

No. 823,624.

PATENTED JUNE 19, 1906.

A. W. McCURDY.
FILM CARTRIDGE.
APPLICATION FILED. APR. 17, 1906.

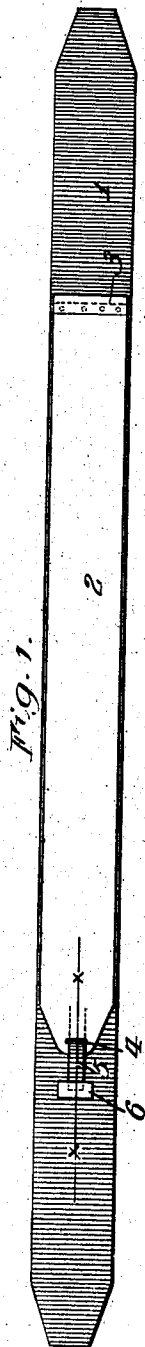


Fig. 1.

Fig. 2.

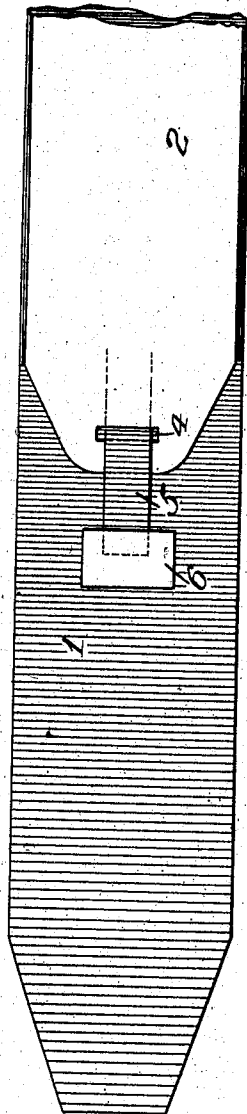


Fig. 3.

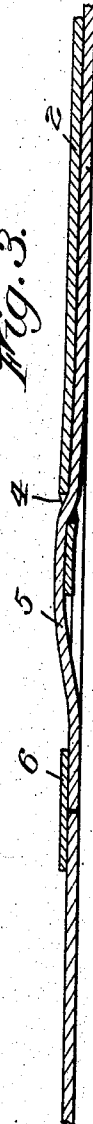
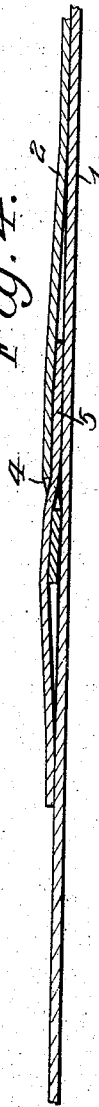


Fig. 4.



Witnesses

Halter B. Payne
Russell B. Griffith

Inventor

Arthur W. McCurdy

By J. Edmund Church
his Attorney

UNITED STATES PATENT OFFICE.

ARTHUR W. McCURDY, OF BADDECK, CANADA, ASSIGNOR TO EASTMAN KODAK COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

FILM-CARTRIDGE.

No. 823,824.

Specification of Letters Patent.

Patented June 19, 1906.

Application filed April 17, 1905. Serial No. 256,069.

To all whom it may concern:

Be it known that I, ARTHUR W. McCURDY, of Baddeck, in the county of Victoria, Province of Nova Scotia, Dominion of Canada, have invented certain new and useful Improvements in Film-Cartridges; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to film-cartridges of that type in which the film is wound in a coil or spiral with a covering or protecting-strip of opaque flexible material, such as black paper, said covering-strip being longer than the film to cover the latter when wound with either end outermost on the coil; and it has for its object to provide simple and efficient means for adapting said film for use in the kodak or McCurdy developing-machines.

The invention consists in certain improvements and combinations of parts, as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings, Figure 1 is a plan view of the film-cartridge unrolled. Fig. 2 is an enlarged view of one end of the same. Fig. 3 is a sectional view on the line *xx* of Fig. 1. Fig. 4 is a similar view of a modification.

Similar reference-numerals in the several figures indicate similar parts.

In carrying out my invention I provide the usual opaque covering-strip, (indicated by 1,) preferably of black paper, the film (indicated by 2) being shorter than the covering-strip and attached thereto at the leading end in any suitable manner, as by the short adhesive strip 3, lapping the end of the film. In order to adapt cartridges of this type for use in the developing-machine, it is necessary to connect the rear end of the film with the paper covering, so that it may be drawn from the spool after exposure by a tension on the paper. As in the use of film-cartridges in roll-holders or cameras provision must be made for permitting relative movements of the film and paper, the connection between the rear end of the film and the paper must readily accommodate itself to this relative movement without liability of the parts becoming separated and at the same time be of such a

nature that the draft upon the end of the paper will draw the film from the spool and into the developing-machine. To accomplish these results, I taper the rear end of the film and form near the end thereof an aperture (indicated by 4,) through which is adapted to extend a tongue or loop 5, attached at its ends to the paper covering-strip, and preferably by cutting said tongue in the material thereof, the free end of said tongue being secured by a short sticker 6, preferably of waterproof material and secured by an adhesive which is not readily soluble in the developing, washing, and fixing fluids, this loop or tongue in the paper covering being free at the portions intermediate its ends and forming a loop or extensible connection for the film, whereby the latter may be permitted to slide in either or both directions to accommodate itself to the relative movements of the parts.

In Fig. 4 I have shown a modification of the invention in which the tongue or loop 5, though preferably of relatively thin paper, is not an integral part of the covering-strip, but is attached to the latter at opposite ends forwardly and in rear of the end of the film by adhesive material not readily soluble in the above-named fluids, and as two paper surfaces are secured the connection is more firm than when paper is secured to a nitrocellulose material by an adhesive.

The aperture in the end of the film is preferably slightly larger than the tongue to allow both lateral and end movement of the film, and thereby avoid binding in the camera or roll-holder, and the outer edges of this rear end of the film are made tapering, as shown, to prevent its catching on the spools or other operating parts or curling up in the developing apparatus when the tension is applied to the rear end of the paper covering.

This preferred method of securing the end of the film which is the "following" end during the exposure, but is the end which is first wound upon the spool when the cartridge is formed, is simple and cheap, as the operator spooling the film is required simply to insert the tongue through the aperture in the film and secure its end by the sticker, which latter covers it and adheres to the paper at the sides and end, and then to wind the paper and film upon the spool and secure the forward end by the strip 3 in the usual manner. This ar-

5 rangement provides also for drawing the film during the developing operation from the center, and therefore there is no necessity for reinforcing its attaching end, and there is no possibility of its becoming disconnected during development, and at the same time slight lateral and longitudinal movement may be permitted without liability of the parts becoming disconnected. As the ends of the
10 loop or tongue are secured in front and in rear of the aperture in the end of the film, there is no liability of doubling the loop or unduly increasing the thickness of the roll.

I claim as my invention—

15 1. A film-cartridge embodying a flexible photographic film and a covering-strip of flexible opaque material longer than the film and attached to one end of the latter and means for loosely connecting the opposite
20 end of the film at its central portion to the covering-strip to permit relative longitudinal movements of the connected parts.

25 2. A film-cartridge embodying a flexible photographic film tapering toward the center at the rear end, a covering-strip of flexible opaque material longer than the film and fixedly attached to one end of the latter and a loose connection located between the converging sides of the tapered end of the film
30 and the covering-strip permitting relative movements of the parts.

35 3. A film-cartridge embodying a flexible photographic film having an aperture at one end, a covering-strip of opaque flexible material longer than the film and attached to one end of the latter and a loop connected at its ends to the covering-strip and passing through the aperture in the film.

40 4. A film-cartridge embodying a flexible photographic film having an aperture at one end, and a covering-strip of flexible opaque material longer than the film and attached to

one end of the latter, said covering-strip having a loop thereon connected at both its ends and passing through the aperture in the end 45 of the film.

5. A film-cartridge embodying a flexible photographic film having a tapering end and an aperture therein, and a covering-strip of flexible opaque material longer than the film 50 and attached to one end of the latter, said covering-strip having a tongue thereon connected at both its ends and passing through the aperture in the end of the film.

6. A film-cartridge embodying a flexible 55 photographic film having a tapering end and an aperture therein, and a covering-strip of flexible opaque material longer than the film and attached to one end of the latter, said covering-strip having a tongue formed there- 60 in and passing through the aperture in the film and means for securing the free end of the tongue.

7. A film-cartridge embodying a flexible photographic film having a covering-strip of 65 flexible opaque material longer than the film and attached to one end of the latter, said strip having the tongue formed therein and extending through the aperture in the film and a sticker for securing the free end of the 70 tongue to the strip.

8. A film-cartridge embodying a flexible photographic film provided with an aperture therein and a covering-strip of opaque flexible material longer than the film and attached 75 to one end of the latter and a connecting-loop passing loosely through the aperture in the film and attached to the covering-strip forwardly and in rear of the said aperture.

ARTHUR W. McCURDY.

Witnesses:

JOHN G. DAVIDSON,
ANGUS FERGUSON.