Feb. 25, 1930. J. FRANKENBERG 1,748,760

FILM CLEANING DEVICE

Filed Dec. 14, 1927

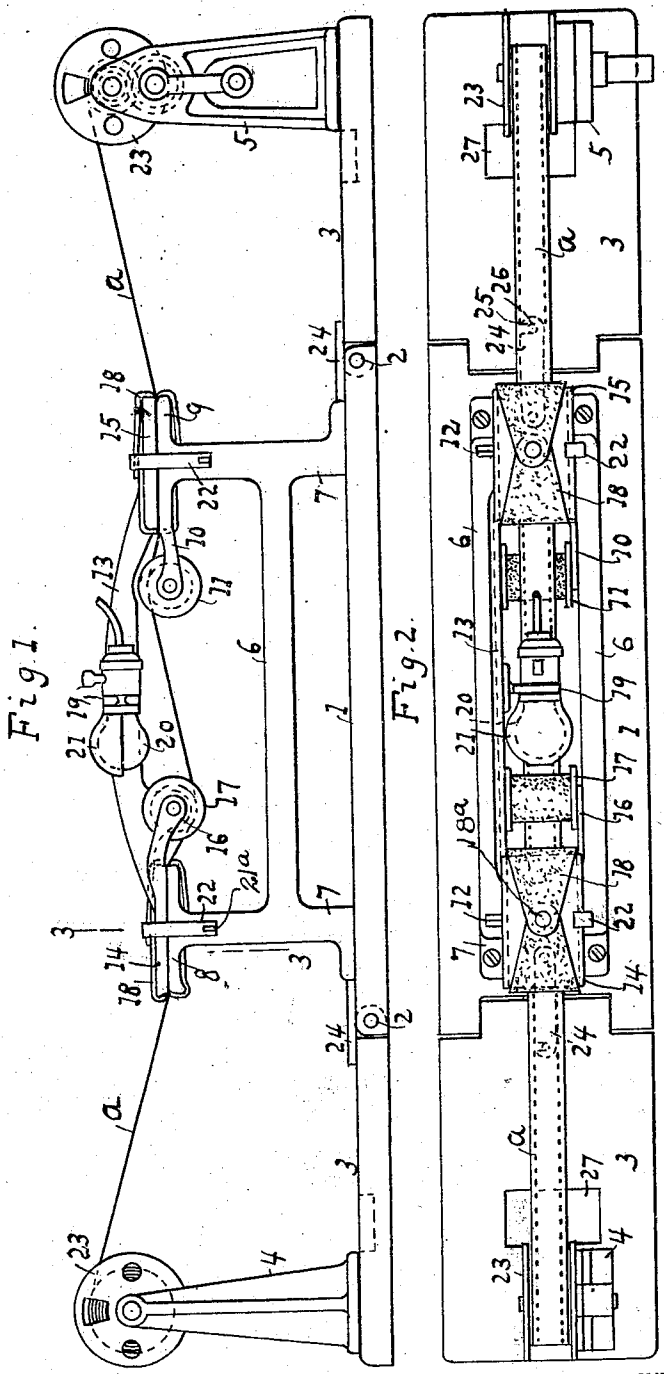


Fig. 1.

Fig. 2.

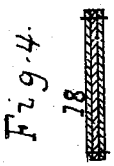


Fig. 4.

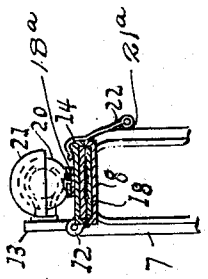


Fig. 3.

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Patented Feb. 25, 1930 1,748,760

UNITED STATES PATENT OFFICE

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FILM-CLEANING DEVICE

Application filed December 14, 1927. Serial No. 239,849.

The present invention relates to means for cleaning and polishing films, and particularly to that type of mechanism which cleans and polishes both sides of a film. It was hitherto believed to be necessary to have the cleaning liquid constantly fed to the film by means of a reservoir and a conduit. Applicant has found that by saturating a prepared pad with the cleaning fluid he can clean at least a thousand feet of film, which is the usual length of film on a reel, without replenishing the supply of cleaning fluid.

It is the object of this invention to embody this discovery in a simple inexpensive mechanism.

It is a further object of this invention to provide in said mechanism means for positively drying the cleaned film before polishing it.

It is a further object of the applicant to make the cleaning pads removable, reversible and replaceable.

In the annexed detailed description from which further advantages will be evident, reference will be had to the accompanying drawings in which:—

Fig. 1 is a front elevation of the device.

Fig. 2 is a plan view of the device.

Fig. 3 is a cross-section of the cleaning clamp on the line 3—3 of Fig. 1.

Fig. 4 is a cross-section of the cleaning pad.

Referring to the drawings in detail 1 represents a base of any desired material. Hingedly connected to the ends of base 1 by means of pins 2 are leaves 3 one of which carries a reel support 4 and the other of which carries a film rewinder 5. The film rewinder 5 is of standard construction so that further description of it is unnecessary. Mounted on the base 1 is a standard 6 made of light metal and comprising four legs 7, the legs at each end being connected by channel plates 8 and 9 respectively which are formed integrally with said legs. The inner end of the channel plate 9 has its sides extended to form arms 10. Mounted between arms 10 is a velvet covered drum 11, the ends of said drum being flanged. Hingedly mounted on said standard 6 by means of hinges 12 is a casting consisting of a bowed bar 13 carrying at its ends channel plates 14 and 15 respectively. Channel plate 14 has one side of its inner end extended to form arm 16. Mounted between 16 and 13 is another velvet covered flanged drum 17. The channel plate 14 is located to cooperate with channel plate 8 to form a clamp, and the channel plate 15 is similarly located with respect to channel plate 9. Mounted on each channel plate is a pad 18 made up of two strips of velvet carrying between them one or more strips of felt which has been treated in any known manner to increase its absorptive powers as, for instance, by soaking in caustic soda or any other swelling agent followed by drying at an elevated temperature. The three strips are sewed together at their edges forming pads on the ends of which are secured snap fasteners 18^a. One of these pads is stretched over the inner face of each channel plate, turned over the ends of said channel plate and the fastener is closed as shown in Fig. 2. From the construction of this pad it is evident that either side may be used as the outside whereby it is reversible. Mounted on the bar 13 midway between the plates 14 and 15 is a clamp 19 carrying an ordinary electric bulb 20 over which is placed a reflector 21. This light serves as a heating means for drying the film and at the same time provides light so the condition of the film can be easily seen.

Hingedly mounted by means of hinges 21^a on the legs 7 of the standard 6 in front of channel plates 8 and 9 respectively are spring clamps 22 which can be swung over the top of plates 14 and 15 respectively when in closed position to clamp them to plates 8 and 9 respectively. The clamps formed by the channel plates are in longitudinal alignment with the film carrying reels 23. The film itself is designated by the letter *a*. The base 1 carries a swinging plate 24 at each end, each said plate having a slot 25 at its free end for engaging a stud 26 on each leaf 3 to hold said leaves in extended position. When not in use these plates 24 may be swung into open position thereby allowing the leaves 3 to be folded into upright position, each leaf having a de-

pression 27 for receiving the ends of said channel plates. From this it naturally follows that the whole device can easily be packed into a portable container.

Referring to the drawings the operation of the machine is as follows:—

With the channel plates 14 and 15 thrown back in open position the film *a* is drawn over the channel plate 8, over the drum 11 and over the channel plate 9. The pads covering the channel plates 8 and 14 are saturated with the desired quantity of a cleaning fluid which is applicable to both sides of the film. The channel plates 14 and 15 are then swung down upon the channel plates 8 and 9 respectively, the drum 17 pressing down upon the film *a*. The clamping members 22 are then sprung into place and the heating member 20 is adjusted so that its rays play directly on the film. The rewinder is then turned to draw the film through the clamps formed by the channel plates. When passing through the clamp formed by the channel plates 8 and 14 the film is cleansed of all grease spots and receives a coating of cleaning fluid. The excess fluid on the upper side is removed by the drum 17 and in passing under the heating element the rest of the moisture on the film is dried. Any moisture that escapes this treatment must necessarily be on the under side of the film and is removed in passing over the drum 11. The film then passes through the dry pads on channels 9 and 15 and is polished.

From the foregoing description and construction of applicant's device it can be seen that it is capable of cheap production, that it does not require skill for its operation and that it does not require any more effort than an ordinary rewinding operation. It is to be understood that the above described device is merely the preferred embodiment of applicant's invention in practice and is susceptible to such various changes and modifications within the scope of applicant's claims as he may deem advisable to practice.

Having thus fully described the object and practical embodiment of the invention, what is desired to be protected by Letters Patent is:—

1. A film cleaning and polishing device comprising a base, a standard mounted on said base carrying channel plates, a bracket hingedly mounted on said standard and carrying channel plates for coacting with said first mentioned channel plates to form film clamps, each channel plate carrying soft absorbent material on its inner face and a heating element mounted on said bracket intermediate said channel plates and adjacent the line of travel of the film being cleaned.

2. A film cleaning and polishing device comprising a base, a standard mounted on said base carrying channel plates, one of said channel plates carrying on one end a drum covered with absorbent material, a bracket hingedly mounted on said standard and carrying channel plates which coact with said first mentioned channel plates to form film clamps, one of said second mentioned channel plates carrying on one end a drum covered with absorbent material, each channel plate carrying soft absorbent material on its inner face, and a heating element mounted on said bracket intermediate said channel plates and adjacent the line of travel of the film being cleaned.

3. A film cleaning and polishing device comprising a base, a rewind mechanism mounted on said base, a standard mounted on said base carrying channel plates in longitudinal alignment with said rewind mechanism, one of said channel plates carrying a drum covered with absorbent material on its inner end, a bracket hingedly mounted on said standard and carrying channel plates which coact with said first mentioned channel plates to form film clamps, one of said second mentioned channel plates carrying on its inner end a drum covered with absorbent material, each channel plate carrying soft absorbent material on its inner face, and a heating element mounted on said bracket intermediate said channel plates and adjacent the line of travel of the film being cleaned.

4. A film cleaning and polishing device comprising a base, a standard mounted on said base carrying channel plates, one of said channel plates carrying on one end a drum covered with absorbent material, a bracket hingedly mounted on said standard and carrying channel plates which coact with said first mentioned channel plates to form film clamps, one of said second mentioned channel plates carrying on one end a drum covered with absorbent material, each channel plate carrying a pad made up of one or more strips of felt pretreated to increase its absorption power and faced on each side with a strip of velvet, and a heating element mounted on said bracket intermediate said channel plates and adjacent the line of travel of the film being cleaned.

5. A film cleaning and polishing device comprising a base, leaves hingedly mounted on said base carrying a rewind mechanism, a standard mounted on said base carrying channel plates in longitudinal alignment with said rewind mechanism, one of said channel plates carrying on one end a drum covered with absorbent material, a bracket hingedly mounted on said standard and carrying channel plates which coact with said first mentioned channel plates to form film clamps, one of said second mentioned channel plates carrying on one end a drum covered with absorbent material, each channel plate carrying soft absorbent material on its inner face, and a heating element mounted on said bracket intermediate said channel plates and adjacent the line of travel of the film being

cleaned, said leaves having recesses therein to receive the ends of said clamps whereby the assembly may be folded to form a compact bundle.

6. In a film cleaning device, a film cleaning pad made up of one or more strips of felt pretreated to increase its absorption power and faced on each side with a strip of velvet, all of said strips being sewed together at their edges and carrying at each end one member of a snap fastener whereby the entire pad is reversible, removable and replaceable on a support.

In testimony whereof I have hereunto set my hand.

JULIUS FRANKENBERG.