United States Patent

Lee et al.

[15] **3,677,154**

[45] **July 18, 1972**

[54] **CARD AND HOLDER FOR FINGERPRINT IDENTIFICATION SYSTEM**

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[73] Assignee: **KMS Industries, Inc.**, Ann Arbor, Mich.

[22] Filed: **July 23, 1970**

[21] Appl. No.: **57,580**

[52] **U.S. Cl.** .....**95/1.1**, 40/158 B, 95/1 R

[51] **Int. Cl.** **G03b 17/24**

[58] **Field of Search** .....95/1, 1.1; 355/2; 350/3.5; 40/2.2, 10, 158 R, 158 B; 96/67

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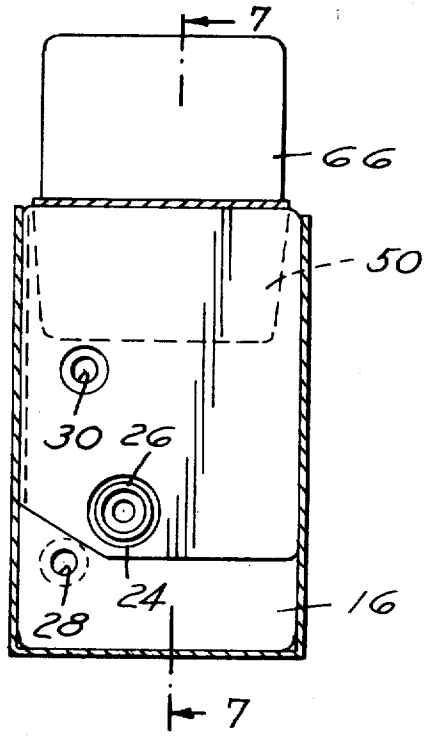
[57] **ABSTRACT**

An identification card and holder for personal identification in the form of an apertured sheet of material carrying a holographic transparency at a perforation for holding data such as a finger print, and a holder for said card in the form of an envelope with apertures to register with the transparency and a light mask slidable in the envelope from a position covering the transparency to a position to expose the transparency to a light source, the envelope and mask cooperating to position the mask in a covering position or an exposed position.

6 Claims, 10 Drawing Figures



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2 Sheets-Sheet 1

FIG. 1

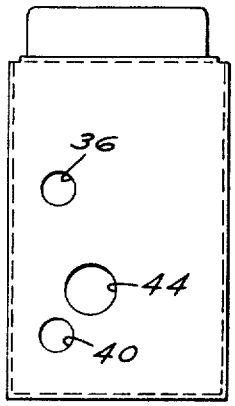

FIG. 2

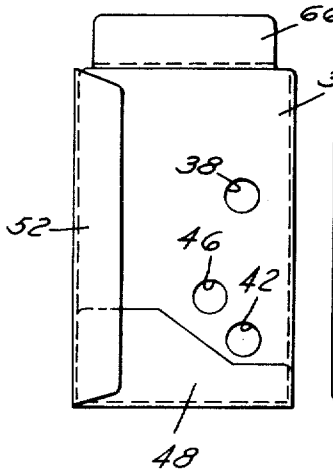

FIG. 4A

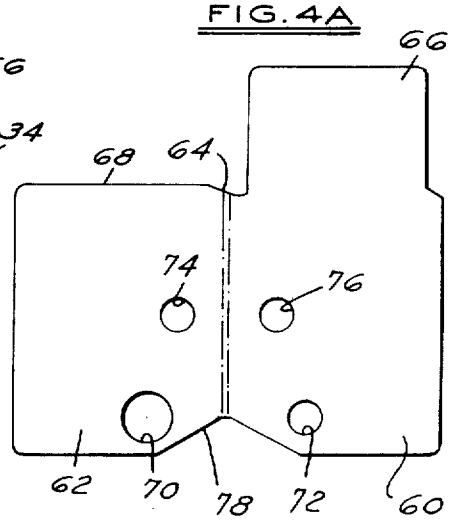

FIG. 3

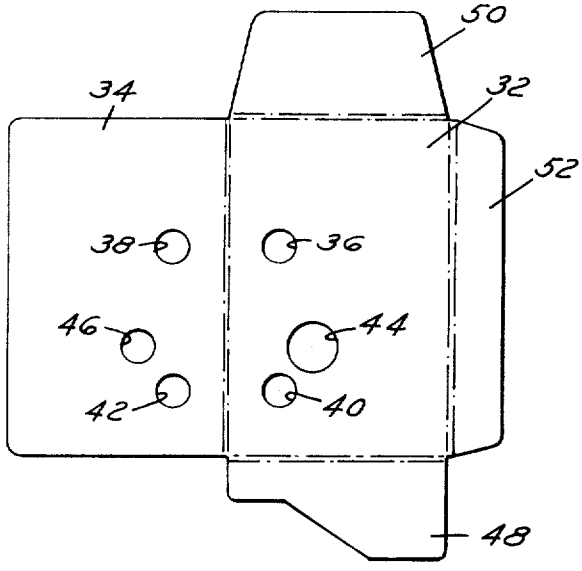

FIG. 4B

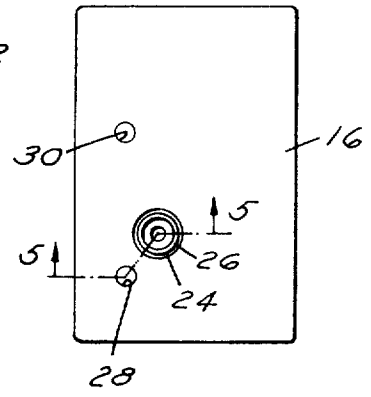

FIG. 5

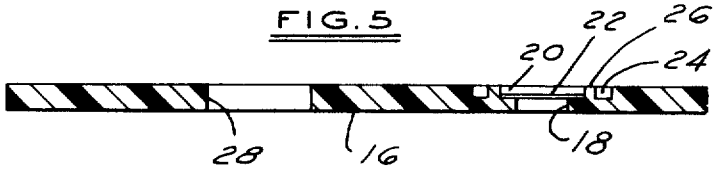

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FIG. 6

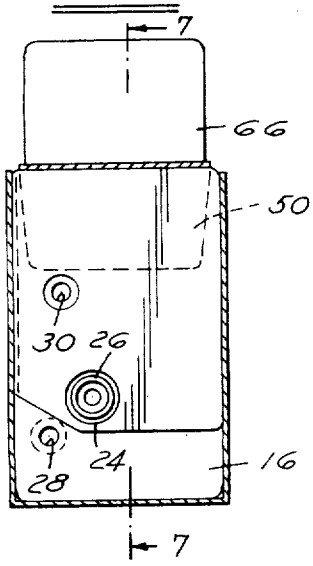


FIG. 8

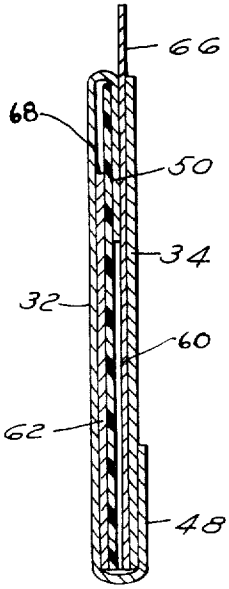


FIG. 7

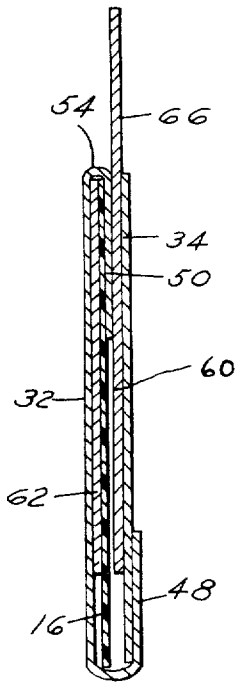
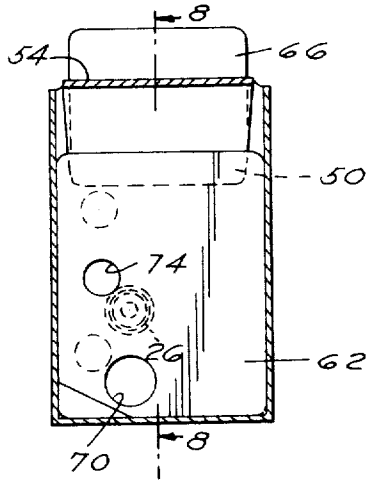


FIG. 9



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CARD AND HOLDER FOR FINGERPRINT IDENTIFICATION SYSTEM

This invention relates to an identification card and holder for use for personal identification.

It is an object of the present invention to provide a card and holder which is designed for use in a system wherein individual and distinctive data from a person such as a fingerprint can be recorded on the card for use with an identification system.

It is a further object of the invention to provide a card and holder wherein a light sensitive area on the card is protected against exposure until such time as it is properly positioned for the intended exposure.

Another object of the invention is a means for mounting a light sensitive material in a card for permanent use as an identification card, which card can carry written identification as well as a coded identification.

Other objects and features of the invention relating to details of construction accompanying the specification and claims wherein the principles of operation of the invention together with the use and the best mode presently contemplated are set forth.

Drawings accompany the disclosure and the various views thereof may be briefly described as:

FIG. 1, a front view of the combination card holder and mask.

FIG. 2, a rear view of the combination card holder and mask.

FIG. 3, a layout of the enclosing envelope of the card holder.

FIG. 4A, a view of the layout of the mask.

FIG. 4B, a plan view of the identification card.

FIG. 5, a sectional view of a portion of the card taken on line 5—5 of FIG. 4B.

FIG. 6, a sectional view of the assembly showing the light mask in a shifted position.

FIG. 7, a sectional view on line 7—7 of FIG. 6.

FIG. 8, a sectional view on line 8—8 of FIG. 9.

FIG. 9, a sectional view of the assembly with the light mask in masking position.

Reference is first made to FIG. 4B where a card in the form of a relatively stiff sheet 16 is shown. This can be made out of plastic material which can ultimately carry additional identification in the form of impressed or embossed letters.

It is intended to use the identification card in what is termed a coherent optical fingerprint identification system which utilizes the properties of coherent light and matched filter optical processing to compare a pre-stored hologram of a fingerprint to a "real time" hologram of a fresh fingerprint. The matched filter is an intensity recording of the phase and amplitude information of the Fourier transform of the fingerprint impression. This filter must be recorded onto a light sensitive material which will produce a partially opaque and partially transmitting image. This image, which actually is a filter in the correlation process, is then placed within an optical system so that the matching operation may be performed. The light sensitive recording material for the system can be photographic film.

The identification sheet has a hole 18 which is surrounded on one surface of the sheet by an annular recess 20 in which lies a transparency 22. A larger annular recess 24 concentric with the hole 18 and the recess 20 is also provided. The transparency 22 in the initial instance, when assembled, is a round disc of light sensitive material such as unexposed film, and it is held in place in the sheet 16 by heat staking the annular ridge 26 which lies between the recess 20 and the recess 24. After the film chip is placed in the position with the annular ridge 26, a hot tool is lowered onto the ridge which causes the plastic ridge to flow onto the edge of the film chip locking it into position. The temperature, of course, must be properly regulated to allow for the plastic flow without damaging the unexposed film chip. This staking is shown in FIG. 4B; the film disc 22 is securely held in place over the hole 18. If desired, the transparency 22 can be treated with an emulsion subsequent to the mounting in the sheet.

The sheet also has two spaced openings 28 and 30 which serve as locators in an apparatus described in copending application, Ser. No. 87,424, filed Nov. 6, 1970, entitled "Film Pack Locator Assembly."

The position of the three holes, that is, the aperture for the film and the two openings 28 and 30, is selected to minimize the change of position of the film chip hole which might be caused by temperature variation. The center of the film chip hole 18 must be located within 0.0005 inch in order to insure accurate results in the correlation procedures.

Once the card 16 is formed with the sensitive film 22 in place, it is necessary to protect it until the film is properly exposed and developed. An envelope is used for this purpose together with a light mask. The envelope is shown in layout form in FIG. 3 consisting of sides 32 and 34 each provided with openings 36 and 38 and 40 and 42 which respectively register when the sides are folded together to overlie the openings 28 and 30 of the sheet 16. The envelope panel 32 is provided with an opening 44 which registers with a similar but smaller opening 46 on panel 34, these being in registry with the hole 18 when assembled over the sheet 16.

The envelope also has an end flap 48 and an end flap 50 with one side flap 52. When the envelope is assembled, the end flap 48 and the side flap 52 are folded over the panel 34 and held in place by suitable adhesive, the flaps being fashioned to leave the openings 38, 46 and 42 uncovered, FIG. 2. The flap 50 of the envelope is turned so that it is on the inside of the side panel 34. This is best shown in the sectional view of FIGS. 7 and 8; the bight 54 between the panel 32 and the flap 50 will serve as a stop in a manner which will be described below. The material from which the envelope is formed is preferably a light blocking material and it may have a dull black inner surface to enhance this characteristic.

Interleafed with the card 16 in the envelope and the walls of the envelope is a U-shaped masking member shown in FIG. 4A in layout having a main panel 60 and a side panel 62 joined by a bight portion 64. When this member is assembled into the unit, the bight portion rides along the inside of one folded edge of the envelope and the panel 62 is interleafed between the panel 32 and the sheet 16 as shown in FIGS. 7 and 8. The panel 60 which has a handle or grip extension 66 is interleafed between the panel 34 and the sheet 16 and extends outwardly between the flap 50 and the inside of the panel 34. Thus, the mask may be shifted longitudinally of the assembly by manipulation of the extending portion 66. When the mask is moved from the closed or inner position of FIGS. 8 and 9 to the position shown in FIGS. 6 and 7, the top edge 68 of the panel 62 strikes the bight 54 and stops the outward motion of the mask.

The mask has two opposed openings 70 and 72 which will register with the hole 18 when the mask is in its outer position. The mask also has two registering holes 74 and 76 which will register with the hole 30 in the sheet 16 and the holes 36 and 38 in the envelope when the mask is in the position shown in FIG. 7. The notched portion 78 is positioned so that it will expose the holes 40 and 42 of the envelope and the hole 28 of the sheet 16 when in the outermost position.

The mask is also formed of an opaque material such as black paper. The assembly shown in FIG. 1, 2 and a is in the sealed or protected position so that the film disc 22 is properly protected from light exposure. When it is desired to expose the identification card, it can be inserted into a proper apparatus where locating pins will engage the holes 28 and 30 position the opening 18 properly for exposure. At this time, the grip end 66 can be pulled which will move the mask slide to the position shown in FIGS. 6 and 7 to expose the film. A recording can then be made on the film in the form, for example, of a hologram of a finger print of an individual as described in copending application, Ser. No. 774,674, filed Nov. 12, 1968, entitled "Method and Apparatus for Personal Identification." After exposure, the mask can then be moved back into the covering position and the card assembly can be taken to a developing room where the film disc is properly developed and fixed after which it will carry permanent recorded data which can be used in identification apparatus.

I claim:

1. In combination:
a. an identification card comprising a sheet of relatively stiff material having a hole perforating the sheet,
b. light sensitive material overlying said hole,
c. means to fasten said light sensitive material in said sheet,
d. an envelope surrounding said sheet on two sides and four edges, said envelope having opposed apertures on the two sides to expose said light sensitive material, and
e. an opaque mask slide composed of two legs connected by a bight each overlying one side of said sheet, said legs being dimensioned to perit shifting of said mask within said envelope, said legs of said mask being provided with opposed openings spaced from said hole in one position of said mask and overlying said hole when said slide is shifted in said envelope.

2. A combination as defined in claim 1 in which one of said legs extends out of one edge of said envelope to serve as a grip for shifting the mask.

3. A combination as defined in claim 2 in which a flap of said envelope formed as an extension of one side thereof is folded to lie within the other side thereof to serve as a stop for said mask and as a retainer for said sheet.

4. A combination as defined in claim 1 in which one of said legs serves in combination with one end of said envelope as a top locator to locate said mask with the opposed openings therein in registry with said hole.

5. A combination as defined in claim 1 in which said sheet has a plurality of perforations spaced from said hole to serve as locators and the sides of said envelope and the legs of said mask are similarly perforated to align said respective perforations when said mask is shifted in said envelope to expose said hole.

6. In combination:
a. an identity card, a portion of which is light sensitive for reception of an image from an optical system,
b. an envelope for holding said card having openings to expose said portion,
c. a light guard movable in said envelope covering said portion in a first position to protect said portion from accidental exposure and selectively movable to a second position within said envelope to expose said portion and back to the first covering position, and
d. means on said envelope and means on said light guard cooperatively associated to limit the movement of said light guard within said envelope in each of the two positions.

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