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(54) **Seat belt safety device**

Sicherheitsvorrichtung für Sicherheitsgurt

Dispositif de sécurité pour une ceinture de sécurité

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(56) References cited:
WO-A-84/01275 **GB-A- 2 236 794**
GB-A- 2 307 711 **US-A- 3 484 908**

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EP 0 927 525 B1

Description

[0001] The present invention relates to a safety device for a vehicle seat belt buckle.

[0002] Many child seats nowadays involve the use of the seat belts with which the vehicle is fitted ordinarily for use by adults. However, often a child learns how to release the buckle of the seat belt by depressing the release button of the buckle, thus unfastening the belt: this can lead to dangerous consequences, either because the child is no longer restrained by the seat belt and may be thrown about within the vehicle, or because the driver will be distracted.

[0003] A number of devices have been proposed for fitting to the seat belt buckle and preventing the child gaining access to the release button of the buckle. However, these devices have suffered various drawbacks, in particular making it complicated for an adult to engage the buckle and/or difficult for the adult to release the buckle especially in the case of an emergency.

[0004] WO-A-84/01275 discloses a safety device for the buckle of a vehicle seat belt, the buckle comprising a tongue carried by the seat belt and a body part having a socket for receiving the tongue and also having a release button which is depressible for releasing the tongue therefrom: the safety device comprises a housing for enclosing the body part of the buckle and an internal lever which can be actuated for depressing the release button. To overcome the above-mentioned drawbacks, in accordance with the present invention, there is provided a safety device for the buckle of a vehicle seat belt, the buckle comprising a tongue carried by the seat belt and a body part having a socket formed therein to receive the tongue, the body part also having a release button which is depressible for releasing the tongue therefrom, the safety device comprising an attachment portion for attachment of the device, and a cover element for overlying the release button of the buckle, characterised in that the attachment portion of the device serves to attach the device to the seat belt adjacent the tongue of the buckle, in a manner permitting the device to be slid along the seat belt but against frictional resistance, in that the cover element overlies the release button of the buckle only when the tongue is engaged within said socket of the body part, and in that the cover element is pivotable outwardly and away from said body part to gain access to said release button.

[0005] In use of this device, it is an easy matter for an adult to pivot the cover element of the device outwardly to gain access to the release button, then depress this button to release the buckle. However, it is difficult for a small child to reach down sufficiently far to grasp the cover element and pivot it outwardly, and additionally depress the release button: this is particularly the case as the cover element must be pivoted outwardly from its upper end and, even once the cover element is pivoted outwardly, it still lies between the child and the release

button. The device is therefore child-proof: the device also provides effective protection where the seat is used by a handicapped person.

[0006] Preferably the attachment portion is formed with at least two transverse slots arranged for the seat belt to pass through successively, such that sliding movement of the device along the belt is frictionally resisted: at least one edge of at least one of these slots may be serrated or otherwise configured to increase the resistance to sliding relative to the belt.

[0007] The safety device may comprise a rigid member, arranged so that as it is pivoted outwardly from the buckle body part, its attachment portion pivots inwardly, correspondingly deflecting the portion of the seat belt to which it is attached.

[0008] Alternatively, the cover element may be hinged relative to the attachment portion of the device. In this case, the device may be formed in one-piece from relatively rigid or inflexible sheet material, which is provided with at least one transverse fold to permit the cover element to hinge relative to the attachment portion.

[0009] The safety device may be arranged for use with a buckle which has the release button positioned in the top end of the body part of the buckle. In this case, and in one preferred embodiment, the attachment portion of the safety device lies in a first plane, for engagement with the seat belt, and the cover element comprises a flap which lies in a second plane, spaced from the plane of the attachment portion, and connected to the attachment portion by a transition portion: in use, the flap lies against or alongside the outer side of the buckle body part and the transition portion lies over the top end of the release button. In another preferred embodiment, the cover element may comprise a curved portion joined to the attachment portion and curved outwardly and downwardly and finally inwardly.

[0010] In the above-described embodiments, the cover element may be formed with an aperture to enable an able adult to insert his or her finger(s) to depress the buckle release button: this may allow the buckle to be released more quickly, to free the child or handicapped person who is restrained by the seat belt, than either pivoting the cover element outwardly or sliding it along the seat belt. The aperture may be arranged to prevent or substantially inhibit access to the buckle release button on the part of the child or handicapped person who is restrained by the seat belt: preferably an upper part of the cover element is closed, to close across the top of the body part of the buckle, and the aperture in the cover element is formed in a part of the cover element which extends down the side of the buckle body part.

[0011] Preferably, in each embodiment, at least the cover element of the safety device is of a transparent or semi-transparent material, so that the buckle remains visible.

[0012] Embodiments of the present invention will now be described by way of examples only and with reference to the accompanying drawings, in which:

FIGURE 1 is a side view of a first embodiment of safety device in accordance with the present invention, shown fitted to a seat belt;

FIGURE 2 is a front view of the device of Figure 1; FIGURE 3 is an isometric view of a second embodiment of safety device in accordance with the present invention;

FIGURE 4 is a similar view of a modified form of the safety device of Figure 3; and

FIGURE 5 is an isometric view of a fourth embodiment of safety device in accordance with the present invention.

[0013] Referring to Figures 1 and 2 of the drawings, there is shown a safety device 20 for a vehicle seat belt buckle 10, 14. The buckle, in the example shown, comprises a body part 10 mounted to the upper end of a stalk 12, and a tongue 14 carried by the belt 16 and inserted downwardly into a socket formed in the top of the body part 10. The body part 10 houses a mechanism for locking the tongue 14 within its socket, and is furthermore provided with a button 18 which is depressible for releasing the tongue 14, thereby releasing the buckle.

[0014] The safety device 20 shown in Figures 1 and 2 is attached to the seat belt 16 just above the tongue 14 and includes a cover portion 24 for overlying the release button 18 when the tongue 14 is engaged with the body part 10 such that the belt 16 is in its normal, lightly-tensioned condition.

[0015] In particular, the safety device 20 comprises a one-piece member of plastics material, having a flat, generally rectangular portion 22 by which the device is attached to the seat belt 16, and a flat, generally rectangular portion 24 which lies in a plane substantially parallel to but spaced from the attachment portion 22: the two portions 22, 24 are joined to each other by a curved transition 23. The cover portion 24 extends away from the attachment portion 22 in the longitudinal direction of the device. The attachment portion 22 is formed with two transverse slots 26 and with a slit 27 which extends longitudinally of the device from the free end edge of portion 22 to the inner of the two slots 26.

[0016] It will be appreciated that the slit 27 allows for insertion of the seat belt 16, in order to engage the belt to the device 20 such that (as shown) the belt 16 passes forwardly through the inner slot 26, then rearwardly through the outer slot 26. In this manner, the device 20 is frictionally engaged with the belt 16: although the device can be slid along the belt, it is relatively resistant to this movement. This resistance to sliding movement may be increased by providing serrations or otherwise configuring at least one edge of at least one of the slots 26.

[0017] It will also be appreciated that because, in use, the device 20 overlies the release button 18 of the seat belt buckle, the release button is not directly accessible for depression to release the buckle. However, the release button may be readily accessed by pivoting the

cover portion 24 of the device away from the body part 10 of the buckle: the device 20 is a rigid member and this outward pivoting movement of the cover portion 24 produces corresponding inward pivoting movement of the attachment portion 22 and inward deflection of the belt 16, all shown by the arrows A in Figure 1. Whilst it is easy for an able adult to pivot the device and gain access to the release button in the manner just described, it is very difficult for a child or a handicapped person, who is restrained by the seat belt 16, to reach sufficiently far down to grip the device 20 and pivot it outwardly and upwardly, and additionally to press the release button, because all the while the device 20 still overlies and inhibits easy access, on the part of the child or person restrained by the seat belt, to the release button.

[0018] If desired, the device 20 may be slid along the belt 16 away from the buckle tongue 14, against the above-mentioned resistance to movement, before inserting the tongue into its socket in the body part 10 of the buckle, after which the device 20 may be slid along the belt in the opposite direction, to the position shown in Figure 1 in which it overlies the release button of the buckle. Similarly, when it is desired to release the buckle, the device 20 may be slid upwardly along the belt in order to uncover the release button: however, a child or handicapped person would find it difficult to slide the device along the belt.

[0019] Figure 3 shows a safety device which is formed from a single sheet of relatively rigid or inflexible plastics material which has two transverse fold lines to provide an attachment portion 32, a cover portion 34 and an intermediate or transition portion 33. The attachment portion 32 is formed with two transverse slots 36 and a slit 37 corresponding to the slots 26 and slit 27 of the device 20 of Figures 1 and 2, enabling the device to be attached to a seat belt in the same manner. The device of Figure 3 is used similarly: however, to gain access to the buckle release button, it is only necessary to hinge the cover portion 34 outwardly, relying on the flexibility of either or both of the transverse fold lines of the device. This enables an adult to access the release button quickly and easily, but it still presents difficulties for a child or handicapped person.

[0020] Figure 4 shows a device which is the same as the device of Figure 3, except that the attachment portion 42 is formed with two transverse slots 46 extending from the opposite side edges of the device. The seat belt is, in use, engaged with the device in similar manner, i.e. by passing upwardly through one slot 46 and then downwardly through the second slot. It will be appreciated that other arrangements of slots, different from those shown in Figures 3 and 4, may be provided for attachment of the device to the seat belt.

[0021] Figure 5 shows a safety device which comprises a one-piece member of plastics material, having a flat, generally rectangular portion 62 by which the device is, in use, attached to the seat belt: in particular, the por-

tion 62 is formed with an arrangement of transverse slots 66 and a longitudinal slit 67, similar to the device of Figures 1 and 2; it may instead be formed with an arrangement of slots similar to the device of Figure 4. The device further comprises a cover portion 64 which extends from the lower edge of the attachment portion 62, the cover portion 64 curving outwardly and downwardly and finally inwardly. The cover portion 64 is formed with a window 65 the upper edge of which is spaced from the lower edge of the attachment portion 62. It will be appreciated that, in use of the device shown in Figure 5, the cover portion 64 overlies the top end and outer side of the buckle body, including its release button. The device thus prevents a child or handicapped person, who is restrained by the seat belt, from gaining direct access to the buckle release button. However, just in the same manner as for the device of Figures 1 and 2, an able adult is able to pivot the device outwardly and upwardly, about its point of attachment to the seat belt, in order to gain access to the buckle release button: alternatively, the able adult may be able to slide the device along the belt. Moreover, the device of Figure 5 offers the opportunity for the above adult, wishing to release the buckle and free the child or handicapped person with minimal delay, to insert his or her fingers through the aperture 65 and depress the buckle release button. It will be appreciated that it is extremely difficult for the child or handicapped person, restrained by the seat belt, to reach downwardly over the top, closed part of the curved cover portion, then pass his fingers inwardly through the aperture 65 and depress the buckle release button.

[0022] In all of the embodiments which have been described, the device is preferably formed of a transparent or semi-transparent material, so that the buckle which underlies the device remains visible.

Claims

1. A safety device for the buckle of a vehicle seat belt (16), the buckle comprising a tongue (14) carried by the seat belt (16) and a body part (10) having a socket formed therein to receive the tongue (14), the body part also having a release button (18) therefrom, the safety device comprising an attachment portion (22) for attachment of the device, and a cover element (23,24) for overlying the release button (18) of the buckle, **characterised in that** the attachment portion (22) of the device serves to attach the device to the seat belt (16) adjacent the tongue part (14) of the buckle, in a manner permitting the device to be slid along the seat belt (16) while being frictionally engaged therewith, **in that** the cover element (23,24) overlies the release button (18) of the buckle only when the tongue is engaged within said socket of the body part (10), and **in that** the cover element (23,24) is pivotable outwardly and away from said body part (10) to gain access to said release button (18).
2. A safety device as claimed in Claim 1, **characterised in that** the attachment portion (22) comprises at least two transverse slots (26), arranged for the seat belt (16) to pass through each slot in succession.
3. A safety device as claimed in Claim 2, **characterised in that** at least one edge of at least one of the transverse slots (26) is serrated or otherwise configured to increase the resistance to sliding relative to the belt (16).
4. A safety device as claimed in any preceding claim, **characterised in that** it comprises a rigid member, arranged so that as it is pivoted outwardly from the buckle body part (10), its attachment portion (22) pivots inwardly, correspondingly deflecting the portion of the seat belt (16) to which it is attached.
5. A safety device as claimed in any one of Claims 1 to 3, **characterised in that** the cover element (23,24) is hinged relative to the attachment portion (22) of the device.
6. A safety device as claimed in Claim 5, **characterised in that** it is formed in one-piece from rigid or inflexible sheet material, which is provided with at least one transverse fold to permit the cover element (23,24) to hinge relative to the attachment portion (22).
7. A safety device as claimed in any preceding claim, **characterised in that** the attachment portion (22) lies in a first plane, for engagement with the seat belt (16), and the cover element (23,24) comprises a flap (24) which lies in a second plane, spaced from the plane of the attachment portion (22), and connected to the attachment portion (22) by a transition portion (23) such that, in use, the flap lies against or alongside the outer side of the buckle body part (10) and the transition portion (23) lies over the top end of the body part (10) of the buckle.
8. A safety device as claimed in any preceding claim, **characterised in that** the cover element comprises a curved portion (64) joined to the attachment portion (62) and curved outwardly and downwardly and finally inwardly.
9. A safety device as claimed in any preceding claim, **characterised in that** the cover element (64) is formed with an aperture (65) into which one or more fingers may be inserted to depress the buckle release button (18).

10. A safety device as claimed in Claim 9, **characterised in that** an upper part of the cover element (64) is closed, to close across the top of the body part (10) of the buckle, and the aperture (65) in the cover element (64) is formed in a part of the cover element (64) which extends down the side of the buckle body part (10).

11. A safety device as claimed in any preceding claim, **characterised in that** at least the cover element (23,24) of the safety device is of a transparent or semi-transparent material.

Patentansprüche

1. Sicherheitseinrichtung für das Schloß eines Fahrzeugsicherheitsgurts (16), welches Schloß eine Zunge (14), die durch den Sicherheitsgurt (16) gehalten wird, und einen Hauptteil (10) aufweist, der eine darin ausgebildete Fassung aufweist, um die Zunge (14) aufzunehmen, wobei der Hauptteil auch einen Löseknopf (18) hat, der niederdrückbar ist, um die Zunge (14) davon zu lösen, wobei die Sicherheitseinrichtung einen Befestigungsteil (22) zum Befestigen der Einrichtung und ein Abdeckelement (23, 24) aufweist, das über dem Löseknopf (18) des Schlosses liegen soll, **dadurch gekennzeichnet, daß** der Befestigungsteil (22) der Einrichtung dazu dient, die Einrichtung am Sicherheitsgurt (16) nahe bei dem Zungenteil (14) des Schlosses auf eine Weise zu befestigen, die es ermöglicht, daß die Einrichtung entlang dem Sicherheitsgurt (16) verschoben werden kann, während sie reibungsmäßig damit in Eingriff ist, daß das Abdeckelement (23, 24) über dem Löseknopf (18) des Schlosses nur liegt, wenn die Zunge innerhalb der Fassung des Hauptteils (10) in Eingriff ist, und daß das Abdeckelement (23, 24) nach außen und weg von dem Hauptteil (10) schwenkbar ist, um Zugang zu dem Löseknopf (18) zu erhalten.

2. Sicherheitseinrichtung nach Anspruch 1, **dadurch gekennzeichnet, daß** der Befestigungsteil (22) wenigstens zwei Querslitze (26) aufweist, die so ausgebildet sind, daß der Sicherheitsgurt (16) durch jeden Schlitz nacheinander hindurchlaufen kann.

3. Sicherheitseinrichtung nach Anspruch 2, **dadurch gekennzeichnet, daß** wenigstens ein Rand von wenigstens einem der Querslitze (26) gezackt ist oder anders ausgebildet ist, um den Widerstand gegenüber Gleiten relativ zum Gurt (16) zu erhöhen.

4. Sicherheitseinrichtung nach einem vorangehenden Anspruch, **dadurch gekennzeichnet, daß** sie ein starres Glied aufweist, das so ausgebildet ist, daß

es nach außen vom Schloßhauptteil (10) schwenkbar ist, wobei sein Befestigungsteil (22) nach innen schwenkt und entsprechend den Teil des Sicherheitsgurts (16) umlenkt, an dem es angebracht ist.

5. Sicherheitseinrichtung nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, daß** das Abdeckelement (23, 24) relativ zum Befestigungsteil (22) der Einrichtung scharnierartig angebracht ist.

6. Sicherheitseinrichtung nach Anspruch 5, **dadurch gekennzeichnet, daß** sie einstückig aus starrem oder unflexiblem Blatt- oder Blechmaterial gebildet ist, das mit wenigstens einer Querfaltung versehen ist, damit das Abdeckelement (23, 24) relativ zum Befestigungsteil (22) scharnierartig verschwenken kann.

7. Sicherheitseinrichtung nach einem vorangehenden Anspruch, **dadurch gekennzeichnet, daß** der Befestigungsteil (22) in einer ersten Ebene für Eingriff mit dem Sicherheitsgurt (16) liegt und das Abdeckelement (23, 24) eine Klappe oder Lasche (24) aufweist, die in einer zweiten Ebene, beabstandet von der Ebene des Befestigungsteils (22) liegt und mit dem Befestigungsteil (22) durch einen Übergangsteil (23) so verbunden ist, daß bei der Benutzung die Klappe oder Lasche gegen die oder entlang der äußeren Seite des Schloßhauptteils (10) anliegt und der Übergangsteil (23) über dem oberen Ende des Hauptteils (10) des Schlosses liegt.

8. Sicherheitseinrichtung nach einem vorangehenden Anspruch, **dadurch gekennzeichnet, daß** das Abdeckelement einen gekrümmten Teil (64) aufweist, der mit dem Befestigungsteil (62) verbunden ist und nach außen und nach unten und schließlich nach innen gekrümmt ist.

9. Sicherheitseinrichtung nach einem vorangehenden Anspruch, **dadurch gekennzeichnet, daß** das Abdeckelement (64) mit einer Öffnung (65) versehen ist, in die eine oder mehrere Finger eingeführt werden können, um den Schloßlöseknopf (18) niederzudrücken.

10. Sicherheitseinrichtung nach Anspruch 9, **dadurch gekennzeichnet, daß** ein oberer Teil des Abdeckelements (64) geschlossen ist, um über die Oberseite des Hauptteils (10) des Schlosses zu schließen, und die Öffnung (65) im Abdeckelement (64) in einem Teil des Abdeckelements (64) ausgebildet ist, der sich an der Seite des Schloßhauptteils (10) nach unten herunter erstreckt.

11. Sicherheitseinrichtung nach einem vorangehenden Anspruch, **dadurch gekennzeichnet, daß** wenigstens das Abdeckelement (23, 24) der Sicherheits-

einrichtung aus durchsichtigem oder halbdurchsichtigem Material besteht.

Revendications

1. Dispositif de sécurité pour la boucle d'une ceinture de siège de véhicule (16), la boucle comprenant une patte (14), portée par la ceinture de siège (16), et une partie de corps (10) comportant un logement qui y est ménagé pour recevoir la patte (14), la partie de corps comportant également un bouton de libération (18) qui peut être enfoncé pour libérer la patte (14) vis-à-vis d'elle, le dispositif de sécurité comprenant une partie de fixation (22) pour la fixation du dispositif, et un élément de recouvrement (23, 24) destiné à se placer par-dessus le bouton de libération (18) de la boucle, **caractérisé en ce que** la partie de fixation (22) du dispositif sert à fixer le dispositif à la ceinture de siège (16) en un emplacement adjacent à la partie de patte (14) de la boucle, d'une manière permettant que l'on puisse faire coulisser le dispositif le long de la ceinture de siège (16), tout en étant en coopération par frottement avec celle-ci, **en ce que** l'élément de recouvrement (23, 24) se place par-dessus le bouton de libération (18) de la boucle uniquement lorsque la patte est engagée dans ledit logement de la partie de corps (10), et **en ce que** l'élément de recouvrement (23, 24) peut faire l'objet d'un pivotement vers l'extérieur et en s'éloignant de ladite partie de corps (10), afin que l'on ait accès audit bouton de libération (18).
2. Dispositif de sécurité tel que revendiqué à la revendication 1, **caractérisé en ce que** la partie de fixation (22) comprend au moins deux fentes transversales (26), disposées pour que la ceinture de siège (16) traverse chaque fente d'une manière successive.
3. Dispositif de sécurité tel que revendiqué à la revendication 2, **caractérisé en ce qu'**au moins un bord d'au moins l'une des fentes transversales (26) est strié ou configuré d'une autre manière afin d'accroître la résistance au coulisement vis-à-vis de la ceinture (16).
4. Dispositif de sécurité tels que revendiqué dans une revendication précédente quelconque, **caractérisé en ce qu'**il comprend un élément rigide, agencé de façon que, lorsqu'on le fait basculer vers l'extérieur à partir de la partie de corps de boucle (10), sa partie de fixation (22) bascule vers l'intérieur, en faisant dévier d'une manière correspondante la partie de la ceinture de siège (16) à laquelle il est fixé.
5. Dispositif de sécurité tel que revendiqué dans l'une quelconque des revendications 1 à 3, **caractérisé**

en ce que l'élément de recouvrement (23, 24) est articulé par rapport à la partie de fixation (22) du dispositif.

6. Dispositif de sécurité tel que revendiqué à la revendication 5, **caractérisé en ce qu'**il est formé en une seule pièce à partir d'une matière de feuille rigide ou non flexible, qui est pourvue d'au moins un pli transversal afin de permettre à l'élément de recouvrement (23, 24) de faire l'objet d'un mouvement d'articulation par rapport à la partie de fixation (22).
7. Dispositif de sécurité tel que revendiqué dans une revendication précédente quelconque, **caractérisé en ce que** la partie de fixation (22) est située dans un premier plan, en vue d'une coopération avec la ceinture de siège (16), et l'élément de recouvrement (23, 24) comprend un volet (24) qui est situé dans un second plan, espacé du plan de la partie de fixation (22), et relié à la partie de fixation (22) par une partie de transition (23) d'une manière telle que, en service, le volet est situé en appui sur le, ou le long du, côté extérieur de la partie de corps de boucle (10) et la partie de transition (23) est située au-dessus de l'extrémité supérieure de la partie de corps (10) de la boucle.
8. Dispositif de sécurité tel que revendiqué dans une revendication précédente quelconque, **caractérisé en ce que** l'élément de recouvrement comprend une partie courbe (64) jointe à la partie de fixation (62) et courbée vers l'extérieur et vers le bas et finalement vers l'intérieur.
9. Dispositif de sécurité tel que revendiqué dans une revendication précédente quelconque, **caractérisé en ce que** l'élément de recouvrement (64), est pourvu d'une ouverture (65) dans laquelle il est possible d'introduire un ou plusieurs doigts en vue d'enfoncer le bouton de libération de boucle (18).
10. Dispositif de sécurité tel que revendiqué à la revendication 9, **caractérisé en ce qu'**une partie supérieure de l'élément de recouvrement (64) est fermée, afin de fermer d'un côté à l'autre le dessus de la partie de corps (10) de la boucle, et l'ouverture (65) de l'élément de recouvrement (64) est ménagée dans une partie de l'élément de recouvrement (64) qui s'étend vers le bas du côté de la partie de corps de boucle (10).
11. Dispositif de sécurité tel que revendiqué dans une revendication précédente quelconque, **caractérisé en ce qu'**au moins l'élément de recouvrement (23, 24) du dispositif de sécurité est en une matière transparente ou semi-transparente.

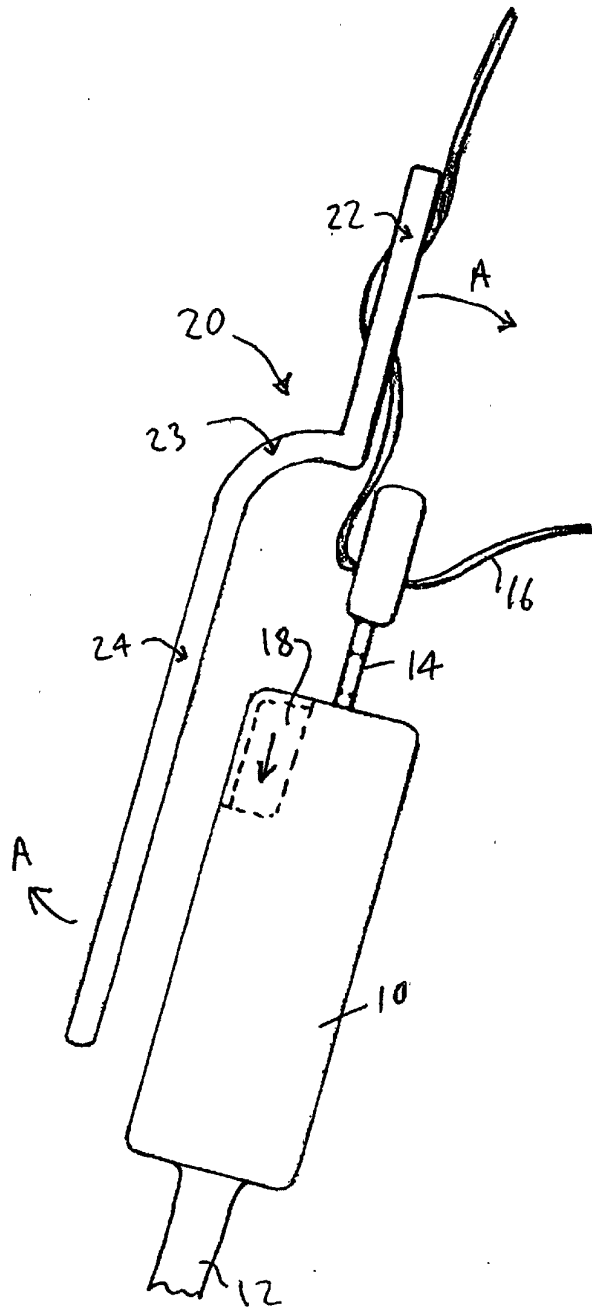


Figure 1

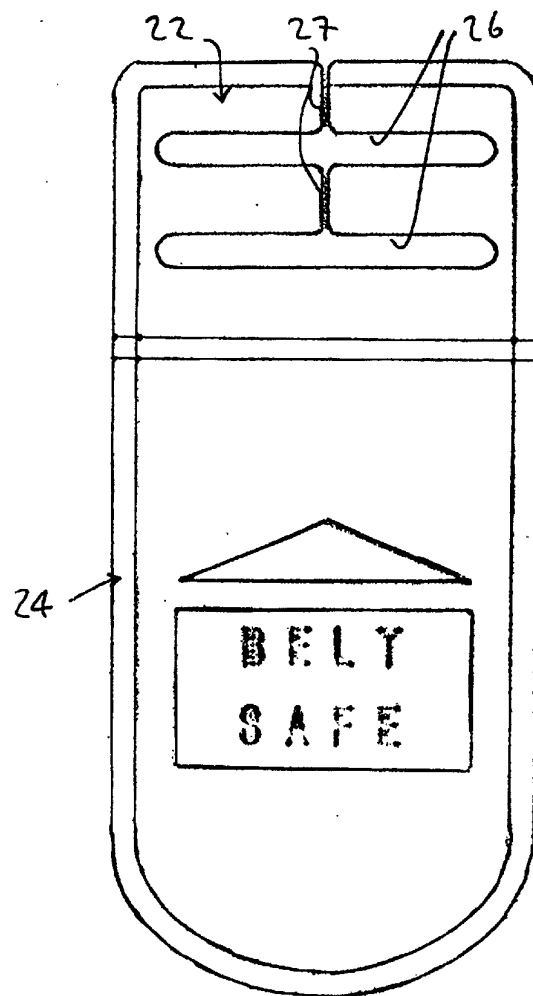


Figure 2

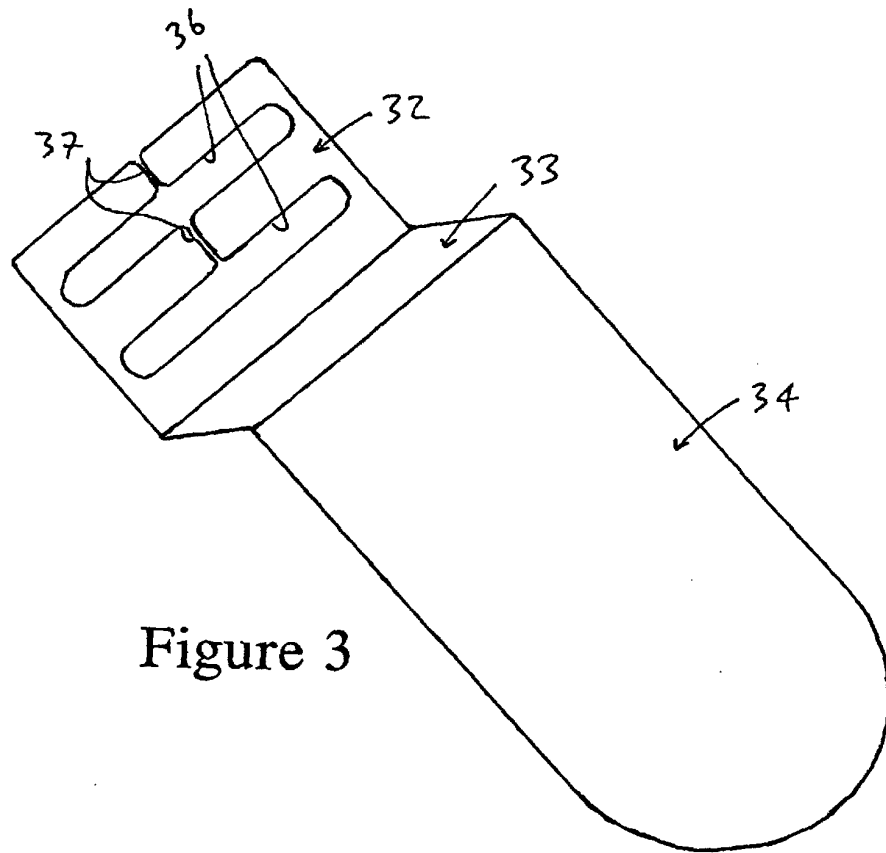


Figure 3

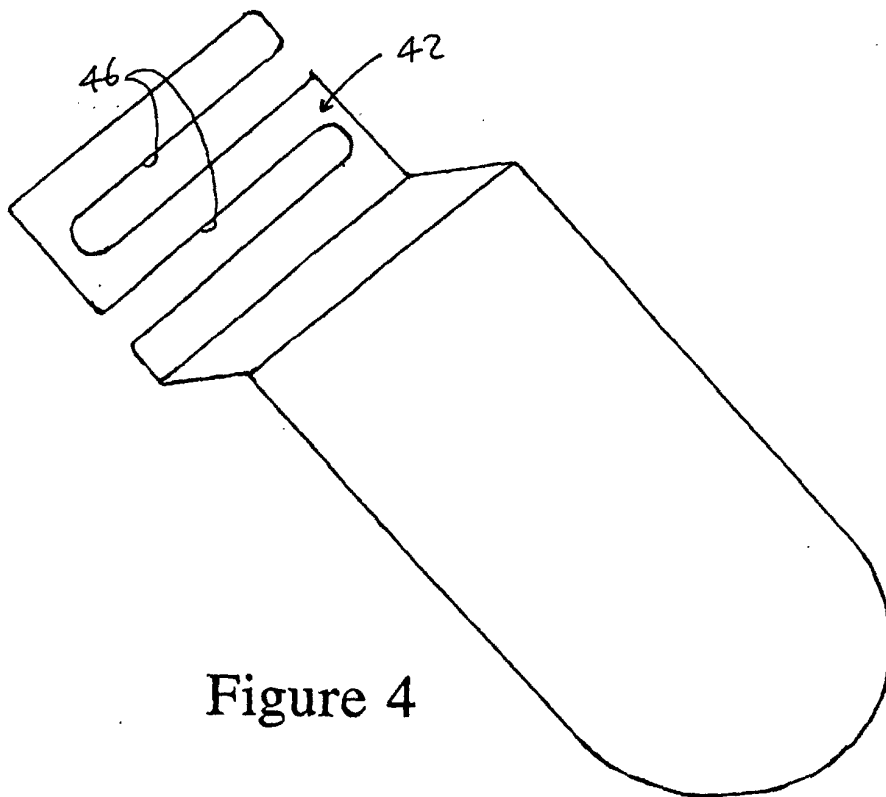


Figure 4

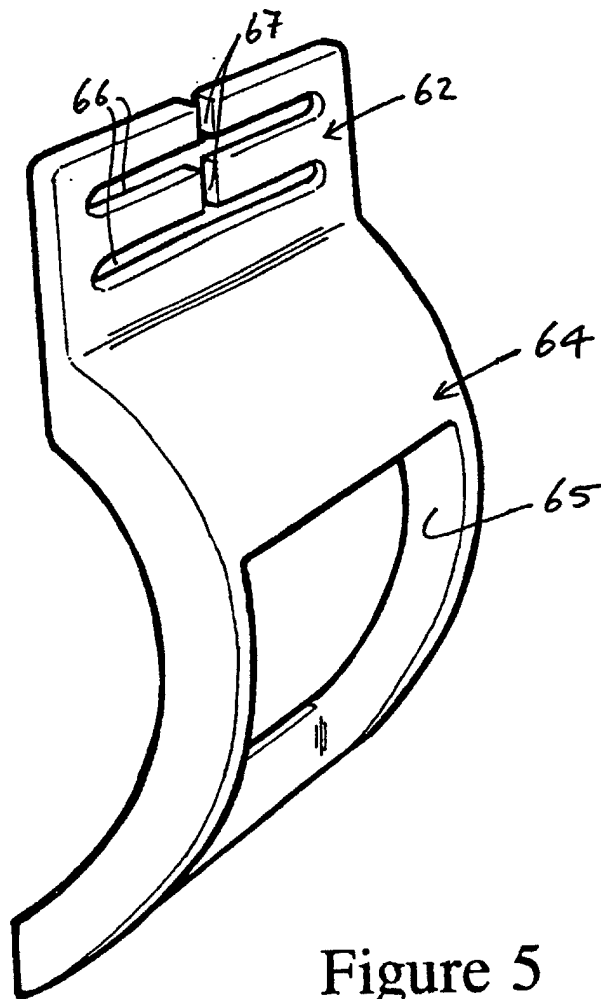


Figure 5