

PATENT SPECIFICATION.

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COMPLETE SPECIFICATION.

Method of Engraving Rollers applicable for the Treatment of Photographic Films.

We, SOCIETE DU FILM EN COULEURS KELLER-DORIAN, societe anonyme, organised under the laws of France, of 42, rue d'Enghein, Paris, France (Assignees of JEAN AUDIBERT, French citizen, of 7, rue Victor Hugo, Villeurbanne (Rhône), (France), do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Various methods in colour photography use a sensitive film whose support carries on the side opposite the emulsion a very large number of imbricated refracting elements of microscopic size obtained by rolling the film under the influence of heat in contact with a cylinder suitably engraved.

These microscopic refracting elements cannot give a perfect result except under the condition that they constitute optically perfect elements, in other words that they fulfil the following conditions:—

1. Their principal section must present at the top a constant curvature for the same thickness of film; this section may be circular but is preferably hyperbolic.

2. The whole surface of these elements must be highly polished.

3. The intersection of the surfaces of two adjacent elements must form a sharp angle and must not diffuse light.

The present invention has for its object a mode of obtaining engraved cylindrical surfaces, effecting the impression at once on commercial films of microscopic refracting elements answering to the above conditions, and the use of these surfaces for the preparation of films for colour photography.

The principle of obtaining the

[Price 1/-]

engraved cylinders depends upon the indentation of the surface of the said cylinders, perfectly formed and brought to a mirror polish by the use of a shaped tool also brought to a mirror polish. Under these conditions the surface of the impression itself preserves the same polish. It is evident then that the plastic substance constituting the film support, compressed firmly upon the cylinder thus prepared, will accordingly take the shape and the polish of the impression left by the tool.

One way of carrying out the invention is the following. It is only given as an example without limiting the invention.

A hardened steel disk is carefully mounted on a carrier and given the shape of a glass cutter. The sides of the wheel are carefully polished on a stone or the like in the neighbourhood of the cutting edge. Finally the edge itself is worked by hand to produce on its top the exact curvature which it is desired to give to the microscopic refracting elements of the film.

The tool thus made enables the marking of pressure cylinders previously brought to a mirror polish to be effected in different ways.

If it is desired to obtain markings sensibly perpendicular to the generating lines of the cylinders, the wheel carrier is mounted on the carriage of a precision lathe adjusted so as to be displaced by an interval corresponding to the distance between two consecutive microscopic elements. The axis of the wheel being disposed parallel to that of the cylinder to be engraved, the wheel traces on the latter an impression of a depth, the greater corresponding to a greater pressure. This last is regulated also so that

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two consecutive impressions meet one another in a sharp edge without depressing the edges of the impression.

5 If a marking parallel to the generators of the cylinder is desired, the disk is disposed with its axis perpendicular to that of the cylinder, this last being mounted on the bed of a dividing engine. The carriage is then operated
10 as if it carried in place of the wheel a simple tool for graving or indenting.

Finally if a helicoidal marking is desired, the translational movement of the tool is combined with the rotational
15 movement of the cylinder. It is enough to observe that the plane of the edge of the disk must be parallel to the helix which it is proposed to trace. The whole surface is covered with parallel helical
20 grooves by the use of a dividing plate.

Cylinders thus engraved impress on the film a number of fine hatchings presenting rigorously the curvature and
25 polish of the edge of the disk used for engraving them. The cylinders are thus entirely suited for the most refined purposes, particularly for the treatment of films for colour photography.

30 Films made according to the above process are free from the defects of those produced by such means as a die automatically struck, combined with angular and longitudinal displacement of the cylinder to be engraved. The indented

hollows in such a case retain a minute
35 air bubble whilst rolling, a bubble which prevents absolute contact between the celluloid and the bottom of the marking. The shape of the refracting elements is on that account never the same as that
40 of the die used for striking.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we
45 claim is:—

1. A method of effecting the engraving of cylinders adapted to impress
50 microscopic refracting elements upon photographic films consisting in depressing the previously polished surface of the said cylinders by means of a tool also polished.

2. Means for carrying into effect the method claimed in Claim 1, comprising
55 a tool shaped as a disk having a projecting edge whose section is formed according to the curvature to be given to the refracting elements.

3. Photographic films treated by rolling over them under pressure cylinders prepared in accordance with Claim 1.
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