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(54) **Security aid**

(57) A security aid in the form of a portable shield (1) that includes an aperture (4) through which a user's fingertip is visible. The security aid is a means of con-

cealing a Personal Identification Number (PIN) from bystanders while the user can see what numbers are pressed on a keypad through the aperture (4).

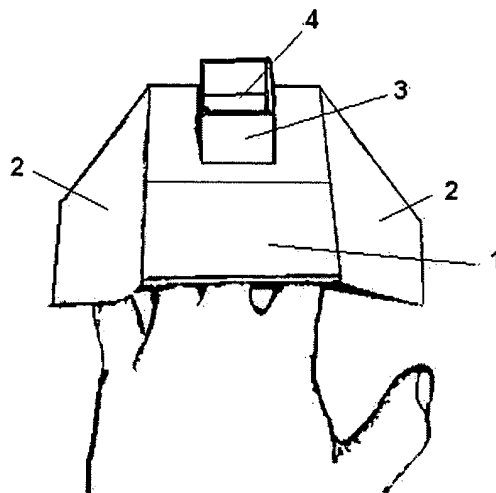


Fig .1.

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Description**FIELD OF INVENTION**

[0001] The present invention relates to means of Personal Identification Number concealment.

BACKGROUND OF THE INVENTION

[0002] The use of Personal Identification Numbers (PIN) has been widespread throughout the world for many years, particularly since they were introduced by banks as a means of confirming a cardholder's identity when drawing money from an Automated Teller Machine (ATM). The premise behind the PIN is that, in being known only to the cardholder, it positively identifies the person keying the PIN as the true cardholder. This makes the PIN a stronger Cardholder Verification Method (CVM being the term commonly used by banks) than the traditional signature as well as allowing payment with a credit/debit card at an Unattended Payment Terminal (UPT) as no-one is required to verify a signature.

[0003] The problem with PIN is that if it is disclosed to anyone other than the cardholder, either deliberately through the cardholder telling somebody their PIN, or inadvertently through someone witnessing the cardholder entering their PIN, its ability to identify the true cardholder is compromised. This problem has been exploited by "card fraudsters" who employ a variety of methods to obtain a cardholder's PIN, for example so-called "shoulder surfing" (attempting to view someone entering their PIN by looking over their shoulder at an ATM), through to far more sophisticated methods such as planting small cameras at ATMs which allow the fraudster to view PIN entry remotely.

[0004] A new system "Chip and PIN" is to be implemented throughout the UK, Europe and other parts of the world. Chip and PIN is the methodology being introduced by the credit card services, e.g. Visa and Mastercard (Registered Trade Marks), and banks to combat the increasing levels of card fraud which is costing around £400 million per year in the UK alone. "Chip" refers to a microchip on the card which securely stores card information, making them virtually impossible to counterfeit. PIN has been selected as the most appropriate CVM to replace signature and to make card payments as secure as possible. The expectation is that the introduction of Chip and PIN will greatly reduce card fraud.

[0005] The problem, however, with the introduction of Chip and PIN, is that whereas before cardholders generally only used their PIN to withdraw cash from an ATM, now they will be using it for every retail purchase they make using a credit or debit card. This presents the card fraudster with a whole new myriad of opportunities to obtain someone's PIN. If they do so, then subsequently steal the cardholder's card, they are not only able to withdraw cash from the cardholder's bank account but

they can also freely make purchases on the card without having to forge a signature.

[0006] Retailers are being given guidelines on the layout of their Points of Sale and, more specifically, the positioning of the PIN Entry Devices (PEDs), in order to reduce the risk of a customer's PIN being observed during input. There are also guidelines for how CCTV cameras should be positioned to prevent them being used to zoom in for a close-up view of a customer entering their PIN. However, in practice it will take some time before all retailers are able to provide their customers with a "PIN friendly" environment and, in fact, the onus will be on the cardholders themselves to ensure that their PIN is not revealed to anyone else when they are entering it at a store counter or ATM.

[0007] Consumers often cite "shoulder surfing" as one of their major concerns with this new payment system. They generally feel more exposed at retail Points of Sale and think that use of body position or obscurement by their free hand is inadequate to conceal their PIN. Even when the option is available to them, most are also reluctant to actually pick up the PED and hold it close to their body while entering their PIN.

[0008] Despite this, the only advice the banks and card schemes are currently offering all their customers, in their promotional literature and on their websites, regarding maintaining the secrecy of their PIN, is that they should "take care" when entering it.

[0009] One solution to the problem of PIN concealment is the use of a PIN shield. Such a shield is described in US Patent 5,509,224 wherein a planar sheet of cardboard, or other suitable material, is attached to the user's fingers to conceal PIN input from visual access. The principal defect with this solution is that not only does it obscure PIN entry from unwanted observation but it also conceals visual access by the legitimate user and increases the likelihood that the PIN will be entered incorrectly. This shortcoming is particularly significant since many ATMs will withhold the card if the PIN is entered incorrectly more than twice.

SUMMARY OF THE INVENTION

[0010] In a broad aspect of the present invention, there is provided a security aid comprised of a portable shield wherein the shield is adapted, in use, to cover at least a portion of a user's finger characterised by including an aperture through said shield that, in use, is aligned with a user's fingertip.

[0011] The invention has the advantage that it provides a means of concealing PIN input into a keypad from unwanted observation without compromising the ability of the legitimate user to see the position of their fingertips (in relation to the keys of the keypad).

[0012] In one embodiment the shield includes an upright wall adjacent to the aperture. In another embodiment the upright wall surrounds the aperture. In a preferred version of the shield the upright wall is collapsible

and thereby closes the aperture.

[0013] A shield according to the present invention may include a loop, adhesive pad or other form of fastener, for attaching the shield to a finger.

[0014] In a preferred version of the invention the shield is foldable into a smaller size.

[0015] Materials for making the present invention can be both rigid and/or pliable. Examples include cardboard, paper or plastic. Preferably the material is recyclable.

[0016] A shield according to the present invention may include a spring-loaded opening mechanism, or be folded in such a way as to achieve a "pop-up" effect when it is unfolded.

[0017] The shield according to the present invention may be portable by way of a hand attachment means as described above, or it may be in the form of a temporary "box" or like shape erected over a keypad - providing access for the user's fingers. An aperture in the "roof" enables visual contact with the user's fingertips.

DESCRIPTION OF THE INVENTION

[0018] In a first form of the invention the shield is attached to the user's hand (either right or left) while they are entering their PIN on a keypad. The shield is preferably wide enough to cover both the user's fingers and the keypad itself. The shield provides a greatly restricted viewing angle of the keypad by means of an aperture in the shield that allows only the user to view their fingertips and the number keys while entering their PIN.

[0019] Preferably the viewing angle through the shield aperture is further restricted by means of an upright wall adjacent to the aperture. More preferably, the upright wall surrounds the aperture in the shield. Preferably the upright wall that lies adjacent to or surrounds the shield aperture is collapsible from an open into a closed position. With the upright walls in the collapsed position and the aperture closed the user could enter their PIN by touch, facilitated by the raised dot on the "5" which is the ISO standard for all keypads. When the upright walls are in the collapsed position and the aperture is closed, the present invention completely obscures the keypad.

[0020] According to one form of the invention the user can maintain the shield in place by means of a loop through which a finger, e.g. the index finger, but more preferably the middle finger, or more than one finger, of either hand can be inserted. Other forms of fastener could also be used to maintain the shield in place, such as adhesive pads or elastic bands.

[0021] Preferably the shield can fold up to roughly credit card dimensions or smaller, allowing it to fit easily into a standard wallet or purse. This gives the shield the added convenience of being readily available whenever the user is accessing his credit or debit card.

[0022] Preferably the shield is made from cardboard, paper or plastic, thus making it extremely cheap to produce. The shield could therefore be considered as a

"give-away" item by relevant organisations. For example, banks could distribute them to customers when they issue them with new credit/debit cards. Alternatively, the shields could be given away with promotional literature or at ATMs. Similarly, retailers could provide them to their customers at Points of Sale where the input of a PIN is required. They could even be used as corporate "free gifts" and promotional tools bearing the company logo or advertisements.

[0023] As the shield is very cheap to produce and could be made available at many different locations it is anticipated that a user could throw one away when it has become too worn and easily find a replacement. Preferably the shield is therefore made from a recyclable material.

[0024] Other versions of the shield could be made from plastic or a wire frame and additionally comprise a mechanism, for example a spring, whereby the shield has a "pop-out" effect when opened. A shield made in this way may be more durable and could be considered more aesthetically pleasing. Such a version of the shield is more expensive to produce and hence better suited for sale to the general consumer rather than being a give-away item.

[0025] Although the purpose of the shield is primarily to protect the PIN for credit/debit card retail and ATM transactions, it could just as easily be used in any situation where someone is required to key in a secret code onto a numeric keypad, e.g. burglar alarms, office door locks etc.

DETAILED DESCRIPTION OF THE INVENTION BY REFERENCE TO THE DRAWINGS

[0026]

Figure 1 shows a perspective view of the top surface of a first embodiment of the present invention,

Figure 2 shows a plan view of the top surface of the first embodiment of the present invention and the position of the aperture in relation to the fingertips,

Figure 3 shows the first embodiment of the present invention that includes a front flap,

Figure 4 shows a perspective view the bottom surface of the first embodiment of the present invention,

Figure 5 shows a general view of the first embodiment of the present invention in a partially folded configuration,

Figure 6 is a template for the central portion of the shield, showing the position for the aperture and the aperture flap, around which the side flaps and aperture walls are attached,

Figure 7 shows a template for the side flaps, aperture walls and finger loop,

Figure 8 illustrates a second embodiment of the security aid according to the present invention in a "box" shape, and

Figures 9a to 9c show a sequence of unfolding for a box shape embodiment from Figure 8.

[0027] A first embodiment of the present invention is shown in Figure 1. The shield 1 is made from a foldable material, such as cardboard, of sufficient size to cover the fingers of one hand. The shield 1 includes downwardly angled side flaps 2 that prevent unwanted side observation of the user's fingers. An upright wall 3 surrounds an aperture 4 through the shield 1.

[0028] As shown in Figure 2, the aperture 4 is aligned with the user's fingertips so that he/she can see the position of their fingertips in relation to a keypad. This is the preferable form, however, the invention should still be construed as encompassing designs where the most distal end of the fingertip is not visible, although this is thought to be less desirable. In interpreting the invention, "fingertip" should be considered any part of the finger beyond the second knuckle.

[0029] The upright wall 3 that surrounds the aperture 4 reduces the viewing angle to such an extent that only the user can see the position of his/her fingertips in relation to the keypad by looking directly down. The upright wall 3 may also be collapsible. When the upright wall 3 is in the collapsed closed position, the shield aperture 4 is closed and the shield 1 covers the fingers and fingertips completely.

[0030] In a modified form of the first embodiment, as shown in Figure 3, the shield 1 also includes a front flap 5 to prevent unwanted observation of the user's fingers from in front of the user. Such unwanted front observation may be possible when using a horizontal keypad or by means of a concealed camera, for example.

[0031] As shown in Figure 4, the shield may be attached to the user by means of a loop 6 through which a finger is inserted. The loop 6 could be ring shaped for one finger or broader to accommodate several fingers.

[0032] As shown in Figure 5, the shield can be constructed in such a way that it folds into a smaller size, preferably the size of a credit/debit card for ease of carrying in a standard purse or wallet. Not only is the main body of the shield 1 foldable but the upright wall 3 that is adjacent to or surrounds the aperture 4 is also foldable and can collapse into a flattened position thereby closing the shield aperture. In Figure 5 the arrows show the direction of folding when the shield is folded into the flattened position.

[0033] In a preferred embodiment, the foldable shield can be made by combining two pieces of material, preferably paper, cardboard or plastic. An example of templates for making a foldable shield out of two pieces of

material is given in Figures 6 and 7. The position of a shield aperture flap 7 is shown in Figure 6. The shield aperture flap 7 is attached to the collapsible walls 3 when the two pieces are combined so that when the user lifts the flap upwards the walls move from the collapsed closed position into the upright open position.

[0034] As previously described the security aid according to the present invention can be manufactured by available methods. Many different embodiments are possible that retain the general advantageous features.

[0035] A second such embodiment is illustrated by Figures 8 and 9. In figure 8 the security aid takes the form of a collapsible box 10. Score marks 11 are visible that enable the sidewalls 12 and roof 13 to fold into a smaller size, e.g. credit card dimensions. An elongate aperture 14 is provided in a sidewall 12 to receive a user's fingers thereto that may be three or four fingers wide. A second, smaller aperture or edge cut-out shape 15 is provided in a different sidewall to permit the box to fold without the sides overlapping thereby making it as compact as possible.

[0036] The box may include an upright wall(s) 16 surrounding aperture 4 or, as illustrated, at opposing sides of the aperture. This embodiment is dictated by ease of manufacture.

[0037] The box is intended to be portable (e.g. in the wallet of a user) and popped out and placed over a keypad when required.

[0038] Figures 9a to 9c show the sequence of use. Step 1 (Figure 9a): the security aid 10 is in a folded form held between two hands. Step 2 (Figure 9b): the credit card sized portions are spread apart revealing the aperture 4 and expanding the box shape (on the opposite side from the illustrated view). Step 3 (Figure 9c) : The freestanding box is placed over a keypad (not visible) and a hand/fingers enters aperture 14 to access the keys. Light is provided through roof aperture 4 (where the user gains visible access to inside the box) and side cut-out 15.

[0039] The box shape can be manufactured from cardboard or plastic as required, probably as two components like the first embodiment.

[0040] Both embodiments share common attributes, namely:

- 1) Intended to fold to a credit card shape for ease of storage,
- 2) Substantially cover a PIN keypad when in use to prevent third parties from seeing finger movement (whether directly or via CCTV), while still allowing the user to see the number keys,
- 3) Made from cheap materials and intended to bear company logos and promotional messages - most likely a give-away, yet functional item for promotional purposes,

Claims

1. A security aid comprised of a portable shield (1) wherein the shield is adapted, in use, to cover at least a portion of a user's finger, 5
characterised by including an aperture (4) through said shield that, in use, is aligned with a user's fingertip.
2. The security aid of claim 1 wherein the aperture is larger than a finger tip. 10
3. The security aid of claim 1 or 2 wherein the shield is adapted to be attached to a hand of a user. 15
4. The security aid of claim 3 wherein the hand attachment means is a loop (6) or adhesive pad.
5. The security aid of any one of the preceding claims including an upright wall (3) adjacent the aperture. 20
6. The security aid of claim 5 wherein the upright wall surrounds the aperture (4).
7. The security aid of claim 5 or 6 wherein the upright wall is collapsible. 25
8. The security aid of any one of the preceding claims wherein the shield is made from a collapsible/foldable construction. 30
9. The security aid of any one of the preceding claims wherein the shield is in the form of a box (10) adapted to cover a PIN keypad. 35

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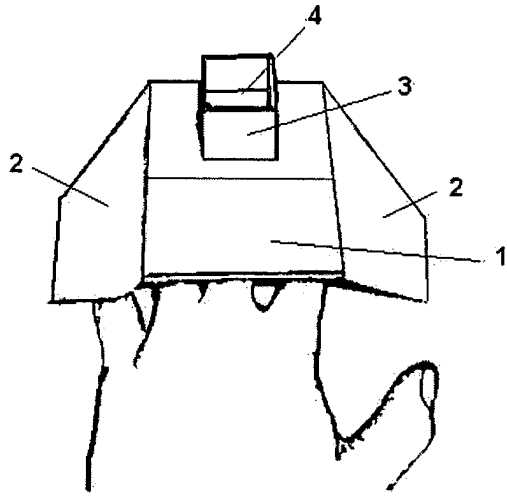


Fig .1.

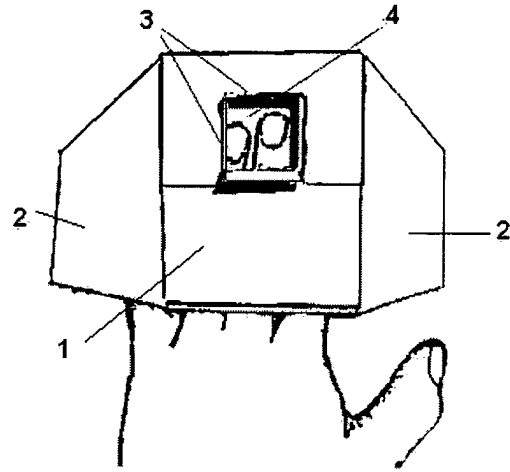


Fig .2.

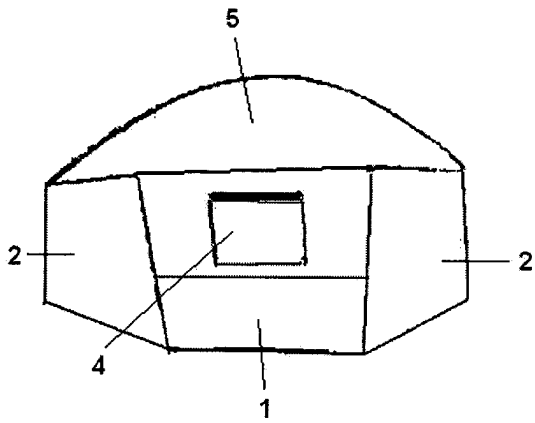


Fig .3.

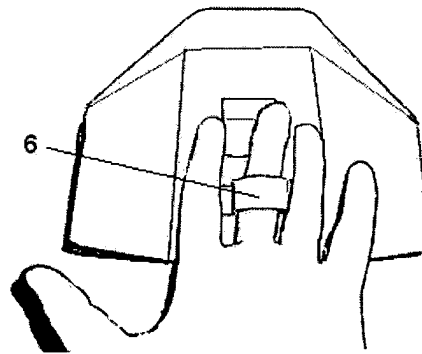


Fig .4.

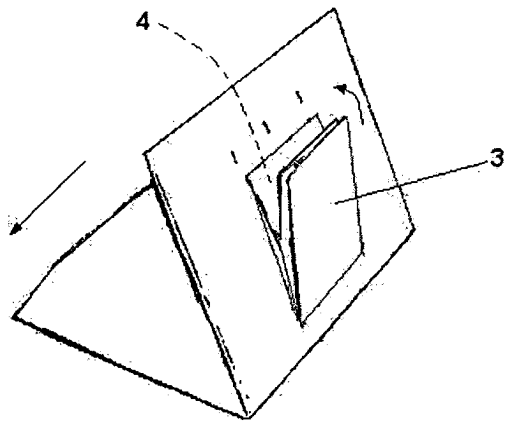


Fig .5.

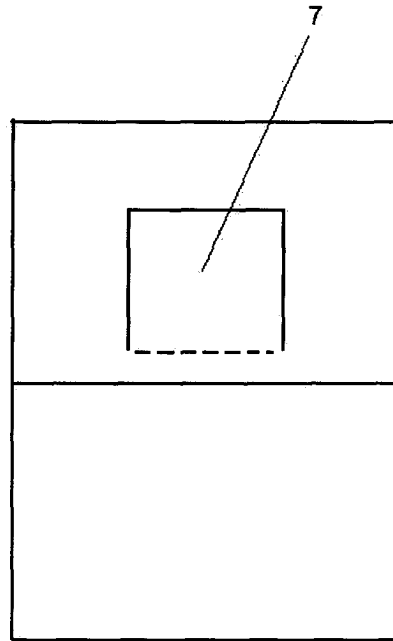


Fig .6.

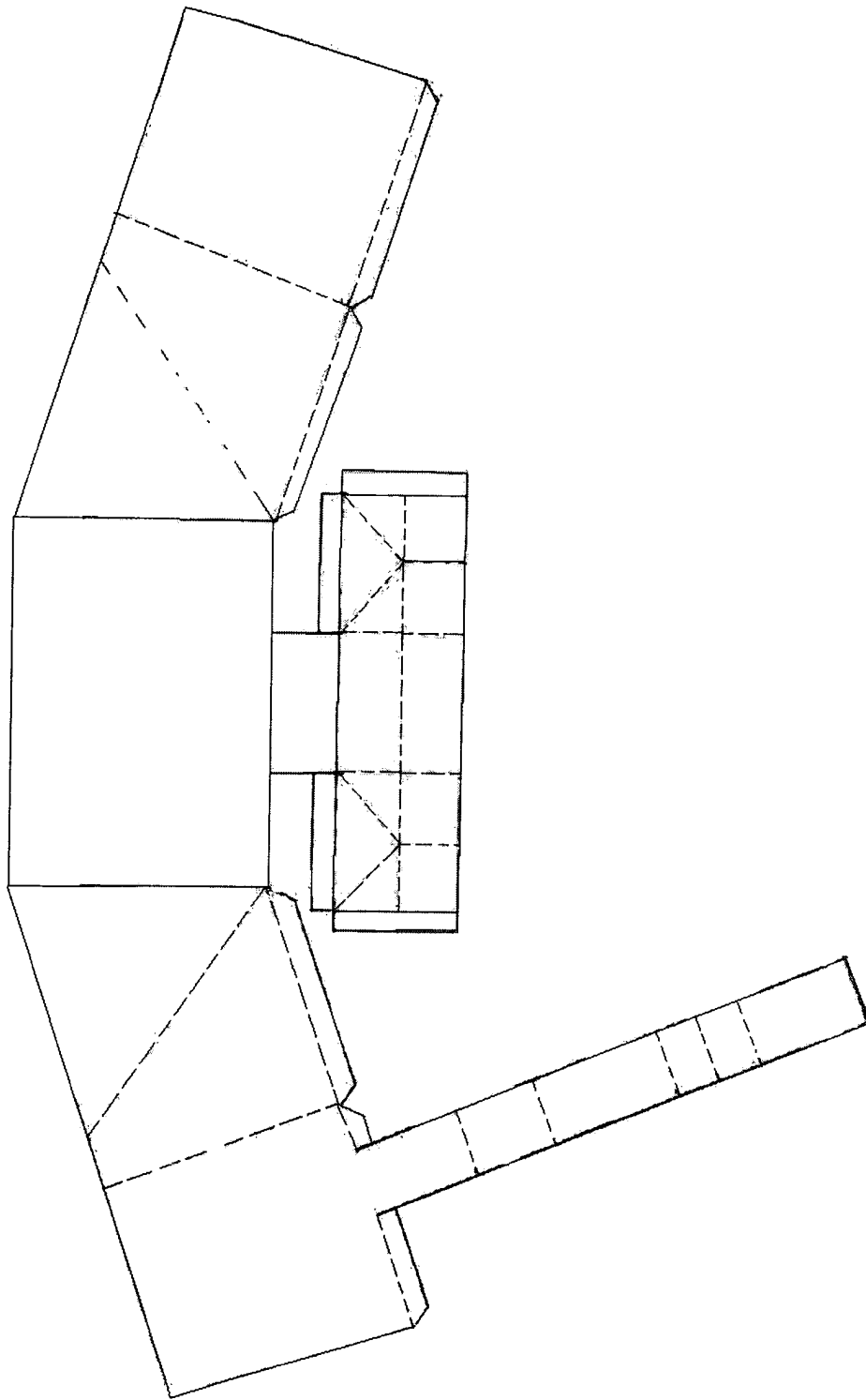


Fig .7.

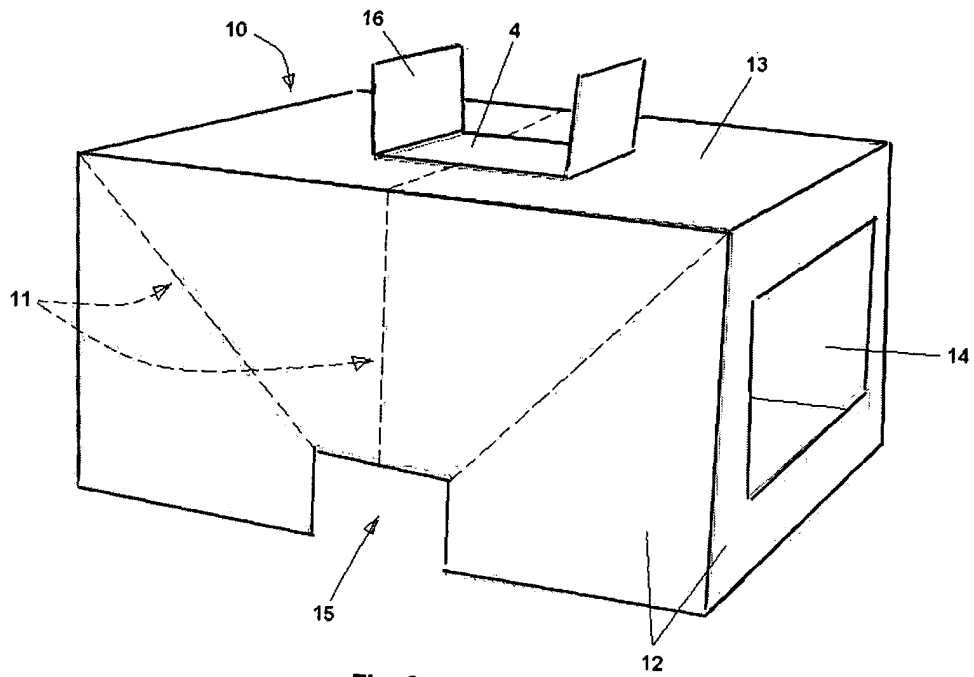


Fig .8.

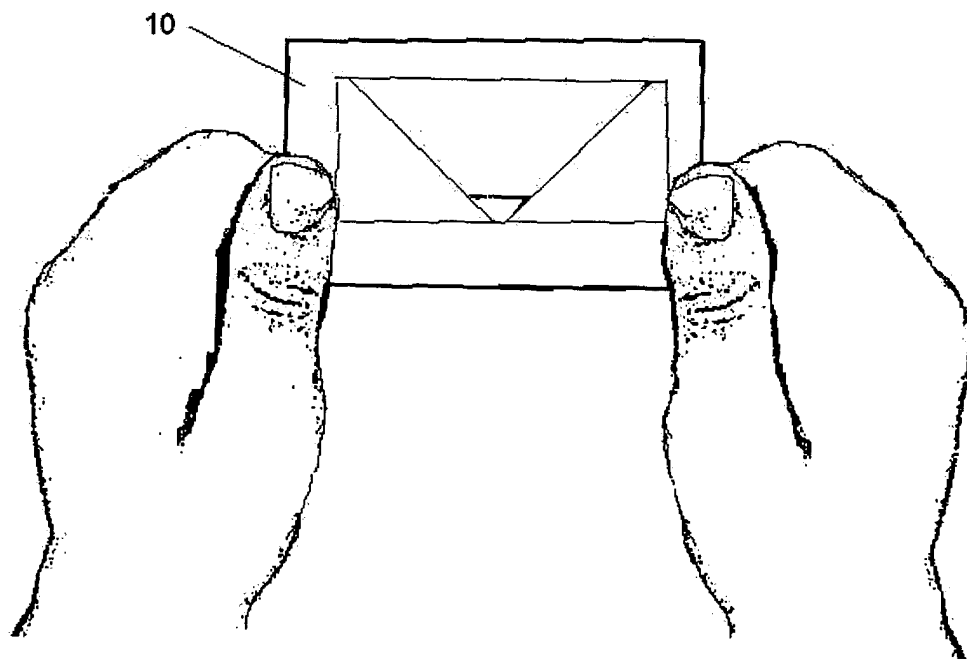


Fig .9a.

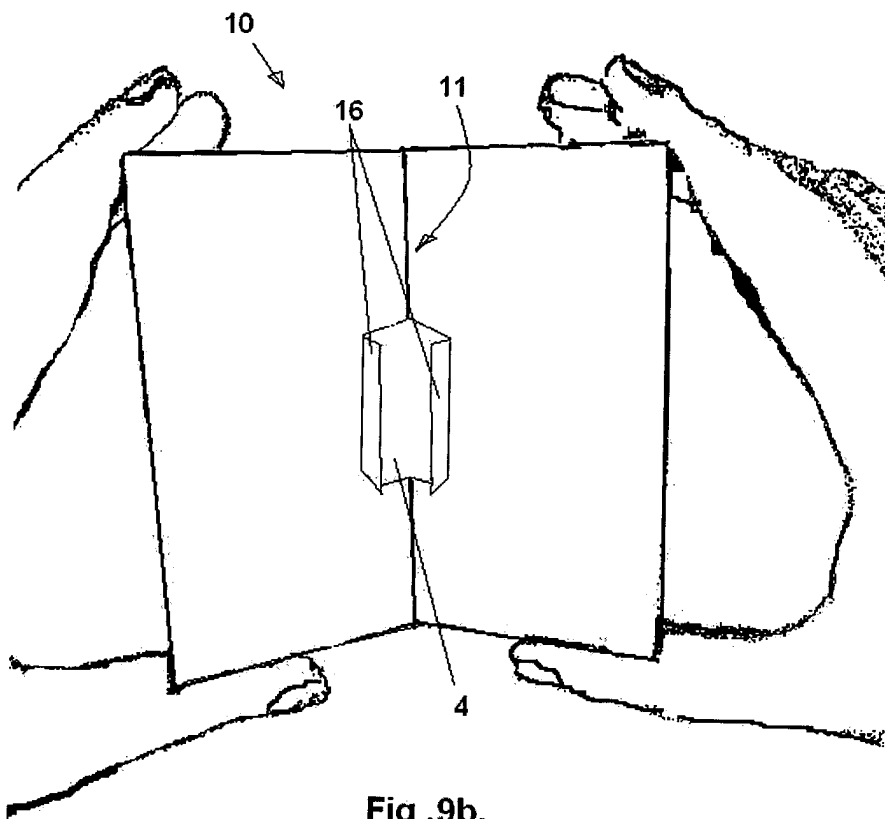


Fig .9b.

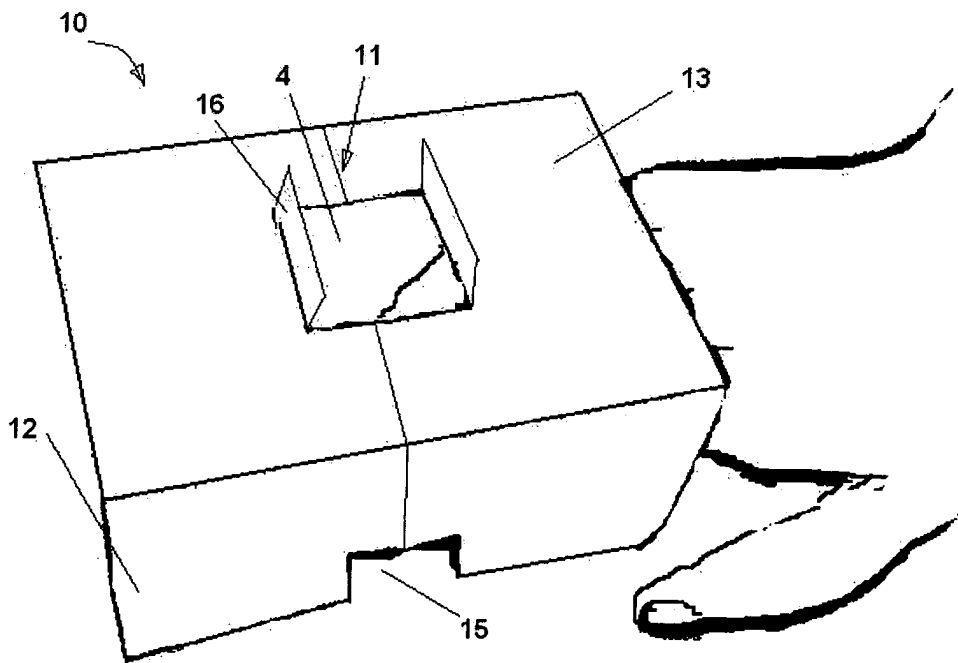


Fig .9c.



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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		20 September 2005	Guivol, O
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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EPO FORM 1503 03.82 (P04C01)



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EUROPEAN SEARCH REPORT

Application Number
EP 05 25 3706

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 September 2005	Examiner Guivol, 0
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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