July 5, 1955 J. M. ENGLISH, JR 2,712,514

IDENTIFICATION PASSES

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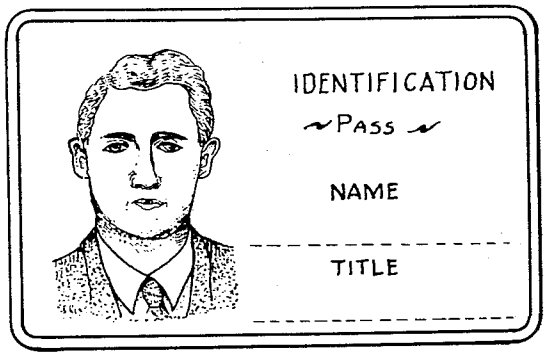


Fig. 1.

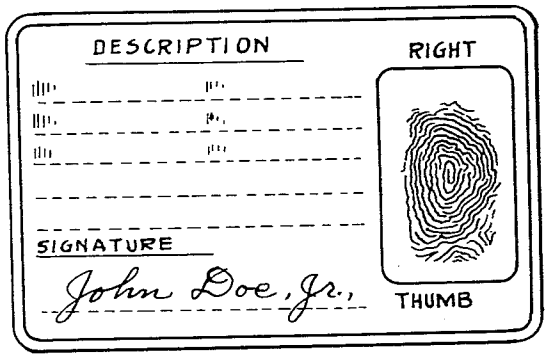


Fig. 2.



Fig. 3.

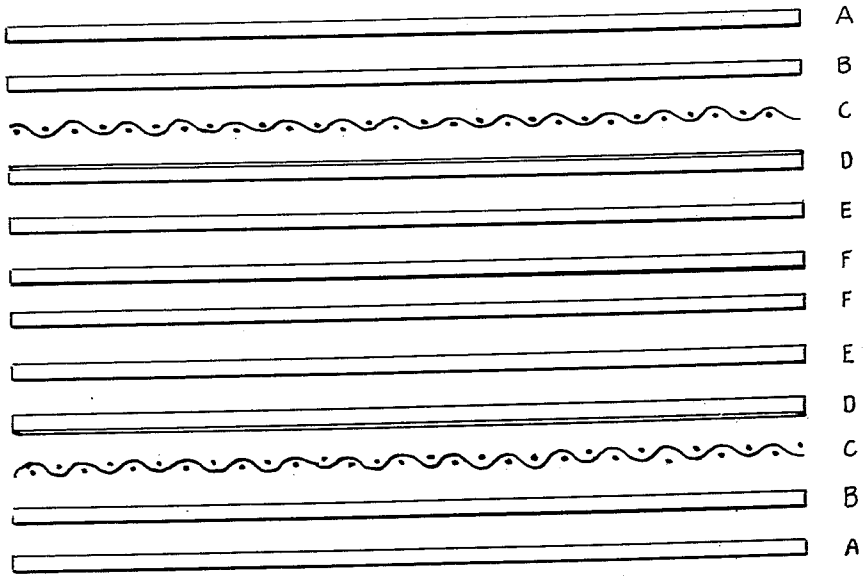


Fig. 4.

INVENTOR
JOSEPH M. ENGLISH JR.
BY
H. L. Godfrey
ATTORNEY

United States Patent Office

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IDENTIFICATION PASSES

Joseph Martin English, Jr., Silver Spring, Md., assignor to the United States of America as represented by the Attorney General

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The invention described herein may be manufactured and used by or for the Government of the United States for governmental purposes without the payment to me of any royalty thereon in accordance with the provisions of the act of April 30, 1928 (Ch. 460, 45 Stat. L. 467).

This invention relates to identification passes or badges and more particularly to such articles as have fraud-preventing coating thereon. Still more particularly, this invention relates to identification passes which are encased and impregnated with a resinous composition which, once it is set or polymerized by heat treatment, is not thereafter susceptible of removal by heat or solvents.

Heretofore, identification passes have been constructed wherein a photograph and, if desired, signatures or the like, have been mounted on a card and the whole encased with a protective coating such as, for example, cellulose acetate film. Passes of this nature suffer from the disadvantage that the film may be softened by heat treatment, and the photograph and other significant indicia may be removed and replaced. After completion of the alterations, casual inspection gives no indication that the identification pass has been fraudulently tampered with. It will be appreciated that, in an industrial installation involving many thousands of employees, it is impossible for gatekeepers or the like to become personally acquainted with the entire plant staff. Accordingly, great reliance must be placed upon simple identification means such as photographic badges, passes, or the like, in making sure that only authorized persons have access to the establishment.

Accordingly, this invention has for an object the production of an identification pass which can be fabricated from non-critical and readily available materials without requiring complex machinery for its production. Another object is the production of an identification pass which is extremely difficult to alter without leaving readily detectable evidence of alterations. Another object is the production of an identification pass wherein photographic indicia, as for example, a portrait of the authorized bearer, together with, for example, reproductions of fingerprint patterns, may be mounted on a card and encased in a transparent or translucent protective covering which is incapable of removal or alteration without making the attempted substitution readily apparent. Another further objective will be apparent as the ensuing description proceeds.

These objectives are accomplished by this invention which provides an identification pass comprising at least one sheet of fibrous material carrying identifying indicia, the said sheet being impregnated with and coated by a translucent thermosetting resin.

In one preferred embodiment, an identification pass is made by impregnating a plurality of sheets of fibrous material carrying identifying indicia with a solution of a soluble resin-forming condensate, thereafter assembling the thus impregnated sheets into a sandwich and

hot-pressing the assembled sheets at thermosetting temperature to form a unitary structure.

The invention will be made clear by reference to the ensuing description and the accompanying drawings in which Fig. 1 illustrates the obverse of an identification pass in accordance with this invention.

Fig. 2 illustrates the reverse, including suitable indicial thereon, of the pass of Fig. 1.

Fig. 3 shows a sectional view, partially broken away, of an identification pass showing the multiple layers of one embodiment.

Fig. 4 illustrates in an expanded view a sectional elevation of a pass made in accordance with this invention, showing a plurality of symmetrical layers about a core.

For a practical embodiment of this invention, and referring now to the drawings, a suitable pass may be fabricated by assembling a plurality of layers of fibrous material into a sandwich. In the drawings, in Fig. 4, the uppermost layer A comprises an outer sheet of paper which may be alpha cellulose fiber or rag paper, preferably not containing filler, which has been impregnated with a thermosetting resin solution.

Below the upper layer A is located a second sheet of paper B bearing a printed or lithographed pattern. This sheet may serve to carry some of the significant data which it is desired to incorporate as a part of the indicia carried by the pass or, in the alternative, it may serve as an overlay sheet preventing the alteration of an underlying sheet without destruction of the overlay. Whatever the nature of the indicia on sheet B, they may be inscribed before or after impregnation with the resin-forming material later to be described.

Next below sheet B is another sheet C, preferably composed of a reinforcing textile fabric such as, for example, cheesecloth, which serves the plural function of strengthening the pass during use, rendering alteration of underlying layers more difficult and preventing deformation of the paper sheets during the manufacture of the pass.

Below the textile layer C, is assembled a paper layer D carrying a portrait thereon or other photographic image. The photograph is made by the selected reduction of silver halide particles dispersed in gelatin and adhesively mounted to a paper backing, and it is desirable to remove the unactivated silver halide without the intervention of acid hardeners or tanning agents prior to impregnation with the resin-forming solution later to be described.

Underneath the photographic image layer are assembled two layers E and F of filled fibrous material, such as rag paper stock filled with titanium dioxide, whiting, or the like. These layers serve the function of reflecting light through the upper layers and, at the same time, strengthening the entire sandwich. The remainder of the sandwich comprises a series of layers in reverse order to those described in order that further identifying indicia may be carried while providing a symmetrical structure.

In assembling the sandwich above described to form an identification pass in accordance with this invention, each layer is first impregnated with a suitable resin-forming condensate, preferably in aqueous or alcoholic solution. Suitable resins comprise the thermosetting resins which are translucent and, at the same time, readily set to a permanent condition. Such resins may include, for example, the melamine-formaldehyde condensate sold under the trade name "Melmac 405" by the American Cyanamid Company; primary urea-formaldehyde soluble condensate and polymerizable alkyd resinous condensates such as, for example, the soluble condensate of phthalic anhydride and glycerol or other suitable thermosetting resins which can be used to impregnate a fibrous layer while in the monomeric or partially condensed state and thereafter can be polymerized to the irreversible state.

In impregnating and forming the identification pass in accordance with this invention, it is preferred to impregnate each fibrous layer with a solution of the resin-forming condensate prior to the final heat-polymerization. In general, an aqueous or an alcoholic solution is made containing, for example, about 50 percent by volume of primary resin condensate in ethyl or methyl alcohol. Preferably, for ease in handling and good results, the primary resin-forming solution is diluted with about an equal volume of water. Thereafter, the fibrous layer, such as paper, cheesecloth, or the like, as above described, is immersed or thoroughly saturated with the solution of the resinous component. The thus impregnated layer is dried without heating substantially and is then ready for assembly into a sandwiched relation with the other layers of the pass.

In the impregnation of ordinary photographic prints, it is desirable to impregnate the prints with the resinous solution after developing the prints but prior to drying the same. Obviously, impregnation under these conditions takes place by diffusion. There results a complete impregnation which, upon subsequent polymerization later to be described, produces an identification pass free of air spaces or voids.

After impregnation, the various layers of the identification pass, where more than one layer is employed, are assembled in a sandwiched relationship to each other and pressed between two polished metal plates under approximately one thousand pounds per square inch of pressure. The plates are then heated to about 305 to 325° F. until polymerization to the irreversible, resinous state is completed. In general, a heating period of approximately four to eight minutes in entirely adequate to complete the polymerization and condensation.

After completion of the hot pressing operation above described, the pass is then trimmed to size and is ready for use.

The following example illustrates how the invention may be carried out but it is not limited thereto:

A photographic image in the form of an ordinary gelatin-silver emulsion print is developed with an ordinary photographic developer solution and is fixed without employing acidic hardening substances in the fixing bath (acidic hardening substances in the fixing bath tend to inhibit complete impregnation). While still wet, the photograph is immersed in a solution of equal parts, by weight, of water and a primary melamine-formaledhyde condensate sold by the American Cyanamid Company under the trade name of "Melmac 405." The print is thoroughly soaked in this solution until both the paper backing and the gelatin layer have become impregnated. Thereafter, the print is removed from the solution and allowed to dry at room temperature.

The dried print is then placed in a hot press between two chromium-plated polished surfaces and subjected to a pressure of about 1000 pounds per square inch. By suitable control of the heating means, the hot press is maintained at a temperature of about 305 to 325° F. for a period of about four minutes. Thereafter, the press is cooled to room temperature and the photograph encased in resin is removed. After trimming, it is ready for use. Alternatively, in order to expedite the production of large numbers of identification passes, the hot press can be opened at the end of the heating period and the resinified photograph can be removed and cooled in a cool press which holds it in the desired flat shape until the resin has thoroughly set.

Example 2.—The procedure of the foregoing example was repeated, employing a pair of photographic prints placed back to back with reinforcing layers interposed between them and with separately impregnated overlay

layers mounted on the face of each photograph. The entire sandwich was hot pressed, as above described, to yield a unitary tamper-proof identification card. Excess resin which may have been squeezed out of the edges of the sandwich may be trimmed off as by grinding or the like.

It will be seen from the foregoing description and examples that an identification pass or badge can be made in a simple fashion from thermosetting resins and ordinary fabric or fibrous layers carrying indicia thereon. Since the resins employed are thermosetting, an attempt to alter the significant indicia on the fibrous layers by reheating of the resin merely results in charring which, of course, is readily apparent to a casual observer. Attempts to cut or grind out the significant portions and substitute forged portions of the indicia are readily detectable by the interference with the overlay sheets, as above described. The identification badges or passes of this invention can be manufactured in quantity at very little expense.

In addition to the resins specifically set forth above as being suitable, other thermosetting resins such as, for example, alkyd resins and mixtures thereof, can be employed. A particularly efficacious resinous mixture is the resin sold in primary condensate form by the American Cyanamid Company under the trade name of "LAMINAC" which is understood to be a primary condensate of a dibasic acid such as maleic anhydride with a glycol in a solution of monomeric styrene. This composition is employed without using additional solvents and is resinified by the addition of peroxidic catalyst or by heating or both. Obviously, many other thermosetting translucent or transparent resins can as well be employed for the encasement and impregnation of the intermediate fibrous layers of the identification pass.

Since many apparently different embodiments of this invention will occur to one skilled in the art to which it pertains, various changes can be made in the specific details without departing from the spirit and scope of this invention.

What is claimed is:

A process for the production of an identification pass which comprises developing a gelatin-silver halide photographic paper print while excluding acidic hardening substances, and while still wet, immersing and impregnating said paper print with a solution of a melamine-formaldehyde resin-forming condensate, similarly impregnating at least one overlay layer of translucent fibrous material, drying the thus impregnated sheets, superposing the print and layer in sandwiched relationship, and hot pressing at about 305° F. to 325° F. under a pressure of about 1,000 pounds per square inch until resinification is complete.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 18,370	Ellis	Mar. 1, 1932
1,502,137	De Foreest	July 22, 1924
1,905,999	Ellis	Apr. 25, 1933
2,197,357	Widmer	Apr. 16, 1940
2,361,670	Whitehead	Oct. 31, 1944
2,525,310	Novak	Oct. 10, 1950
2,528,152	Landgraf	Oct. 31, 1950
2,545,804	Butler	Mar. 20, 1951
2,588,067	Whitehead	Mar. 4, 1952
2,609,321	Patterson	Sept. 2, 1952

OTHER REFERENCES

"Laminating With Melamine Resins," article by T. W. Noble published in "Plastics" for December 1946, pp. 46, 48, 49, 94, 95.