

UNITED STATES PATENT OFFICE.

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APPARATUS FOR COLORING KINEMATOGRAPHIC FILMS.

1,035,433.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LÉON GAUMONT, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in Apparatus for Coloring Kinematographic Films, of which the following is a specification.

In machines for coloring kinematographic films, the most delicate operation is certainly to obtain perfect registration between the stencil and the film. The non-registration of these two bands arises from the following causes: 1. The edges of the bands are not absolutely straight. 2. They are not all of the same width, which renders it impossible to retain them between two cheeks arranged at a fixed distance apart. 3. Finally, and this is the most serious defect, the stencil undergoes contraction which in certain cases amounts to as much as some tenths of a millimeter. Obviously in this case, with a lateral support common to the two bands, the images will be correctly superposed on one side but in proportions as they approach the opposite side the registration will be imperfect and this to an increasing extent. In order to diminish the effects resulting from this cause, we have devised a method of distributing or dividing these defects in taking into account the contractions of the stencil, that is to say in producing exact superposition in the axis of the two bands, the differences being thus located on either side of this axis so that their value is one half of what it formerly was. Obviously, this method is applicable only to films and stencils produced from one and the same negative and in the manufacture of which care has been taken to cause one of the sides to coincide with the same side of this negative.

This invention will be readily and clearly understood from the following description with reference to the accompanying drawing, in which:—

Figure 1 is a longitudinal section of the arrangement, and Fig. 2 is a plan view.

The device consists broadly of two smooth cylinders A rotatable about their spindle and arranged on either side of the member for displacing the bands (cylinders, claws or the like). Each cylinder comprises a fixed cheek B at one end and a movable cheek C at the other end; this cheek C is acted upon by a spring *a* which applies the

film to be colored against the fixed cheek B, the edge of the film, in contact with the fixed cheek being the side which has been decided as guide for the printing. The film is thus guided by the plane formed by the two fixed cheeks B.

Two cylinders D analogous to the foregoing provide for the guidance of the stencil X. Between these cylinders and the frame of the machine there is arranged a milled knob E, the central hole in which is screw threaded to permit of the displacement of the cylinders upon their spindles.

On one of its faces the milled knob E bears divisions 0 to 20, each corresponding to displacements of one half a tenth of a millimeter.

When the milled knob is at 0, all the fixed cheeks of the cylinders are located in the same plane and the edge of the stencil coincides with the edge of the film as in the printing machine; if the stencil and the film are of the same width, transverse registration is insured but if the stencil has experienced contraction amounting to one fifth of a millimeter, for example, such self registration no longer takes place and the registration upon the axis of the image becomes necessary. In order to obtain this, it is only necessary to rotate the milled knob through two divisions (one tenth) in the normal direction of the scale; the stencil is displaced by the same amount and its axis coincides with that of the image. A dog *b* serves to lock the milled knob E.

It will therefore be obvious that with this device it is only necessary to ascertain once for all the width of the stencil before it is used and to take into account any variations that it may undergo subsequently.

What I claim and desire to secure by Letters Patent of the United States is:—

1. An apparatus for use in coloring films, comprising a laterally fixed guide for a superposed film and stencil, and an adjustable guide for one of said film and stencil, whereby said film and stencil may be adjusted laterally relatively to one another.

2. An apparatus for use in coloring films, comprising a laterally fixed guide for a superposed film and stencil, and means for laterally moving said film and stencil relatively to one another.

3. An apparatus for use in coloring films, comprising rollers having lateral guiding

means thereon over which a superposed film and stencil pass, and means for laterally adjusting said film and stencil relatively to one another.

- 5 4. An apparatus for use in coloring films, comprising rollers having lateral guiding means thereon over which a superposed film and stencil pass, and means for laterally adjusting said stencil relatively to said film.
- 10 5. An apparatus for use in coloring films, comprising guide rollers over which a superposed film and stencil pass, and other adjustable guide rollers over which one of said stencil and film pass, whereby said film and stencil may be adjusted laterally relatively to one another.
- 15 6. An apparatus for use in coloring films, comprising guide rollers over which a superposed film and stencil pass, other adjustable guide rollers over which one of said stencil and film pass, whereby said film and stencil may be adjusted laterally relatively to one another, and a toothed drum for advancing said film and stencil.
- 20 7. An apparatus for use in coloring films, comprising a guide for a superposed film and stencil, and an adjustable guide for one of said film and stencil, whereby said

film and stencil may be adjusted laterally relatively to one another, and a toothed drum for advancing said film and stencil.

8. An apparatus for use in coloring films, comprising a plurality of rollers, having guide flanges thereon, over which a superposed film and stencil pass, means pressing said superposed objects in engagement with said guide flanges, and means for laterally moving said stencil and film relatively to one another.

9. An apparatus for use in coloring films, comprising a plurality of rollers having guide flanges thereon, over which a superposed film and stencil pass, means pressing said superposed objects in engagement with said guide flanges and means displacing certain of said rollers laterally relatively to other of said rollers, whereby the film and stencil will be displaced laterally relatively.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

LÉON GAUMONT.

Witnesses:

DION B. MASON,
GABRIEL BELLARD.