No. 810,234.

PATENTED JAN. 16, 1906.

W. M. TOWERS & H. S. HARRINGTON.

DEVELOPING MACHINE.

APPLICATION FILED JUNE 20, 1905.

Fig. 1.

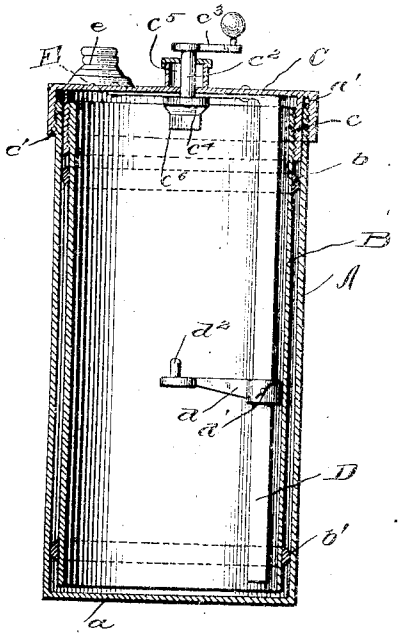


Fig. 2.

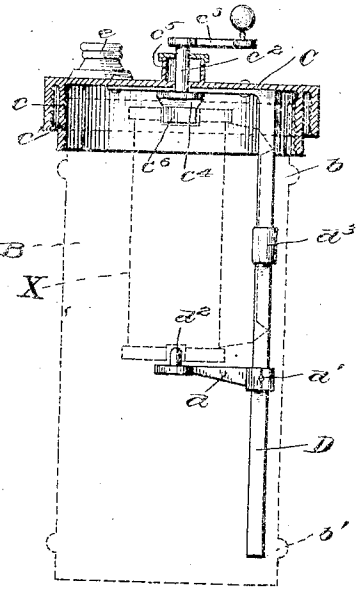


Fig. 3.

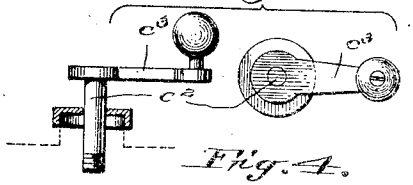


Fig. 4.

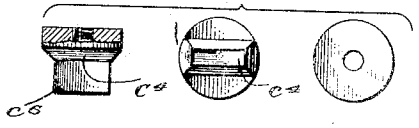


Fig. 5.

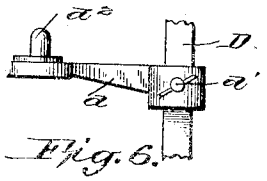


Fig. 6.

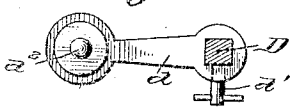
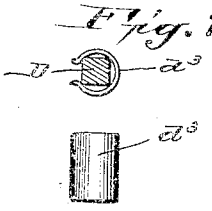


Fig. 7.



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DEVELOPING-MACHINE.

No. 810,234. Specification of Letters Patent. Patented Jan. 16, 1906.

Application filed June 20, 1905. Serial No. 266,102.

To all whom it may concern:

Be it known that we, WILLIAM M. TOWERS and HERBERT S. HARRINGTON, citizens of the United States, and residents of Rome, in the county of Floyd and State of Georgia, have made certain new and useful Improvements in Developing-Machines, of which the following is a specification.

Our invention is an improvement in machines for developing and fixing photographic films; and it consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings forming a part hereof, Figure 1 is a vertical longitudinal section of our invention. Fig. 2 is a similar section of the cover. Fig. 3 is a detail of the crank. Fig. 4 is a detail of the nut. Fig. 5 is a side view of the bracket. Fig. 6 is a top plan view thereof, and Fig. 7 is a detail of the clamp.

In the practical application of our invention we provide an outer cylindrical casing A, having a closed end a and an open end a'. An open-ended inner casing B is arranged to telescope within the outer casing, packing-rings b b' being arranged between the casing to prevent leakage of fluid therebetween.

A cover C, having a flange c to fit without the inner casing and a flange c' to fit without the outer casing, is provided to close the open ends. A stud-shaft c^2 is journaled vertically in the cover at the center thereof, a space c^5 being provided encircling the shaft for a packing-ring to prevent leakage around the shaft. The inner end of the shaft is provided with a nut c^4, cut away, as at c^6, to fit the slot in the end of the film-spool X, while the outer end is provided with a crank c^3 for convenience in rotating the shaft.

A support D is secured to the inner face of the cover and extends into the casing, a bracket d being slidably mounted upon the support and having at its free end a pin d^2 for engaging the opposite end of the film-spool. A set-screw d', traversing a screw-threaded opening in the bracket and engaging the support, is provided for maintaining the bracket in its adjusted position, and upon the support between the bracket and the cover is a U-shaped clamp d^3 for securing the free end of the cover paper to the support.

A screw-threaded opening E is provided in the cover adjacent to the edge thereof for convenience in filling the casing, the opening being normally closed by a screw-threaded plug or cap e.

In operation the cover of the machine is removed, and, if necessary, the inner casing is drawn out a sufficient extent, so that the spool when in place will occupy only about half the length of the casing. The lower half of the casing is then filled with any suitable developing fluid. The film-spool is placed with the slot in engagement with the inner end of the stud-shaft, and the bracket is pushed up until the pin engages the spool, after which the set-screw is manipulated to secure the bracket in position. The seal of the film is broken and the paper cover of the film unwound the proper distance. The slip of paper found on the end of the film is pasted to the covering-paper, the surplus covering-paper torn off, and the paper slip is wrapped around the support and the clamp moved thereover to secure it in place. The cover is placed on the casing and the crank turned from left to right a sufficient number of times to open up the film, but not enough to detach it from the spool. When this is done, the casing is inverted to submerge the film in the fluid, the machine being gently agitated until the film is developed. After developing, the plug is removed, the developing fluid poured off, and the casing is filled with water and agitated for a short time, after which the water is poured off and a suitable fixing fluid poured into the casing. After fixing, the film may be washed in the usual way. It will be understood that the developing or fixing operation is determined by the lapse of time and not by sight.

It will be evident from the description that our invention while simple in construction is yet efficient in operation, the development and fixation being uniform throughout the length of the film.

By means of the adjustable support and the telescoping of the casing the machine may be adapted for use with different widths of film. It will be evident that the support D is made long enough to support the largest-size film-spool that may be used in the developing-machine. The purpose of a telescoping casing is to provide sufficient room for containing the solution out of contact with the film-spool. In developing the largest-size film should the casing not be extended

the solution will be all the time in contact with the film.

When it is desired to extend the casing, the outer casing A is unscrewed from the cover and slipped down on the inner casing a sufficient extent—that is, an extent to equal approximately the length of the film-spool. This increases the length of the casing an amount equal to the distance the outer casing is drawn off the inner casing. The cover and inner casing remain in the same position with respect to each other that they were before.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In apparatus of the character specified, the combination with a film-spool, of a cylindrical casing comprising telescoping sections, a cover for the open end of the casing, and provided with a screw-threaded opening, a stud-shaft journaled in the cover, and having its inner end cut away to fit the slot in the end of the film-spool, a crank on the outer end of the shaft, a support secured to the cover and extending into the casing, a clamp on the support, a bracket slidably mounted on the support, a set-screw in the bracket and engaging the support, a pin on the free end of the bracket for engaging the opposite end of the film-spool, and a screw-threaded plug for engaging the opening in the cover.

2. In apparatus of the character specified, the combination with a film-spool of a cylindrical casing comprising telescoping sections, a cover for the casing provided with an opening, means on the cover for engaging the slotted end of the film-spool and for rotating the same, a support secured to the cover and extending into the casing, a bracket slidably mounted thereon, a set-screw in the bracket and engaging the support, a pin on the free end of the bracket for engaging the opposite end of the film-spool, and means for closing the opening in the cover.

3. In apparatus of the character specified, the combination with a film-spool of a cylindrical casing comprising telescoping sections, a cover for the casing, means on the cover for engaging the slotted end of the film-spool and for rotating the same, a support attached to the cover and extending into the casing, a clamp on the support, means on the support for engaging the opposite end of the film-spool and means for adjusting the engaging means.

4. In apparatus of the character specified, the combination with a film-spool of a cylindrical casing comprising telescoping sections, a cover for the casing, means on the cover for engaging the slotted end of the film-spool, means for rotating said engaging means, means secured to the cover for engaging the opposite end of the film-spool and means for adjusting said last-named engaging means.

5. In apparatus of the character specified, the combination with a film-spool of a cylindrical casing, a cover for the casing, means on the cover for engaging the slotted end of the film-spool and for rotating the same, means connected with the cover for engaging the opposite end of the film-spool, and means for adjusting said engaging means.

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