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METHOD OF BONDING A GELATINE PHOTOGRAPHIC MEDIUM TO PAPER

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U.S. Cl. 96—22 1 Claim

ABSTRACT OF THE DISCLOSURE

A method for bonding a gelatine coated tri-colored photographic paper or film to a paper in which the paper is applied to the copying paper or film subsequent to the development of the yellow and blue-green image on the copying paper or film but prior to the completion of the development of the red image and while the gelatine is tacky after which the combined paper and paper or film are heated to harden the gelatine and permanently bond the cover paper to the photograph.

When preparing identity papers, such as identity cards, it has been found expedient to apply to such papers, in addition to a visible photograph of the person to which the papers apply, also a photograph which is normally identical to the visible photograph and covered with a sheet of material such as paper, this second photograph being visible only when seen against the light. In this way, the validity of the papers can be doubly checked upon and the forgery of such papers is rendered more difficult.

When preparing such identity papers, however, difficulties are encountered, inasmuch as paper will not adhere to the surface of the photograph. This is particularly true of colored photographs, with which the gelatine is hardened with formalin, for example, during the process, the formalin being applied during the last stage of the process or alternatively when drying the colored photograph.

When developing the colored photograph, the blue-green and yellow images are normally developed first, this being effected in dark environment and at low temperatures. The final development of the red image is often carried out at high temperatures (80–100° C.), and the gelatine must therefore be hardened by adding, e.g. formalin to prevent the surface of the photograph from adhering to the surfaces of the developing apparatus. Even if lower temperatures are used when developing the red image, the photograph must nevertheless be dried at high temperatures, and the gelatine must therefore be hardened to prevent it from sticking to the surface of the drying apparatus. The surface of the photograph is glossed to a certain extent in connection therewith. The red image, however, need not to be developed in the dark.

This aforementioned problem is solved by means of the present invention, according to which a piece of paper is applied to the surface of the photograph subsequent to developing the yellow and the blue-green images, but prior to completing the development of the red image. At this stage of the process, the gelatine is still in a soft and tacky state and will adhere to the paper applied thereto. During the following stage of the development process and the subsequent drying stage, when the gelatine hardens, a permanent bond is obtained between the paper and the surface of the photograph, the gelatine being partially pressed into the paper by the pressure exerted by the drying rollers or the pressure means and hardened in this state. The image is not affected hereby and is fully visible when viewed against the light.

It is impossible to forge an identity card provided with a paper covered image in the aforedescribed manner, since the paper cannot be separated from the image without destroying the latter.

If the card is laminated in a plastics material, as is normally the case, the plastics material will not adhere to the gelatine surface of the visible photograph, but will adhere to the paper covering the hidden photograph. Thus, the layer of plastics material will be connected with the hidden photograph (which as aforementioned is normally identical to the visible photograph), and hence it is impossible to separate the hidden photograph from the plastics material without destroying the identity papers.

The invention is illustrated, but not restricted by the following example.

EXAMPLE

For making identity cards a series of colored photographs were copied in a conventional manner on a web of photographic copying paper for color photography (type Agfa MCM 111) to form a series of pairs of copies on the web each comprising two identical photographs of the same person disposed beside each other. The paper web was developed in a conventional developing machine type Pako Processor, wherein the copying paper web is passed through a series of developing baths (operating at room temperature and in the dark) and rinsing baths of compositions suitable for the copying paper, as recommended by the manufacturer thereof, to develop the blue-green and yellow colors and then over a heated drum (about 190° C.) to develop the red (magenta) color and to dry the paper the copying paper passing through a stabilizing bath containing about 3% formaldehyde before being passed to the heated drum. In the present example, the copying paper, after passing through the stabilizing bath and while gelatine surface was still soft and tacky, was removed from the developing machine and a piece of paper containing printed information corresponding to each individual was applied over each pair of partly developed copies on the web so as to cover one of the copies in such pair. The web with the applied papers was then passed over the heated drum where it was subjected to about 190° F. for about 5 minutes. By this treatment the red color was developed and at the same time the previously formaldehyde-treated gelatine was hardened and each applied paper piece permanently bonded to the hardened gelatine in the photographic surface to which it had been applied. At the same time the paper web was dried. The web was then cut transversely to separate it into individual cards each comprising a pair of identical colored photographs one of which was covered by said printed piece of paper. Each card was placed between two sheets of plastic slightly larger than the card and the assembly subjected to heat (about 285° F.) and pressure (about 40,000 p.s.i. for about 55 seconds in a conventional laminating press to bond the plastic sheets to the paper surfaces and to each other around the card. This treatment also slightly strengthened the red color of the prints and weakened the blue color.

What is claimed is:

1. A method of bonding a gelatine coated tri-colored photographic copying material to a cover paper comprising applying the cover paper to the photographic copying material subsequent to the development of the yellow and blue-green images on the photographic copying material but prior to the completion of the development of the red image and at which time the gelatine is tacky and heating the combined paper and material to complete the development of the red image and harden the gelatine to permanently bond the cover paper to the photograph.

References Cited

UNITED STATES PATENTS

3,608,465 9/1971 Ching ..... 96—50 P L

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