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(54) **SECURITY BAGS**

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(56) References cited:
EP-A- 0 396 428 **WO-A-89/05761**
WO-A-91/18377 **FR-A- 2 361 074**
GB-A- 2 202 823

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Description

The present invention relates to bags, and more particularly to security bags in which a visible indication is provided of any attempt to gain access to the contents of the bag.

It is known for banking establishments and the like to use bags for transmitting valuables, for example specified sums of money, from one department to another. The system operated by such establishments is such that it is readily possible to ascertain whether a bag has been stolen in transit. However, it is ordinarily more difficult to ascertain whether the bag has been opened in transit and then resealed after some of the contents have been removed. In order to overcome this problem, tamper-evident bags have been provided wherein any attempt to gain access to the interior of the bag becomes visibly apparent.

Typically, the walls of such bags are formed of sheet material including a portion having an opening which gives access to the interior of the bag. The bags include a closure portion arranged to be superposed on the portion having the opening, to close the bag. Closure is effected by means of a band of high-tack adhesive which is applied across the closure portion or the portion having the opening, for example from the molten state or in the form of a tape. The adhesive may be pressure sensitive adhesive, and suitable adhesives include thermoplastic hot melt adhesives, cured silicone rubber adhesives, acrylic pressure sensitive adhesives and the like.

Such adhesives are required to have high initial tack with respect to the surface of the sheet material and also to have high adhesive and cohesive strength. In order to provide a visible indication of any attempt to open the bag by separating the closure portion and the portion having the opening, the adhesive should be strong enough to cause stretching or tearing of the portions. If desired, perforations may be provided in the closure portion to indicate tearing and emphasise the effect in the manner described in our GB-A-2149381.

With the exception of the cured silicone rubber adhesive described in our GB-A-2 254 785, pressure sensitive adhesives suitable for the closure of security bags have a softening temperature which is below the melting point of the closure portion and of the sheet material. The softening temperature is commonly in the range of 90 to 100°C. Accordingly, by the local application of heat, the security bags can be opened and resealed without any visible indication that the bag has been opened. Also, the non-silicone adhesives may be rendered glass-like by cooling. Such cooling may be effected by means of a spray from aerosol cans containing halogenated hydrocarbons, such as Freons. Such sprays are intended for use in cleaning electrical contacts and are widely available. Consequently by local cooling of the closure portion, the bags can be opened and resealed without any indication that the bags have been opened.

Our Patent Specifications EP-A-0396428 and GB-A-2 263 313 describe methods for making such tampering evident. However, the methods described therein are dependent upon subjective assessment of layer separation or degradation of print quality. Inspection of bags for evidence of tampering may therefore take longer than is desired by the banking establishment or the like.

The present invention seeks to provide a security bag incorporating means of determining unequivocally whether the bag has been subjected to heating or cooling. Desirably, an indication is provided not only of whether an attempt has been made to open the closure of the bag by heating or cooling, but also the method used. Even in the case that the adhesive used was the cured silicone rubber adhesive in our above patent GB-A-2 254 785, the indicating means would ensure that even unsuccessful attempts to open the bags are detected.

From one aspect, the present invention consists in a bag formed of sheet material and comprising first and second portions of the sheet material forming the bag, an opening in the first portion to enable access to be gained to the interior of the bag, a closure portion integral with one of the first and second portions and arranged to be superposable with the first portion, adhesive applied as a band having a free surface so arranged as to seal the opening on superposition of the first portion and the closure portion, and at least one indicating means for providing an irreversible visible indication of the bag having been subjected to heating and which, when the first portion and the closure portion are superposed, is disposed over the opening, or on at least that part of the first portion adjacent the opening and on the side thereof distant from the position at which the closure portion is integral with one of the first and second portions, the bag being characterised in that the indicating means is arranged to change colour below the softening temperature of the adhesive.

From another aspect, the invention consists in a bag formed of sheet material and comprising first and second portions of the sheet material forming the bag, an opening in the first portion to enable access to be gained to the interior of the bag, a closure portion fixed to the sheet material along the whole lateral width of the bag and arranged to be superposable with the first portion, adhesive applied as a band having a free surface so arranged as to seal the opening on superposition of the first portion and the closure portion, and at least one indicating means for providing an irreversible visible indication of the bag having been subjected to heating and which, when the first portion and the closure portion are superposed, is disposed over the opening, or on at least that part of the first portion adjacent the opening and on the side thereof distant from the position at which the closure portion is fixed to the sheet material, the indicating means being arranged to change colour below the softening temperature of the adhesive.

In one embodiment of the invention, the closure portion comprises a transparent plastics substrate to which the band of adhesive is applied, which substrate is adhered to the sheet material of the bag by means of adhesive which may be the same as, or different from, that of the band of adhesive.

In another embodiment of the invention, a releasable cover-strip is provided on the free surface of the band of adhesive. In use, the cover strip is removed prior to the closure of the bag.

In a further embodiment of the invention, the indicating means is applied to or affixed on the closure portion.

In a still further embodiment of the invention, the indicating means is applied or affixed to the portion having an opening.

In a yet further embodiment of the invention, the indicating means provides a colour change on heating or cooling of the bag and in a still further embodiment, the indicating means provides a visible change of phase or state on heating or cooling of the bag. If desired, individual means may be provided to show heating or cooling, respectively.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example only, to the following drawings in which:

Figure 1 is a diagrammatic front view of an open security bag in accordance with a first embodiment of the present invention,

Figure 2a is a diagrammatic section through a part of the bag of Figure 1 on an increased scale when the bag is open,

Figure 2b is a diagrammatic section through a part of the bag of Figure 1 when the bag is closed,

Figures 3a and 3b are respectively diagrammatic sections through a variation of the bag of the embodiment of Figure 1 when open and closed.

Figure 4 is a diagrammatic section through a part of a bag of a second embodiment of the invention, Figure 5 is a diagrammatic section through a variation of the bag of Figure 4 showing optional additional security features, and

Figure 6 is a diagrammatic section through a precursor of a security bag of the first embodiment of the invention when the bag is open, during an exemplary production process.

Referring now to Figures 1 and 2, the bag is formed from a single strip 1 of flexible thermoplastics sheet material such as polyethylene or polypropylene which is folded laterally along a fold line 2 to form a first portion 3 and a second portion 4. The thermoplastics sheet material is preferably transparent, partially transparent or translucent, or a combination of opaque and transparent so as to make it easier to see evidence of tampering. The folded portions 3 and 4 are heat welded to each

other in a zone 5 which extends parallel with and close to each of the longitudinal and each of the lateral edges of the portions to produce an envelope-like bag 6 wherein the second portion 4 is longer than the first portion 3. The second portion 4 has a closure portion in the form of a flap 7. The flap portion 7 is at least translucent, and preferably is transparent.

At an end region of the bag 6 closer to the flap portion 7, an opening line in the form of a slit 8 extends across the first portion 3 terminating at each end at the weld zone 5. The slit 8 provides access to the interior of the bag 6. A band of adhesive 9 is provided on the flap portion 7. The choice of adhesive is not limited, although the adhesive should be a high tack adhesive having high cohesive and adhesive strength, such that any attempt to open the bag by separating the first portion and the closure portion will result in stretching or tearing of the closure and/or first portions, and can include all those mentioned above. The adhesive 9 may be applied from the molten state or in the form of a tape, or by any other suitable method. As can be seen from Figure 2a, a releasable cover strip 10 is provided to cover the free surface of the adhesive 9 when the bag is open. An indicating means 11, comprising a band of a substance exhibiting a change of colour, phase or state when subjected to heating or cooling is provided on the flap portion 7 and is covered by the adhesive 9. The indicator means is visible through the flap portion 7.

In use of the security bag, the items to be held in the bag are introduced through the slit 8. The cover strip 10 is then removed from the adhesive 9 and the flap portion 7 is folded over onto the portion 3, with the fold line being close to the proximal laterally extending part 5a of the weld zone 5. The disposition of the adhesive layer 9 relative to the fold line of the flap portion 7 is such that when the flap portion 7 is brought down onto the first portion 3, the part of the flap portion 7 carrying the adhesive 9 straddles the slit 8 so that the slit 8 is completely overlain by the said adhesive 9. Thus, the slit 8 is completely sealed and there is no access opening whatsoever to the interior of the bag 6 (see Figure 2b). Advantageously, the parts of the first portion 3 adjacent to the slit 8 have previously been subjected to Corona discharge to assist adhesion. The indicator means 11 overlies at least that part of the portion 3 adjacent to the slit 8 which is distant from the lateral weld zone 5a. If desired, the flap portion 7 may include a receipt portion 12 which is detachable by means of perforations 13.

The nature of the indicator means 11 is not limited, and the indicator means may, for example, comprise a temperature indicating paint (such as Thermindex O/G 87, supplied by Synthetic and Industrial Finishers Ltd of Cheam, Surrey), or temperature indicating ink, temperature indicating labels E1 or NE1 or other temperature indicating materials such as "Colour Change" and "Thermal Melt" crayons supplied by Thermographics Ltd of Burton, South Wirral. Thermal transfer printing labels, such as those available from Kanzaki Label Tech-

nologies, Ricoh Ltd and Armour Ltd (from the latter under part nos. 479 and F 52 622) and heat-sensitive paper as used for facsimile machines and heat copiers are also suitable. Also, suitable are coated papers and coated films such as those sold under the trade names RIVATAC T5206 and RIVATAC AT231/67HG and the coating materials of such papers and films sold under the trade names T902 and T903 by Smith & McLaurin Ltd of Kilbarchan, Scotland. Furthermore, the dye systems included in such heat-sensitive papers can advantageously be incorporated into printing inks. The temperature indicating paints and inks and the temperature indicating labels and paper provide a visible indication of heating or cooling by changing colour at a specified temperature, which is below the softening temperature of the adhesive or above the temperature at which the adhesive becomes glass-like, as appropriate. It is essential however, that the colour change of such materials is irreversible. Advantageously, temperature indicating inks may be applied directly to the adhesive in the form of a pattern or design by means, for example, of an ink jet printing technique. Where, for example in the case of the thermal melt crayons, the indication of heating or cooling is provided by a change of state, it will also, in general, be necessary for the change of phase or state to be irreversible. However, where, for example, the indication is provided by a change from the solid to the liquid state, the indicator means may be applied in a pattern or design to the sheet material or directly on the adhesive. Thus, any change from the solid to the liquid state of the indicator means can provide a disruption or distortion of the applied pattern or design which will be immediately apparent, even if the indicator re-solidifies.

Referring to Figures 3a and 3b, in which parts corresponding to those of Figures 1 and 2, are indicated by like reference numerals, it will be seen that the indicator means can also be provided on at least that part of the portion 3 which is immediately adjacent the opening 8 distant from the lateral weld zone 5a. After closure of the bag, the adhesive 9 completely overlies the opening slit 8 and the indicator 11. In this embodiment, the adhesive 9 must be translucent, or preferably transparent, to ensure that the indicator means 11 is visible through the flap portion 7.

Referring to Figure 4, in which parts corresponding to parts in Figures 1 to 3 have the same reference numerals, the bag 6, which is shown in the open state, can be sealed by a closure member 14. The closure member 14 comprises a plastics material substrate 15 which is at least translucent and preferably is transparent and which is adhered to at least a part of the section 16 of the first portion 3 along the whole lateral width of the bag, and optionally to the second portion 4, by an adhesive layer 9. A releasable cover strip 10 prevents adhesion of the closure member 15 to the first portion 3 adjacent to the opening 8 prior to the filling of the bag. In use, the items to be held in the bag are introduced through the slit 8, the cover strip 10 is removed and the

closure member 14 seals the opening 8 by completely overlying the same. The free surface of the adhesive 9 which is exposed on removal of the cover strip 10 adheres the substrate 15 to the first portion 3, 16. An indicator means 11 is provided on the transparent plastics material substrate 15 in such a position that, when the bag is sealed, the indicator means overlies the opening 8, or at least that part of the first portion 3 which is adjacent to the opening 8 and distant from the lateral weld zone 5a. The indicator means 11 may equally be applied to the adhesive 9 (by for example ink jet printing) or to the part of the first portion 3 adjacent the slit opening 8 and distant from the weld zone 5a.

Further security features may be incorporated into the security bags as is particularly illustrated in Figure 5, which is a variation of the embodiment of Figure 4. These security features can also be incorporated into the embodiments of Figures 1 to 3. In Figure 5, the closure member 14 comprises a transparent plastics material substrate 15 which carries a discontinuous weakly bonded adhesive layer 17 such as ethyl cellulose and a strongly bonded adhesive layer 18 such as epoxy cellulose acetate propionate. Because of the layers 17 and 18, any attempt to gain access to the interior of the bag 6 by lifting the substrate 15 will result in those parts of the layer 18 which are in registry with layer 17 remaining adhered to portions 3 and 4 whilst other parts of the layer 18 will remain adhered to substrate 15. This results in the formation of a visible pattern constituted by the split layer 18 which pattern cannot be obliterated by re-sealing the closure member. Soluble transparent or translucent dye may be carried in a layer 19. Layer 20 comprises a high tack adhesive in which the indicator means 11 is disposed. It is not essential, however, for the indicator means 11 to be disposed in the layer 20. Layer 21 is an optional second layer of adhesive which carries optional ink jet printing 22.

Referring now to Figure 6, the bag is produced by folding longitudinally a continuous length 101 of the thermoplastic sheet material (after it has been optionally printed as appropriate) into a J-form where it includes a first portion 103 folded longitudinally at 102 so as to be superposed on a part of a second portion 104 so as to leave a flap portion 107 of the second portion 104 exposed. The first portion 103 is heat sealed to the second portion 104 by a longitudinally extending heat seal denoted by a reference numeral 105. Preferably, a longitudinally extending region of the flap portion 107, which region is generally parallel to the heat seal 105, is subjected to corona discharge to improve its adhesion characteristics in that region. A band of high-tack adhesive 109 is applied to that region and is covered by a removable cover strip 110 optionally after having been provided with a security code by means of an ink jet printing technique. An indicating means 111 may be applied to the flap portion 107 prior to the application of the adhesive 109. Alternatively, the indicating means may be applied generally at region 113. The region indicated generally

by 113 may also be subjected to corona discharge to improve its adhesion.

The continuous length 101 of sheet material is then cut transversely using a double heat sealing device comprising two pairs of heat sealing jaws between which is located a cutting blade so that the sheet material is cut into adjacent transverse sections each having heat sealed edges. Each of these sections constitutes a bag in accordance with the invention. It will be appreciated that a similar method can be applied for the production of the bags in accordance with Figures 4 and 5. It is particularly advantageous to apply the closure member as a pre-made tape which will desirably incorporate the indicating means.

Claims

1. A bag (6) formed of sheet material (1) and comprising first and second portions (3,4) of the sheet material forming the bag, an opening (8) in the first portion to enable access to be gained to the interior of the bag, a closure portion (7) integral with one of the first and second portions and arranged to be superposable with the first portion (3), adhesive (9) applied as a band having a free surface so arranged as to seal the opening on superposition of the first portion (3) and the closure portion (7), and at least one indicating means (11) for providing an irreversible visible indication of the bag having been subjected to heating and which, when the first portion (3) and the closure portion (7) are superposed, is disposed over the opening, or on at least that part of the first portion adjacent the opening and on the side thereof distant from the position at which the closure portion is integral with one of the first and second portions (4), the bag being characterised in that the indicating means (11) is arranged to change colour below the softening temperature of the adhesive.
2. A bag (6) formed of sheet material (1) and comprising first and second portions (3,4) of the sheet material forming the bag, an opening (8) in the first portion to enable access to be gained to the interior of the bag, a closure portion (7) fixed to the sheet material along the whole lateral width of the bag and arranged to be superposable with the first portion, adhesive (9) applied as a band having a free surface so arranged as to seal the opening on superposition of the first portion (3) and the closure portion (7), and at least one indicating means (11) for providing an irreversible visible indication of the bag having been subjected to heating and which, when the first portion (3) and the closure portion (7) are superposed, is disposed over the opening, or on at least that part of the first portion adjacent the opening and on the side thereof distant from the position

at which the closure portion is fixed to the sheet material, the indicating means (11) being arranged to change colour below the softening temperature of the adhesive.

- 5 3. A bag as claimed in claim 2, wherein the closure portion (7) comprises a transparent plastics substrate to which the band of adhesive (9) is applied.
- 10 4. A bag as claimed in claim 3, wherein the plastics substrate is fixed to the sheet material by means of the adhesive (9).
- 15 5. A bag as claimed in claim 3, wherein the plastics substrate is heat welded to the sheet material.
- 20 6. A bag as claimed in any preceding claim, wherein a releasable cover-strip is provided on the free surface of the band of adhesive (9).
- 25 7. A bag as claimed in any preceding claim wherein the indicating means (11) is applied to or affixed on the closure portion.
- 30 8. A bag as claimed in any preceding claim wherein the indicating means (11) is applied or affixed to the first portion having the opening (8).
- 35 9. A bag as claimed in any preceding claim wherein the indicating means (11) provides a visible change of phase or state on heating of the bag (6).
- 40 10. A bag as claimed in any preceding claim wherein the indicating means provides a visible change of colour, phase or state on cooling the bag (6).
- 45 11. A bag as claimed in any preceding claim including a temperature indicator selected from the group comprising temperature indicating paints, temperature indicating inks, temperature indicating labels, heat sensitive papers, thermal melt crayons and thermal colour change crayons.
- 50 12. A bag as claimed in any preceding claim wherein the indicator means (11) is applied to the sheet material (1) in a pattern or design.
- 55 13. A bag according to claim 10 wherein the indicating means is such as to change colour at a temperature above that of normal use of the bag.

Patentansprüche

- 55 1. Beutel (6), der aus Folienmaterial (1) gebildet ist, und der erste und zweite Teile (3, 4) des Folienmaterials umfasst, die den Beutel bilden, eine Öffnung (8) in dem ersten Teil, um zu ermöglichen, dass zu

- dem Inneren des Beutels Zugang gewonnen wird, ein Verschlusssteil (7), das mit einem der ersten und zweiten Teile integral ist und das angeordnet ist, um mit dem ersten Teil (3) überlagert werden zu können, einen Klebstoff (9), der als ein Band aufgetragen ist, das eine freie Oberfläche so angeordnet hat, um die Öffnung bei der Überlagerung des ersten Teils (3) und des Verschlusssteils (7) abzudichten, und wenigstens ein Anzeigemittel (11), um eine unabänderliche sichtbare Anzeige zu liefern, dass der Beutel einer Erwärmung ausgesetzt wurde, und das über der Öffnung angeordnet ist, wenn das erste Teil (3) und das Verschlusssteil (7) überlagert sind, oder auf wenigstens dem Stück des ersten Teils neben der Öffnung und auf der Seite davon, die von der Stelle entfernt ist, an der das Verschlusssteil mit einem der ersten und zweiten Teile (4) integral ist, wobei der Beutel dadurch gekennzeichnet ist, dass das Anzeigemittel (11) angeordnet ist, um seine Farbe unter der Erweichungstemperatur des Klebstoffs zu ändern.
2. Beutel (6), der aus Folienmaterial (1) gebildet ist, und der erste und zweite Teile (3, 4) des Folienmaterials umfasst, die den Beutel bilden, eine Öffnung (8) in dem ersten Teil, um zu ermöglichen, dass zu dem Inneren des Beutels Zugang gewonnen wird, ein Verschlusssteil (7), das an dem Folienmaterial entlang der ganzen lateralen Breite des Beutels befestigt ist, und das angeordnet ist, um mit dem ersten Teil überlagert werden zu können, einen Klebstoff (9), der als ein Band aufgetragen ist, das eine freie Oberfläche so angeordnet hat, um die Öffnung bei der Überlagerung des ersten Teils (3) und des Verschlusssteils (7) abzudichten, und wenigstens ein Anzeigemittel (11), um eine unabänderliche sichtbare Anzeige zu liefern, dass der Beutel einer Erwärmung ausgesetzt wurde, und das über der Öffnung angeordnet ist, wenn das erste Teil (3) und das Verschlusssteil (7) überlagert sind, oder auf wenigstens dem Stück des ersten Teils neben der Öffnung und auf der Seite davon, die von der Stelle entfernt ist, an der das Verschlusssteil an dem Folienmaterial befestigt ist, wobei das Anzeigemittel (11) angeordnet ist, um seine Farbe unter der Erweichungstemperatur des Klebstoffs zu ändern.
3. Beutel nach Anspruch 2, in dem das Verschlusssteil (7) ein durchsichtiges Kunststoffsubstrat umfasst, auf das das Band aus Klebstoff (9) aufgetragen ist.
4. Beutel nach Anspruch 3, in dem das Kunststoffsubstrat durch den Klebstoff (9) an dem Folienmaterial befestigt ist.
5. Beutel nach Anspruch 3, in dem in dem das Kunststoffsubstrat mit dem Folienmaterial verschweißt ist.
6. Beutel nach einem vorhergehenden Anspruch, in dem ein lösbarer Deckstreifen auf der freien Oberfläche des Bands oder des Klebstoffs (9) geliefert ist.
7. Beutel nach einem vorhergehenden Anspruch, in dem das Anzeigemittel (11) auf das Verschlusssteil aufgetragen oder an ihm befestigt ist.
8. Beutel nach einem vorhergehenden Anspruch, in dem das Anzeigemittel (11) auf das erste Teil mit der Öffnung (8) aufgetragen oder befestigt ist.
9. Beutel nach einem vorhergehenden Anspruch, in dem das Anzeigemittel (11) eine sichtbare Änderung der Phase oder des Zustands beim Erwärmen des Beutels (6) liefert.
10. Beutel nach einem vorhergehenden Anspruch, in dem das Anzeigemittel eine sichtbare Änderung der Farbe, der Phase oder des Zustands beim Kühlen des Beutels (6) liefert.
11. Beutel nach einem vorhergehenden Anspruch, das einen Temperaturanzeiger einschließt, der von der Gruppe ausgewählt ist, die die Temperatur anzeigende Farben umfasst, die Temperatur anzeigende Tinten, die Temperatur anzeigende Etiketten, wärmeempfindliche Papiere, thermische Schmelzstifte, und thermische Farbänderungsstifte.
12. Beutel nach einem vorhergehenden Anspruch, in dem das Anzeigemittel (11) in einem Muster oder in einer Gestalt auf das Folienmaterial (1) aufgetragen ist.
13. Beutel nach Anspruch 10, in dem das Anzeigemittel so ist, um seine Farbe bei einer Temperatur über derjenigen der normalen Benutzung des Beutels zu ändern.

Revendications

1. Sac (6) formé à partir de produit en forme de nappe (1) et comportant une première et une deuxième portion (3,4) du produit en nappe formant le sac, une ouverture (8) en première portion permettant d'obtenir l'accès à l'intérieur du sac, une portion de fermeture (7) intégrale avec l'une des portions première et deuxième est agencée pour la superposition avec la première portion (3), un adhésif (9) appliqué sous forme de bande ayant une surface libre agencée telle à fermer l'ouverture suite à la superposition de la première portion (3) et de la portion de fermeture (7), et au minimum un moyen indicateur (11) admettant l'indication visible irréversible du sac ayant été soumis à la chauffe et lequel, lors-

- que la première portion (3) et la portion de fermeture (7) sont superposées, est agencée sur l'ouverture, ou au minimum la partie de la première portion adjacente à l'ouverture et sur son côté éloigné de la position en laquelle la portion de fermeture est intégrale avec l'une de la première et la deuxième portion (4), le sac étant caractérisé en ce que le moyen indicateur (11) est agencé pour changer de couleur sous la température de ramollissement de l'adhésif.
- 2.** Sac (6) formé à partir de produit en forme de nappe (1) et comportant une première et une deuxième portion (3,4) du produit en nappe formant le sac, une ouverture (8) en première portion permettant d'obtenir l'accès à l'intérieur du sac, une portion de fermeture (7) fixée à la matière en nappe le long de toute la largeur latérale du sac et agencée pour la superposition avec la première portion, l'adhésif (9) appliqué sous forme de bande ayant une surface libre agencée telle à fermer l'ouverture à la superposition de la première portion (3) et de la portion de fermeture (7), et au minimum un moyen indicateur (11) pour effectuer une indication visible irréversible d'une application de chauffage du sac, et lequel lorsque la première portion (3) et la portion de fermeture (7) sont superposées, est agencée sur l'ouverture, ou au minimum cette partie de la première portion adjacente à l'ouverture et sur son côté éloigné de la position en laquelle la portion de fermeture est fixée à la matière en nappe, le moyen indicateur (11) étant agencé pour changer de couleur sous la température de ramollissement de l'adhésif.
- 3.** Sac tel que revendiqué à la revendication 2, suivant laquelle la portion de fermeture (7) comporte un substrat de plastique transparent auquel la bande d'adhésif (9) est appliquée
- 4.** Sac tel que revendiqué à la revendication 3, suivant laquelle le substrat de plastique est fixé sur la matière en nappe au moyen de l'adhésif (9).
- 5.** Sac tel que revendiqué à la revendication 3, suivant laquelle le substrat de plastique est thermosoudé à la matière en nappe.
- 6.** Sac tel que revendiqué à l'une ou l'autre des revendications, suivant laquelle une bande détachable de couverture est prévue en surface libre de la bande d'adhésif (9).
- 7.** Sac tel que revendiqué à l'une ou l'autre des revendications, suivant laquelle le moyen indicateur (11) est appliqué ou fixé à la portion de fermeture.
- 8.** Sac tel que revendiqué à l'une ou l'autre des revendications, suivant laquelle le moyen indicateur (11) est appliqué ou fixé à la première portion comportant l'ouverture (8).
- 9.** Sac tel que revendiqué à l'une ou l'autre des revendications, suivant laquelle le moyen indicateur (11) prévoit une variation visible de phase ou d'état suite à la chauffe du sac (6).
- 10.** Sac tel que revendiqué à l'une ou l'autre des revendications, suivant laquelle le moyen indicateur prévoit une variation visible de couleur, de phase ou d'état suite au refroidissement du sac (6).
- 11.** Sac tel que revendiqué à l'une ou l'autre des revendications, comportant un indicateur de température sélectionné à partir du groupe comportant les vernis indicateurs de température, les encres indicatrices de température, les étiquettes indicatrices de température, les papiers sensibles à la chaleur, les crayons thermo-fondants et les crayons thermo-indicateurs de couleur.
- 12.** Sac tel que revendiqué à l'une ou l'autre des revendications, suivant laquelle le moyen indicateur (11) est appliqué à la matière en nappe (1) sous forme de dessin ou de motif.
- 13.** Sac tel que revendiqué à la revendication 10, suivant laquelle le moyen indicateur est tel à changer de couleur à une température supérieure à celle de l'exploitation du sac.

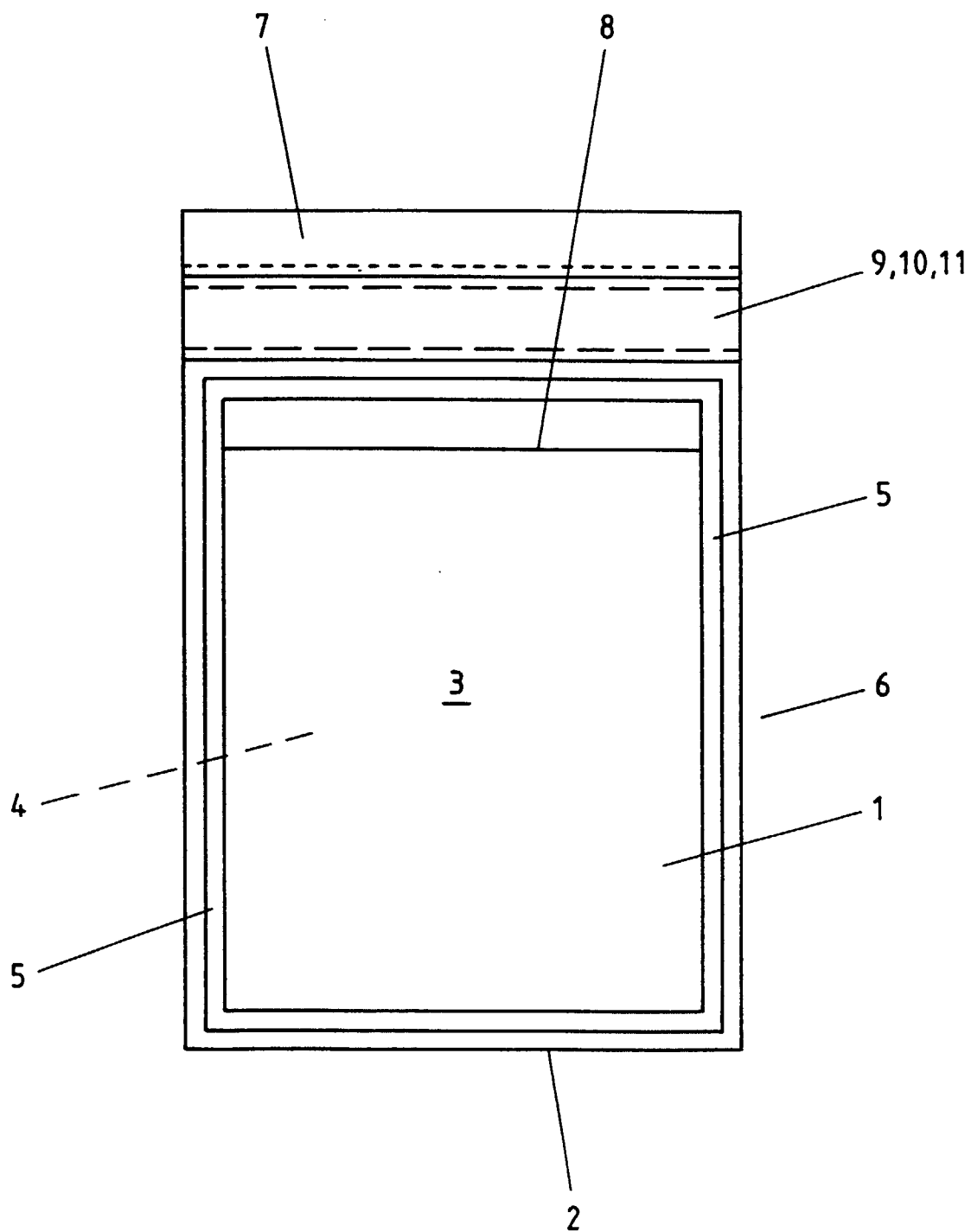


FIG. 1

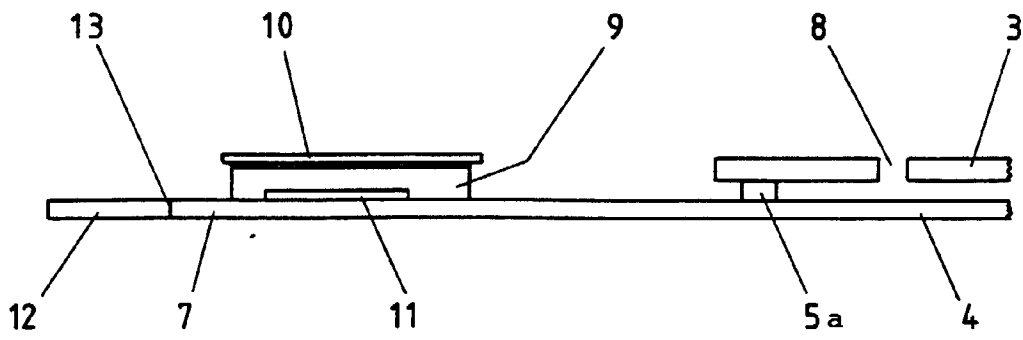


FIG. 2a

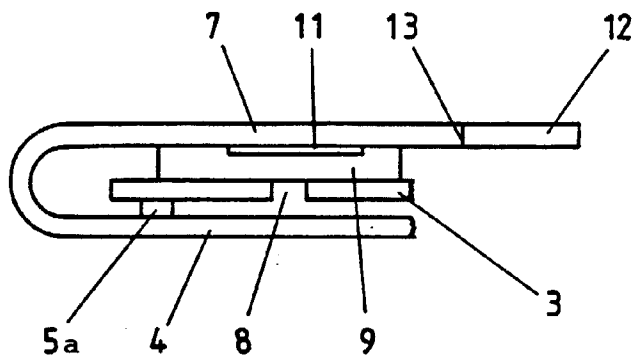


FIG. 2b

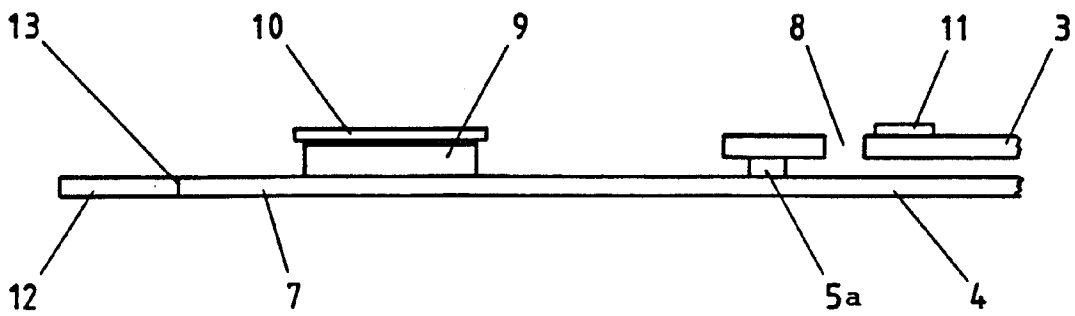


FIG. 3a

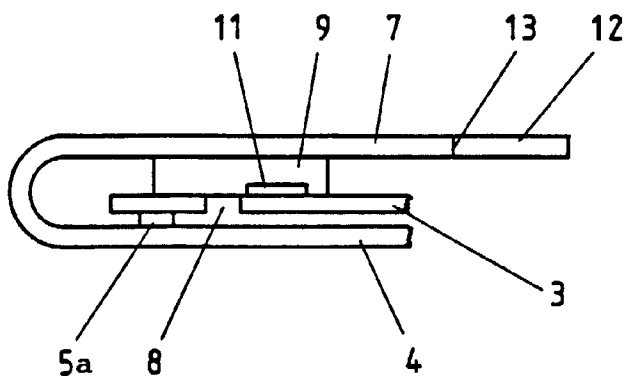


FIG. 3b

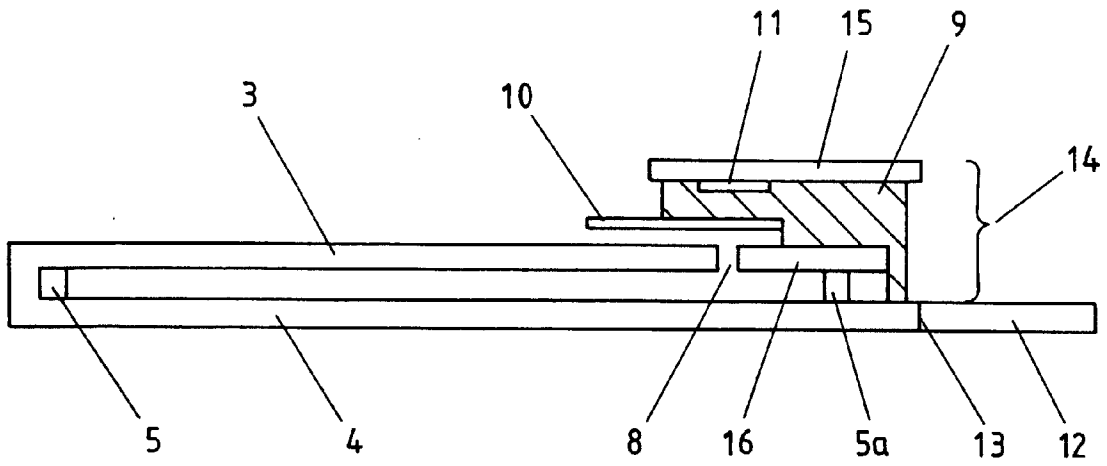


FIG. 4

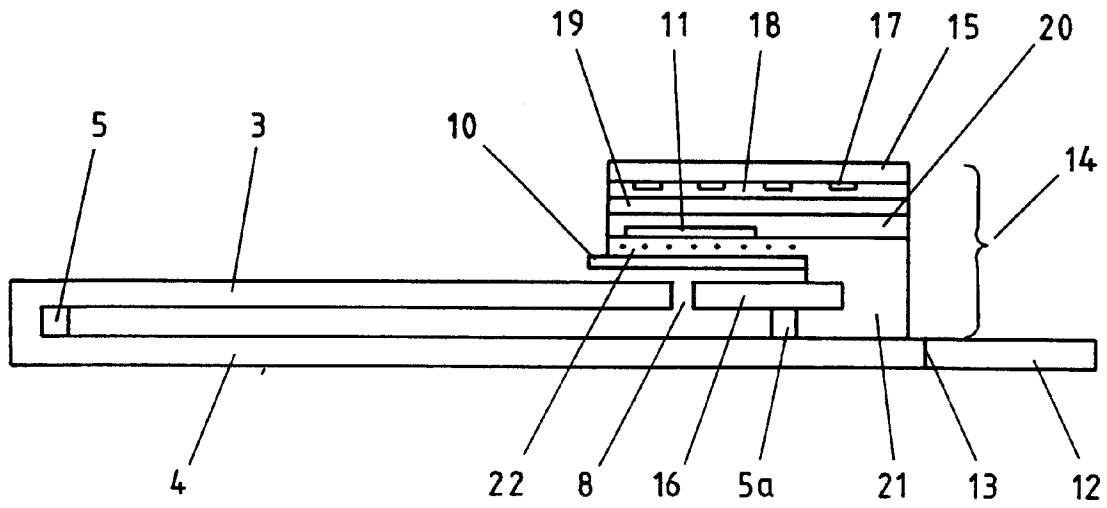


FIG. 5

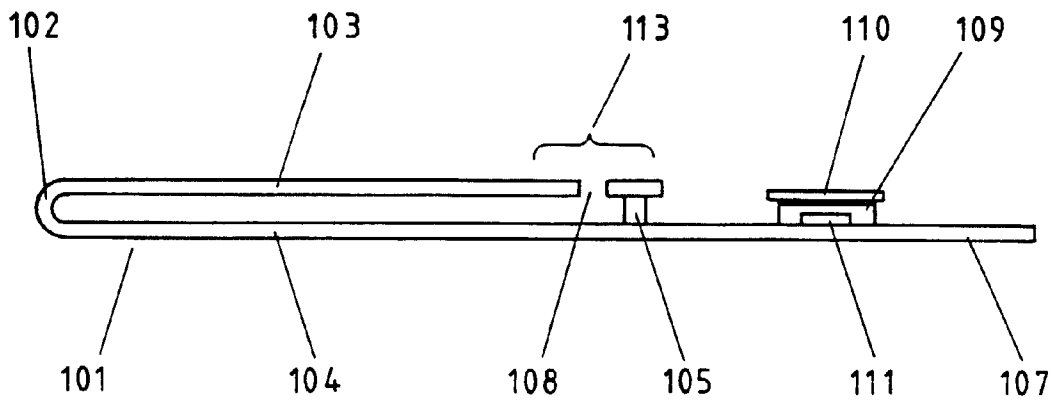


FIG. 6