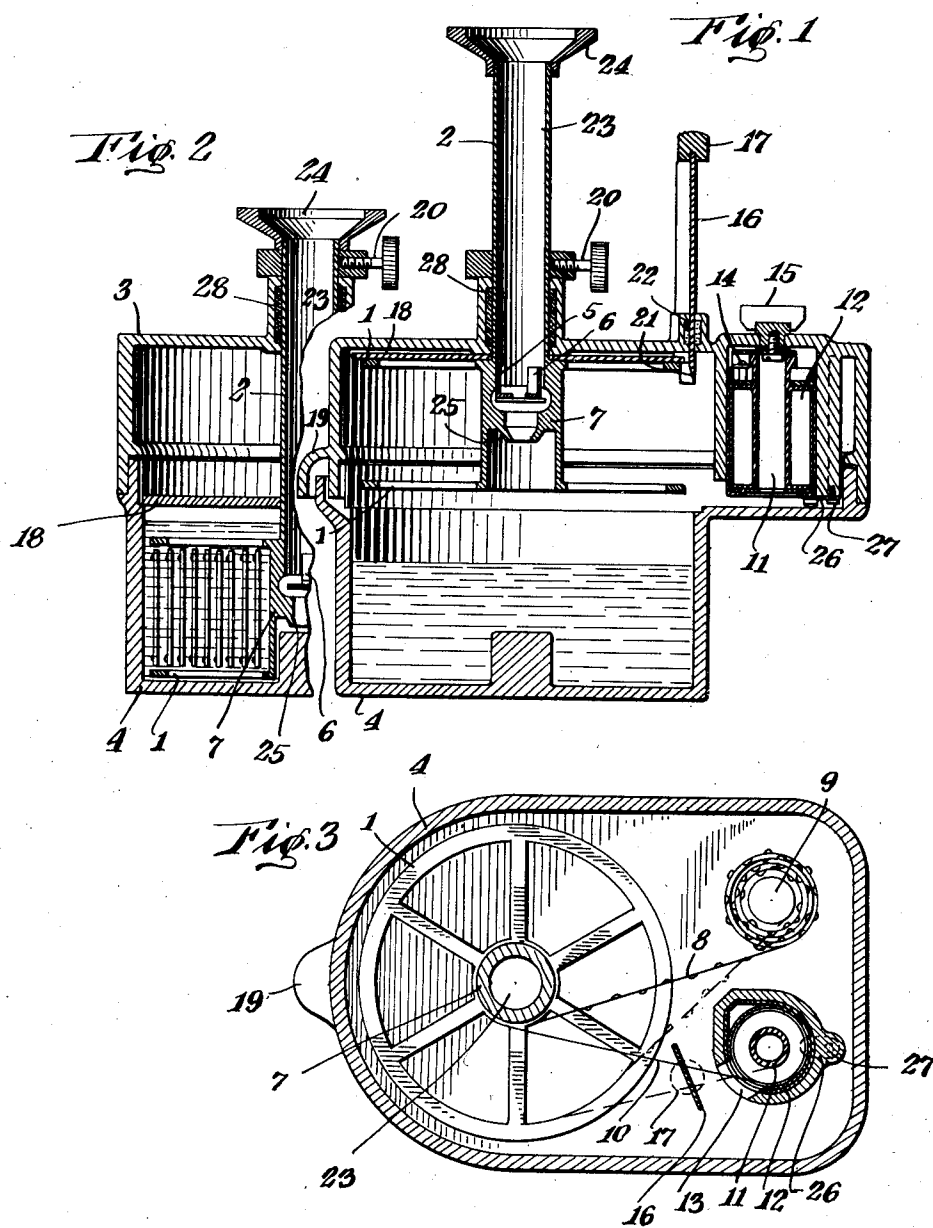
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DEVICE FOR DEVELOPING FILM ROLLS

Filed March 17, 1931

2 Sheets-Sheet 1



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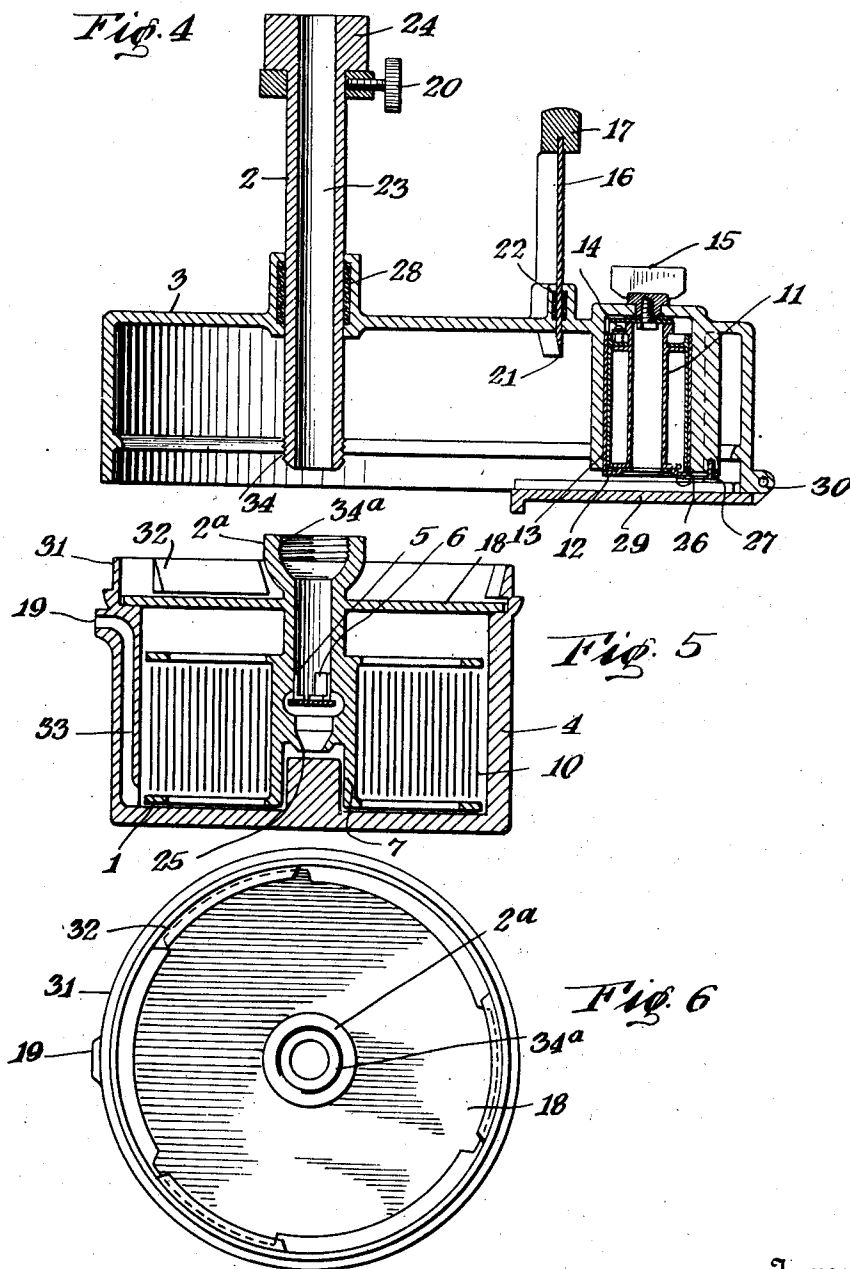
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DEVICE FOR DEVELOPING FILM ROLLS

Application filed March 17, 1931, Serial No. 523,236, and in Germany November 17, 1930.

This invention relates to improvements in devices for the developing and fixing of film rolls in daylight, i. e. without the use of a dark chamber. The known devices of this nature either made entirely or partly from rubber or rubberoid material, do not employ spools for the film within the developing or fixing liquid and have the disadvantage that the several layers of the film show the tendency of sticking together.

These disadvantages are successfully overcome by the device forming the object of the present invention in which the film band within a magazine which is impervious to light is reeled within the developing device upon a specially devised developer spool, while an intermediary band separates the single film band layers, and is then immersed into the developer.

Another object of my invention is the provision of such a device in which the upper parts of the developer box containing the film magazine are protected against damage by accumulation of dirt and by the acids contained in the developer by a special cover for the lower part of the developer box or housing.

A further object of my invention is the provision of a special cutting device for cutting films firmly clamped at their ends in the film magazine, while the film is protected against the light rays.

A still further object of my invention is the provision of a novel locking device for the film magazine firmly connected with the developing box.

These and other objects and advantages of my invention will become more fully known as the description thereof proceeds and will then be specifically defined in the appended claims.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a sectional front elevation of a film developing device constructed according to my invention.

Fig. 2 is a fragmentary sectional front elevation of a modified form of my device.

Fig. 3 is a sectional plan view illustrating

the film guiding and reeling means and the intermediary bar.

Fig. 4 is a fragmentary sectional front elevation of the upper part of a modified form of my device.

Fig. 5 is a sectional side elevation of the lower part of the device Figure 4.

Fig. 6 is a top plan view thereof.

As illustrated in Figures 1 to 3, a developer spool 1 is attached to the lower end 7 of a tube 2 within a developer box 4 closed on top by a cover forming part of the box containing the film reeling mechanism.

The tube 2 carries at its upper end a funnel 24 for feeding the developer or fixing bath to the box. The lower end of the inner channel 23 of the tube is closed by the shutters 5, 6, and 25, to prevent the entrance of light into the developer box.

The tube 2 may be made in one continuous piece (Figures 1 to 3) or may be made in two parts 34, 34^a, (Figure 5) and in the latter case part 2^a is funnel-shaped.

An intermediary band wound from a spool 9 and a film band 10 wound from a spool 11 of the film magazine 12 are wound upon the developer spool 1 by the rotation of tube 2. The intermediary band is provided with a plurality of warts or protuberances 8 which separate the several layers of the film band during the reeling operation so as to keep the film band layers separated.

A special housing for the film magazine is provided with an opening 13 allowing the passage of the film and is adapted to receive the film magazine 12 and a locking device on part 3 of the box consisting of a claw 14 and a wing 15 allowing an opening of the film magazine 12.

A tongue 26 rotatable about pivot pin 27 keeps the magazine within the special housing for the film magazine.

The film band is cut by means of a blade 21 with which co-operates a vertically arranged blade 16 guided within a guide 22 impervious to light and is operated by means of the pressure head 17.

A cover 18 for the developing chamber is pressed onto the same by means of the proper operation of tube 2 after the intro-

duction of the developer spool, to close the chamber.

A discharge spout 19 allows the discharge of the developer and fixing liquid. The tube 2 is entered through a guide 28 impervious to light and a set screw 20 locks the tube in any of its adjusted positions.

As illustrated in Figures 4 to 6 the tube 2 is made in two parts 34, 34^a, and the bottom part 29 is connected to the upper part 3 of the casing by means of the hinge connection 30 while part 3 is received in a ring flange 31.

The cover 18 is secured below the projections 32 of the developer box protected against the light rays by means of a bayonet lock while a channel 33 within the box leads to the discharge pipe.

It will be understood that I have described and shown the preferred forms of my device only to illustrate as examples the many possible ways to practically construct the same, and that I may make such changes in its general arrangement and in the construction of the minor details thereof as come within the scope of the appended claims without departure from the spirit of my invention and the principles involved.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device for developing and fixing film rolls comprising a box composed of two parts, a lower part containing the developer, a developer spool and tube and a cover operated from said tube to cover the lower part upon the lowering of said spool with the film thereon into the developer.

2. In a device for developing and fixing film rolls, a box composed of two parts, a lower part adapted to receive a developer, and an upper part containing the operating parts, means for removably mounting the upper part onto the lower part, and means for protecting the upper part against the injurious influence of the developer within the lower part.

3. In a device for developing and fixing film rolls, a box, a tubular element for feeding the developer into said box, a film spool on said element, a roll for an intermediary band separating the convolutions of the film, protuberances on said band, and means for rotating said element and spool thereon for reeling the film and intermediate band thereon, with the warts or protuberances on said band keeping the single film layers separated from one another.

Signed at Frankfort-on-the-Main, Germany, this 30th day of January, A. D. 1931.

OSKAR BARNACK.