Dec. 27, 1932. A. RODDE 1,892,473

DEVICE FOR THE PERIODIC DISTRIBUTION OF A LIQUID SUBSTANCE ON A PLANE SURFACE, CINEMATOGRAPHIC FILMS OR OTHERS

Filed May 31, 1930

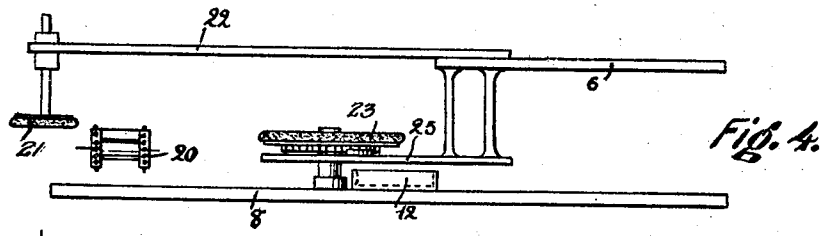

Fig. 4.

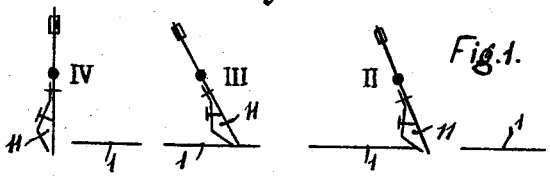

Fig. 1.

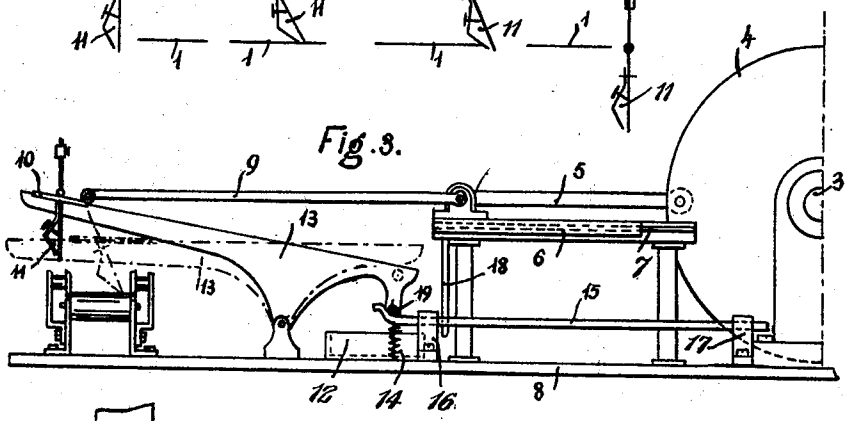

Fig. 3.

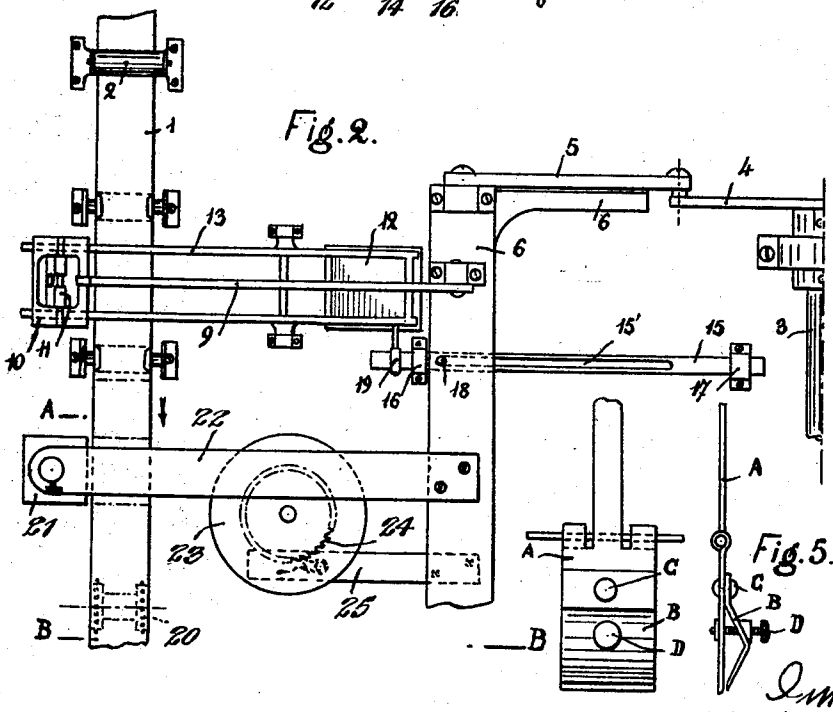

Fig. 2.

Fig. 5.

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Patented Dec. 27, 1932 1,892,473

UNITED STATES PATENT OFFICE

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DEVICE FOR THE PERIODIC DISTRIBUTION OF A LIQUID SUBSTANCE ON A PLANE SURFACE, CINEMATOGRAPHIC FILMS OR OTHERS

Application filed May 31, 1930, Serial No. 458,581, and in Belgium June 8, 1929.

This invention refers to a device for the periodic distribution at regular intervals and in a neat and proper manner of a liquid substance on a plane surface, such as cinematographic films, metal bands, tissue or other material.

The device is essentially characterized by a kind of line drawing pen with suitable sized blades, working in the contrary direction to the drawer's pen, and which is made up of a rigid blade and a movable blade adjustable in relation to the preceding one, and the width of which is sized according to the surfaces to be covered.

For the driving of this drawing pen device, a machine is provided which is characterized in that all the organs taking a part in the operation of the drawing pen, inking, motion, lifting up, &c..., are positioned on a member moved in an alternating rectilineal direction. and the drawing pen is running in a direction perpendicular to the motion forward of the band to be partially covered with the said substance.

This substance consists for the cinematographic films, for instance, in a tinge to be affixed on each image for the colouration of the film in view of its coloured projection.

The product in question also may be a varnish, a stiffening, an emulsion, or similar.

In the case of a film tintage, each variety of colour is preferently requiring a proper driving mechanism with its inking, or the machine may be built wide enough so as to drive simultaneously a plurality of drawing pens.

In the accompanying drawing:

Fig. 1 shows 4 positions of the drawing pen while using same.

Fig. 2 is a plan view of the machine.

Fig. 3 is an elevation on the line A—A of Fig. 2.

Fig. 4 is an elevation on the line B—B of Fig. 2.

Fig. 5 shows both front and side views of the drawing pen.

In reference to the drawing, a kind of line drawing pen working in the contrary direction to the drawers' pens, consists in two blades A, B fastened one to the other by means of a rivet C. The blade A is rigid, the blade B has a certain flexibility, and both blades are made up of metals unaffected by the substances to be used. The blade B can be more or less removed from the blade A by means of a screw D or a small cam, and it is shorter than the said blade A, so that the required slope obtained while the machine is running brings the both ends of the blades seating on the same horizontal plane. The blade width is sized according to the surface to be covered.

This special drawing pen is moved by some mechanical devices to be described hereafter along a way bringing same to a tank where it is filled with colour, then carried on the surface to be covered with the tinge, returned back over the said surface without coming in touch with same, and brought again to the inking tank for a new operating cycle.

During this operation, the covered band is automatically fed of the proper length so as to bring another surface to be covered under the drawing pen starting for a new operation.

The slope of the drawing pen is made adjustable through the height between same and its impact point and by the position of the way in relation to the surface to be covered. Fig. 1 shows first the position before the impact with the surface to be covered, secondly the position after the impact and before the settling of the liquid, thirdly the position during the settling, and at last the position when the operation is performed.

It is convenient to have the rod A charged with a movable weight running along the same, or provided with a spring in order to adjust the impact strength when the drawing pen comes in touch with the surface, thus avoiding the phenomenon of the chattering or skipping of the pen.

Also the tank may be disposed so as to accompany the drawing pen and to supply same periodically with the liquid, or placed steadily at the end of its stroke and maintained with a constant level of liquid.

The driving device may be for instance built in the following manner as in the case

of the tinting of the image field for trichromic films.

Starting from the pellicle 1, the winding off direction is shown by the arrow, this pellicle is brought into position for its motion forward by the known means of the delivering drums and a driving drum, this last being itself driven by a Maltese cross device.

The film is rigidly maintained under tension by a pressure roll 2. A spindle 3 is provided at each end with an eccentric plate 4 driving respectively a connecting rod 5 attached to a sliding frame 6 held and guided by the slides 7, Fig. 2, directly connected to the base plate 8, Fig. 2, by columns. On the reciprocating sliding frame 6 are mounted all the necessary controlling means for the tintage and further operation. A connecting rod 9 driving the pen holder 10 follows the reciprocating stroke of the frame 6, the stroke being so measured that the drawing pen 11 at the end of its stroke releases the film it has just covered with colour, whereas at the beginning of the stroke it is in a position to take colour in a tank with a constant level 12, Fig. 3. The direction of the drawing pen is secured by the tilting support 13 held in a slanting position by a spring 14.

A small bar 15 sliding into two bearings 16 and 17 is bent at one of its ends in order to bring back to the horizontal position the tilting support now in the tintage position. An arm 18 driven by the frame 6 is engaged into a groove 15′ of the member 15. The said groove is less long than the stroke of the arm 18, so that when this last comes into touch with the bottom of the groove, its member 15 is carried along. The member 15 being continually in touch with the tilting support by means of the roller arm 19, the support 13 will run along the curve of the bar 15 and takes the needed horizontal position for the tintage.

As soon as the drawing pen is leaving the film, the motion forward of the frame 6 brings the arm 18 in contact with the other end of the groove in the member 15, bringing thus the curved part of the member under the roller 19 and tilting the support 13.

As the stroke is coming now at its end, the back motion of the frame 6 carries the drawing pen along an inclined plane towards the inking tank. Then the pen having taken liquid leaves the tank at the end of the stroke owing to the reverse motion of the member 15 impelling the tilting support 13 to come back to the horizontal position.

An image field being tinged, it is necessary to remove the possible excess of colour, and therefore after a revolution of the driving drum 20 carrying forward the band to be covered for the length corresponding to three images, a drying pad 21, Fig. 4, driven from the frame 6 through a small bar 22 runs slightly on the coloured part of the film.

During the back motion, this pad is dried on a revolving pad 23 which at each stroke forward of the pad 21 is fed by a ratchet 24 driven by the rod 25 fixed on the frame 6.

A cleaning device by means of impregnated cotton and chamois leather is added to the machine.

According to the arrangement of the above described machine, it is obvious that since the film is fed with the images (in the case of the trichromic films) it must go successively through two other machines in order to receive two further colours, or come again in the same machine, after having substituted the previous drawing pen with another pen for the application of another tinge.

Having now described the object of this invention and in which manner same is to be performed, what I claim is:

1. Apparatus for periodically distributing a liquid substance on a film, comprising means for moving the film in a right line, a member mounted for reciprocating movement at an angle to the film, means to impart reciprocating movement to said member, a fount, a tiltable member extending across and above the film and under the inner end of which said fount is located, a holder slidably mounted on said tiltable member, a liquid applying instrument pivotally connected to said holder and depending therefrom, a connecting rod between the holder and the reciprocating member and means to alternately move the tiltable member to substantially horizontal position and at the instroke of the holder to tilt said tiltable member so that its inner end lowers said instrument into the fount.

2. Apparatus as claimed in claim 1, including a pad carried by the reciprocating member and arranged to pass transversely across and on the upper side of the film.

3. Apparatus as claimed in claim 1, including a pad carried by the reciprocating member and arranged to pass transversely across and on the upper side of the film and also including a drying pad, so arranged as to be transversely crossed on its upper side by the pad which is carried by the reciprocating member and means to impart step by step rotation to said drying pad.

4. Apparatus as claimed in claim 1, in which the means for tilting the tiltable member comprises a spring active to tilt the same, a tappet on said tiltable member, a reciprocating rod having a cam arm cooperating with said tappet and an arm carried by said reciprocating member and travelling between spaced stops with which the reciprocating rod is provided.

In witness whereof I affix my signature.

ARMAND RODDE.