

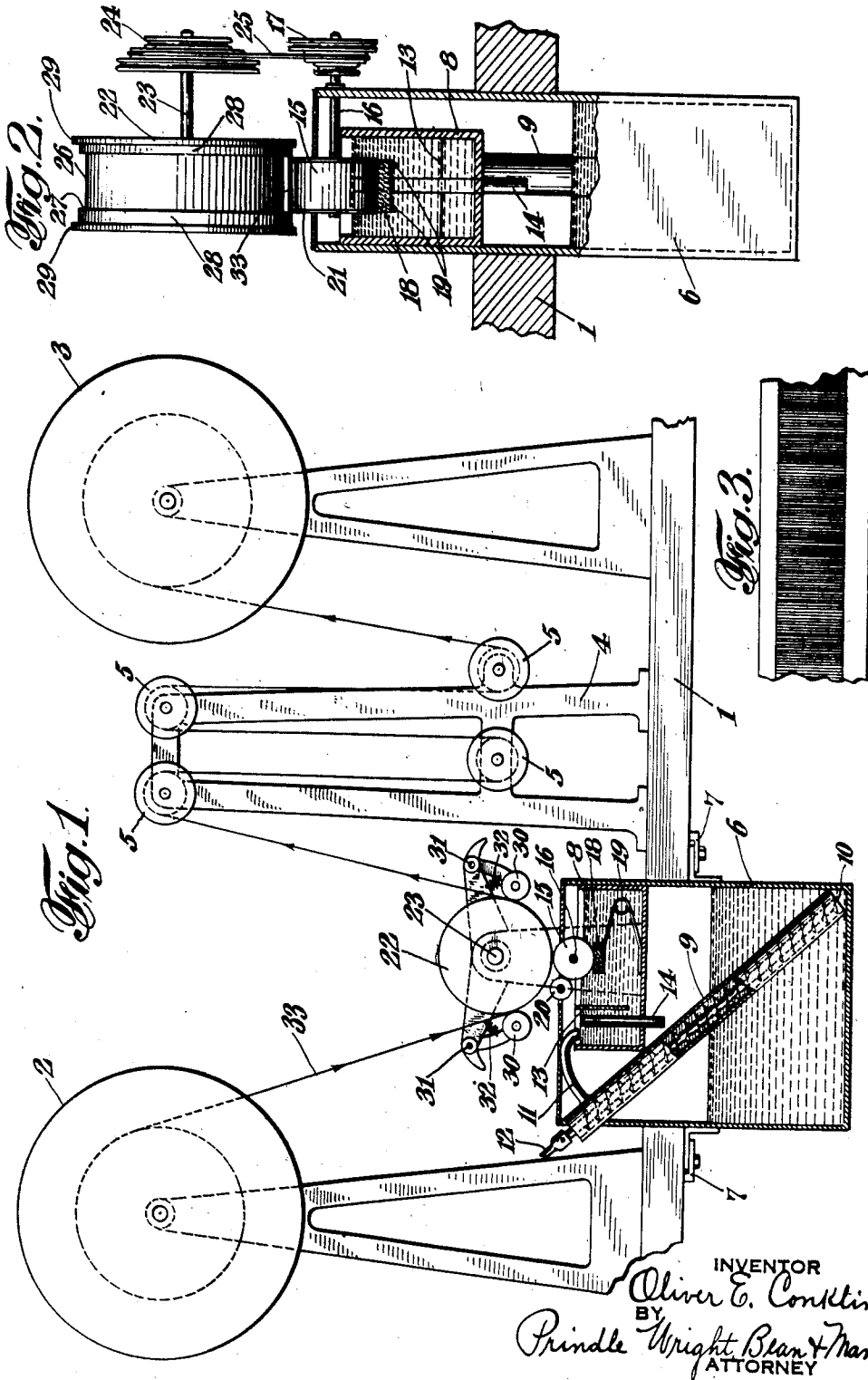
Jan. 8, 1935.

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1,987,387

FILM TINTING MACHINE

Filed June 15, 1929



UNITED STATES PATENT OFFICE

1,987,387

FILM TINTING MACHINE

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Application June 15, 1929, Serial No. 371,229

14 Claims. (Cl. 95—94)

This invention relates to a film tinting machine for tinting motion picture film which is to be used in sound reproduction or sound motion pictures. It is well known that a considerable amount of pictures are printed on so-called color stock, as, for example, red on fire scenes, blue on snow scenes, pink, amber, etc. These colors, because they cut off some of the light transmitted, interfere with the proper reproduction of sound when the sound track is on the stock. This sound track is printed between the perforation and the picture area.

It is an object of this invention to provide a machine which will tint a color in a stripe, the width of the picture space, leaving sufficiently clear untinted space between the picture space and the perforation to permit the photographing of the sound track on the clear untinted space.

Another object is the provision of a machine of simple structure which produces the tinting of a certain portion of a sound film.

Another object is to provide a tinting machine which may be used to bead a dye solution on raw stock before or after perforation, or on finished print, and either on the emulsion surface or the back of a film.

A further object is to provide a machine whereby the tinting, drying, and reeling up of the finished film is produced in one operation.

Further objects of this invention include improvements in detail, of the construction and operation, whereby a simple and effective apparatus of the character described hereinafter is provided.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, this invention consists in the construction, combination and arrangement of parts hereinafter described, and then sought to be defined in the appended claims, reference being had to the accompanying drawing forming a part hereof, and which shows, merely for the purpose of illustrative disclosure, a preferred embodiment of my invention, it being expressly understood, however, that various changes may be made in practice within the scope of the claims without detracting from my inventive idea.

In the drawing—

Fig. 1 represents a side view of one embodiment of my invention, parts being shown in cross-section to facilitate the disclosure;

Fig. 2 is an enlarged end view showing the feed roller and beading roller and associated

elements, with some parts shown in cross-section and others omitted;

Fig. 3 represents an unperforated film tinted by the machine shown in Fig. 1.

Referring now to the drawing, the numeral 1 designates a suitable base or support upon which this apparatus is mounted. At one end is mounted an unwind or supply roll 2 and at the other end is mounted a power driven wind-up roll 3. At an intermediate position a suitable support 4 is provided upon which is mounted a plurality of idler rolls 5 arranged so as to cause the tinted film to travel through a path of suitable distance to permit the solution to dry or set. A tank or container 6 is removably supported upon the base 1 by means of the lug construction 7 and is located between the unwind or supply roll 2 and the idler rolls 5.

A smaller tank or container 8 is mounted in the upper part of the main container or tank 6 and is adapted to be supplied with the dye solution from the main container or tank by means of pump 9. This is shown as a screw pump having the opening 10 near the bottom of the tank or container 6 and having the discharge pipe 11 adapted to discharge the dye solution into the smaller tank or container 8. This pump is driven through a flexible and detachable connection 12 so that the containers 6 and 8, together with the pump 9, are removable as a unit so that another container might be placed in position. This is very desirable as it permits the use of different dye solutions. When one container is removed, the rolls 20 and 15 are retained and cleaned to be used with a substituted container or tank containing a different dye solution.

The smaller tank or container 8 is provided with a partition or baffle 13 adjacent the discharge end of discharge pipe 11 and in the compartment formed by this partition or baffle 13 is provided the overflow pipe 14 adapted to discharge any surplus solution from the small tank or container 8 back into the large tank or container 6. The principal purpose of the partition or baffle 13 is to prevent agitation of the body of solution in the main portion of the small tank or container 8 and thereby prevent oscillation or agitation of the solution in contact with the bead roll or beading roller 15.

This bead roll or beading roller is driven by means of a suitable shaft 16 mounted in the tank or container 6 and having a differential pulley 17 on the outer end thereof. This bead roll is so positioned within the tank or container 8 that the lower portion only thereof is in contact with

the dye solution, and as it rotates it carries a film of that solution around and in contact with the motion picture film, as will be hereinafter described. A wiper pad 18 is positioned within the tank or container 8 and in contact with the surface of the bead roll or beading roller 15, preferably being held resiliently in contact therewith by spring construction 19. This pad prevents the accumulation of sediment or any quantity of material upon the surface of the bead roll or beading roller. A roller 20 is mounted in the upper portion of tank or container 6 close to the bead roll or beading roller 15 and serves to prevent that bead roll or beading roller from carrying an excess quantity of dye solution up into contact with the picture film. Roller 20, however, is not essential and may be omitted. The bead roll or beading roller is provided on each side with sharp edged flanges 21, which serve to form a solution-holding channel on the face of the bead roll or beading roller and thereby assist in maintaining sharply defined edges for the tinted area or zone on the film.

A feed roller 22 is suitably supported upon the main frame or support 1 in opposition to the bead roll or beading roller 15. This feed roller 22 is power driven by any suitable means and its shaft 23 has a differential pulley construction 24, which is operatively connected to differential pulley construction 17 by means of belt 25. The feed roller 22 is of peculiar construction having a central depression or groove 26 covering a major portion of its width. This depression 26 is bordered by shoulders 27 which define the inner edges of the raised surfaces 28 on each side of the depression 26. These raised surfaces are in turn bordered by the outer annular flanges 29 which operate to hold and guide the film in its passage between the feed roller 22 and the bead roll or beading roller 15. A plurality of pressure rolls 30 cooperate with the feed roller 22, being mounted in suitable pivoted supports 31 and resiliently held against the film by means of spring construction 32. It is to be noted, as particularly shown in Figure 2, that the film designated 33 contacts with the raised surfaces 28 only of the feed roller 22, and it is to be understood that the pressure rolls 30 bear only on the untinted parts of the film to hold the film in contact with the raised surfaces 28. Usually the rolls 15 and 22 will rotate at different surface speeds in the same direction, although this is not necessary at all times. In order to change the surface speeds of the rolls 15 and 22, differential pulley constructions 17 and 24 and belt 25 are provided. By using differential speeds of these rolls it is possible to change the tinting strength of the dye solution without going to the trouble of replacing the dye solution.

The operation of this apparatus is as follows: A suitable supply of untinted film is provided upon the unwind roll 2 and the film is fed through the feed and bead or bearing roller construction, the drying roll construction to the wind-up roll 3. The film in its passage between the feed roller 22 and the bead roll 15 is supplied with a film of dye solution by means of capillary attraction, it being understood that the bead roll or beading roller 15 does not contact with the film except in starting the operation and then only the film is dropped momentarily on to the bead roll or beading roller to take up the bead of dye solution which it holds until the tinting operation is completed. The film is supported in its passage through these rolls upon the raised surfaces 28 and the sharp edged flanges 21 of the bead roll or beading roller

operate, as previously described, to sharply define the edges of the bead and, therefore, the edges of the tinted portion of the film. The space between the flanges 21 of the bead roll or beading roller 15 and the flanges 29 of the feed roll 22 are untinted and are available, therefore, for sound recording or other purposes.

After the film leaves the feed roller it passes through the drying rolls 5 where the solution is dried and set and then the tinted film is wound on the wind-up roll.

The depression or recess in the feed roller 22 has an additional advantage to those previously specified in that it prevents contact of the dye solution with the feed roll if the machine is operated without film passing therethrough, as, for instance, at the end of a run when the supply of film is exhausted and the machine has not been shut down.

Except when starting the operation, the flanges 21 do not contact with the film 33.

What I claim is:—

1. In a device of the character described, a base, a container carried by the base, a beading roller associated with the container and adapted to contact with liquid in the container, a feed roller carried by the base and provided with flanges whereby to guide a continuous strip of film passing between the rollers, said beading roller being of a lesser width than the width of the feed roller and provided with flanges at each end thereof and adapted to tint a film only on a portion of its area.

2. In a device of the character described, a base, a feed roller on said base and in the shape of a spool formed with an annular depression in its central portion, a container adapted to contain a dye solution, a beading roller carried by the container and being of substantially the same width as the depression in the feed roll and adapted to tint a strip of film passing between the rollers only for a restricted area.

3. In a device of the character described, a base, a feed roller carried by said base formed with an annular central depression, a beading roller of a width approximately that of the depression and adapted to tint a continuous strip of film on a restricted area only and means whereby differential speeds of the rollers are obtained.

4. In a device of the character described, a base, means mounted thereon for conveying and guiding a continuous strip of film, a container removably carried by the base and adapted to contain a dye solution, a second container associated with said first container and containing a tubular overflow means emptying into said first container, a pump in said first container and adapted to convey the dye solution from the first container to the second container whereby to keep the contents of the said second container at a predetermined level, and a partition in the said second container adapted to keep the level in the second container in a quiescent state.

5. In a device of the character described, a base, means comprising a feed roller and a beading roller mounted on said base for conveying and guiding a continuous strip of film, a container associated with the base, a second container associated with the first container, means for conveying a liquid from the first conveyor to the second, overflow means for conveying overflow liquid from the second container to the first, a partition between the said overflow means and

said beading roller to maintain the liquid level in a quiescent state.

6. In a device of the character described, a base, an unwind roller for a film mounted thereon at one end, a wind-up roller for a film mounted thereon at the other end, said rollers being adapted to convey and guide a continuous strip of film, a feed roller mounted on the base intermediate the first mentioned rollers and adapted to convey a film, a dye container carried by the base, a second container carried by the first named container and provided with an overflow means, a pump means for conveying liquid from said first named container to the said second container, a beading roller carried by the second container and adapted to tint only by capillarity a continuous strip of film passing between the feed roller and beading roller on a restricted area only, the said beading roller being of a lesser width than the said feed roller.

7. In a device of the character described, a base, an unwind roller for a film mounted thereon at one end, a wind-up roller for a film mounted thereon at the other end, said rollers being adapted to convey and guide a continuous strip of film, a feed roller mounted on the base intermediate the first mentioned rollers and adapted to convey a film, a dye container carried by the base, a second container carried by the first named container and provided with an overflow means, a pump means for conveying liquid from said first named container to the said second container, a beading roller carried by the second container and adapted to tint only by capillarity a continuous strip of film passing between the feed roller and beading roller on a restricted area only, the said beading roller being of a lesser width than the said feed roller, and resilient means contacting with said beading roller to keep it clean and free from any solid deposits.

8. In combination, a base, a roller mounted at one end thereof, a second roller mounted at the other end thereof, said rollers being adapted to convey and guide a continuous strip of film, a power driven feed roller carried by said base intermediate said aforementioned rollers and provided with an annular depression in the center of the roller intermediate its ends and out of contact with a continuous strip of film adapted to be carried past said rollers, the said depression forming shoulders which support the continuous strip of film at its edges, said feed roller being formed with flanges at the end thereof and extending beyond the shoulders to form a guiding means for the strip of film, resilient pressure rolls carried by the said base and adapted to contact the feed roller only on the shoulders thereof, a beading roller associated with said base and provided with flanges at each end thereof, said beading roller being of a lesser width than the said feed roller and adapted to tint the film only by capillarity on a restricted area corresponding to the depression in the said feed roller.

9. In a device of the character described, a base, means for conveying and guiding a continuous strip of sound film mounted thereon, said means comprising a power driven feed roll formed with a central annular depression intermediate its ends, said depression being out of contact with the film and forming shoulders at each end thereof to form supports or contact areas with the sound film, said feed roller being provided at its ends with flanges to guide the sound film, a dye container carried by the base,

a beading roller carried by the said container and being of a lesser width than the said feed roller and of about the same width as the annular depression on the feed roller, said beading roller being adapted to be submerged in the dye solution and capable of transferring the dye solution to the film by capillary action only to a restricted area of the sound film so as to not interfere with the reproduction of the sound.

10. In a device of the character described, a base, means mounted thereon for conveying and guiding a film comprising a feed roller, a dye container removably mounted on the said base, a flanged beading roller carried by the container and adapted to be partially submerged in the dye solution in the container, said flanges on the beading roller functioning to obtain sharply defined edges of the tinted area on the film, said beading roller being of a lesser width than the said feed roller so as to be capable of transferring the dye solution to the film only in restricted and desired areas, and said feed roller and beading roller being connected by a pulley and belt means whereby differential speeds of the two rollers are obtained and the degree of tinting may be varied thereby.

11. In a device of the character described, a base, means mounted on the base for conveying a continuous strip of film, a container carried on the base, a second container provided with an overflow pipe and mounted within the first container, a pump in the first container adapted to keep liquid in the second container at the level of the top of the overflow pipe, and a partition in said second container adapted to keep the level in the second container in a quiescent state.

12. In a device of the character described, a base, a feed roller mounted on said base and formed with an annular central depression, a container adapted to contain the coloring solution, a beading roller carried by the container and being of substantially the same width as the depression in the feed roller and adapted to tint a continuous strip of film on a restricted area only, and means for keeping said beading roller clean and free from accumulations of sediment or the like.

13. In a device of the character described, a base, a feed roller mounted thereon; said feed roller being in the shape of a spool formed with an annular depression in its central portions to form shoulders or raised surfaces on each side of the annular depression, a container adapted to contain the coloring solution, a beading roller of a width approximately that of the annular depression in the feed roller, and adapted to tint a continuous strip of film on a restricted area only, and bearing means adapted to press the film against the shoulders or raised surfaces on the feed roller.

14. In a device of the character described, a feed roller in the shape of a spool formed with an annular depression in its central portion, said central depression forming shoulders or raised surfaces on each side thereof, a beading roller of a width approximately that of the depression and adapted to tint a continuous strip of film on a restricted area only, and bearing means adapted to press the film against the shoulders or raised surfaces, said bearing means including a plurality of resiliently mounted rollers.