No. 746,756. PATENTED DEC. 15, 1903.

J. F. STEWARD.

PHOTOGRAPHIC FILM DEVELOPING APPARATUS.

APPLICATION FILED OCT. 9, 1902.

NO MODEL.

Fig. 2

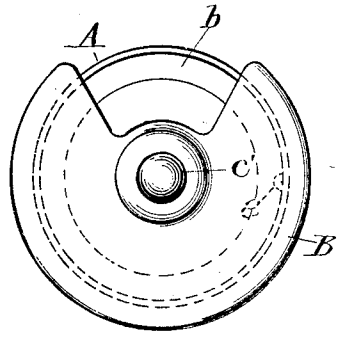


Fig. 1

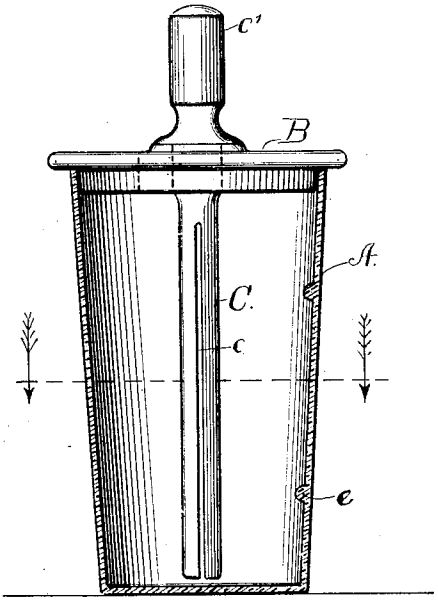


Fig. 3

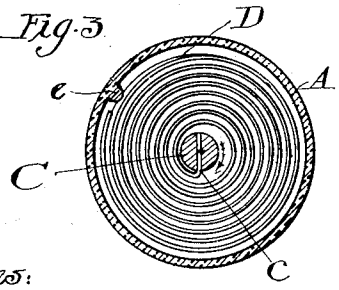
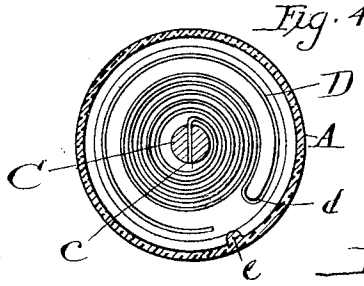


Fig. 4



Witnesses:
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No. 746,756. Patented December 15, 1903.

UNITED STATES PATENT OFFICE.

JOHN F. STEWARD, OF CHICAGO, ILLINOIS.

PHOTOGRAPHIC-FILM-DEVELOPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 746,756, dated December 15, 1903.

Application filed October 9, 1902. Serial No. 126,405. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. STEWARD, of Chicago, in the county of Cook and State of Illinois, have invented a new Photographic-Film-Developing Apparatus, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional side elevation of the device; Fig. 2, a plan view; and Figs. 3 and 4, diagrammatic illustrations of the operation of the device, showing the vessel for the developing and fixing solutions in section, cut on the line X X of Fig. 1.

The object of the invention is to provide means whereby films, whatever the length, may be developed conveniently; and it consists in providing a developer-receptacle and a spindle, the latter adapted to hold one end of the film and suitably supported so as to be substantially central in the receptacle.

In the drawings, A is the vessel in which the developing solution is placed, preferably of glass.

B is a support for the spindle C. The spindle may be separate from its support B, as shown in dotted lines in Fig. 1, and turn freely therein, or the whole support, as I prefer to make it, may be as one piece, with the spindle and rest upon the top of the vessel A or free to turn thereon.

c is a slot in the spindle, which is adapted to hold one end of the film, as shown in Figs. 3 and 4, and *c'* is a part of the spindle provided by which it may be turned, preferably by the thumb and finger. As stated, I prefer to permit the support B to rest upon the top of the vessel A, and in order that the solution used may be poured freely from the vessel without removing the spindle or film I cut the support away at *b*, as shown in Fig. 2.

The operation of my device is as follows: The film, having its end secured in the slot or in any suitable manner secured to the spindle, is wound thereon from the spool as taken from the camera. It is preferable to remove the paper from the film and wind it alone on the spindle. While winding the film on the spindle it should be drawn through cold water, which will prevent the lapping parts of the film from sticking together. With the film thus wound on the spindle it is inserted in the developer and the spindle turned in a direction that will unwind the film and wind it in the reverse direction. This done, the spindle is rotated as at first and the film again unwound and rewound. The action is as shown in Figs. 3 and 4. If the spindle be turned in the direction indicated by the arrow in Fig. 3, it will be unwound, and while unwinding a loop *d* will be formed and that loop continued from center to circumference until all is wound. The operation of winding backward and forward is continued until looking through the glass, if glass be used for the vessel, the image appears fully developed. It is necessary, of course, to have the image side next to the glass to examine it. To accomplish this, it is only necessary to stop when the film is right side out. When development is fully accomplished, the developer is poured from the vessel and, if desirable, the vessel filled with water, and the developer thus rinsed in part from the film. This poured out the hypo may then be poured in and the operation required in developing repeated—that is, the film wound first one way and then the other. At such time that the back of the film is outward the progress in clearing may be witnessed, and when the film is fully cleared it may be taken from the spindle and washed in the usual manner.

e represents knobs as one piece with the vessel, against which the end of the film may come and hold it from rotation when the stem is being turned to unroll the film and roll it in the reverse direction. This is not necessary, but adds to the perfection of operation.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A photographic-film-developing device, consisting of a developer-receptacle, a holder adapted to engage and hold one end of the film to be developed, said holder being journaled in a support mounted on the said receptacle and means for rotating said holder in both directions on its axis, substantially as described.

2. In a developing device, a developer-receptacle having, as one part therewith, resistances against which the end of the film may contact to prevent moving in one direction, and a spindle substantially centrally located therein and having means for holding

one end of the film that is being developed, and also capable of rotation in the said receptacle, all combined substantially as described.

3. A photographic-film-developing device, consisting of a developer-receptacle, a holder adapted to engage and hold one end of the film to be developed, said holder being sustained in its position within the said receptacle by a suitable support and means for rotating said holder in both directions on its axis, substantially as described.

4. A developing device consisting of a developer-receptacle having a cover provided with an opening for admitting the developing solution to be introduced and poured out of the vessel, a holder adapted to engage and hold one end of the film to be developed, said holder journaled in said cover, and means for rotating said holder in both directions on its axis, substantially as described.

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