(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 113 228**
**A2**

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **83307742.3**

(51) Int. Cl.³: **B 42 D 15/02**

(22) Date of filing: **20.12.83**

(30) Priority: **24.12.82 GB 8236826**
**20.01.83 GB 8301539**
**04.02.83 GB 8303100**

(43) Date of publication of application:
**11.07.84 Bulletin 84/28**

(84) Designated Contracting States:
**CH DE FR GB IT LI NL**

(71) Applicant: **McCORQUODALE PLC**
**McCorquodale House 15, Cavendish Square**
**London W1M OHT(GB)**

(72) Inventor: **Boyd, Paul**
**29 Old Berg Gardens Hatch Warren Lane**
**Basingstoke Hampshire(GB)**

(72) Inventor: **Squires, Alan Henry**
**5 Holmbury Keep Langshott Lane**
**Horley Surrey(GB)**

(72) Inventor: **Christian, David Patrick Kingston**
**25 Park Lane**
**Maplehurst Sussex RH3 6LL(GB)**

(74) Representative: **Skone James, Robert Edmund et al,**
**GILL JENNINGS & EVERY 53-64 Chancery Lane**
**London WC2A 1HN(GB)**

(54) **Improvements relating to security cards.**

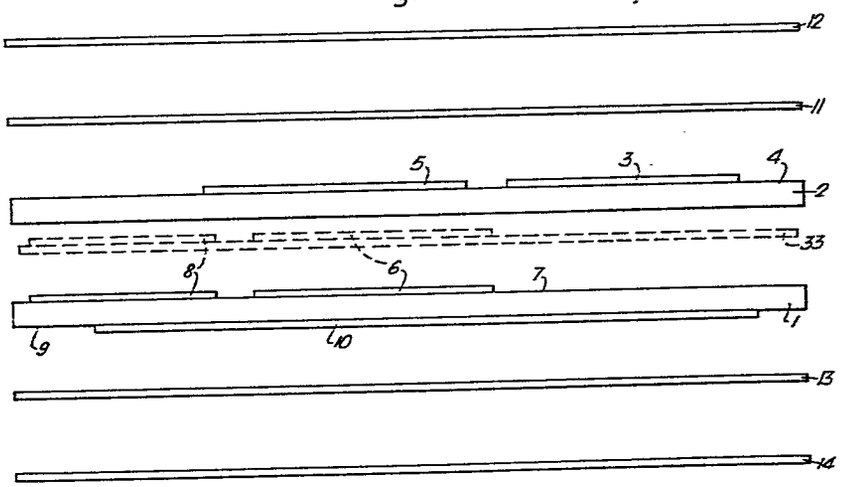
(57) A security card comprises a core formed by at least two laminae (1,2), indicia (6,8) such as a photo-image of the bearer of the card and the bearer's signature are provided within the core between the laminae. These indicia are detectable through at least one of the laminae (1,2).

EP 0 113 228 A2



Croydon Printing Company Ltd.

Fig.1.



# IMPROVEMENTS RELATING TO SECURITY CARDS

The invention relates to a security card and a method for its manufacture.

Security cards include a wide variety of cards, usually manufactured from a plastics material, which are used to identify or authorise the bearer. One group of security cards is that of transaction cards used in the process of completing a financial transaction and including credit cards, cash cards, debit cards, identification cards and cheque guarantee cards. Other groups include that of pass cards enabling the owner of the card to gain access to a building, service or country and the like and cards enabling the bearer to use vending machines. These cards usually exhibit personalised information characteristic of the bearer, for example the name of the bearer, details relating to a credit or bank account held by the bearer, the date of expiry of the card, and the signature of the bearer.

In use, transaction cards may be presented to a retailer who may use the card to imprint the account details onto a sales slip which, in the case of a credit card, the bearer subsequently signs. The retailer is then obliged to ascertain that the signature on the sales slip corresponds with that on the card. No other means is commonly provided to enable the retailer to ensure that the person presenting the card is the rightful bearer of that card.

Currently many transaction cards are being fraudulently used, and a sum in excess of 35 million pounds is being lost as a result of such use, each year. Much of this loss arises when a cheque book and a cheque guarantee card are stolen together. The cheque guarantee card is used to provide a specimen of the account holder's signature, to compare against that which the account holder writes on the cheque, and few retailers will accept cheques without simultaneous presentation of these cards.

Fraudulent use is possible if the signature can be removed from the card and a new signature is substituted, or alternatively the signature may be forged on a cheque following the example provided on the card. Various means have previously been proposed to prevent tampering with the signature including the addition of reactive chemicals to the strip on which the signature is written, but these are not particularly effective.

Further proposals to overcome this problem have been the suggestion that a photograph of the bearer should be provided on the card. A number of methods of achieving this have been proposed but they all suffer from various defects. One such method involves printing a black ink panel which is then subsequently engraved by a stylus to provide an image of the bearer. This method, however, is subject to a number of disadvantages: the black ink panel must be relatively thick in relation to the rest of the printing on the card, and its thickness must be controlled within fine limits. The resulting image comprises areas of black and white and hence the image definition and quality of representation of the bearer is limited. Furthermore, as this image lies just below a thin protecting lamina it is easily removed by scraping or routing, and a new

photo image may be glued on in its place. When covered with a varnish, the forged card, particularly when presented in a busy retail outlet, is not readily distinguishable from a genuine card. A further method involves the addition of a photographic emulsion to a substrate, usually paper, which is then encapsulated within a clear plastics envelope. This envelope is usually formed from two plastics films which are then laminated together to seal in the photograph and substrate. This card also suffers from a disadvantage that it is often possible to remove the photograph and substitute another, without leaving any easily recognisable sign that the card has been tampered with.

In accordance with a first aspect of the present invention, a security card comprises a core formed by at least two laminae, one or more indicia characteristic of the card bearer being provided within the core between the laminae, and the or each indicium being detectable through at least one of the laminae.

Typically, a security card comprises a central core, often of a plastics material, on which indicia characteristic of the card bearer are printed, outer surfaces of the core having overlaminae provided thereon. As has been explained above, it is not too difficult to remove or gain access under the overlaminae to tamper with the indicia. With the invention, however, indicia are provided within the core itself so that anyone attempting to gain access to the indicia would have to destroy the card or leave signs that it had been tampered with.

Preferably, a likeness of the card bearer such as a photo-image of the card bearer is provided between the core laminae. This may be for example a likeness of the bearer's face. A likeness may be solely provided but

alternatively, or additionally, a representation of the bearer's signature may be provided between the core laminae. In other examples the indicia may provide one or more alphanumeric characters characteristic of the bearer, or the bearer's name.

In accordance with a second aspect of the present invention, a security card comprises a core formed by at least two laminae, one or more indicia being provided within the core between the laminae, further indicia duplicating some or all of the indicia between the laminae being provided on a surface of the core, and the or each indicium within the core being detectable through at least one of the laminae.

Typically, the core will carry on at least one of its outer surfaces conventional information about the bearer, such as his account number and the like and the or each indicium provided within the core may duplicate at least some of the indicia on the outer surface. The advantage of this arrangement is that the security card can be easily checked by comparing the indicia on the surface of the core with the indicia within the core. Even if the indicia within the core is not as clear as that on the core, a sufficient comparison can be made to establish that they are in fact the same.

At least one indicium within the core may be duplicated at least once within the core either between the same two core laminae or between different pairs of core laminae where the core comprises more than two laminae. In this case, the duplicated indicia may be arranged in alignment with one another so that by viewing the security card, any differences between indicia which should be the same will be fairly easily recognised, but preferably the duplicated indicia are relatively offset to assist comparison.

In one construction, at least one of the duplicated indicia may be reduced in size relatively to the other or others. Preferably, the reduced indicium is considerably reduced relatively to the other or others so that it is only detectable with the use of a lens. Conveniently, the non-reduced indicia are detectable and recognisable to the naked eye. Typically, the reduced indicium will be provided within the core and the non-reduced indicia on an outer surface of the core.

Many additional security features may be incorporated into the security card in a conventional way. One new feature which we have developed for use with the invention is the inclusion in addition to other indicia of a security character or code solely within the core. When the security card is used, the retailer or other person to whom the card is presented, must not only record information on the surface of the core but also the character or code within the core which can only be seen by holding the card adjacent to a lightsource or by some other means. The advantage of this is that it encourages the retailer to look at the other indicia within the core.

Preferably, this security character or code is a single alphabetical or numeric character which may be assigned at random during the manufacturing stage or may relate directly to the security card number, a modulus check number, for example, or may be issued by the bank or other institute issuing the card. The issuing institution can also agree only to honour a transaction involving a security card if the security character is recorded by the retailer.

Other security features which may be incorporated include the use of invisible printing, which is viewable only under ultra-violet light, rainbow printing, and vignette printing. A micro-grounding may also be printed over a photo-image as additional security, or may be printed on an under surface of an overlamina. Furthermore, solvent sensitive inks may be used so that any attempt to delaminate the security card by the use of solvents can be detected since the solvents will react with the inks which will change colour either due to the release of a dye contained within the solvent sensitive ink or due to a direct reaction between the ink and the solvent. Further security features may be included such as embossing the card surface over a part of the indicia on the surface of the core, and including a security thread in the form of a black line or code.

Of course, one or more of these characteristic indicia may be provided at the same time within the core.

Although the or each indicium within the core may normally be provided directly on one or more surfaces of the core laminae, the indicia may be provided on one or more relatively thin laminae sandwiched between the core laminae. These thin laminae may be similar to conventional overlaminae.

It is preferable if at least one of the laminae of the core is made of a translucent material to enable the or each indicium within the core to be detected. It is particularly convenient, however, if all the core laminae are translucent whereby the or each indicium

between the core laminae are visible on transmitting light through the card. In this way, the or each indicium within the core may be visible to the naked eye. In one construction, the or each translucent lamina may be made from a plastics material such as PVC filled with a sufficient quantity of titanium dioxide such that the lamina is not opaque, as in conventional security cards, but exhibits a degree of translucence. One major advantage of indicia within the core being visible to the naked eye is that the validity of the security card can quickly and easily be checked by a busy retailer.

In the case where at least some of the indicia within the core are duplicated on an outer surface of the core, the material of the laminae of the core may be such that one lamina enables the indicia within the core to be detected while the other lamina carries the normally visible indicia and does not enable the indicia within the core to be detected. Preferably, however, both laminae allow the indicia within the core to be detected and in this case each indicium within the core may be offset from the corresponding indicium on the surface of the core as previously mentioned.

It is particularly preferable in the case where a likeness of the bearer of the card is provided, for the likeness to include one or more indicia. This new security feature is very difficult to reproduce fraudulently.

Typically, the likeness of the bearer of the card may be a likeness of the head of the bearer and included in that likeness may be a numeral or letter, such as the letter "M" or some other indicium. The likeness will still be recognisable for

comparison purposes with the bearer of the card and the included indicia will appear as a shadow.

In accordance with a third aspect of the present invention, a method of manufacturing a security card comprises providing at least two core laminae; providing one or more indicia characteristic of the bearer of the card between the laminae; and joining the laminae together, the material of at least one lamina being such that the or each indicium is detectable through that lamina.

In accordance with a fourth aspect of the present invention, a method of manufacturing a security card comprises providing at least two core laminae; providing one or more indicia between the laminae; providing some or all of the same indicia on an outer surface of one of the laminae; and joining the laminae together, the material of at least one lamina being such that the or each indicium between the laminae is detectable through that lamina.

Additionally, further overlaminae may be provided on the outer surfaces of the core. The overlaminae provide protection for any indicia on the outer surface (s) of the core but may also contain security features themselves. Typically, the core laminae may have a thickness of between 0.1 and 0.6 mm, while the overlaminae are normally crystal clear and from 0.02 to 0.2 mm in thickness.

The laminae may be laminated together at a temperature in the range 120-160$^{o}$C and at a pressure in the range 200-500 pounds per square inch.

Preferably, an adhesive is introduced between adjacent laminae prior to joining the laminae together.

An adhesive could be included between the core laminae and/or between the core laminae and any overlaminae, and/or between adjacent overlaminae. The adhesive may be provided on the laminae by coating such as extrusion, blade coating, or screen printing or by other known methods. Suitable adhesives include those based on polyester, polyamide, and polyurethane resins. These adhesives typically are reactivated by heat and this can be disadvantageous since such reactivation could be carried out in some circumstances in order to tamper with the card. Conveniently therefore thermo-setting adhesives are used.

Preferably, the adhesive is a two part adhesive, one part of the adhesive being coated on one lamina, and the other part of the adhesive being coated on the other lamina, prior to joining the two laminae together. Apart from assisting in manufacture, the use of a two part adhesive is advantageous since it cannot be reactivated.

The or each indicium provided between the core laminae may be provided on an inner surface of the lamina whose outer surface carries further indicia if that is also provided, or on the inner surface of the other lamina.

Preferably, the or each indicium is provided on a relatively thin lamina, thick core laminae being joined together with the thin lamina carrying indicia sandwiched between them.

There are several methods by which indicia may be provided between the laminae. One example comprises recording one or more indicia, positioned between the

the core laminae, on photographic film (for example 35mm recording film); developing and exposing the film onto a printing plate; printing the or each indicium on a surface of a first core lamina; printing the or each indicium on a surface of a second core lamina; and joining the laminae together with the or each indicium on the first core lamina sandwiched between the core laminae and offset relatively to the or each corresponding indicium on the surface of the second core lamina.

In one example of this method, the printing plate is used to print the image on a first lamina of the core, a second core lamina is then positioned on the printing press offset with respect to the first core lamina and is printed with the same plate so that the image will be offset with respect to the image on the first lamina.

Alternatively, the or each indicium may be recorded directly on paper plate material which is then used to print the or each indicium on the core laminae.

The provision of an adhesive between the core laminae is particularly useful in that it assists not only in bonding the laminae together but also bonding the ink to the laminae.

In a second example, the method comprises recording one or more indicia, for positioning between the core laminae, on photographic film; developing and exposing the film on a silver halide gelatin photographic emulsion coated on a surface of a first core lamina, exposing the film on a silver halide and gelatin photographic emulsion coated on a surface of a second core lamina; joining the laminae together with the or each indicium on the first core lamina sandwiched between the core laminae and offset from the or each corresponding indicium on the surface of the second core lamina.

As an alternative to this method, a sheet of plastics material similar to the core lamina may

be coated with a photopolymer, or a photopolymer which has been coated onto a polyester base may be used, the image later being transferred to the laminae used for the manufacture of the core.

The advantage of these photographic methods is that a continuous tone image can be obtained which is particularly useful when a photograph of the bearer is included.

Once again, the use of an adhesive between the core laminae not only assists in bonding the laminae together but also in bonding the light sensitive layer to the laminae which is important when using a photographic emulsion and preferable with photopolymers.

In one particularly convenient example, the method further comprises including a security code or character at an edge of the indicium or whereby the second core lamina is sufficiently offset relatively to the first core lamina that the security code or character is only provided on the surface of the first core lamina.

In this way, the security code is solely provided within the core and is not duplicated on an outer surface of the core. As may be appreciated, this offsetting is generally carried out in any case so that the indicia within the core are offset from and visible separately from the indicia on the surface of the core and can easily be compared. In the case where the indicia are stored on photographic film, the security code or character can be provided in the gutter between adjacent images.

Other methods for providing indicia between the core laminae may comprise conventional printing techniques, such as litho-printing or screen printing, or electrophotographic techniques such as a xerographic method, or other wellknown methods such as ink jet printing, laser printing or engraving.

As has been mentioned above, the indicia may be provided directly on thick core laminae but the core lamina may instead be formed by a relatively thin lamina or laminae which is then positioned between thicker core laminae and/or on the surface of the core. This method is particularly useful with the photographic technique since it is difficult to coat thick core laminae with an emulsion. It is also useful since indicia characteristic of the bearer of the card can be more easily provided on thin laminae while indicia which is relatively invarient from card to card, such as the name of the issuing institution, can be provided directly on the core.

In one particularly convenient example, the method further comprises generating a likeness of the bearer of the card; modulating the likeness; and recording the modulated likeness on a surface of a lamina of the card, the modulated likeness being such that the original image is still recognisable but has one or more indicia included therein.

This method is particularly advantageous since the one or more indicia form part of the likeness itself and it is therefore extremely difficult to reproduce fraudulently.

Conveniently, the step of modulating the likeness comprises modifying the density of different parts of the likeness.

The recording step may comprise recording the modulated likeness on a printing plate or photographic film and subsequently applying the recorded likeness the lamina, or alternatively, the modulated likeness

may be exposed directly onto light sensitive material provided on the surface of the lamina, for example that surface which will provide an outer surface of the core.

Apparatus for modulating the likeness may include a memory, such as a computer memory, in which the likeness is stored in digital form. This may be achieved by dividing the likeness into a number of pixels and coding the likeness according to the degree of lightness or darkness in each pixel. The means for modulating the likeness may comprse means for applying an algorithm to the recorded likeness so that the degree of darkness or lightness in some of the pixels is modified to cause one or more indicia to appear within the likeness. One suitable apparatus is the Lasercomp manufactured by Monotype Corporation of Redhill. This is a laser photo-type setter which provides a memory which can store a digitised likeness. In this case, each pixel corresponds to a, or a portion of a, dot the distribution and area of the dots being initially affected by the lightness or darkness of the original likeness, the distribution and area being changeable in accordance with instructions from a computer program.

In the case where at least some indicia are duplicated, the method may further comprise forming one of the duplicated indicia reduced in size relatively to the other.

Preferably, the reduced indicium is considerably reduced relatively to the other indicia so that at least one indicium is detectable and recognisable to the naked eye whereas the other is only detectable with the use of a lens.

Conveniently, a method for manufacturing a plurality of security cards comprises providing indicia on a surface of the first lamina; providing the same indicia on a surface of a second lamina; registering the two laminae together with the indicia relatively offset; joining the laminae together; and dividing the laminae into the plurality of security cards. The dividing step may comprise a punching operation.

This method may include any of the methods previously outlined but preferably the indicia are initially recorded on photographic film and the film is then developed and exposed onto a light sensitive material using for example a conventional step and repeat exposing machine such as that manufactured by the Dainippon Screen Manufacturing Company Limited of Japan, in sequence across and down a lamina such that an array of images of the indicia is exposed. Each set of the indicia will relate to a different bearer. Typically, the bearer will provide a photographic likeness of himself which can be attached to an application form which the applicant must sign. Other information can be included on that form such as the card number, date of expiry etc. arranged in the same way as is required on the card and this completed form with the photographic likeness can then be photographed to generate the indicia.

Some examples of security cards and methods for their manufacture in accordance with the present invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 is an enlarged, exploded side view of a security card;

Figures 2a and 2b are plan views of two examples of security cards with indicia in the core of each

card being visible;

Figure 3 illustrates part of a printing plate for use in manufacturing a plurality of security cards;

Figure 4 is a flow diagram illustrating a process for manufacturing a security card; and,

Figure 5 is a plan view of a third example of a security card.

The security card illustrated in Figure 1 comprises a core formed by two core laminae 1, 2. Each core lamina 1,2 has a thickness of 250µm. A photograph 3 of the bearer of the card is provided on an upper surface 4 of the core lamina 2 while a copy of the bearer's signature 5 is also provided on the upper surface 4 of the lamina 2. A duplicate 6 of the photograph 3 isprovided on an upper surface 7 of the core lamina 1 while a duplicate 8 of the bearer's signature 5 is also provided on the upper surface 7 of the core lamina 1. The photograph 6 and signature 8 are laterally off-set from the photograph 3 and the signature 5 respectively for ease of viewing. The laminae 1, 2 are formed by a translucent, plastics material such as PVC filled with titanium dioxide. The photographs 3, 6 and the signatures 5, 8 may have been provided on the laminae 1, 2 by means of a conventional printing process or a photographic process in which the surfaces 4, 7 of the core laminae 2, 1 are initially coated with a silver halide gelatin photographic emulsion.

An under surface 9 of the core lamina 1 carries further printed matter 10 which may comprise instructions on how to use the card and the like. In addition, the upper surface 4 of the core lamina 2 includes other

printed material to be described in detail below in connection with Figure 2a. This information is not shown in Figure 1.

A pair of overlaminae 11, 12 of clear plastics material are provided on the surface 4 of the core lamina 2. A second pair of overlaminae 13, 14 are provided on the lower surface 9 of the core lamina 1. The overlaminae 11-14 are much thinner than the core laminae 1, 2 and are typically 80 or 125 µm in thickness.

After providing indicia on the surfaces of the core laminae 1, 2 as will be described below, a two part adhesive (not shown) is coated on adjacent surfaces of the laminae so that on lamination the parts of the adhesive will coalesce to assist in bonding the laminae together. A suitable adhesive is Adcoute 102A supplied by Morton-Williams Division, Williams (Hounslow) Limited.

A finished security card is illustrated in Figure 2a. This figure illustrates the appearance of the security card when the security card is positioned in front of a light source. In that situation, not only will the photograph 3 of the bearer of the card on the surface of the core lamina 2 be visible but also the duplicate photograph 6 within the core of the card sandwiched between the core laminae 1,2. Similarly both the signature 5 and the duplicate signature 8 will be visible. The duplicate photograph 6 has been only shown in outline in Figure 2a although the general features of the photograph should still be visible. The degree of visibility will be sufficient to enable an accurate comparison to be made between the two photographs 3, 6 as well as between the two signatures 5, 8.

Figure 2a also illustrates other indicia which

have been provided on the surface 4 of the core lamina 2. This includes the name and logo 15 of the security card company, the name of the card bearer 16, a code number 17 unique to the card bearer, a security card number 18 and the date of expiry 19. In addition, other conventional security features are provided (not shown in the drawings) such as a complex printed pattern forming a border 20 to the security card.

A further security feature in the form of an alpha-numeric character 21, in this case a letter "K" is provided on the surface 7 of the core lamina 1 only. This character 21 is visible through the core lamina 2 in a similar way to the signature 8 and photograph 6 but requires the security card to be viewed in this way thus ensuring that the security card is checked.

Thus, in use, the security card bearer presents the security card to a checker who will hold it in front of a light source to enable the duplicate photograph 6 and the duplicate signature 8 to be viewed. The checker will then compare the photographs 3, 6 and the signatures 5, 8 to determine whether they are the same indicating that the security card is genuine. In addition, the checker will record the character 21.

Figure 2b illustrates a second example of a security card which is the same as the example shown in Figure 2a except that the duplicate photograph 6' has been considerably reduced in size in comparison with the photograph 3. In all other respects, this security card is the same as that shown in Figure 2a. In this case the features of the duplicate photograph 6' will not be readily discernable to the viewer without magnification.

In both the security cards illustrated, an engraved pattern is provided which has been added

after lamination as an additional security feature. This pattern is indicated by reference numeral 22.

Conveniently, security cards of the type shown in Figure 2a can be manufactured in large numbers by firstly arranging photographs of each bearer adjacent to a copy of the bearer's signature in a way such as that shown in Figure 3. This illustrates 9 pairs of photographs 3 and signatures 5 which, in one example, may simply have been obtained by sticking the photographs 3 and paper carrying the signatures 5 on a backing plate 23 in the required arrangement. This assembly shown in Figure 3 is then photographed, the developed photograph then being exposed onto a printing plate. The plate is used to print the indicia on one surface of each of two core lamina sheets. One of the core lamina sheets may be at least partially preprinted with other information such as that indicated by reference numerals 15-20 in Figure 2a. The core lamina sheets are then registered together with one set of printed indicia sandwiched between them and offset from the indicia on the other core lamina sheet as illustrated in Figure 1. Any further information not previously printed is then printed on the exposed surfaces of the core laminae. After the provision of overlaminae, and lamination, as previously described, the completed laminate is then cut into separate security cards.

In a modified example, the photographic film containing the plurality of pairs of photographs and signatures 3, 5 may be exposed on a silver halide gelatin photographic emulsion directly coated on surfaces of the core laminae sheets.

In another example, electronic image scanning techniques may be used. Such scanning apparatus may be that known as the Autokon manufactured by A.M. Multigraphics Inc.

Such a process is illustrated schematically in the flow diagram shown in Figure 4. The photograph and signature of each bearer are scanned by a scanner 24 which generates a digital output signal representing the scanned image and which is fed to a page make-up unit 25. Text for inclusion in the security card such as the card number 18 and the expiry date 19 are fed into the page make-up unit 25 from a text entry unit 26. The page make-up unit 25 allows the user to arrange the photograph, signature, and text as required and then controls an imaging device such as the Monotype Lasercomp typesetter 27. The Lasercomp 27 consists of a Raster Image Processor 28 which accepts input from the page make-up unit 25 and converts the digital data into a Raster scan format so that the data can be used to modulate a laser beam output by a laser imaging system 29 in conjunction with type font information from a type font digital library 30. The laser beam output from the laser imaging system 29 is scanned across a photographic film or paper recording medium 31 to generate an image of the indicia to be printed on the security card.

In practice, a plurality of security card images will be produced on the recording medium 31 by the Lasercomp 27 as illustrated in Figure 4. The recording medium 31 is then used to prepare a lithoprinting plate to enable the security card images to be transferred to the core laminae.

In one modification of this method, the Raster Image Processor 28 of the Lasercomp 27 can be used to modify the photographic image by applying an algorithm to the stored digital data representing the photograph.

This modification may be for example to adjust the density of parts of the photographic image so that an alpha-numeric character is incorporated into the photographic image. The result of this is illustrated in Figure 5 which illustrates a security card similar to that of Figure 2a but where an alpha-numeric character 32, in this case a letter "M", has been incorporated into the photograph 3.

In another example, not shown, the indicia are not printed directly onto the core laminae 1,2 but on additional laminae similar to the overlaminae 11-14. This is illustrated schematically in Figure 1 which illustrates an additional thin laminae 33 on which the duplicate photograph 6 and duplicate signature 8 are provided instead of directly on the surface 7 of the core lamina 1.

In a further modification (not shown) a silver halide gelatin photographic emulsion may be coated on surfaces of the core lamina sheets and the laser beam output from the laser imaging system 29 may be applied directly to the photographic emulsion. Alternatively, the laser beam output may be imaged onto a silver halide paper plate which is then used to provide an image on the core laminae in an offset litho printing method.

## CLAIMS

1. A security card comprising a core formed by at least two laminae (1,2), one or more indicia (6,8) characteristic of the card bearer being provided within the core between the laminae, and the or each indicium being detectable through at least one of the laminae.

2. A security card according to claim 1, wherein a likeness (6) of the card bearer is provided between the core laminae.

3. A security card according to claim 2, wherein a photo-image (6) of the card bearer is provided between the core laminae.

4. A security card according to any of claims 1 to 3, wherein a representation of the bearer's signature (8) is provided between the core laminae.

5. A security card comprising a core formed by at least two laminae (1,2), one or more indicia being provided within the core laminae, further indicia (3,5) duplicating some or all of the indicia between the laminae being provided on a surface (4) of the core, and the or each indicium within the core being detectable through at least one of the laminae.

6. A security card in accordance with claim 5, and any of claims 1 to 4.

7. A security card according to any of the preceding claims, wherein at least one indicium (6,8) within the core is duplicated at least once within the core.

8. A security card according to claim 7, wherein the core comprises more than two laminae, the indicia duplicated within the core being provided between different pairs of core laminae.

9. A security card according to any of claims 5 to 8, wherein the duplicated indicia (3,6;5,8) are relatively offset to assist comparison.

10. A security card according to claim 9, wherein at least one of the duplicated indicia (6') is reduced in size relatively to the other or others.

11. A security card according to claim 10, wherein the reduced indicium (6') is not readily recognisable to the naked eye.

12. A security card according to any of the preceding claims, wherein the or each indicium (6,8) between the core laminae (1,2) is provided on one or more relatively thin laminae (33) sandwiched between the core laminae.

13. A security card according to any of the preceding claims, wherein the core laminae (1,2) are translucent whereby the or each indicium (6,8) between the core laiminae are visible on transmitting light through the card.

14. A security card according to any of the preceding claims, further comprising a security character or code (21) provided solely within the core.

15. A security card according to any of the preceding claims, wherein a likeness (3) of the bearer of the card is provided, the likeness including one or more indicia (32).

16. A method of manufacturing a security card, the method comprising providing at least two core laminae (1,2); providing one or more indicia characteristic of the bearer (6,8) of the card between the laminae; and joining the laminae together, the material of at least one lamina being such that the or each indicium is detectable through that lamina.

17. A method of manufacturing a security card, the method comprising providing at least two core laminae (1,2); providing one or more indicia (6,8) between the laminae; providing some or all of the same indicia (3,5) on an outer surface (4) of the laminae (2); and joining the laminae together, the material of at least one lamina being such that the or each indicium between the laminae is detectable through that lamina.

18. A method according to claim 16 or claim 17, further comprising introducing an adhesive between adjacent laminae prior to joining the laminae together.

19. A method according to claim 18, wherein the adhesive is a two part adhesive, one part of the adhesive being coated on one lamina, and the other part of the adhesive being coated on the other lamina, prior to joining the two laminae together.

20. A method according to any of claims 16 to 19, further comprising providing the or each indicium on a relatively thin lamina (33); and joining thick core laminae (1,2) together with the thin lamina carrying the or each indicium sandwiched between them.

21. A method according to any of claims 16 to 20, comprising recording one or more indicia, for positioning between the core laminae, on photographic film; developing and exposing film onto a printing plate; printing the or each indicium on a surface (7) of a first core lamina (1); printing the or each indicium on a surface (4) of a second core lamina (2); and joining the laminae together with the or each indicium on the first core lamina sandwich between the core laminae and offset relatively to the or each corresponding indicium on the surface of the second core lamina.

22 A method according to any of claims 16 to 20, comprising recording one or more indicia, for positioning between the core laminae, on paper plate material; printing the or each indicium on a surface (7) of a first core lamina (1); printing the or each indicium on a surface (4) of a second core lamina (2); and joining the laminae together with the or each indicium on the first core lamina sandwich between the core laminae and offset relatively to the or each corresponding indicium on the surface of the second core lamina.

23. A method according to any of claims 16 to 20, comprising recording one or more indicia, for positioning between the core laminae, on photographic film; developing and exposing the film on a silver halide gelatin photographic emulsion coated on a surface (7) of a first core lamina (1); exposing the film on a silver halide and gelatin photographic emulsion coated on a surface (4) of a second core lamina (2); and joining the laminae together with the or each indicium on the first core lamina sandwiched between the core laminae and offset from the or each corresponding indicium on the surface of the second core lamina.

24. A method according to any of claims 21 to 23, further comprising including a security code or character (21) at an edge of the indicium or indicia, whereby the second core lamina (2) is sufficiently offset relative to the first core lamina (1) that the security code or character is only provided on the surface (7) of the first core lamina.

25. A method according to any of claims 16 to 24, further comprising generating a likeness of the bearer of the card; modulating the likeness; and recording the modulated likenss (3) on a surface of a lamina of the card, the modulated likeness being such that the original likeness is still recognisable but has one or more indicia (32) included therein.

26 A method according to claim 25, wherein the step of modulating the likeness comprises modifying the density of different parts of the likeness.

27. A method according to any of claims 16 to 26, wherein at least some indicia (6) are duplicated, the method further comprising forming one of the duplicated indicia (6') reduced in size relatively to the other (3).

28. A method according to at least claim 17, for manufacturing a plurality of security cards, the method comprising providing indicia on a surface of a first

lamina; providing the same indicia on a surface of a second lamina; registering the two laminae together with the indicia relatively offset; joining the laminae together; and dividing the laminae into the plurality of security cards.

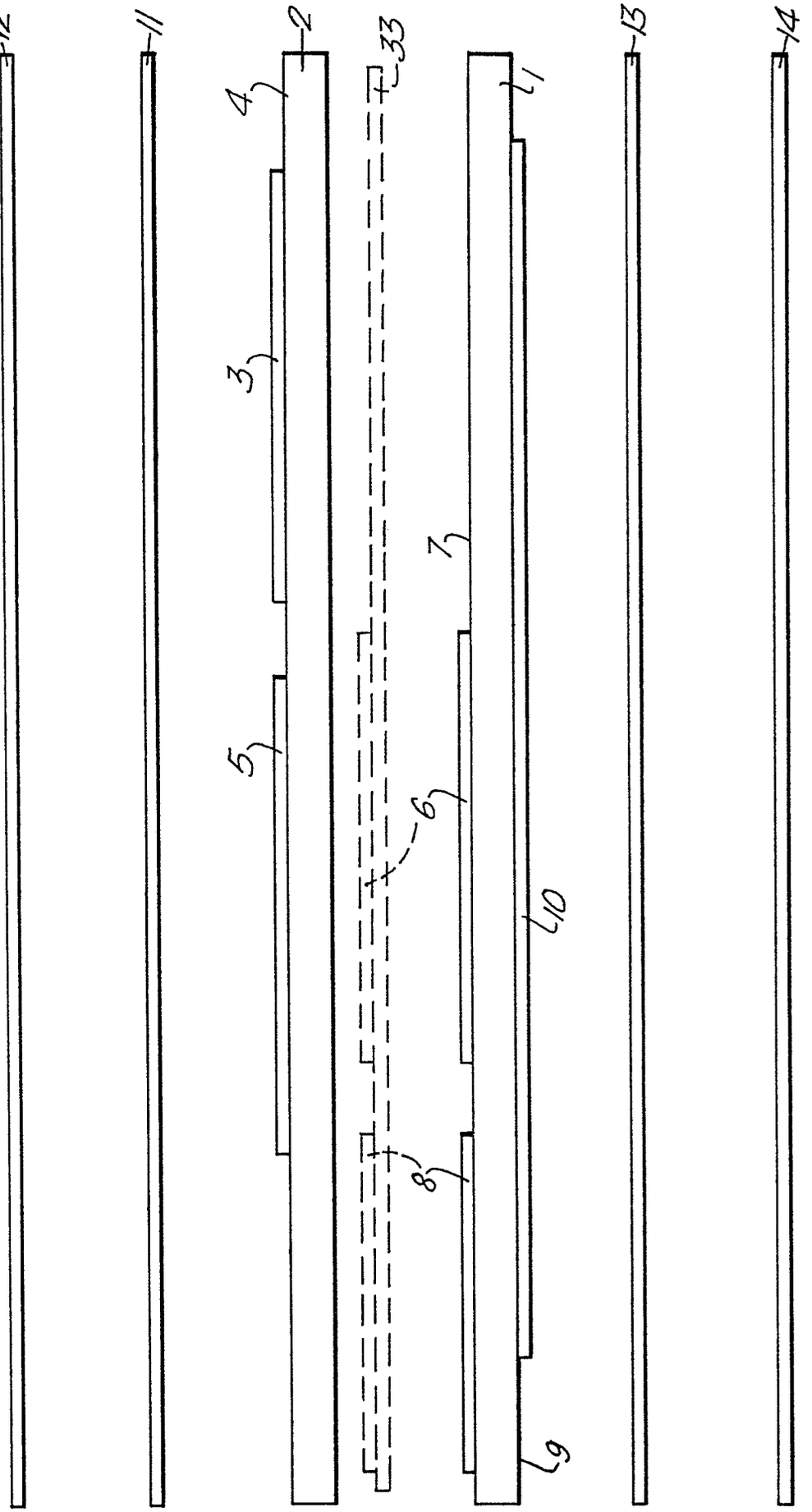



Fig. 1.

Fig. 2a.

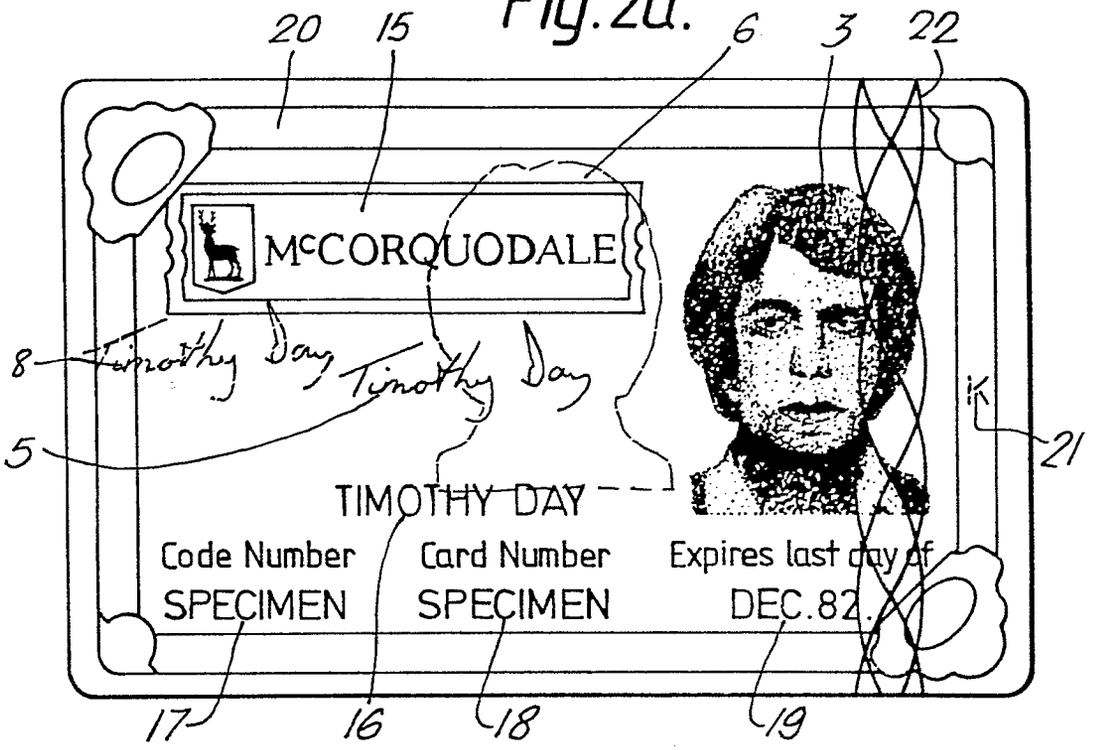

20
15
6
3
22
McCORQUODALE
8
Timothy Day
Timothy Day
5
21
TIMOTHY DAY
Code Number
Card Number
Expires last day of
SPECIMEN
SPECIMEN
DEC. 82
17
16
18
19

Fig. 2b.

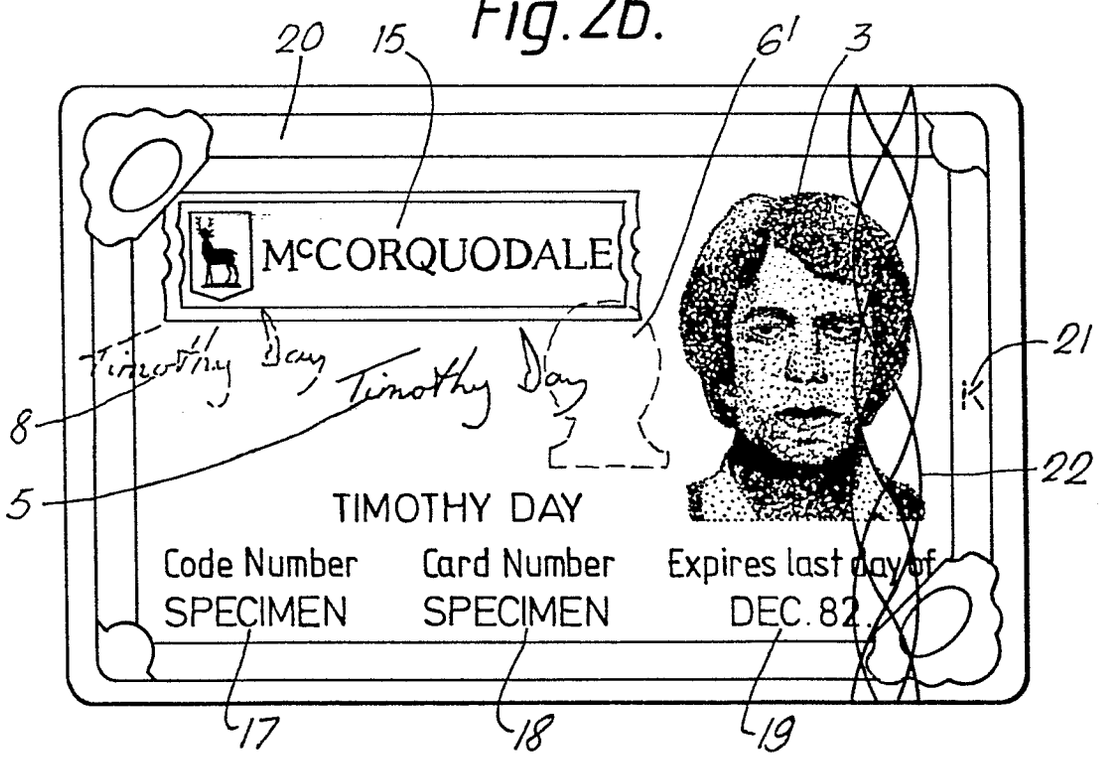

20
15
6'
3
McCORQUODALE
21
8
Timothy Day
Timothy Day
22
5
TIMOTHY DAY
Code Number
Card Number
Expires last day of
SPECIMEN
SPECIMEN
DEC. 82
17
18
19

Fig.3.

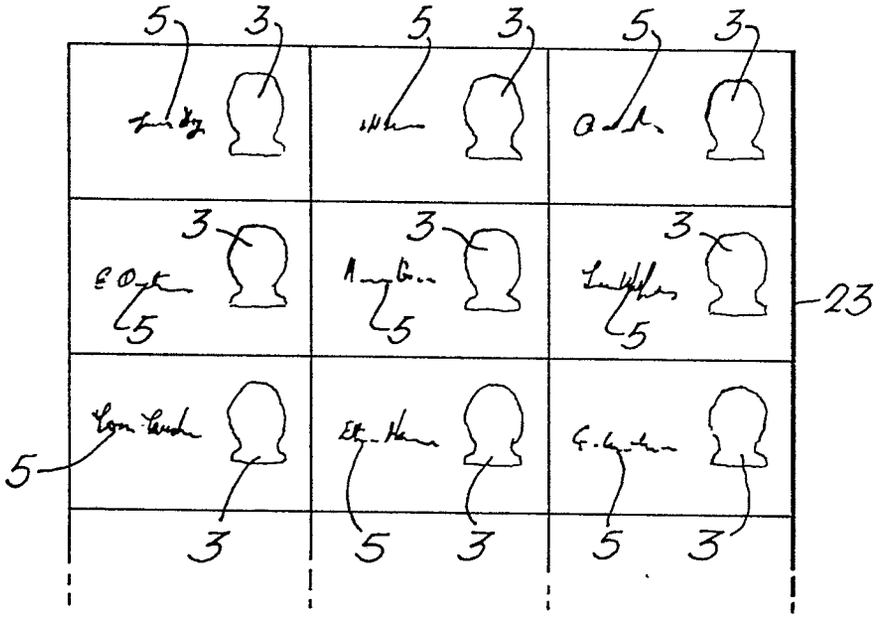
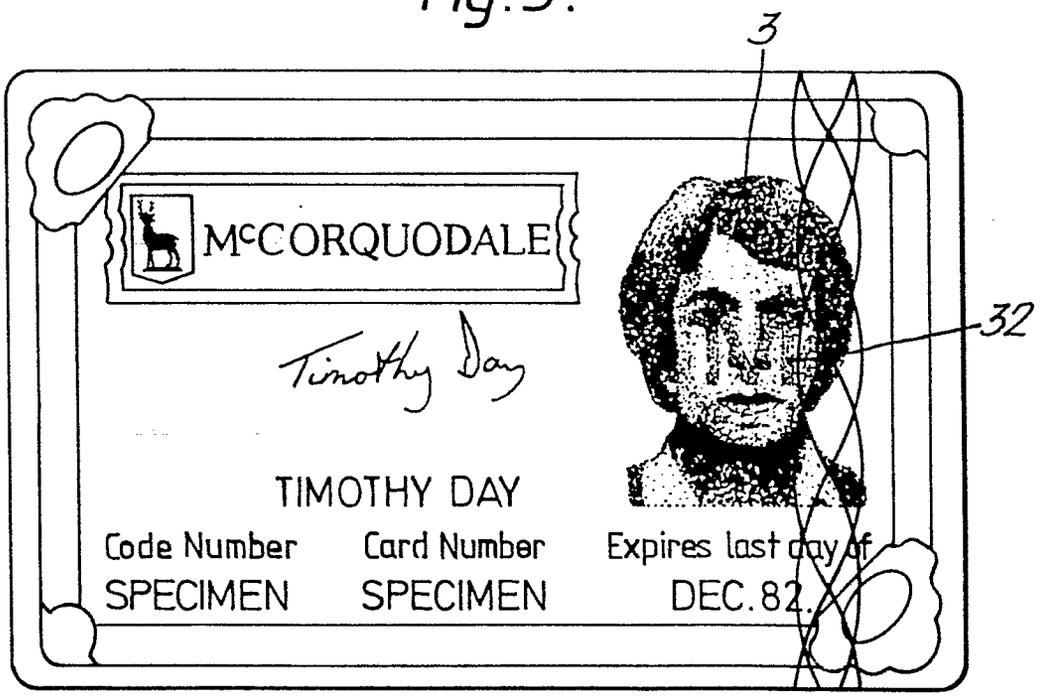

5
3
23

Fig.5.


3
McCORQUODALE
Timothy Day
32
TIMOTHY DAY
Code Number
SPECIMEN
Card Number
SPECIMEN
Expires last day of
DEC. 82

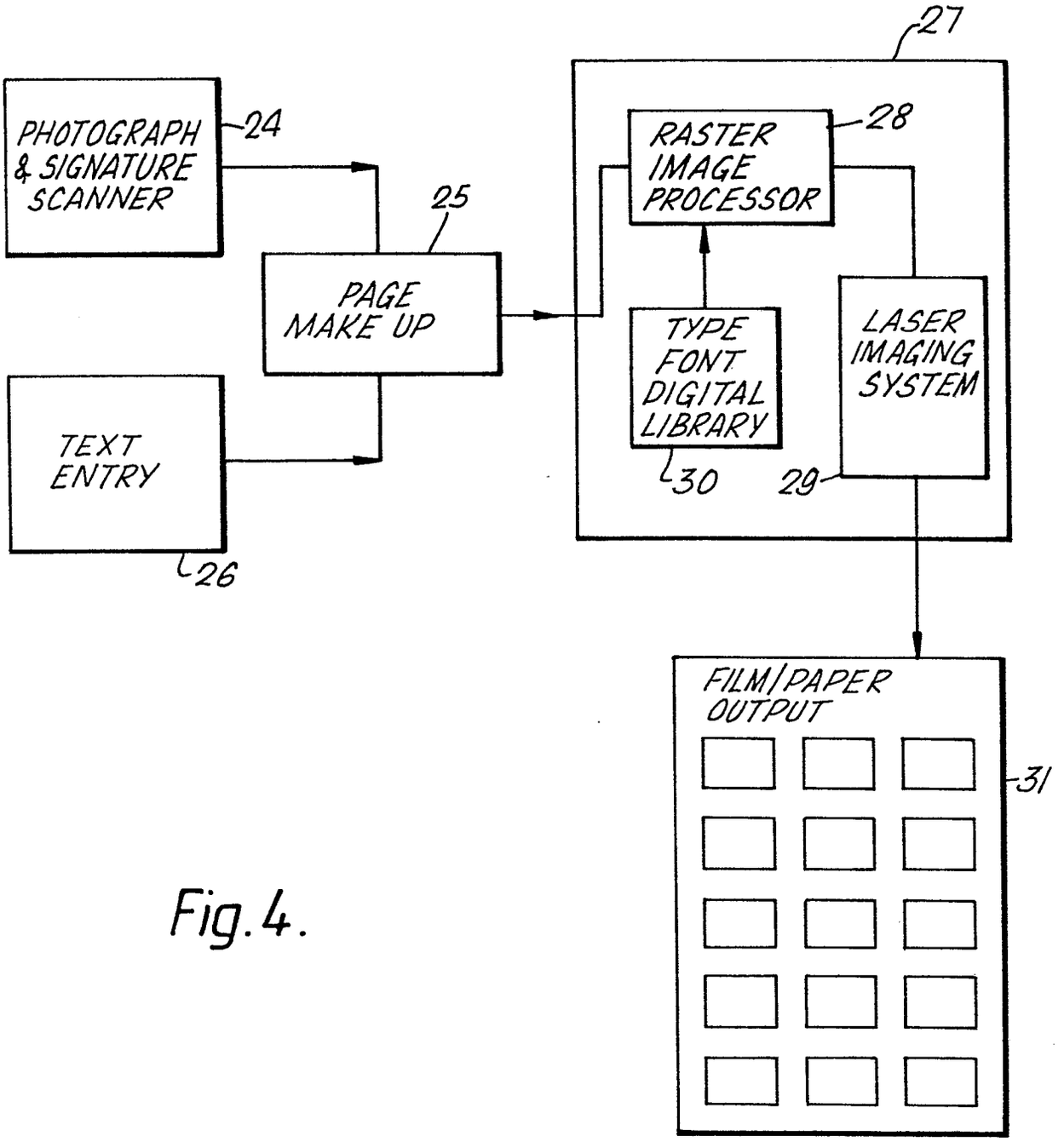

27
PHOTOGRAPH & SIGNATURE SCANNER
24
25
PAGE MAKE UP
TEXT ENTRY
26
RASTER IMAGE PROCESSOR
28
TYPE FONT DIGITAL LIBRARY
30
LASER IMAGING SYSTEM
29
FILM/PAPER OUTPUT
31

Fig. 4.