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(54) **A CLOSED SPECTACLES CASE**

BRILLENBEHÄLTNIS

ETUI A LUNETTES FERME

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Description

[0001] The present invention relates to a closed spectacle case as defined in the introductory part of the appended claim 1.

[0002] A spectacle case of this type is used for holding a folded pair of spectacles to protect said spectacles against mechanical damage and any dust or the like when not in use. Depending on the relevant requirements made to the spectacle cases in use, they may be designed to provide different degrees of mechanical protection and to exhibit varying degrees of dimensional stability.

[0003] The present invention relates to spectacle cases which possess the minimum dimensional stability required to establish and maintain closure between the cover element and the bottom element. However, this does not preclude such spectacle cases from still possessing a considerable degree of flexibility, a property which may be useful for some applications and which is acceptable in particular in connection with the holding of spectacles which are elastic and consequently tolerate a certain degree of deformation.

[0004] It is considered known to devise a spectacle case having a bottom element, a cover element, a hinge and a locking means designed to secure the cover element to the bottom element in the closed position of the case. The cover element and the bottom element of such spectacle cases are usually composed of comparatively rigid components connected by means of the hinge element which, in state-of-the-art spectacle cases, are provided with pivot pin systems or film hinges. Typically the locking means comprises a spring-loaded latch.

[0005] The invention provides a spectacle case of the type described above which is characterized by the features described in the characterizing part of claim 1.

[0006] The hinge function being integral with the cover, the invention provides a particularly simple construction since it eliminates the need for a separate hinge mechanism. Moreover, an elegant design is obtained as well as a convenient opening function which does not involve the risk of the spectacles unintentionally falling out during opening.

[0007] According to the invention, the cover element comprises a first substantially rectilinear reinforcement at the zone where it meets the bottom element, a second substantially rectilinear reinforcement opposite the first one and substantially parallel with the first one as well as an elongated sheet of a resilient material extending between the two reinforcements. By providing the cover element with two rectilinear reinforcements in this manner the flexing course of the cover element during opening and closing will be controlled as the cover will perform a uniaxial curving, i.e. it will follow surfaces whose generatrix are parallel with the rectilinear reinforcements. This movement pattern is maintained in all conditions, including point loading, e.g. when the case is

closed by fingers or if the locking means is provided with spot securing.

[0008] According to a preferred embodiment the first reinforcement may be realised in the form of a bend which may be angular or rounded. The reinforcement in this embodiment does not require additional material, use being made of the cover material proper since, due to its geometry, bending generates a rectilinear reinforcement. However, this does not preclude alternative realisations of the first reinforcement, e.g. by means of a corrugation in the cover surface or by securing the cover to a reinforcement portion of the bottom element. Parallel use of combinations of these reinforcement methods is also an option.

[0009] Similarly, the second reinforcement of the preferred embodiment is realised as a bend so as to exploit the cover material whereby the need for further material is eliminated. The bend may be angular or rounded. Of course, the second reinforcement may also be supplemented with or realised in the form of a corrugation in the cover material or it may have a fitted reinforcement element.

[0010] According to a preferred embodiment, the bend which constitutes at least a portion of the second reinforcement, extends so far that it may engage with the corresponding end of the bottom element and secure the cover element in a releasable manner. This embodiment utilizes the flexing properties of the resilient element which is integral with the cover element for the locking means so as to obtain a particularly simple solution. This embodiment of the locking means presents a particular advantage in tolerating a substantial degree of twisting and bending of the case, the mutually engaging portions of the cover element and of the bottom element being able to slide mutually along a direction parallel to the generatrices of the bends without losing the locking engagement.

[0011] Other embodiments may be provided with a separate locking means at the outermost portion of the cover and in these cases, the cover need not have a bent hooking edge.

[0012] According to a preferred embodiment the bottom element comprises two lateral edges which extend from the area in which the cover element meets the bottom element and to the area which is immediately below the second rectilinear reinforcement in the closed position of the cover, the cover according to this embodiment being so designed that, in its closed position, it abuts on the two lateral edges with spring loading substantially continuously along the entire periphery of the elements. Such continuous, flexible abutment ensures that no slits occur in the case in its closed state whereby complete closure is ensured.

[0013] According to a preferred embodiment the case is composed of two lateral elements and an elongated sheet of thin flexible material having at its one end a section bent into the form of a cylinder sector to constitute the end surface opposite the connecting portion, a

planar or slightly curved section which forms the bottom, a section bent into cylinder sector form to constitute the end surface and the first reinforcement at the connecting area, a planar or slightly curved section which forms the cover plane, and a section at the opposite end of the elongated sheet which is bent into cylinder sector form to constitute the locking means and the second reinforcement, the two lateral elements being permanently joined with those portions of the elongated sheet which form the bottom and the two end surfaces, respectively, and being provided with edges which form abutment surfaces to support the cover portion in the closed position. This embodiment allows the case to be assembled from a total of three components, viz. two identical lateral elements and an elongated sheet of a thin, resilient material.

[0014] The lateral elements may be connected to the elongated sheet material by glueing, welding or structural engagement, and they serve to brace the corresponding portions of the elongated sheet material so as to permit that those portions of the case which are, during use, perceived as rigid are in fact partially constituted of exactly the same resilient elongated sheet material as the portion, viz. the cover, which is perceived as completely flexible. Hereby a convenient solution and an elegant appearance of the case are obtained.

[0015] The invention will now be explained in further detail with reference to the exemplary embodiment illustrated in the drawings, wherein

Figure 1 is a perspective view of a spectacle case according to the invention in its closed state,

Figure 2 illustrates the case shown in Figure 1 in its open state, and

Figure 3 is a side view of the case shown in Figure 1 in its closed state.

[0016] All figures are schematical and not necessarily to scale and they illustrate only elements necessary to understand the invention whereas other elements have been omitted for the sake of clarity. Identical reference numerals are used in all figures to designate identical or corresponding elements.

[0017] The case unit shown in the figures, reference being made in particular to Figure 2, is designated by the reference numeral 1, and it comprises a bottom 2 and a cover 3. Essentially, the bottom 2 forms an upwardly open box delimited by a bottom plane 8, two lateral elements 6, an end plane at the hinge area 4 and an end plane opposite the hinge area 5. The opening of this box-like construction is substantially sealingly closed by means of the cover 3, the closed position of which being illustrated in Figures 1 and 3.

[0018] Although the term "hinge area" is used herein, it is to be understood that the case according to the in-

vention does not comprise an actual hinge. The portion bent during the closing operation is not strictly delimited but comprises the major part of the cover 3 which is bent to varying degrees, the most acute bending being effected close to the hinge area 4 while the bending of the remainder of the cover decreases in pace with the distance from the hinge area.

[0019] According to a preferred embodiment, the two identical lateral elements may comprise oval plates cut from plastics or the like material to the shape illustrated in Figure 3. The remainder of the case may be made of essentially one single elongated sheet of a resilient material which is bent to form an envelope element 11 by bending of a section near the one end of the elongated sheet about an appr. 180° cylinder sector to form the end surface opposite the hinge area 5, a bordering section being slightly curved to form the bottom plane 8, a section is bent appr. 180° to form the end surface at the hinge area 4, a section being curved upwards to form the cover surface 10 which arches upwards when not restrained (cf. fig. 2) and the last section being bent appr. along 135° of a cylinder sector to form the bent hooking edge 9 of the cover, i.e. a bend which serves as an engagement hook and secures the cover by engagement with the end planes of the bottom opposite the hinge area 5.

[0020] The arched shape of the cover when unrestrained implies that essentially any cross section of the cover from the end surface at the hinge area to the hooking edge will be subjected to a bending moment when the cover is closed. These bending moments cause the cover to be pressed against the edges of the lateral elements. The arched shape of the cover is preferably matched to ensure a generally even contact pressure along the edges of the lateral elements. The lateral elements of the preferred embodiment are connected by glueing to those areas of the enclosure element which constitute the end surface opposite the hinge area 5, the bottom 8 and the end surface at the hinge area 4. The lateral elements brace the adhered portions of the enclosure element so as to form a substantially rigid box which constitutes the bottom element 2 of the case.

[0021] In other embodiments the bends may be polygonal or rectangular since the rectilinear reinforcement according to the invention may be realised by any type of bend that has rectilinear generatrices. As mentioned, the rectilinear braces may also be realised in the form of corrugations or by fitted reinforcement elements whereby the envelope element is allowed to have other designs.

[0022] The insides of the case are conveniently provided with a padding 7 or alternatively a moulded insert may be inserted to hold and support the spectacles to be contained therein. According to another embodiment the insert may be designed integrally with lateral elements which replace the lateral elements 6 described above. The envelope element may be made of stainless steel having a dimension within the range of 0.2-0.6 mm,

in particular having a thickness of 0.3-0.5 mm. The dimensions of the assembled case are routinely adapted to the dimensions of the spectacles to be contained therein.

[0023] Although having a rectangular shape with the cover connected at the one short side edge, it is to be understood that the cover of the case according to the invention could also be provided in other embodiments, e.g. with cover connection at an elongated side edge and it may optionally have other shapes than rectangular.

[0024] The case assembly distinguishes itself being elegant and in possessing convenient handling properties. The case is easily closed by light squeezing of the cover and bottom in the vicinity of the bent hooking edge of the cover, and it is opened by upward pushing of the outermost rim of the cover's bent hooking edge while the bottom is held by pressure onto the lateral elements.

[0025] Although specific embodiments of the present invention have been described above, it is to be understood that the invention is not limited to comprise such embodiments and that it is defined exclusively by the scope of the appended patent claims.

Claims

1. A closed spectacle case comprising a bottom element, a cover element, a resilient means and a locking means,
 - wherein the the cover element comprises a first rectilinear reinforcement at the point where it meets the bottom element,
 - wherein the resilient means is implemented in the form of an element which gradually and without any abrupt transitions extends into the bottom element and into the cover element and connects the cover element to the bottom element in a pivotable manner so as to allow it to pivot between a closed position in which the resilient means is tensioned and the bottom element and the cover element provide a spatially enclosed, protective space, and an open position in which the resilient means is relieved and it is possible to access a pair of spectacles into or removing them from the case, and
 - wherein the locking means is designed to secure in a releasable manner the cover element against the bottom element in the closed position, at the portion that is most remote from the point where the cover element meets the bottom element, **characterized by**
 - the cover element comprising a second rectilinear reinforcement parallel with the first rectilinear reinforcement, which second reinforcement provides the locking means, and a sheet of a resilient flexible material extending between

the two reinforcements.

2. A spectacle case according to claim 1, **characterized by** the first reinforcement being realised in the form of a bend, preferably shaped substantially as a sector of a cylinder.
3. A spectacle case according to claim 1, **characterized by** the first reinforcement being realised in the form of a corrugation and/or by fastening to a reinforcement portion of the bottom element.
4. A spectacle case according to any of the claims 1,2 or 3, **characterized by** the second reinforcement being realised in the form of a bend, preferably shaped substantially as a sector of a cylinder.
5. A spectacle case according to any of the claims 1, 2 or 3, **characterized by** the second reinforcement being realised in the form of a corrugation and/or a fitted reinforcement element.
6. A spectacle case according to any of the claims 1-5, **characterized by** the bottom element comprising two lateral edges which extend from the area where the cover element meets the bottom element and to the area which is immediately below the second rectilinear reinforcement of the cover in the closed position of the cover, and by the cover being so designed that, in its closed position, it abuts on the two lateral edges with spring loading substantially continuously along the course of the side edges.
7. A spectacle case according to any of the claims 1-6, **characterized by** the case being composed of two lateral elements and of an elongated sheet of thin, resilient material having at the one end a section which is bent into cylinder sector form to constitute the end surface opposite the connecting area, a planar or slightly curved section which forms the bottom, a section which is bent into cylinder sector form to constitute the end surface and a first reinforcement at the connecting area, a planar or slightly curved section which forms the cover surface and a section at the opposite end of the elongated sheet which has been bent into cylinder sector form to constitute the locking means and the second reinforcement, the two side elements being in permanent connection with those portions of the elongated sheet which forms the bottom and the two end surfaces, and being provided with edges which form abutment surfaces to support the cover portion in its closed position.

Patentansprüche

1. Geschlossenes Brillenbehältnis, umfassend ein Bo-

denelement, ein Deckelelement, eine elastische Einrichtung und eine Sperreinrichtung

wobei das Deckelelement eine erste geradlinige Aussteifung an der Stelle aufweist, wo es auf das Bodenelement trifft, wobei die elastische Einrichtung in Form eines Elements ausgeführt ist, welches sich allmählich und ohne irgendwelche abrupten Übergänge in das Bodenelement und in das Deckelelement erstreckt und das Deckelelement mit dem Bodenelement auf eine drehbare Weise verbindet, um zu erlauben, daß es sich zwischen einer geschlossenen Position, in der die elastische Einrichtung gespannt ist und das Bodenelement und das Deckelelement einen räumlich abgeschlossenen Schutzraum schaffen, und einer geöffneten Position dreht, in welcher die elastische Einrichtung entspannt und es möglich ist, eine Brille in das Behältnis zu geben oder daraus zu entfernen, und wobei die Sperreinrichtung konstruiert ist, um das Deckelelement in der geschlossenen Position auf eine loslösbare Weise am Bodenelement zu befestigen, und zwar in dem Abschnitt, der am weitesten von der Stelle entfernt ist, an der das Deckelelement auf das Bodenelement trifft, **dadurch gekennzeichnet, daß** das Deckelelement eine zweite geradlinige Aussteifung parallel zur ersten geradlinigen Aussteifung, wobei die zweite Aussteifung die Sperreinrichtung vorsieht, und ein Blatt aus einem elastischen, biegsamen Material, das sich zwischen den beiden Aussteifungen erstreckt, enthält oder umfaßt.

2. Brillenbehältnis nach Anspruch 1, **dadurch gekennzeichnet, daß** die erste Aussteifung in Form eines Bogens ausgeführt ist, der vorzugsweise im wesentlichen als ein Ausschnitt eines Zylinders geformt ist.
3. Brillenbehältnis nach Anspruch 2, **dadurch gekennzeichnet, daß** die erste Aussteifung in Form einer Wellung und/oder durch Festmachen an einem Aussteifungsabschnitt des Bodenelements ausgeführt ist.
4. Brillenbehältnis nach irgendeinem der Ansprüche 1, 2 oder 3, **dadurch gekennzeichnet, daß** die zweite Aussteifung in Form eines Bogens ausgeführt ist, der vorzugsweise im wesentlichen als ein Ausschnitt eines Zylinders geformt ist.
5. Brillenbehältnis nach irgendeinem der Ansprüche 1, 2 oder 3, **dadurch gekennzeichnet, daß** die zweite Aussteifung in Form einer Wellung und/oder eines eingebauten Aussteifungselements ausge-

führt ist.

6. Brillenbehältnis nach irgendeinem der Ansprüche 1 - 5, **dadurch gekennzeichnet, daß** das Bodenelement zwei seitliche Kanten umfaßt, welche sich von dem Bereich, wo das Deckelelement auf das Bodenelement trifft, zu dem Bereich, welcher unmittelbar unter der zweiten geradlinigen Aussteifung des Deckels in der geschlossenen Position des Deckels liegt, erstrecken und dadurch, daß der Deckel derart konstruiert ist, daß er in seiner geschlossenen Position an die beiden seitlichen Kanten mit Federbelastung im wesentlichen durchgehend entlang des Verlaufs der Seitenkanten anstößt.
7. Brillenbehältnis nach irgendeinem der Ansprüche 1 - 6, **dadurch gekennzeichnet, daß** sich das Behältnis aus zwei seitlichen Elementen und einem länglichen Blatt aus dünnem, elastischem Material zusammensetzt, das an dem einem Ende einen Abschnitt aufweist, welcher in Form eines Zylinderabschnitts gebogen ist, um die Endfläche gegenüber dem Verbindungsbereich darzustellen, einen ebenflächigen oder leicht gekrümmten Abschnitt, welcher den Boden bildet, einen Abschnitt, welcher in Form eines Zylinderabschnitts gebogen ist, um die Endfläche und eine erste Aussteifung im Verbindungsbereich darzustellen, einen ebenflächigen oder leicht gekrümmten Abschnitt, welcher die Deckfläche bildet, und einen Abschnitt am gegenüberliegenden Ende des länglichen Blattes, welches in Form eines Zylinderausschnitts gebogen wurde, um die Sperreinrichtung und die zweite Aussteifung darzustellen, wobei die beiden Seitenelemente mit jenen Abschnitten des länglichen Blattes, welches den Boden und die beiden Endflächen bildet, in dauerhafter Verbindung stehen und mit Kanten versehen sind, welche Stoßflächen zum Tragen des Deckelabschnitts in seiner geschlossenen Position bilden.

Revendications

1. Etui à lunettes fermé comprenant un élément formant fond, un élément formant couvercle, un moyen élastique et un moyen de verrouillage
 - selon lequel l'élément formant couvercle comprend un premier élément de renforcement rectiligne au niveau du point où il rejoint l'élément formant fond,
 - le moyen élastique est mis en oeuvre sous forme d'un élément qui s'étend, progressivement et sans transition brusque, pour constituer l'élément formant fond et l'élément formant couvercle de manière à pouvoir pivoter entre une position fermée dans laquelle le moyen élastique

- est mis sous tension et l'élément formant fond et l'élément formant couvercle constituent un espace de protection, fermé, et une position ouverte dans laquelle le moyen élastique est relâché et il est possible d'accéder à une paire de lunettes pour la placer ou la retirer de l'étui, et
- selon lequel le moyen de verrouillage est conçu pour fixer de manière libérable l'élément formant couvercle contre l'élément formant fond dans la position fermée, au niveau de la partie qui est la plus éloignée de la zone dans laquelle l'élément formant couvercle rejoint l'élément formant fond, **caractérisé par**
 - l'élément formant couvercle comprend un deuxième élément de renforcement rectiligne parallèle au premier élément de renforcement rectiligne, lequel deuxième élément de renforcement constitue le moyen de verrouillage, et une feuille d'un matériau élastique souple s'étendant entre les deux éléments de renforcement.
2. Etui à lunettes selon la revendication 1, **caractérisé en ce que** le premier élément de renforcement présente la forme d'une partie incurvée, de préférence, en étant sensiblement formé comme un secteur de cylindre. 25
 3. Etui à lunettes selon la revendication 1, **caractérisé en ce que** le premier élément de renforcement est réalisé sous la forme d'une ondulation et/ou par fixation à une partie de renforcement de l'élément formant fond. 30
 4. Etui à lunettes selon l'une quelconque des revendications 1, 2 ou 3, **caractérisé en ce que** le deuxième élément de renforcement est réalisé sous forme d'une partie incurvée, de préférence ayant sensiblement la forme d'un secteur de cylindre. 35 40
 5. Etui à lunettes selon l'une quelconque des revendications 1, 2 ou 3, **caractérisé en ce que** le deuxième élément de renforcement est réalisé sous forme d'une ondulation et/ou d'un élément de renforcement rajouté. 45
 6. Etui à lunettes selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** l'élément formant fond comprend deux bord latéraux qui s'étendent depuis la zone dans laquelle l'élément formant couvercle rejoint l'élément formant fond jusqu'à la zone qui est immédiatement en dessous du deuxième élément de renforcement rectiligne du couvercle dans la position fermée de ce dernier, et en ce que le couvercle est conçu de telle sorte que dans sa position fermée il vient en butée contre les deux bords latéraux avec une charge de ressort sensiblement continue le long des bords latéraux. 50 55
 7. Etui à lunettes selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** l'étui se compose de deux éléments latéraux et d'une feuille allongée d'un matériau élastique et mince présentant au niveau d'une extrémité une section qui est incurvée pour former un secteur cylindrique et constituer la surface d'extrémité en regard de la zone de raccordement, une section plane ou légèrement incurvée qui forme le fond, une section qui est incurvée en un secteur cylindrique pour constituer la surface d'extrémité et un premier élément de renforcement au niveau de la zone de raccordement, une section plane ou légèrement incurvée qui forme la surface du couvercle, et une section au niveau de l'extrémité opposée de la feuille allongée qui est recourbée en secteur cylindrique pour constituer le moyen de verrouillage et le deuxième élément de renforcement, les deux éléments latéraux étant assemblés de manière permanente aux parties de la feuille allongée qui forment le fond et les deux surfaces d'extrémité, respectivement, et est pourvu de bords qui forment les surfaces de mise en butée pour supporter la partie de couvercle dans la position fermée.

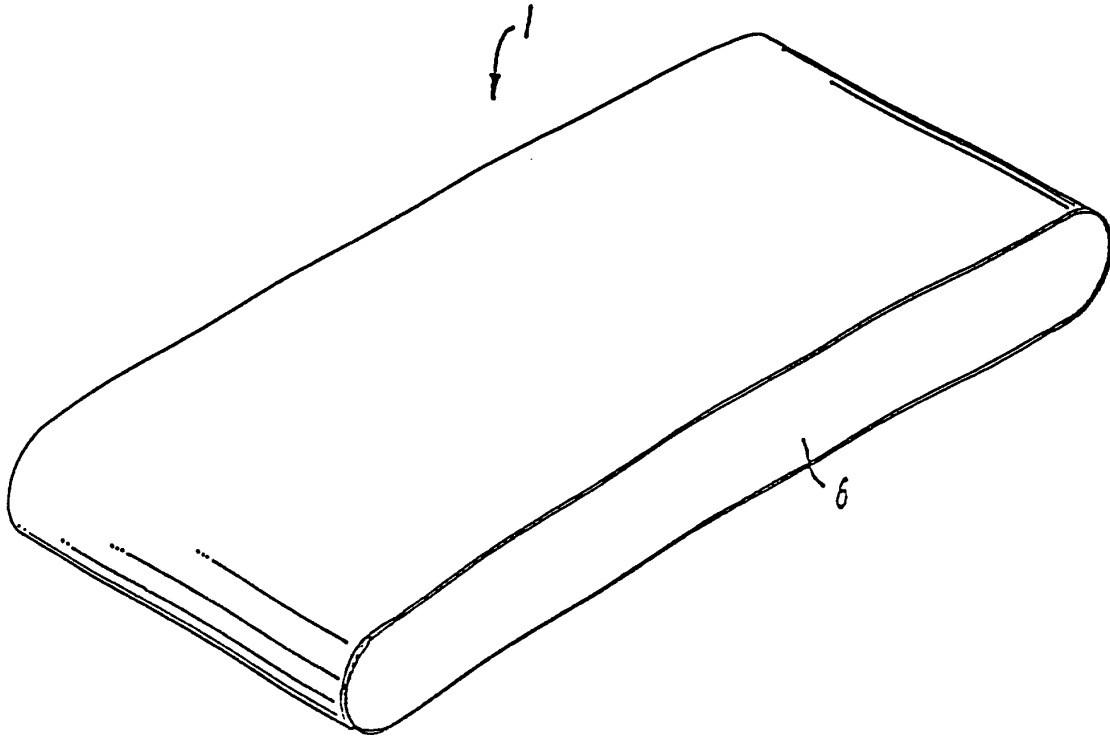


FIG. 1

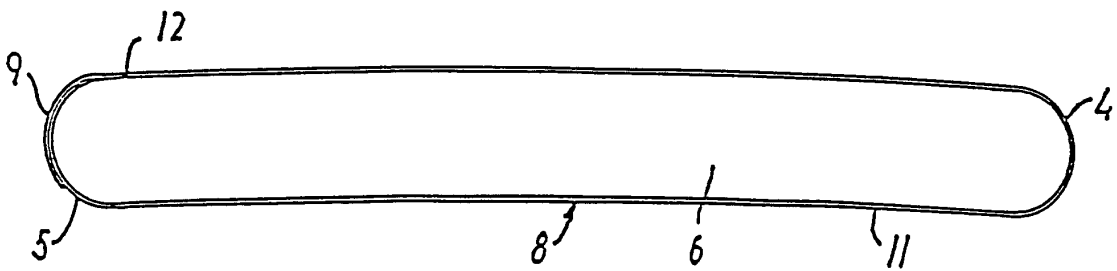


FIG. 3

