March 5, 1946. E. D. DE GRUCHY 2,395,804

RECORD BEARING DOCUMENT

Filed Oct. 30, 1944

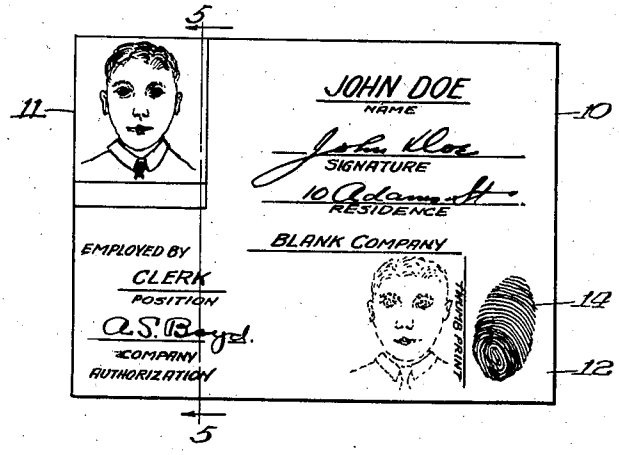
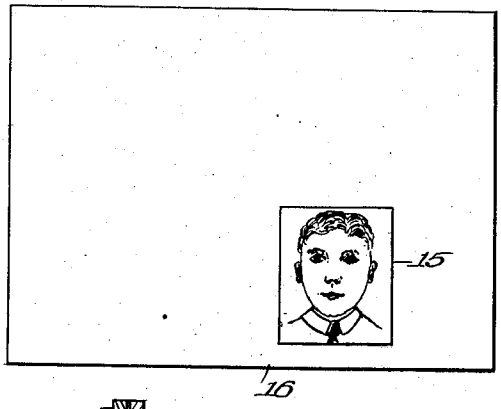


Fig. 1

Fig. 4



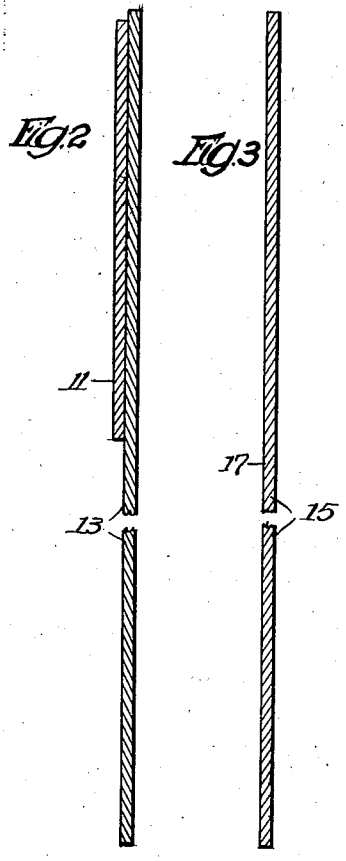


Fig. 2

Fig. 3

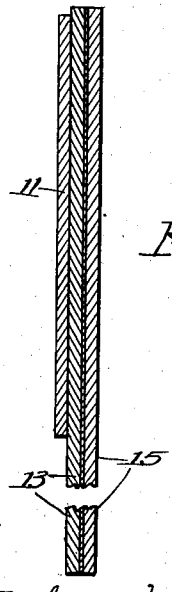


Fig. 5

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RECORD BEARING DOCUMENT

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Application October 30, 1944, Serial No. 560,923

7 Claims. (Cl. 283—6)

This invention relates to record bearing documents including, more particularly, identification cards, checks, money orders, and other documents of a similar type where permanency and untamperability are desirable for documentary purposes.

This application is a continuation in part of applicant's co-pending application, Serial No. 497,443, filed August 5, 1943.

One of the objects of the invention is the provision of a new and improved type of record bearing document which is permanent and tamper-proof.

Another object of the invention is the provision of a new and improved method for preparing a record bearing document of the type described.

A more specific object is the provision of an identification card which is simply and easily manufactured and which provides an identification means that cannot be tampered with without giving full evidence of the tampering.

Under present war conditions, it is essential that identification be carried by the workers in most plants and this identification has to be checked by a guard who will not know all the individuals on sight. The guard must be able to check the identification card with the individual carrying it with a minimum of delay. It is obvious that under such circumstances a card carrying a photograph is the best and quickest means of identification. It is also easy to imitate since an individual may substitute himself for another worker and in so doing substitute his own photograph upon a standard identification card of the company and thereby gain entrance past the guard with no difficulty.

The present invention is illustrated with respect to an identification card which presents a great deal of difficulty in duplication or changing and which is very easily inspected by a guard to determine whether the card is one originally issued by the issuing authority.

It will be understood, however, that the invention is applicable to the preparation of other types of record bearing indicia as, for example, checks, money orders and other types of documentary records.

Generally stated, the documents prepared in accordance with the invention comprise a record bearing sheet, preferably plain white paper, non-transparent by reflected light but of relatively high transparency by transmitted light, a photographic print paper with a photographic emulsion layer thereon containing a developed photographic image of at least a portion of said record, and a water insoluble bonding layer integrally bonding said developed photographic image-containing layer to the back of said record bearing sheet. Thus the visible record appears on the front surface of the record bearing sheet, and a secondary record, formed by said developed photographic image, is contained in the emulsion layer of said print paper where it is normally invisible from the front of said document by reflected light but is visible by strong transmitted light as, for example, when said document is held in front of a strong light source.

For the purpose of the invention, it is preferable that the front record bearing sheet contain a blank space opposite the position occupied by the developed photographic image in the photographic emulsion layer of the secondary record bearing sheet.

Certain advantages of the invention flow from the method of preparing the aforesaid record bearing documents and such documents, when prepared in accordance with the invention, cannot be changed by substituting false records thereon without giving full evidence of the tampering.

Other features and advantages of the invention will appear more fully as the description proceeds, reference being had to the accompanying drawing wherein a preferred form of the invention is shown. It should be understood, however, that the drawing and description are illustrative only and are not to be taken as limiting the invention except insofar as it is limited by the claims.

In the drawing:

Fig. 1 is a front view of an identification card embodying the invention;

Fig. 2 is a sectional view taken through a part of the card;

Fig. 3 is a sectional view taken through another part of the card;

Fig. 4 is a front view of that part of the card shown in Fig. 3 illustrating the part as ready to incorporate in the final card assembly; and

Fig. 5 is a sectional view taken through the final card assembly.

It is to be understood that the drawing herein is somewhat diagrammatic and that the sectional views in particular are greatly enlarged to bring out the features of the invention. The final card 10 as assembled, as shown in Fig. 1, is intended to show a photograph 11 in the upper lefthand corner. This photograph may desirably be one that is pasted on after the rest of the card is printed up. In the lower righthand corner of the card a space 12 is provided where the thumb

print of the individual can be applied. It is obvious of course that additional space can be provided for finger prints if desired. The back side of the card can be used for any desired information, such as height, weight, age and detailed description of the individual. In making up the card, one procedure is to take a blank sheet 13 of a good plain white paper with a plain finish which has relatively high transparency. On this blank sheet of paper the printing of the necessary printed information may be made. The printed blank is signed and the thumb print 14 is put on it and then a picture is taken of the individual and a print on ordinary print paper is made and pasted in the upper lefthand corner as illustrated in Fig. 1. A desirable weight of paper to be used for the blank 13 is about 8 lbs. to the ream.

The next step in the method of producing the identification card is to take a sheet 15 of light weight print paper such as No. 4 Agfa. The print paper normally comprises a light weight paper sheet with a gelatin-silver halide photographic emulsion layer thereon. This paper is covered with a mask 16 to leave only a small square exposed (see Fig. 4). On this square there is printed by the usual process the same photograph which is printed for the print 11 pasted in the upper lefthand corner of the first sheet.

This print is now developed in the usual manner in a commercial developing solution. The development is stopped and the print is fixed in the usual manner employed in making prints of this character and then washed. While the print is wet, the emulsion side 17 of the wet print is next coated with a bonding solution, using a brush, swab or other means, and the print is allowed to dry for ten to fifteen minutes until a certain tackiness develops on the coated side. During the drying period, the sheet 13 shown in Fig. 2 has its back side coated with the same bonding solution, but since the sheet 13 is dry it takes a shorter time for it to reach the tacky stage. Three or four minutes usually are sufficient.

The preferable bonding solution is one which sets to a water-resistant or waterproof mass either by the addition of substances which act as accelerators to cause setting in the cold, or one that can be polymerized or set by the application of heat, or one which sets by a combination of accelerator and heat. For the purpose of the present invention, it is preferable to employ as the adhesive a resin condensation product which is thermosetting, that is to say, which sets to an irreversible water insoluble state upon heating. It is believed that aldehydic resins of this type probably react with the gelatin of the emulsion layer to increase the tenacity of the bond formed between said emulsion layer and the back of the front record bearing sheet. To secure the best results, it is preferable to apply the resinous condensation product to the emulsion layer while the latter is still wet after the developed photographic image is fixed.

The adhesive which has been found to work the best consists of a urea-formaldehyde resin condensation product that is water soluble and which sets to a water-resistant mass upon the addition of an accelerator or the application of heat or a combination of both. While an oil soluble condensation product of urea-formaldehyde may work, the water soluble type is preferred, although the oil soluble type is considered within the scope of the invention. The urea-formaldehyde resins and other resins of this type, including the melamine-formaldehyde resins, are especially advantageous in that they form a transparent bonding layer which is not subject to discoloration. Another type which has been found to be satisfactory is the phenol-formaldehyde condensation product or condensation products consisting of formaldehyde and a phenol which act similarly to the above urea-formaldehyde produces. While such adhesives as blood albumen set with heat or egg albumen set with heat may also be used, they do not produce quite the water-resistance of the urea-formaldehyde or phenol-formaldehyde adhesives but they are included within the scope of the invention.

A one gallon batch of the preferred adhesive is made as follows: 1200 grams commercial urea and 2400 grams 38% formaldehyde are mixed in a suitable container. Then 180 grams potassium carbonate are dissolved in the mixture and the whole heated at from 160 to 180 degrees F. until the mass has the consistency of olive oil. The heat is then removed and the mixture stirred until cool. The hydrogen ion concentration is then adjusted to 7.5 at which point the adhesive remains reasonably stable at room temperature. Accelerators of an acid nature are used to set the adhesive for use and ammonium chloride is preferred although other acid salts, such as aluminum sulphate or ammonium nitrate, can be used.

When the two sheets have reached the desired tacky stage, they are placed together, the tacky sides against each other, and put under pressure for ten to fifteen minutes so as to be well adhered together and so that the solution penetrates into the fibres of the paper itself. The finished card can then be dried in a photographic drier and trimmed to size. If it is desired to protect the same by enclosing it in transparent material, this can be done although it is not necessary.

The finished identification card has the advantage that it contains the regular exposed photograph of the individual and a hidden photograph which is a duplicate of the original photograph pasted to the card. This hidden photograph, which is on sheet 15, is readily visible due to the transparency of the paper when the card is held before a reasonably strong light. This makes it possible for the guard to pass the card over a light source which can be provided at his post and detect any difference in the two photographs. To all outward appearances, the card is a single sheet. The method of preparing the card is such that the photographic emulsion on the sheet 15 is so embedded in the front sheet 13 and adhered thereto that no apparent break exists between the two sheets. Furthermore, even if the two sheets are separated with the greatest of care, it is physically impossible to remove the inner photograph and replace it without the removal appearing obvious. The identification card, therefore, cannot be tampered with, and the only way in which a substitution can be made is by the making of a complete new identification card with forged signatures and with the interposed photograph as well as the pasted on photograph.

It will be apparent that although the invention is of a special importance in making identification cards, similar principles can be applied in making other types of record bearing documents, such as checks, money orders, and the like. It is not essential, of course, that the sec-

ondary record contained in the emulsion layer in the form of a developed photographic image need necessarily be the photograph of a person contained on the front sheet; it can be the photograph of a signature, design, or other record.

From the foregoing description, it is believed that the construction and operation of the present invention will be readily apparent to those skilled in this art.

The invention is hereby claimed as follows:

1. A permanent and tamper-proof document containing a concealed photographic image, said document comprising a photographic print paper with a photographic emulsion layer thereon containing a developed photographic image and a front sheet of paper integrally united by a bonding layer to said photographic emulsion layer, the combined effect of said structure being such that said image is invisible by reflected light but visible by strong transmitted light.

2. A permanent document not subject to tampering without full evidence thereof comprising a record bearing sheet which is non-transparent by reflected light and substantially transparent by transmitted light, a photographic print paper with a photographic emulsion layer thereon containing a developed photographic image of at least a portion of said record carried by said record bearing sheet, and a bonding layer integrally bonding said developed photographic image-containing layer to the back of said record bearing sheet, said developed photographic image being normally invisible from the front of said document by reflected light but visible by strong transmitted light.

3. A permanent document not subject to tampering without full evidence thereof comprising a record bearing sheet which is non-transparent by reflected light and substantially transparent by transmitted light, a photographic print paper with a photographic emulsion layer thereon containing a developed photographic image of at least a portion of said record carried by said record bearing sheet, and a bonding layer integrally bonding said developed photographic image-containing layer to the back of said record bearing sheet, said record bearing sheet containing a blank space opposite the position occupied by said developed photographic image and said developed photographic image being normally invisible from the front of said document by reflected light but visible by strong transmitted light through said blank space.

4. A permanent document not subject to tampering without full evidence thereof comprising a record bearing sheet which is non-transparent by reflected light and substantially transparent by transmitted light, a photographic print paper with a photographic emulsion layer thereon containing a developed photographic image of at least a portion of said record carried by said record bearing sheet, said photographic emulsion layer comprising a gelatin photographic emulsion, and an aldehydic resin integrally bonding said gelatin emulsion layer to the back of said record bearing sheet, said developed photographic image being normally invisible from the front of said document by reflected light but visible by strong transmitted light.

5. A permanent document not subject to tampering without full evidence thereof comprising a record bearing sheet which is non-transparent by reflected light and substantially transparent by transmitted light, a photographic print paper with a photographic emulsion layer thereon containing a developed photographic image of at least a portion of said record carried by said record bearing sheet, said photographic emulsion layer comprising a gelatin photographic emulsion, and a urea-formaldehyde resin integrally bonding said gelatin emulsion layer to the back of said record bearing sheet, said developed photographic image being normally invisible from the front of said document by reflected light but visible by strong transmitted light.

6. An identification card comprising a front sheet carrying on its front face identifying means individual to the particular card and including a photograph, a backing sheet of print paper having an emulsion thereon adhered to the back of said front sheet, and a developed image of said photograph in said emulsion layer, said developed image being completely enclosed between said front sheet and the backing of said print paper and being normally invisible by reflected light but being visible through said sheets when the card is placed between the observer and a relatively strong light source.

7. An identification card comprising a front sheet of paper which is normally non-transparent by reflected light but substantially transparent by transmitted light having thereon printed and written identification matter and a photograph of a person, a backing sheet containing a photographic emulsion layer having therein a developed photographic image of the photograph on the front sheet and positioned in a different area, the two sheets being intimately united throughout their engaging surfaces including the emulsion layer in which said developed photographic image appears, said developed photographic image in said emulsion layer being normally invisible by reflected light and visible through said sheets when the card is placed between the observer and a relatively strong light source.

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