W. R. INGHRAM.

DEVICE FOR DEVELOPING PHOTOGRAPHIC FILMS.

APPLICATION FILED OCT. 14, 1911.

1,033,772. Patented July 23, 1912.

Fig. 1.

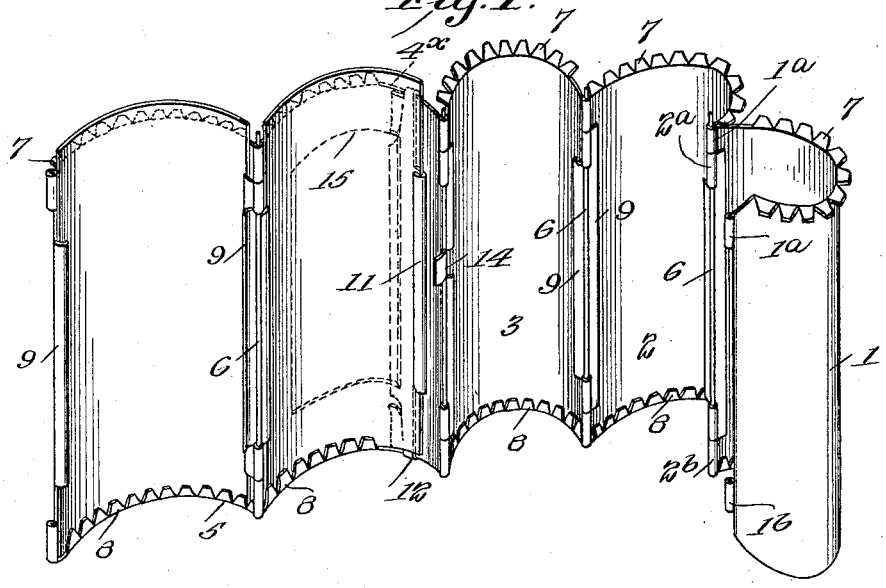


Fig. 2a.

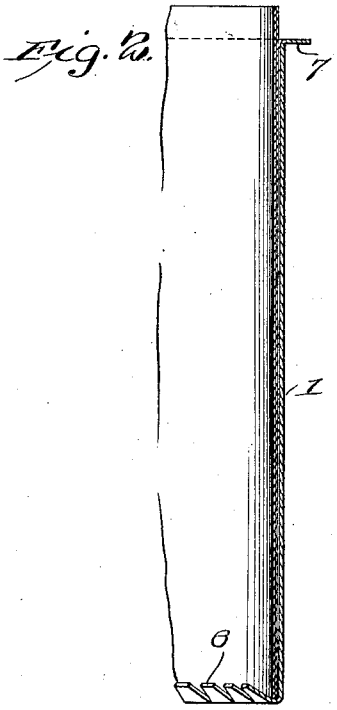
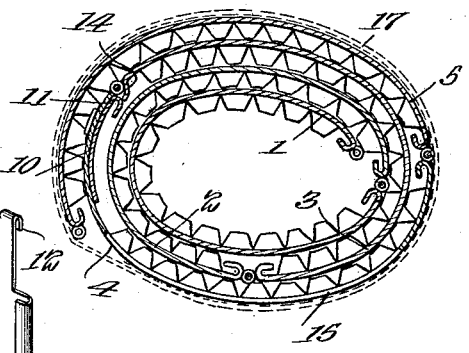


Fig. 3.



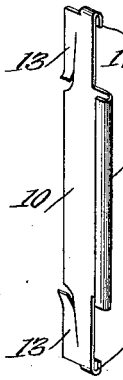


Fig. 4.

WITNESSES

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DEVICE FOR DEVELOPING PHOTOGRAPHIC FILMS.

1,033,772. Specification of Letters Patent. Patented July 23, 1912.

Application filed October 14, 1911. Serial No. 654,597.

To all whom it may concern:

Be it known that I, WILLIAM R. INGHRAM, a citizen of the United States, and a resident of Tucson, in the county of Pima and State of Arizona, have made certain new and useful Improvements in Devices for Developing Photographic Films, of which the following is a specification.

My invention relates to devices for developing photographic films, and it consists in the constructions, combinations and arrangements herein described and claimed.

An object of my invention is to provide a device having a retainer for each film, said retainers being hinged together and so formed that they may be rolled up in compact form, thereby occupying little space and necessitating a minimum quantity of developer.

A further object of my invention is to provide a device of the character described with means for preventing the scratching of the sensitive surface.

A further object of my invention is to provide a device of the character described with means for accommodating films of various sizes. To this end I provide the retainers with adjustable slides, as will be described later.

Other objects and advantages will appear in the following specification, and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawing forming part of this application in which—

Figure 1 is a perspective view showing the device in its unfolded position, Fig. 2 is a section through one of the retainers, Fig. 3 is a transverse section through the folded device, and Fig. 4 is a perspective view of an adjustable slide member.

In carrying out my invention I provide a series of film holder sections, each of these holders being curved. Such a series is shown in Fig. 1. In this figure section 1 is shown as being curved on an arc of relatively short radius, 2 being curved on an arc of greater radius, and the radii of sections 3, 4 and 5 being progressively greater. Each of the sections is provided with an upper and a lower hinge member, such as that shown at 1^a and 1^b respectively on each edge, arranged to register with the hinge members, such as that shown at 2^a and 2^b, the two sections being held together by means of pintles 6, passing through the alining hinge members. The construction described permits the folding of the sections together in the manner shown in Fig. 3. In order to prevent the body portions of the various sections from contacting with each other I provide the outwardly turned serrated portions or flanges 7 on the upper edges of the sections, and the inwardly turned sections or flanges 8 on the lower sections. The lower flanges 8 also serve as supports for the individual films. The flanges 8 are bent upwardly at an angle in order that all of them may be out of the way of the bottom of the tank, thereby providing a level base upon which the folded sections may stand.

In order to hold the films in place, I provide the inwardly bent flanges, such as those shown at 9. A convenient way of making the hinge members 1^a, 2^a, 3^a, etc., and the flange members 9, is to cut them from the edge of the retainer sections, bending the upper and lower pieces to form the hinge members, and bending the intermediate piece inwardly to form the flange member.

The films are designed to be supported by the side flanges 9 and the lower flanges 8. In order to insert the film, it is only necessary to insert one edge under one of the side flanges and bend the film so as to let the other edge enter underneath the opposite flange when the film will immediately take a curved position in contact with the curved inner portion of the retainer.

In order to provide for holding films of various size snugly against the retainer, I may arrange some of the sections with adjustable slide members. Thus the section 4 has an adjustable slide member like that shown in Fig. 4. In this figure it will be seen that the slide 10 has a flange 11 for the purpose of retaining one edge of the film, with curved flanges 12 arranged to slide on the edge such as that shown at 4^x of the section 4. The slide is provided with the upper and lower spring portions 13 which bear against the inner surface of the section and hold the slide in its adjusted

position. In order to insure the slide being in such a position as to force the film against the back of the retaining section I provide the adjacent section such as 3 with a spring flange 14, which, when the device is rolled up, will engage the flange 11 holding it in position so that there is no danger of the slide moving and thereby disengaging the film. While I have shown the slide as being applied to one section, it is obvious that it might be applied to other sections without departing from the spirit of the invention.

In Fig. 1 I have indicated at 15 a cut-away portion or window. This window construction makes individual examination of a film possible during process of development. Thus where it is thought that one film might have been over exposed, such film may be placed in section 4 and the retainer may be unrolled from time to time and the film examined by means of the ruby lantern. Obviously the other sections might be so constructed without departing from the spirit of the invention, and when so constructed the device would be of lighter weight.

From the foregoing description of the various parts of the device the operation thereof may be readily understood.

The films are inserted as described and lie snugly against the body portions of the retainers. The retainers are then folded into the position shown in Fig. 3, the flanges 7 and 8, preventing the contact of the back of one retainer with the sensitive surface of the film in the adjacent retainer. The holders may be held in compact form by means of a rubber band 17 placed around the roll, or by other suitable means. The device is very compact and occupies small space. It may be placed in a small glass jar or bottle and a minimum quantity of developer is required. In Fig. 1, I have shown only five sections, but it will be understood that there may be more or less as desired. Thus the pintles 6 may be withdrawn to provide for rolls of a smaller number of sections or other rolls may be added. The ease with which additional retaining sections may be added I consider an important part of my invention. While the roll as described is small and the films are close together there is, nevertheless, a free space for flow of the developer between the face of each film and the back of the adjacent retainer, while there is absolutely no possibility of the retainer injuring the sensitive surface. Since the amount of developer required is very small it may be more concentrated and therefore development may take place in much less time than ordinary.

When development has been concluded the device is unrolled. The slide 10 of the section 4 will be released by the movement of the spring flange 14 away from the slide. The film may now be pulled upwardly. The films of the other sections are removed by pulling them upwardly.

The developing device may be made of any suitable material such as metal. It may be used for fixing if the material is noncorrosive such as nickel-plated brass. This use of the device is very advantageous, because the films may be immersed in a jar in which the fixing salt or hypo is usually kept. This obviates pouring the hypo into a separate tank for fixing the films.

I claim:

1. In a developing apparatus for photographic films, a series of curved retaining sections hinged together, and means carried by each section for holding a film, said series of sections being arranged to roll into compact form.

2. In a developing apparatus for photographic films, a series of curved retaining sections hinged together, means carried by each section for holding a film, said series of sections being arranged to roll into compact form, and means for preventing the contact of a film in one section with the back of the adjacent section.

3. In a developing apparatus for photographic films, a series of curved retaining sections hinged together, means carried by each section for holding a film, said series of sections being arranged to roll into compact form, and means for preventing the contact of a film in one section with the back of the adjacent section, said means comprising laterally extending flanges at the top of each retainer section.

4. In a developing apparatus for photographic films, a series of curved retaining sections hinged together, means carried by each section for holding a film said means comprising inwardly bent side flanges and inwardly turned bottom flanges, said bottom flanges also serving to prevent the contact of the film of one retainer with the back of the adjacent retainer.

5. In a developing apparatus for photographic films, a series of hinged retainers, each of said retainers being formed in an arc-shaped curve, the radii of the retainers being successively greater thereby permitting the folding of the series of sections into compact form, means for holding a film in each retainer section, and means for preventing the contact of the backs of the retainer sections with the sensitive surface of the film in adjacent retainer sections.

6. In a developing apparatus for photographic films, a series of curved retaining sections hinged together, one of said sections being provided with a cut-away portion and having an adjustable slide provided with a flange for engaging one edge of the film, and a spring contact flange on the adjacent

retainer section arranged to engage the flange of the slide for holding said film in position.

7. In a developing apparatus for photographic films, a retainer comprising foldable retaining portions, each portion being provided with means for holding a photographic film, and means for preventing the engagement of the sensitive surface of one film with the back of the adjacent retainer portion.

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Witnesses:
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BERTRAM L. HITCH.