Oct. 12, 1926. 1,602,600

W. R. WEBB

LOOP EXTENDING DEVICE FOR PHOTOGRAPHIC FILM DEVELOPING MACHINES

Filed Jan. 3, 1925

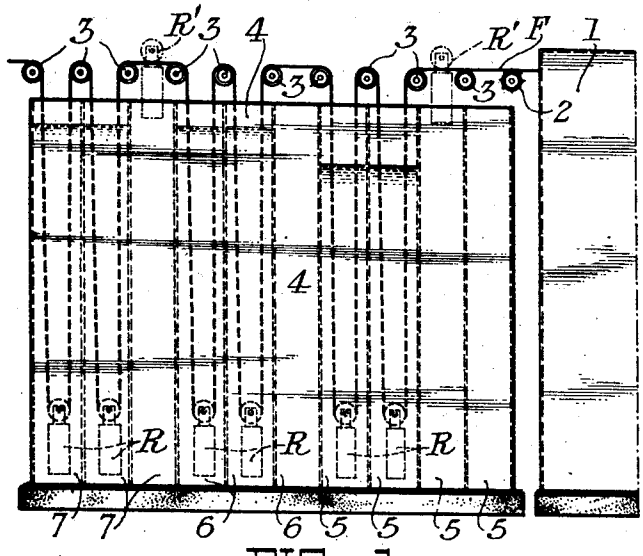


FIG. 1.

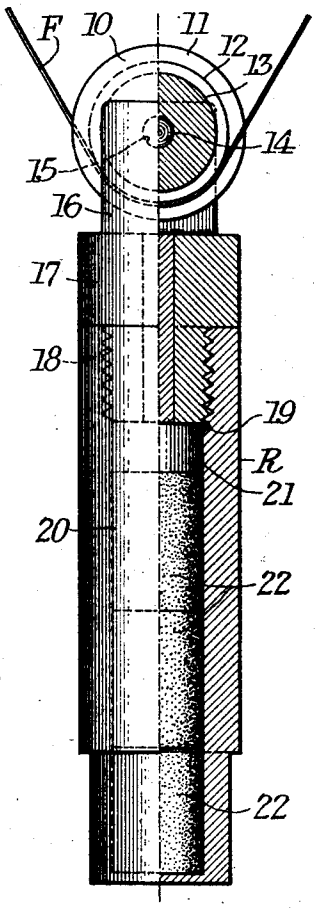


FIG. 2.

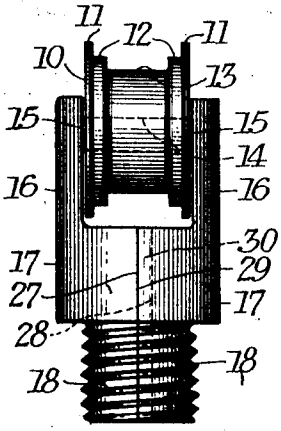


FIG. 3.

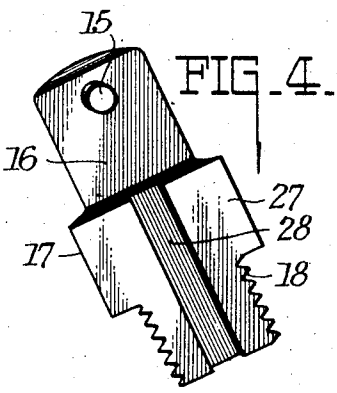


FIG. 4.

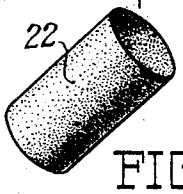


FIG. 6.

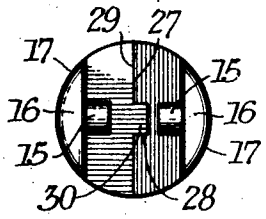


FIG. 7.

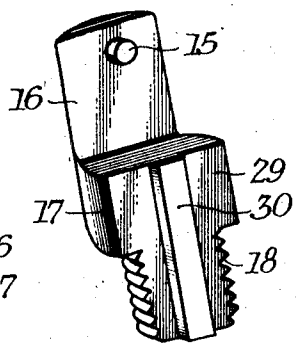


FIG. 5.

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Patented Oct. 12, 1926. 1,602,600

UNITED STATES PATENT OFFICE.

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LOOP-EXTENDING DEVICE FOR PHOTOGRAPHIC-FILM-DEVELOPING MACHINES.

Application filed January 3, 1925. Serial No. 423.

This invention relates to photography, and more particularly to loop extending devices for film treating machines. One object of my invention is to provide a loop extending device which may be inserted and removed from the side of the film band. Another object is to provide such a device consisting of a roller carried by a collapsible support which may be provided with enclosed weights. Another object is to provide a device of the kind described in which the collapsible roller support will hold the roller in a position in which it may rotate freely. Another object is to provide a device of the kind described in which the parts of the collapsible spool support are formed with complementary faces, which guide the parts to their operative position in assembling. Still another object is to provide a loop extending device of simple construction which can be made of a material which is not deleteriously affected by the film treatment solutions, and other objects will appear hereinafter from the following specification, the novel features being pointed out in the claims at the end thereof.

A large proportion of motion picture film is now successively developed, and fixed, and sometimes tinted or toned, with suitable washings following the several steps in what is known as continuous machines, that is, the film band moves continuously through a machine over suitable rollers and sprockets through the various tanks of solution. It is common practice with some machines to vary the action of the different baths by the length of film loop in such baths, and by the number of loops passing therethrough. My weighted roller is particularly adapted for use with such machines, a typical example being shown in the drawings; but it is also obviously equally useful for any machine employing loops of material drawn from the strip or band, especially where it is necessary to place the loop extending device on the strip material from the side of the film band.

Coming now to the drawing wherein like reference characters denote like parts throughout:

Fig. 1 is a side elevation of a typical machine in which a loop extending member constructed in accordance with, and embodying one form of my invention is used;

Fig. 2 is a half section and a half side elevation of a preferred form of my weighted roller;

Fig. 3 is a side elevation of the roller and roller supporting members removed from the body portion;

Fig. 4 is a perspective view of one of the roller supporting members;

Fig. 5 is similar to Fig. 4 being a view of the other roller supporting members;

Fig. 6 is a perspective view of one of the weights which may be used in my device; and

Fig. 7 is a top plan view of the collapsible roller supporting members in operative position.

In Fig. 1 I have shown a typical machine with which my loop extending members may be used. The film F is drawn from a film supply station 1 over a sprocket 2 and a plurality of rollers 3, being looped between certain of these rollers into the fluid treatment tanks 5, 6 and 7. These tanks may contain the necessary fluid for developing, fixing, washing, tinting or toning the film as the case may be. The loop extending members are used to hold the lower end of the film loop in the tank.

Since it is frequently necessary in the course of treatment to treat some portions of the film more than others, it is sometimes necessary to add or remove certain of the loop extending members. As shown in dot and dashed lines, the members R′ can be assembled from the side of the film, while the film is still moving if necessary so that by suitable manipulation of the rollers 3 additional loops can be made at any time. It is, of course, possible, by suitably moving the rollers 3 relative to each other, to reduce the length of a loop or to withdraw the loop entirely, in which case the weighted roller can be quickly removed without disturbing the moving film band.

As indicated in Fig. 2, the weighted roller which forms the loop extending member may consist of a roller 10 preferably provided with flanges 11 for guiding the edges of a film band and having flanges 12 which will support the edges of the film band and a cutaway portion 13 which will prevent the picture areas of the film band from contacting with the roller. This roller is provided with a central bore 14, so that the

roller may be supported by means of a pair of trunnions 15 carried by the arms 16 extending upwardly from the collapsible supporting members 17. These members are similar, each having a threaded portion 18 which, when placed together are adapted to form a screw which may enter into the threaded portion 19 of the body member 20. As indicated in Fig. 2, this member is preferably provided with a central bore 21 adapted to receive the weights 22 which may be of any suitable material.

The collapsible spool supporting members 17 differ from each other in that one member has a flat face 27 provided with a groove 28, and the other member has a flat face 29 provided with a rib 30. When the faces 27 and 29 are laid against each other, the rib 30 by lying in the groove 28 holds the members in the proper position, so that the two threaded sections 18 may be entered together as one piece into the threaded aperture 19. The body member can be quickly screwed or unscrewed to the support formed by these two sections.

As will appear from Fig. 3, when the members 17 are assembled together the arms 16 are spaced slightly from the sides of the roller 10, so that this roller may turn with a minimum amount of friction. As the trunnions 15 extend a comparatively short distance into the bore 14 of the roller, after the body 20 has been unscrewed, it is necessary to move the members 17 only a short distance to permit the roller to be withdrawn.

The operation of my device is as follows: As most continuous machines are provided with a dummy film which is threaded through the proper path, we will assume that the film F has been started and that it is moving through the path shown in Fig. 1. If it is desired to treat the film further with the solution contained in the tanks 5, an additional tank is filled with the treatment bath and a weighted roller R′ is assembled in place by first placing the roller 10 above the film with one of the film supporting members 17 in place. The opposite supporting member is then positioned by placing the trunnions 15 in the bore 14 and bringing the complementary parts of the roller support, that is, the tongue 30 of one part and the groove 18 of the other together. This brings the faces 27 and 29 into contact so that the two threaded portions 18 will form in effect a threaded plug 18 which may be screwed into the threaded socket 19 of the body member 20. The rollers 3 may then be moved differentially so that an additional loop will be extended into another tank 5.

If it is found that the film is receiving too much treatment in a different tank, as for instance in a tank 7, the film loop may be withdrawn by suitable mechanism moving the weighted roller to the top, in which position it may be removed by unscrewing the body 20 from the collapsible supporting members 17 and removing the roller from the film.

The parts of the loop extending member are of relatively simple construction so that they may be made of any desired material which is inert toward the fluid treatment baths, in which it is to be used. Hard rubber is one of the most suitable materials, although glass, Monel metal and other materials may be used if desired. The weights 22 may be of lead.

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

1. In a loop extending device for photographic film treating machines, the combination with a film contacting member, of a collapsible support therefor, a body member for holding the support, the support and body member having interengaging members adapted to hold the support in an operative position in which the film contacting member may be supported thereby.

2. In a loop extending device for photographic film treating machines, the combination with a film contacting member, of a collapsible support therefor, including a pair of supporting arms having complementary faces, a body member for holding the arms, and interengaging members carried by the supporting arms and the body member whereby the latter is adapted to hold the former with the complementary faces in engagement in which position said arms may hold the film contacting member.

3. In a loop extending device for photoghaphic film treating machines, the combina- with a film engaging roller, of arms for supporting the roller, complementary faces on the arms adapted to position the arms in one direction, a body portion and interengaging members carried by the arms and the body portion whereby the former members may be supported by the latter in an operative position in which the roller may be rotatably supported.

4. In a loop extending device for photographic film treating machines, the combination with a film engaging roller, of arms for supporting the roller, complementary faces on the arms adapted to position the arms in one direction, a hollow body portion adapted to receive weights, and interengaging members carried by the arms and the body member whereby the arms may be retained in an operative position and the weights may be retained in the body member by engaging the complementary faces of the arms and joining these to the body through the interengaging members.

5. In a loop extending member for photo-

graphic film treating machines, the combination with a film roller, of a support for the roller including a pair of separable arms having a fixed relative position for holding the roller in an operative rotatable position, and a body portion having connections with the arms being adapted to hold the arms in their operative position.

6. In a loop extending member for photographic film treating machines, the combination with a film roller, of a support for the roller including a pair of separable arms having a fixed relative position for holding the roller in an operative rotatable position, a portion of a screw thread carried by each arm, the two arms when in an operative position forming a complete threaded member, a body portion for supporting the arms, a threaded portion on the body portion, the threaded member formed by the two arms being adapted to cooperate with the threaded member of the body portion whereby the roller may be assembled into its operative position between the arms.

7. In a loop extending device for photographic film treating machines, the combination with a roller adapted to rest in a film, of a support for the roller comprising a pair of arms, means for supporting the roller between the arms, and complementary faces on the arms one of which is grooved, comprising a rib on one face adapted to enter the groove in the other face, each arm having a partially complete thread at one end, a complete thread being formed by the two members when assembled, a body member, a threaded member on the body portion adapted to cooperate with the threaded member formed by the arms whereby the roller may be supported in an operative position.

Signed at Rochester, New York this 19th day of December, 1924.

WILLIAM R. WEBB.