

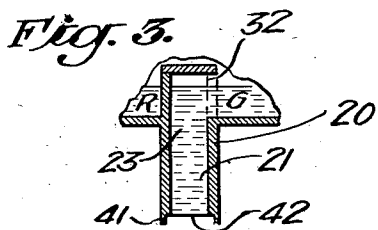
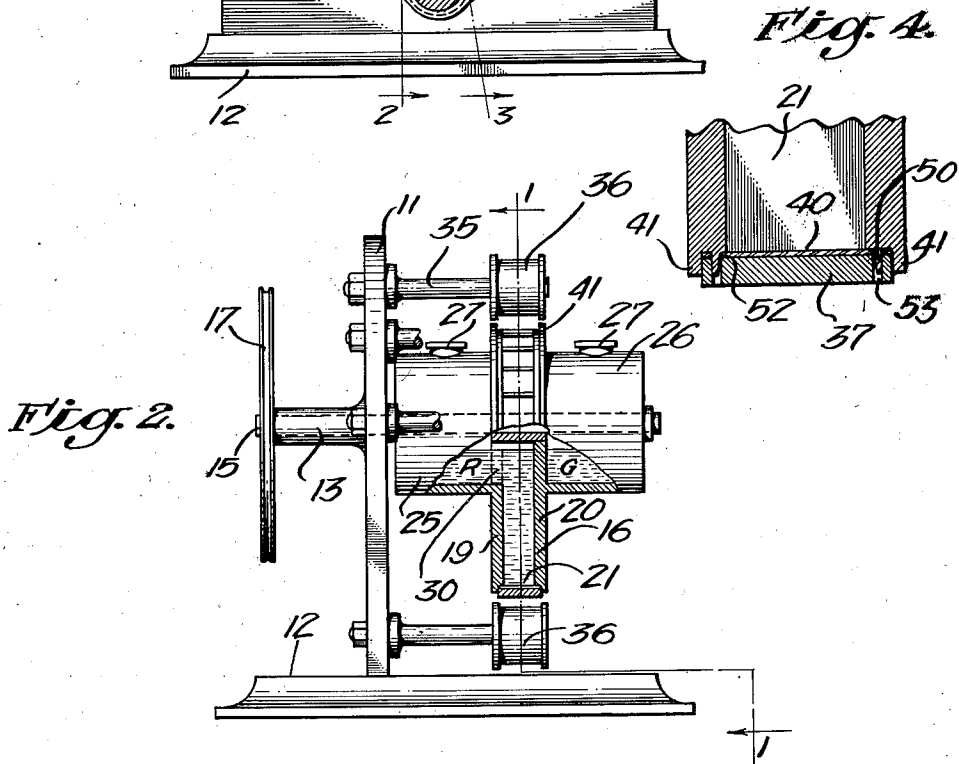
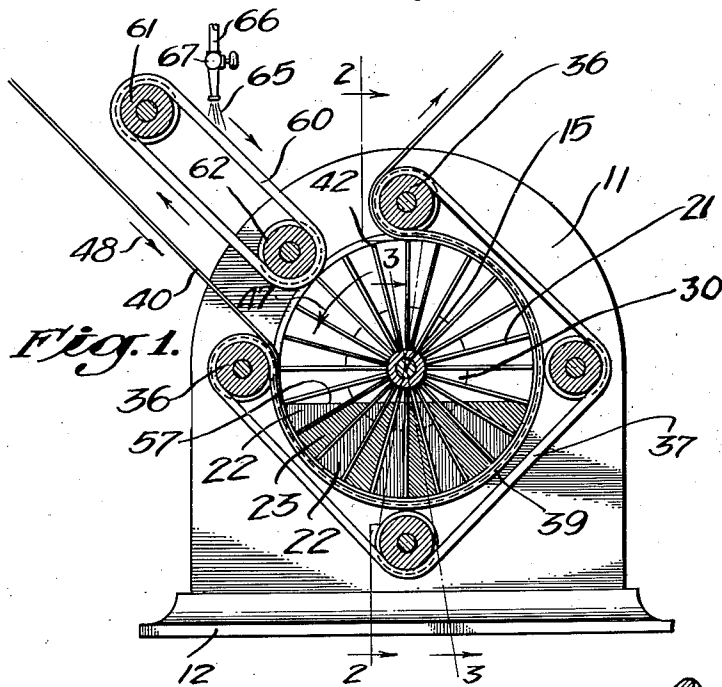
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1,682,943

W. M. THOMAS

APPARATUS FOR TREATING FILMS

Filed Sept. 5, 1923



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## UNITED STATES PATENT OFFICE.

WILLIAM M. THOMAS, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM M. THOMAS AND FOSTER A. LEONARD, OF LOS ANGELES, CALIFORNIA, A COPARTNERSHIP.

## APPARATUS FOR TREATING FILMS.

Application filed September 5, 1923. Serial No. 660,970.

This invention relates to the production of color motion pictures and relates particularly to a means for dyeing a positive film intended for projection of a color motion picture.

In an application entitled Method of producing color projection, Serial No. 660,968, which I have prepared and presented to the Patent Office, I describe the use of a film having the frames, or exposed areas, thereof alternately colored red and green and means for projecting the film in such a manner that a pair of frames is projected in super-imposed relationship upon a screen.

It is an object of the invention to provide a simple and efficient means for dyeing the consecutive frame with different colors suiting the color of the light filter employed in photographing the respective frames.

The especial advantages of the invention and further objects thereof will be made evident hereinafter.

Referring to the drawing which is for illustrative purposes only:

Fig. 1 is a sectional elevation of an embodiment of the invention, taken on the line 1—1 of Fig. 2.

Fig. 2 is a side elevation thereof partially sectioned on the plane represented by the line 2—2 of Fig. 1.

Fig. 3 is fragmentary section taken on a plane represented by the line 3—3 of Fig. 1.

Fig. 4 is an enlarged sectional view showing the manner in which teeth may be employed for holding the film being treated in register.

In the form of my invention shown in the drawing, a vertical plate 11 mounted upon a base 12 is employed. The plate 11 is provided with a journal 13 bored to receive a horizontal shaft 15 having mounted thereon a dye applying member 16 and a sheave 17 through which the member 16 may be rotated. The member 16 consists primarily of a pair of circular wall members 19 and 20 which are suitably spaced apart and are inter-connected by radial walls 21 which divide the space between the plates 19 and 20 into sector shape channels 22 and 23 as best shown in Fig. 1. Extending outwardly from the plates 19 and 20 are hollow cylindrical projections 25 and 26 provided with covered filling openings 27 through which

communication with the interiors of the members 25 and 26 is attained. The plate 19 is perforated as indicated at 30 in Figs. 1 and 2, these perforations being located at the inner end of each channel 22 so that communication between the interior of the projection 25 and all of the channels 22 is attained. As indicated in Fig. 3, the plate 20 is provided with openings 32 which communicate between the interior of the member 26 and each channel 23. Upon spindles 35, mounted on the plate 11, spools 36 are placed, over which a continuous belt 37 is carried. The inner extension 39 of the belt 37 is employed to hold a strip of film 40 between the flanges 41 formed on the plates 19 and 20 and to hold the film tightly against the ends 42 of the radial plates 21. It will be recognized that the inner portion of the belt 37 may be caused to extend almost entirely around the circumference member 16, but for practical purposes, a three quarter extension as shown is satisfactory. In the hollow member 25 a red or other dye is placed, and in the hollow projecting member 26 green or other dye is placed. As indicated in the drawing, the red dye flows through the openings 30 into the channels 22, whereas the green dye flows from the member 26 into the channels 23, the level of the dye in the channels and the interiors of the members 25 and 26 being governed entirely by the amount placed therein.

In the operation of the device, the member 16 is rotated in the direction indicated by the arrow 47 which causes the film to be drawn inwardly as indicated by the arrow 48. In order that the dividing walls 21 remain in perfect register with the frames of the film, it is desirable to employ on the circumference of the plates 19 and 20 teeth 50 which pass through the openings 52 of the film and into suitable spaced openings 53 of the belt member 37. By the term frame is to be understood an exposed area of a motion picture film. An exposed film, therefore, constitutes a consecutive arrangement of frames or exposed rectangular areas. As each successive channel 22 or 23 rotates downwardly, as indicated by the arrow 47, the film 40 is forced thereagainst closing the ends of the channels so that when these channels reach the level 57, the dye may flow into

the respective channels so as to submerge the surfaces of the consecutive film frames with the respective dyes corresponding to the color filter through which the color values were impressed on each film frame.

It will be readily recognized that each film will consist of two series of alternately placed and alternately colored frames. Although I have shown the use of two colors, it is evident that a greater number of colors may be employed when enhanced color effects are desired.

For the purpose of drying the ends of the plates 21, I provide a drying member 60 in the form of a continuous belt of blotting material carried over spools 61 and 62, the spools 62 being placed adjacent to the member 16 so that the blotting belt 60 is brought in contact with the ends 42. For the purpose of keeping the blotting member 60 dry, it is desirable to employ a jet of heated air which may be applied from piping 66 through a nozzle 67.

I claim as my invention:

1. In a device for treating film, the combination of: a member having walls defining a number of channels successively disposed in the same radial plane, the outer ends of which are disposed along a curved line in arrangement corresponding to the frames of a film, said channels being alternately interconnected; means for holding a film across the outer ends of said channels; and means whereby treating substances may be placed in said channels so as to make contact with the frames of said film.

2. In a device for treating film, the combination of: a rotary member having walls defining a number of consecutive channels, the outer ends of which are disposed in arrangement corresponding to the frames of a film; means for rotating said member; means for feeding a film over said member and holding it in contact with the end of the walls defining said channels, said channels being alternately interconnected; and means whereby treating substances may be placed in said channels so as to make contact with the frames of said film.

3. In a device for treating film, the combination of: a rotary member having walls defining a number of consecutive channels, the outer ends of which are disposed in arrangement corresponding to the frames of a film; means for rotating said member; a belt member for feeding a film over said member and holding it in contact with the end of the

walls defining said channels; and means whereby treating substances may be placed in said channels so as to make contact with the frames of said film.

4. In a device for treating film, the combination of: a rotary member having walls defining a number of consecutive channels, the outer ends of which are disposed in arrangement corresponding to the frames of a film; means for rotating said member; a belt member for feeding a film over said member and holding it in contact with the end of the walls defining said channels, said channels being alternately interconnected; and means whereby treating substances may be placed in said channels so as to make contact with the frames of said film.

5. In a device for treating film, the combination of: a rotary member having walls defining a number of consecutive channels, the outer ends of which are disposed in arrangement corresponding to the frames of a film; means for rotating said member; a belt member for feeding a film over said member and holding it in contact with the end of the walls defining said channels, said channels being alternately interconnected; and means whereby treating substances may be placed in said channels so as to make contact with the frames of said film; and means operative against the ends of said walls defining said channels, for removing surplus wet dye after said film has discontinued contact with said rotary member.

6. In a device for treating films, the combination of: a rotary member having walls defining a number of consecutive channels, the outer ends of which are disposed in arrangement corresponding to the frames of a film; means for rotating said member; a continuous belt member for feeding a film over said member and holding it in contact with the end of the walls defining said channels, said channels being alternately interconnected; and means whereby treating substances may be placed in said channels so as to make contact with the frames of said film; and continuous blotting means operative against the ends of said walls defining said channels, for removing surplus wet dye after said film has discontinued contact with said rotary member.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 30th day of August, 1923.

WILLIAM M. THOMAS.