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(54) **PROTECTION FOR LAPTOP**

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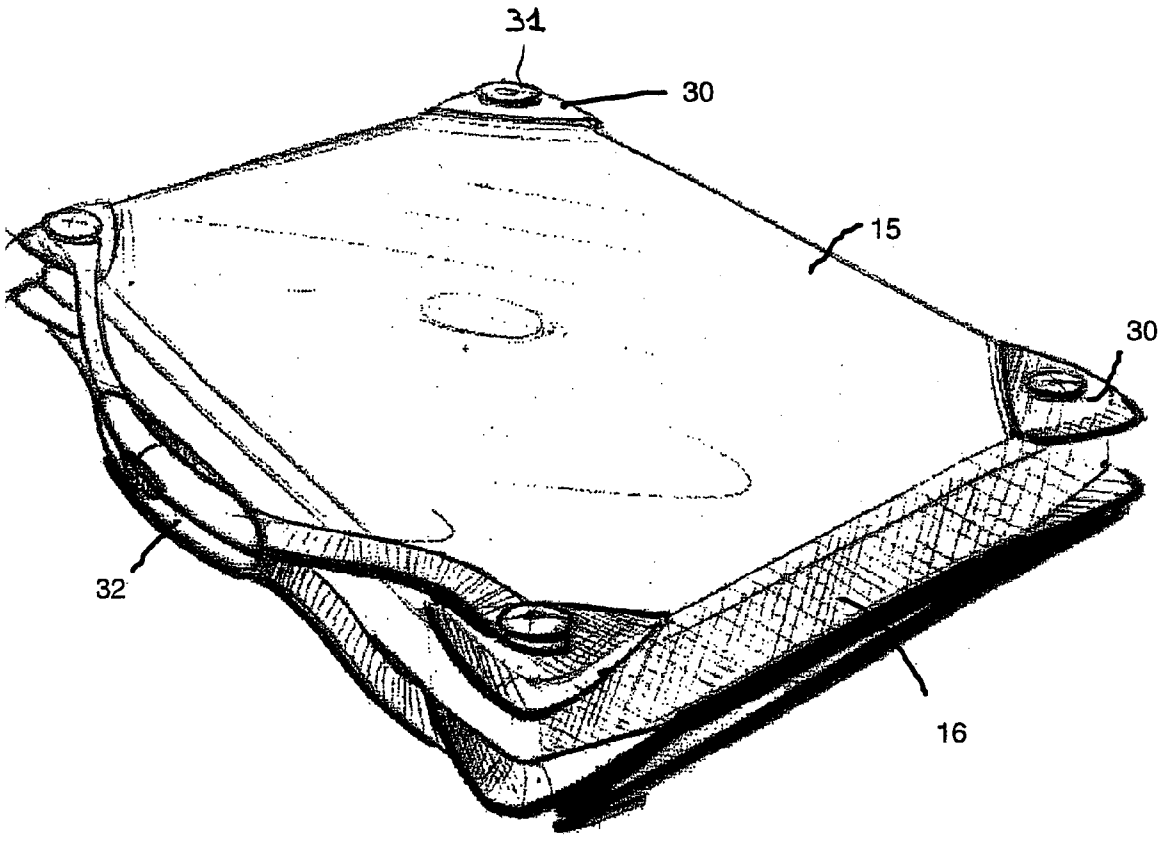
(52) **U.S. Cl.** **206/586**; 206/576

(57) **ABSTRACT**

This protection for a laptop intended to be directly or indirectly separately mounted on the upper surface or screen and lower surface or base of the latter respectively consists of means that are fitted at least in each of the four corners of each of the two main surfaces (upper and lower) of said laptop, each of said means protruding in the two main dimensions of said surfaces relative to the latter, lengthwise and widthwise respectively, so as to constitute a preferred area for receiving shocks or even cushioning them when said laptop is in an operating position or not.



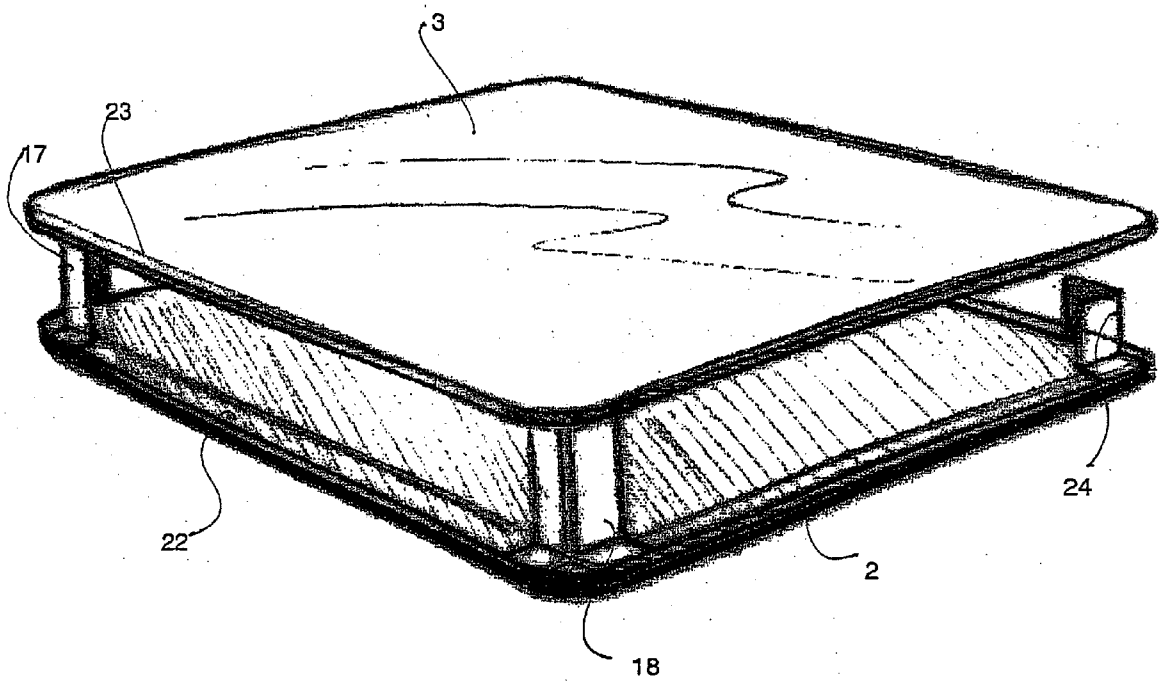


FIGURE 1

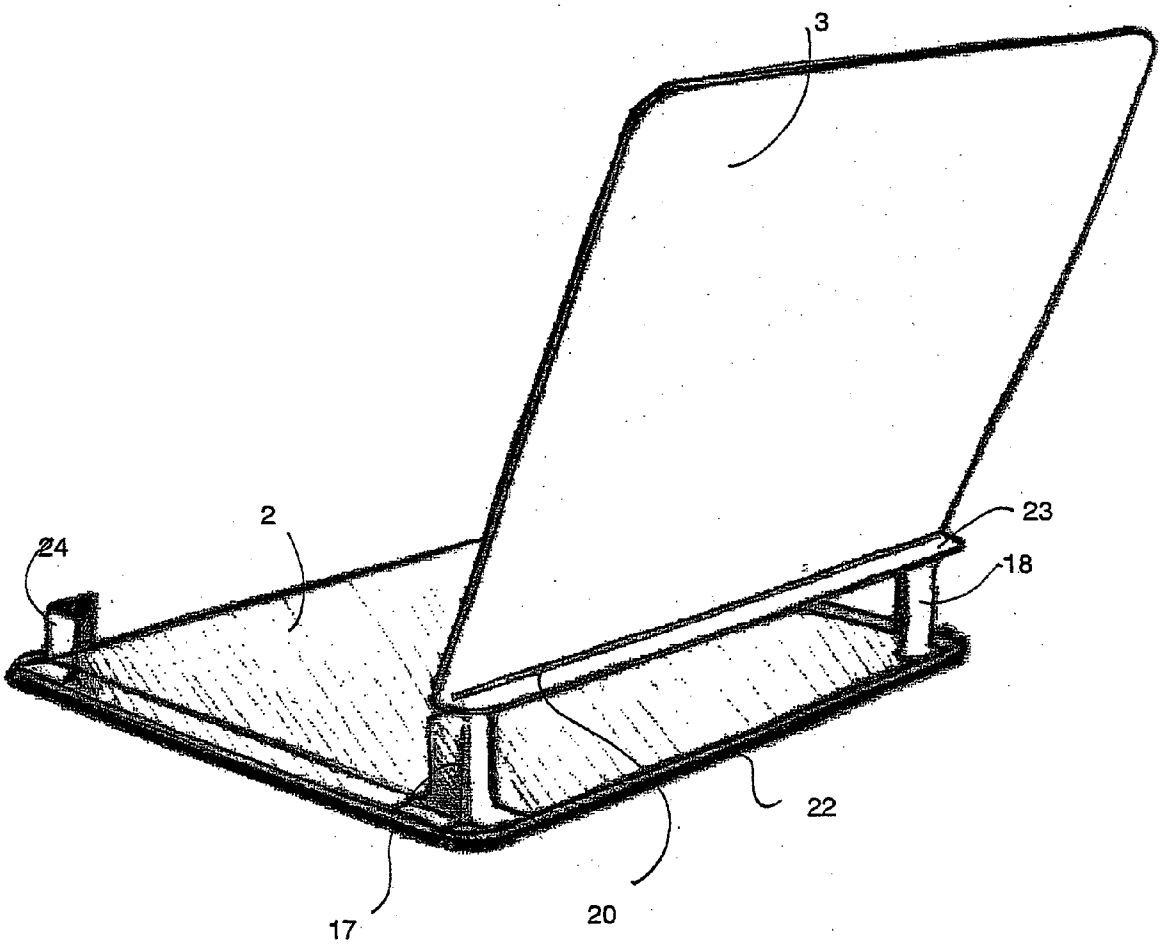


FIGURE 2

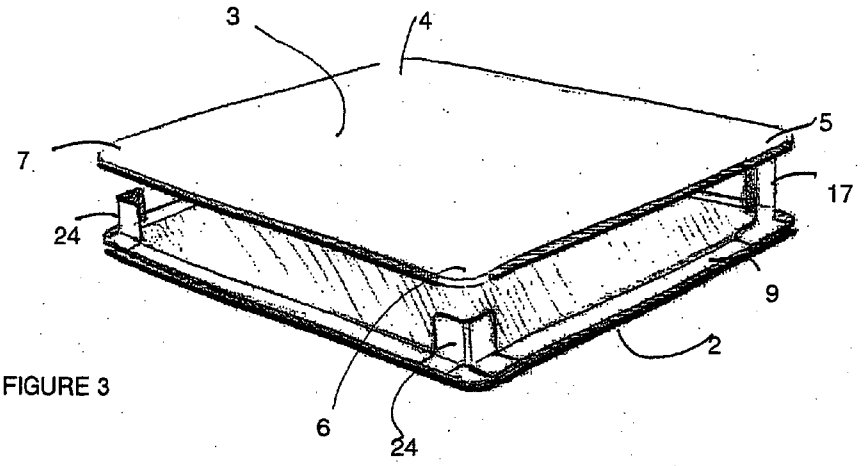


FIGURE 3

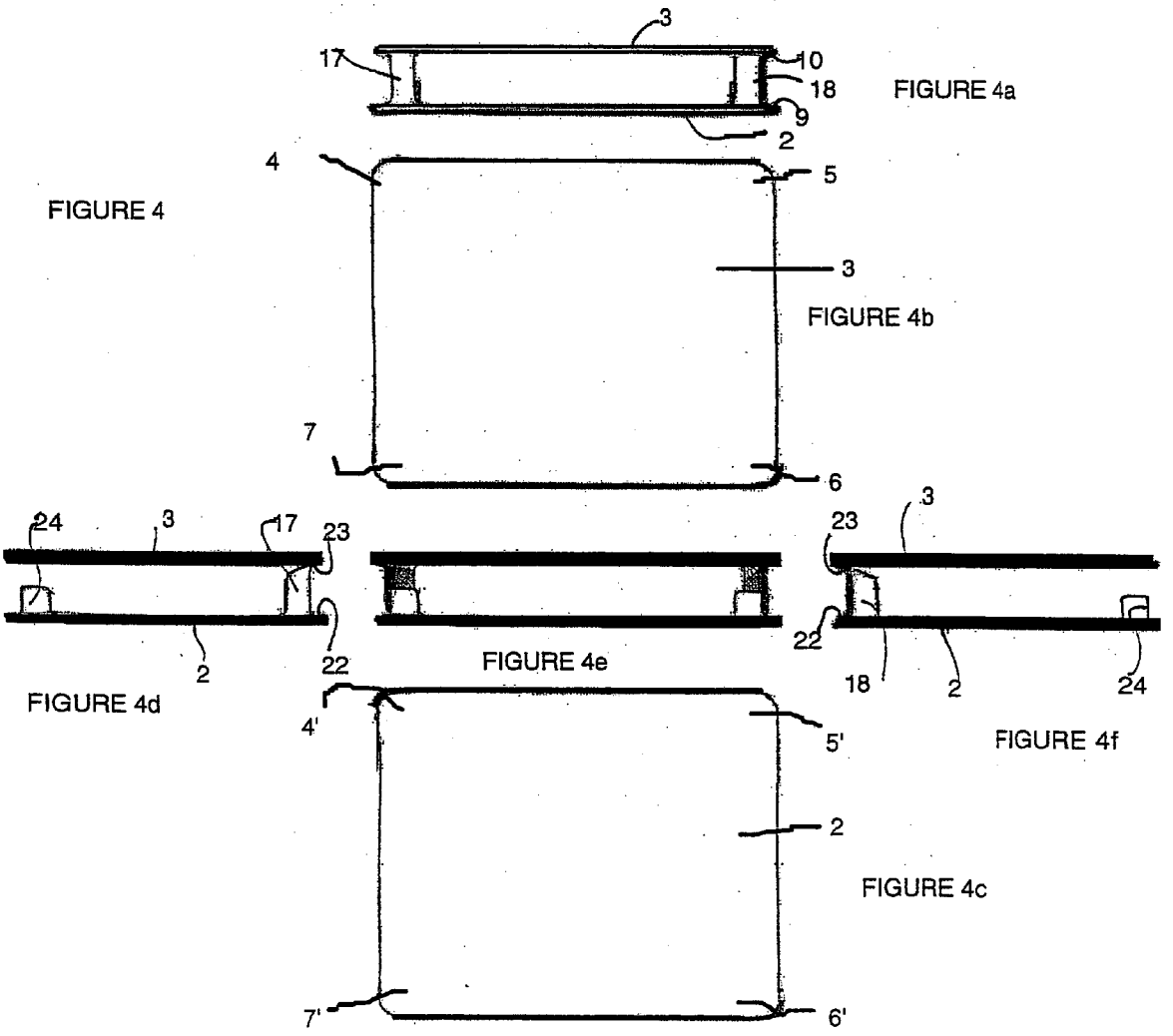


FIGURE 4

FIGURE 4a

FIGURE 4b

FIGURE 4d

FIGURE 4e

FIGURE 4f

FIGURE 4c

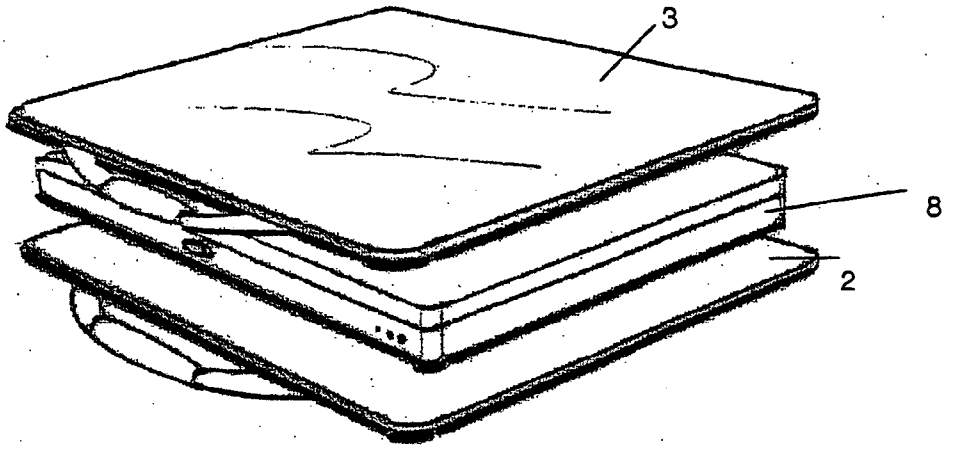


FIGURE 5

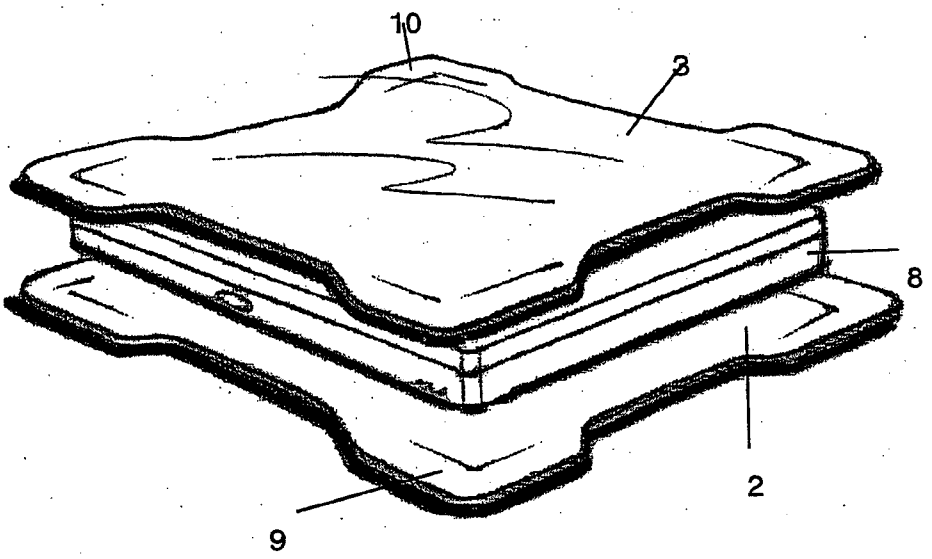


FIGURE 6

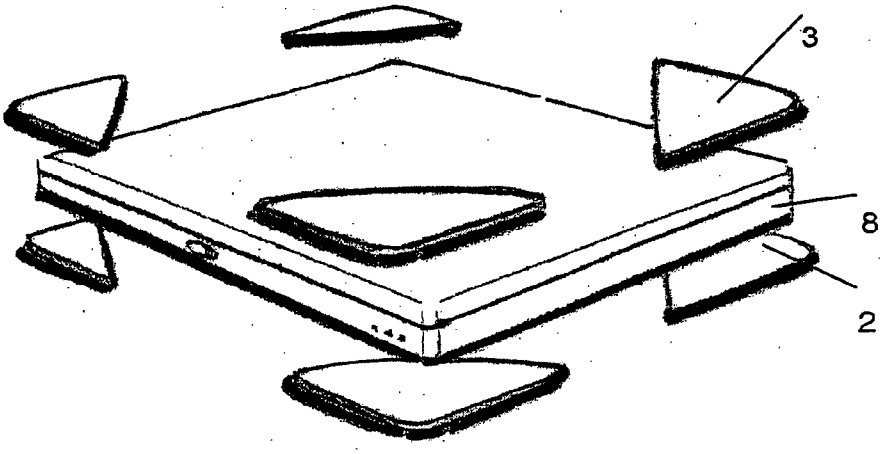


FIGURE 7

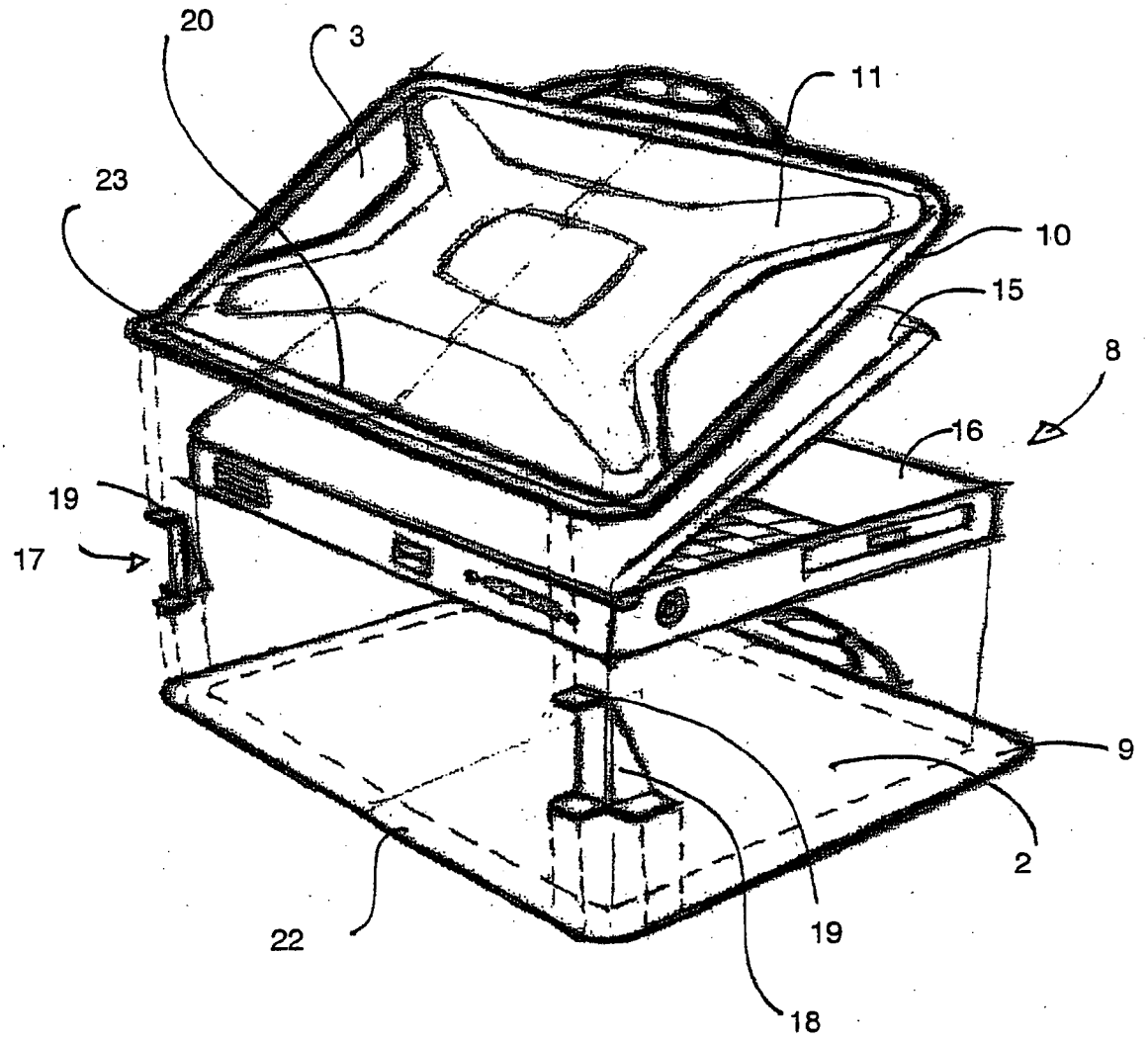


FIGURE 8

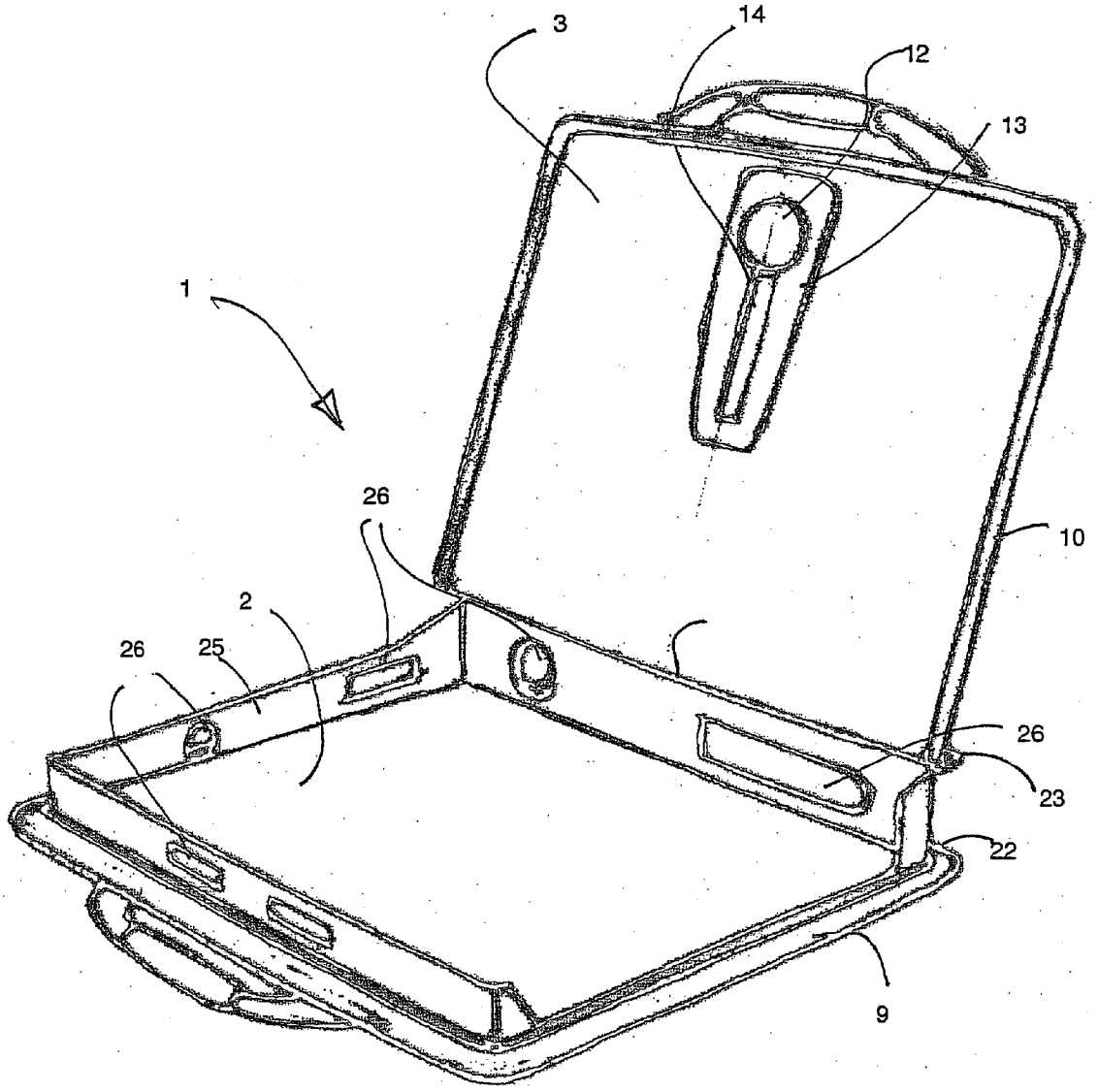


FIGURE 9

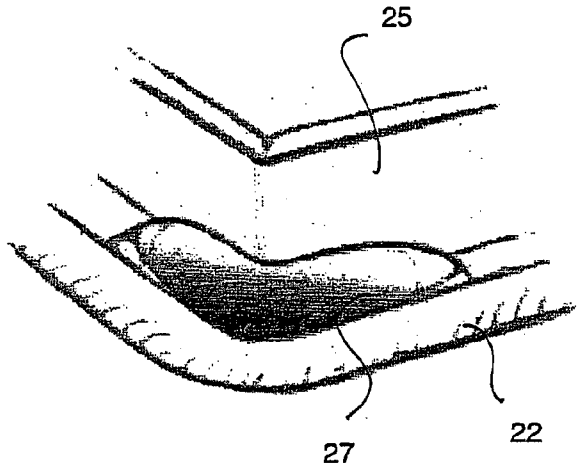


FIGURE 10

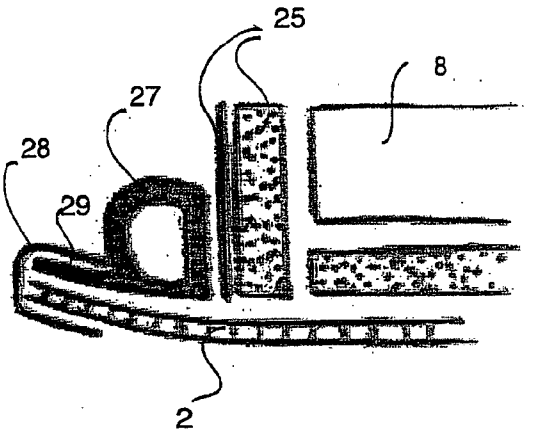


FIGURE 11

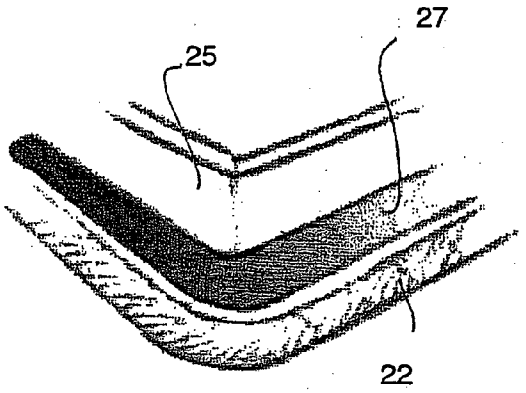


FIGURE 12

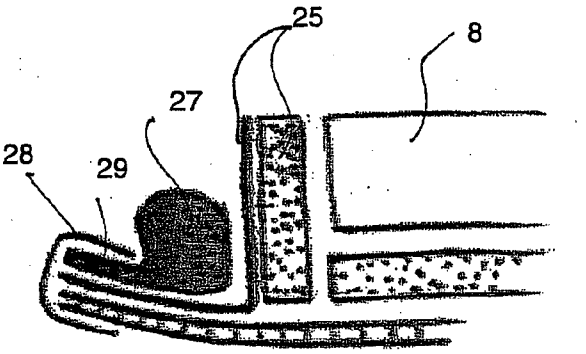


FIGURE 13

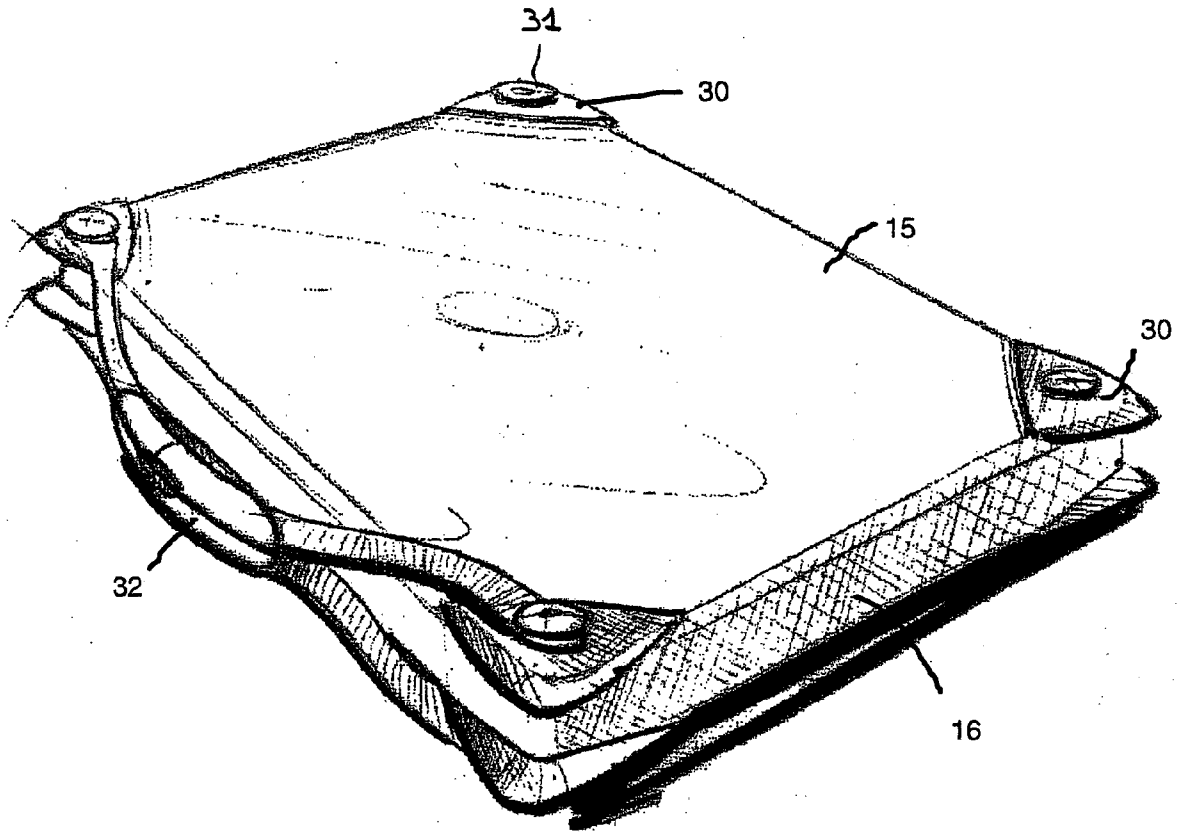


FIGURE 14

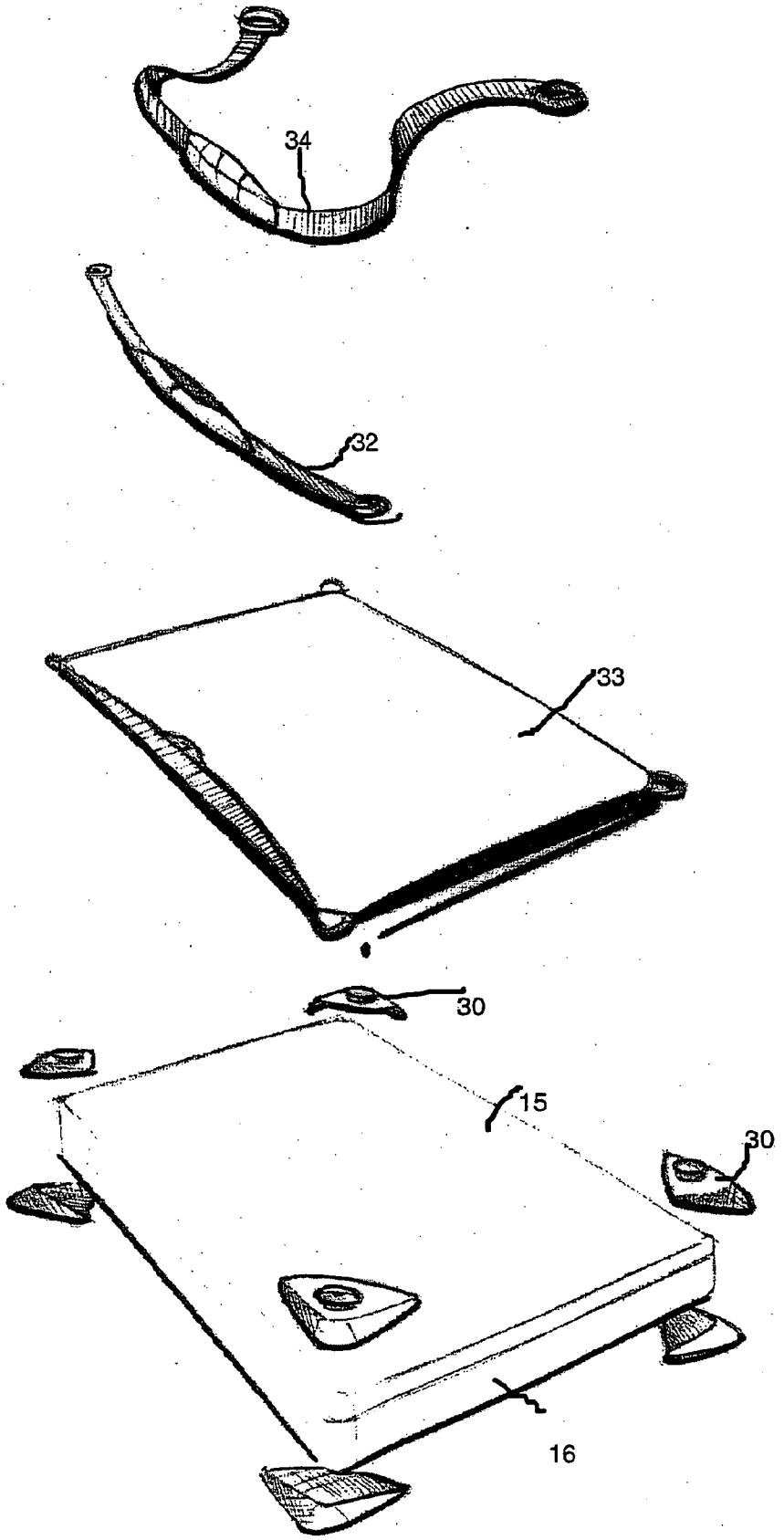


FIGURE 15

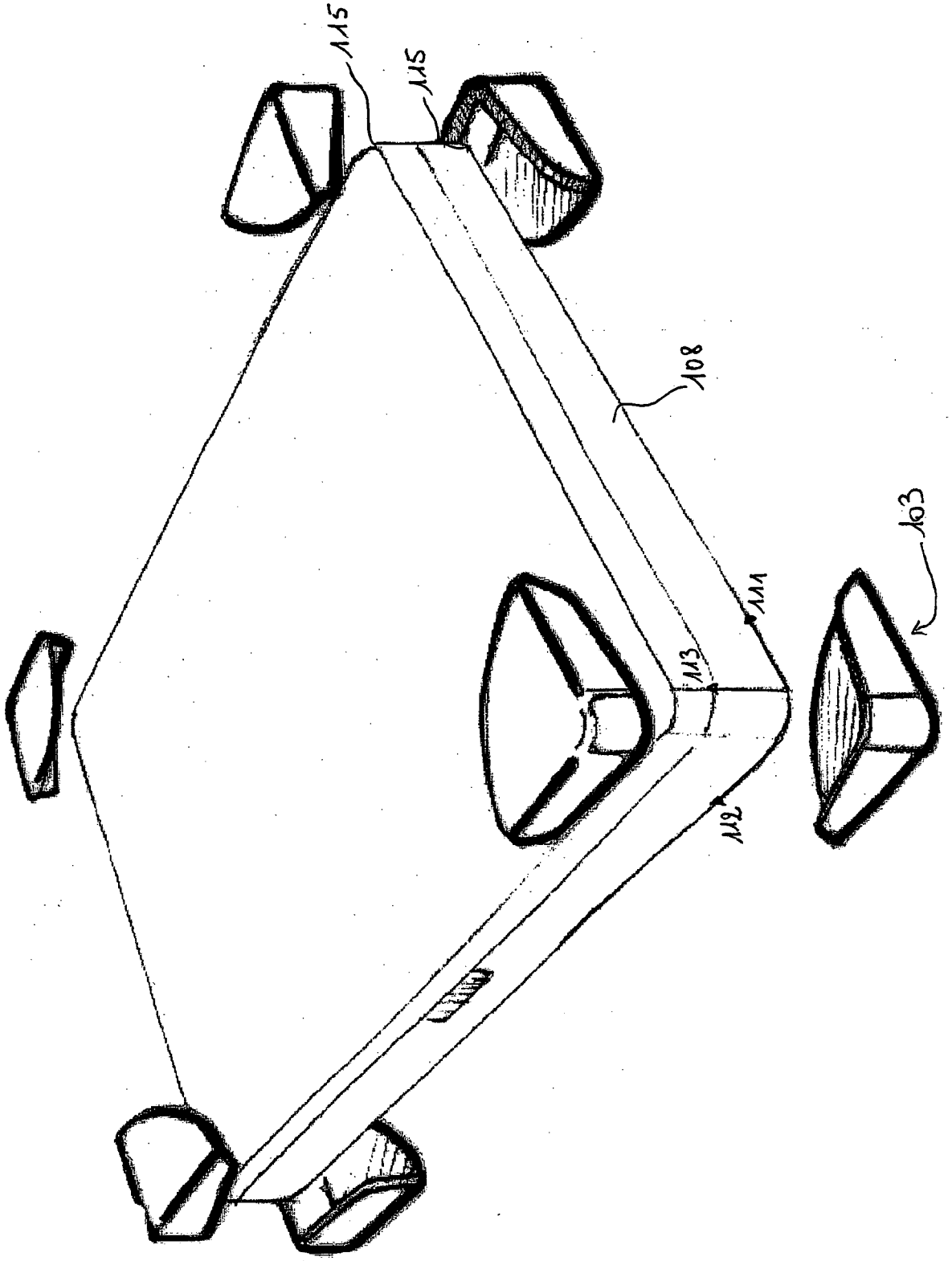


Fig. 16

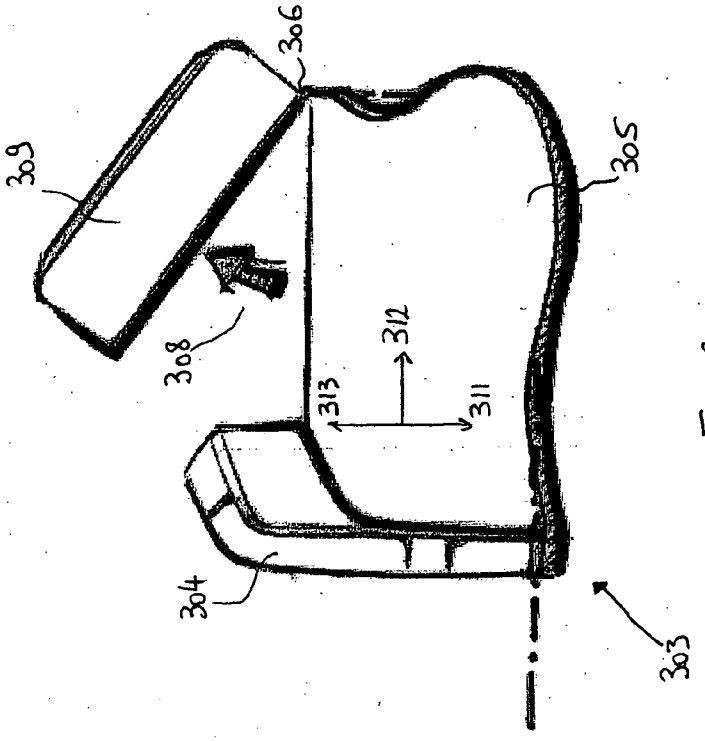

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Fig. 18

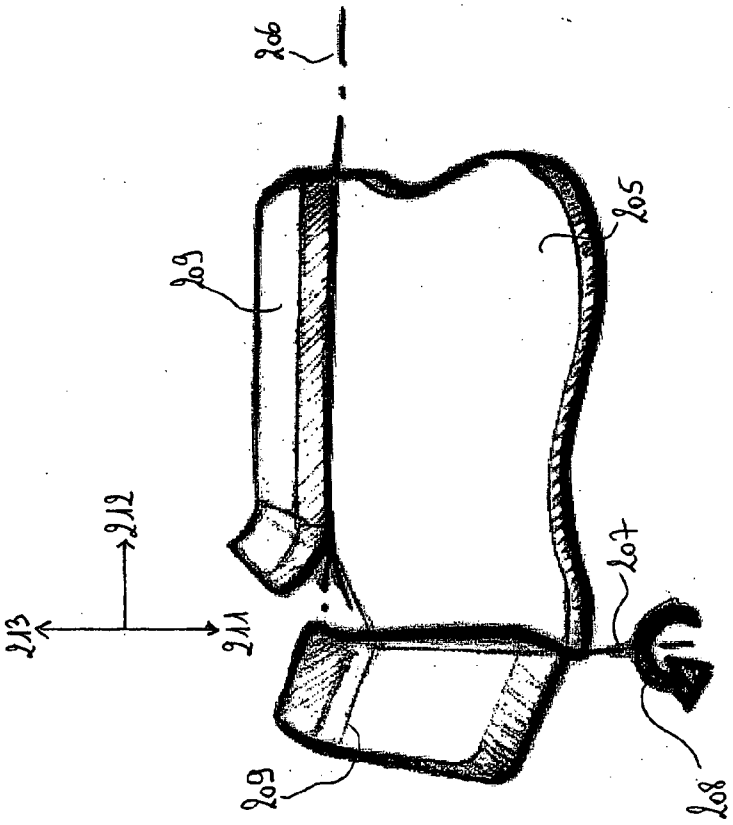
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Fig. 17

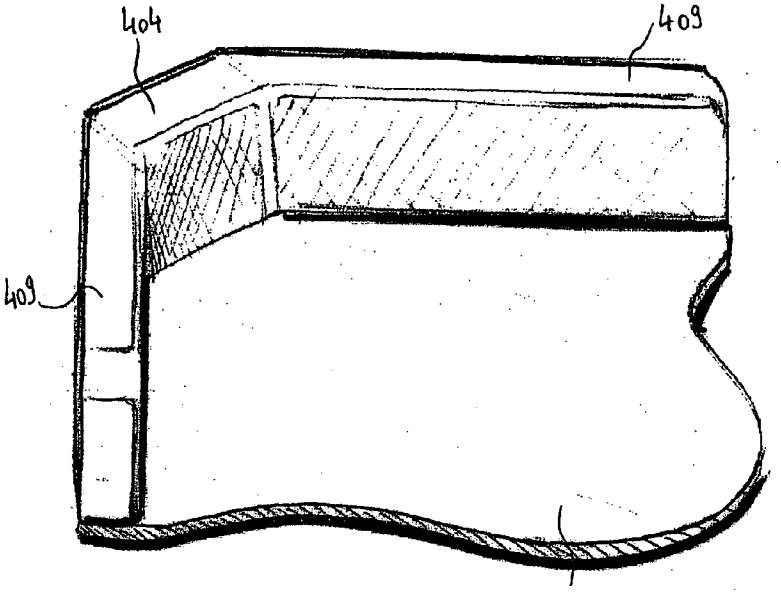

Fig. 19b

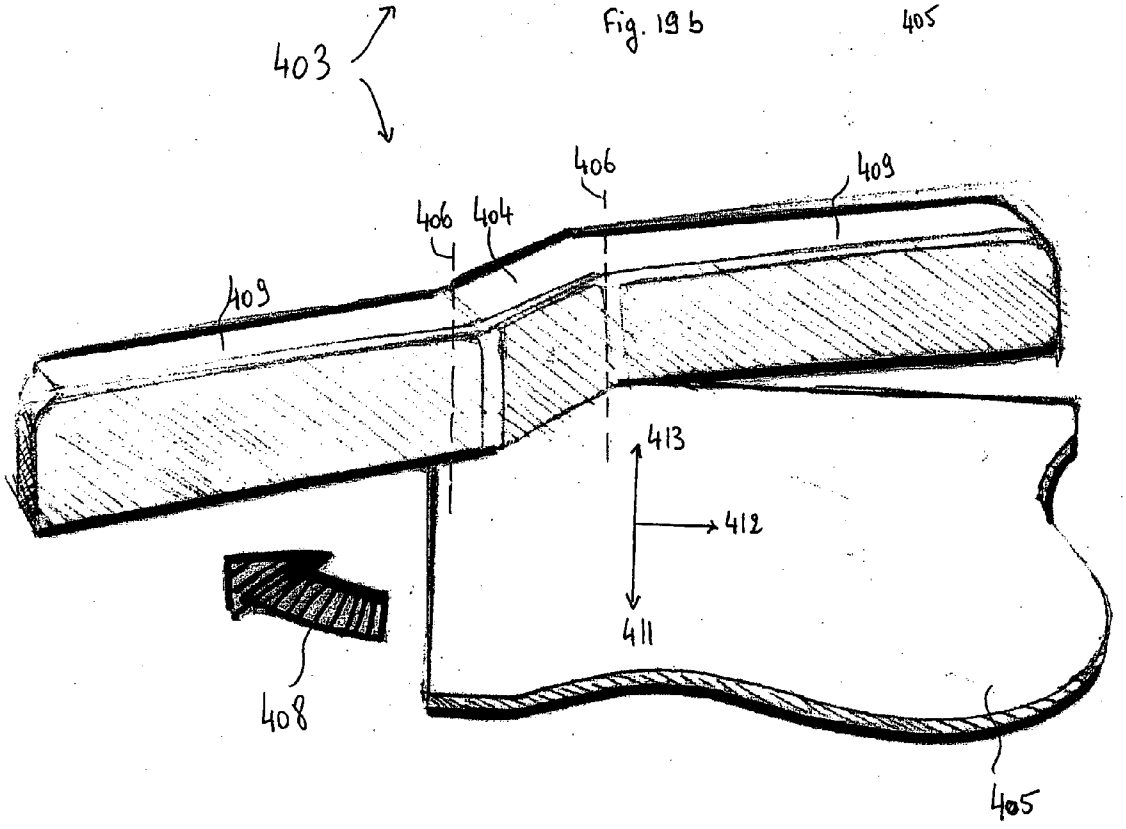

Fig. 19a

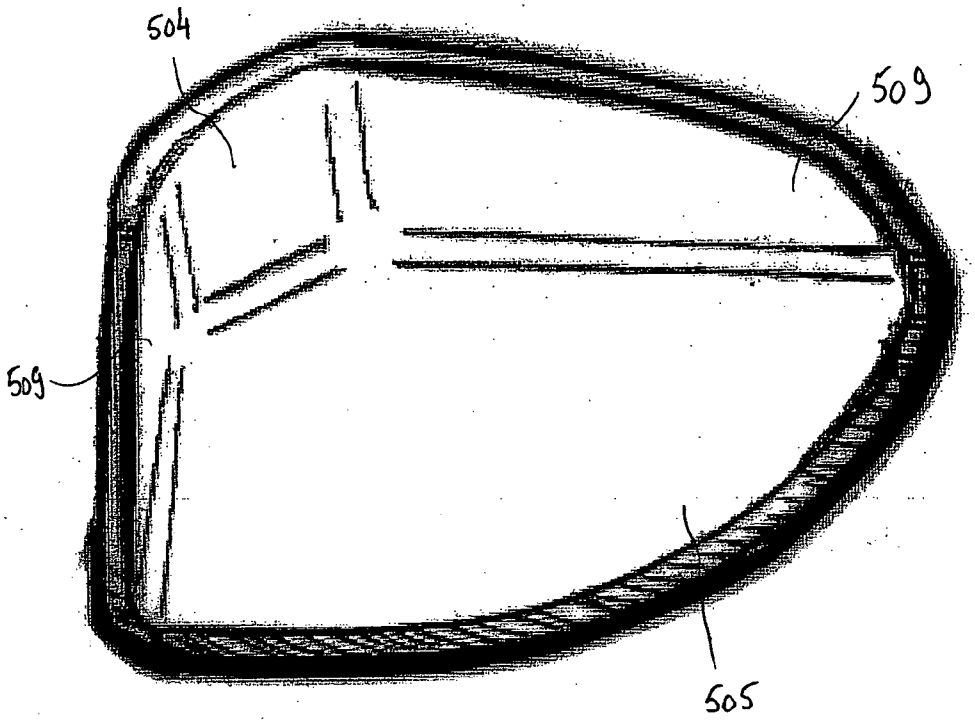

Fig. 20b

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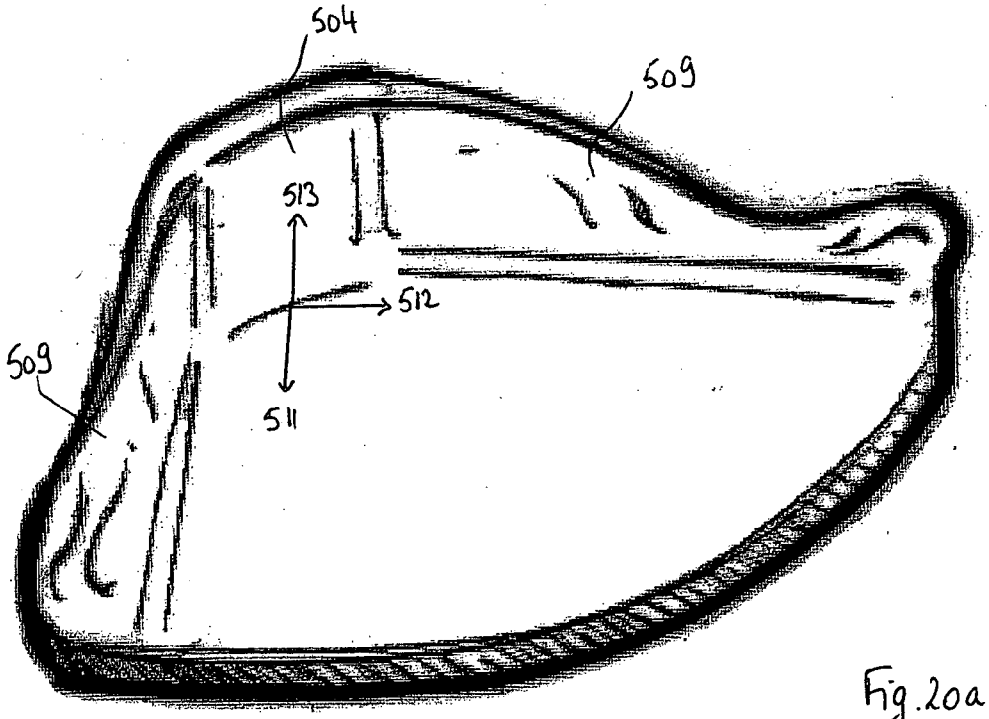


Fig. 20a

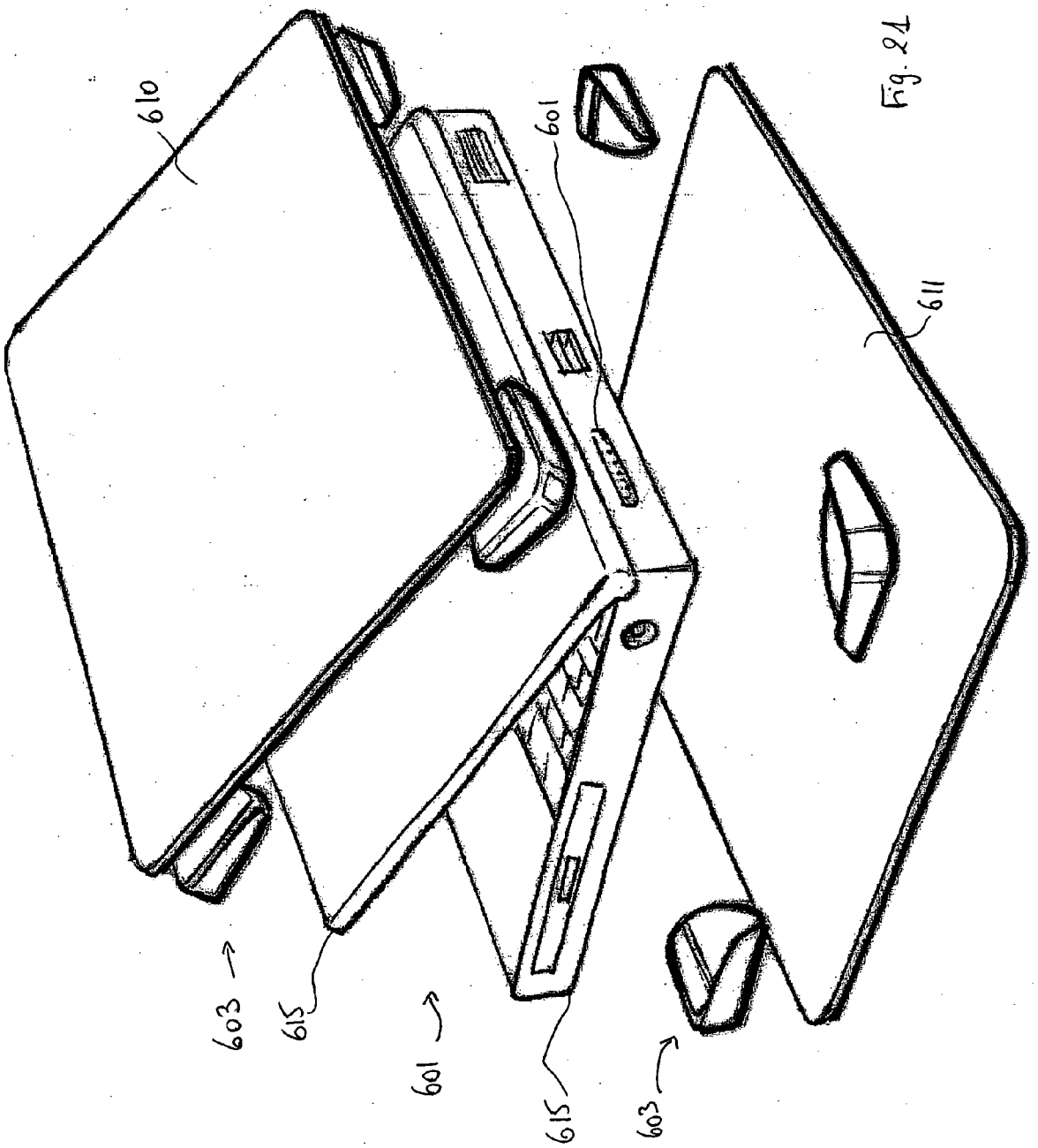


Fig. 9L

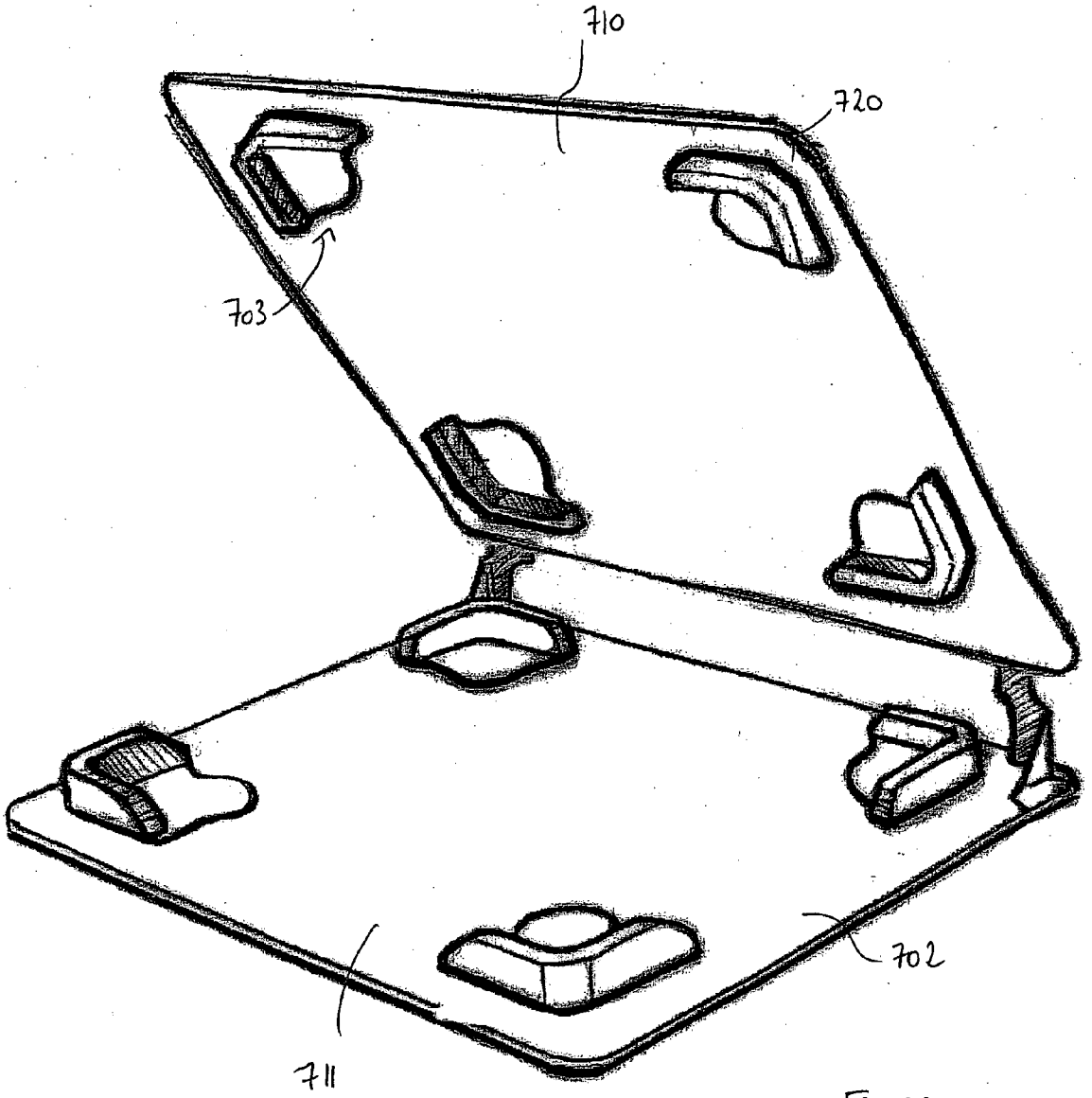


Fig. 22

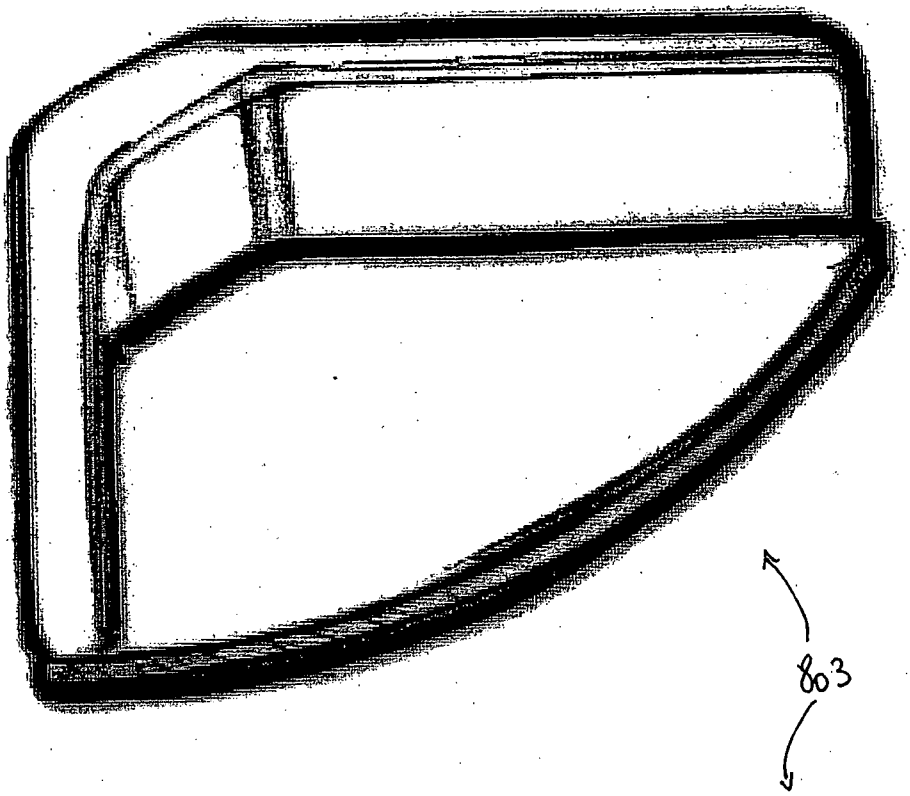


Fig. 23a

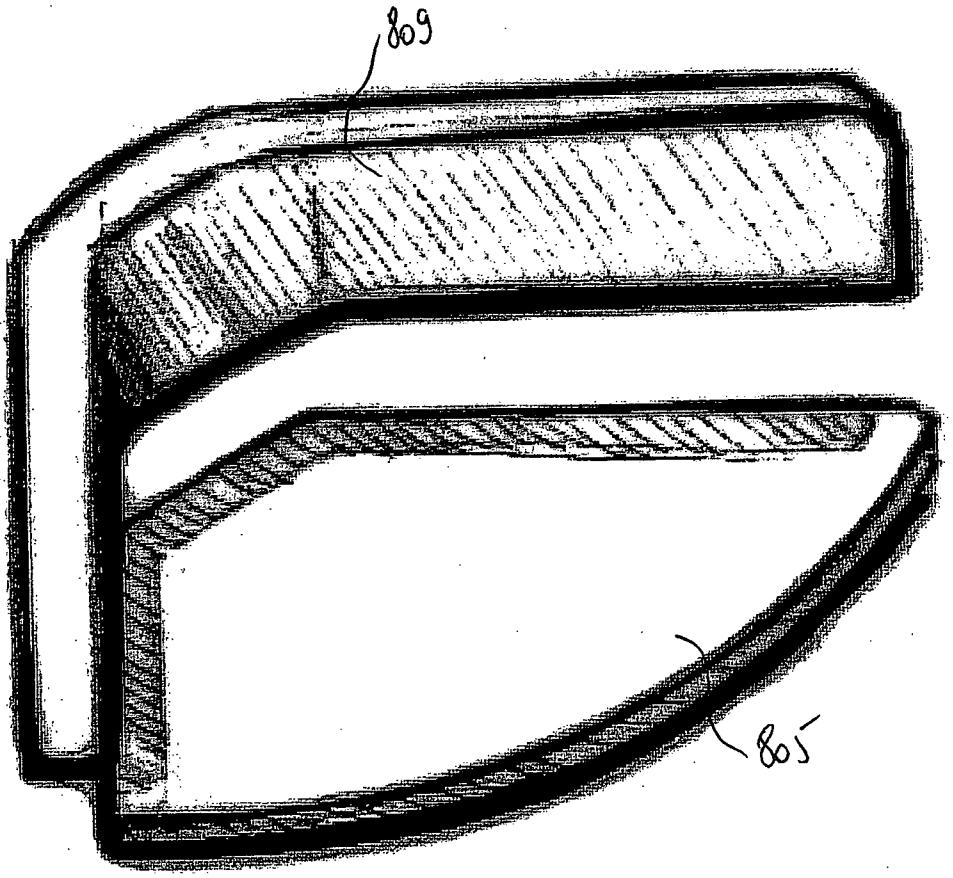


Fig. 23b

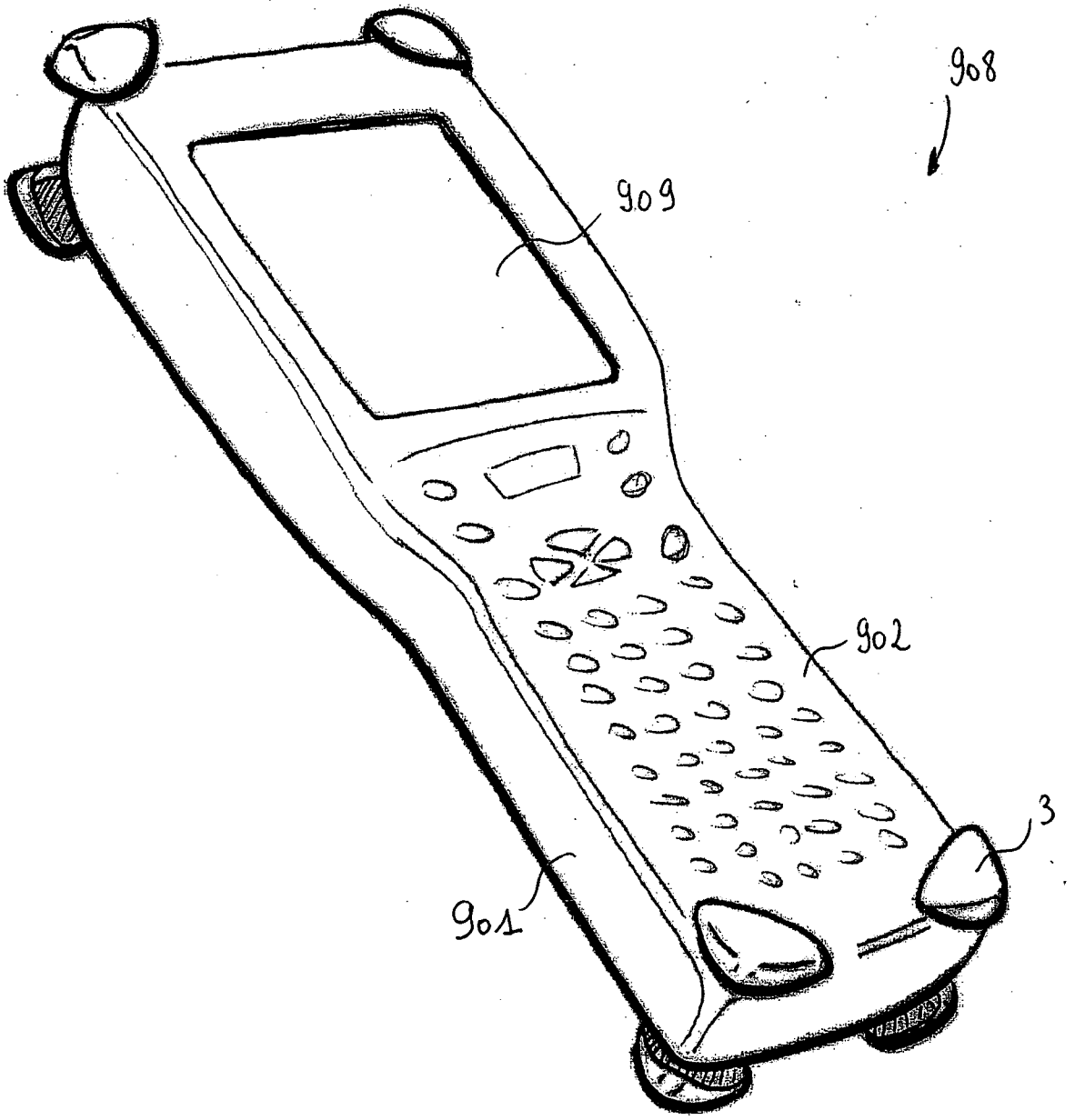
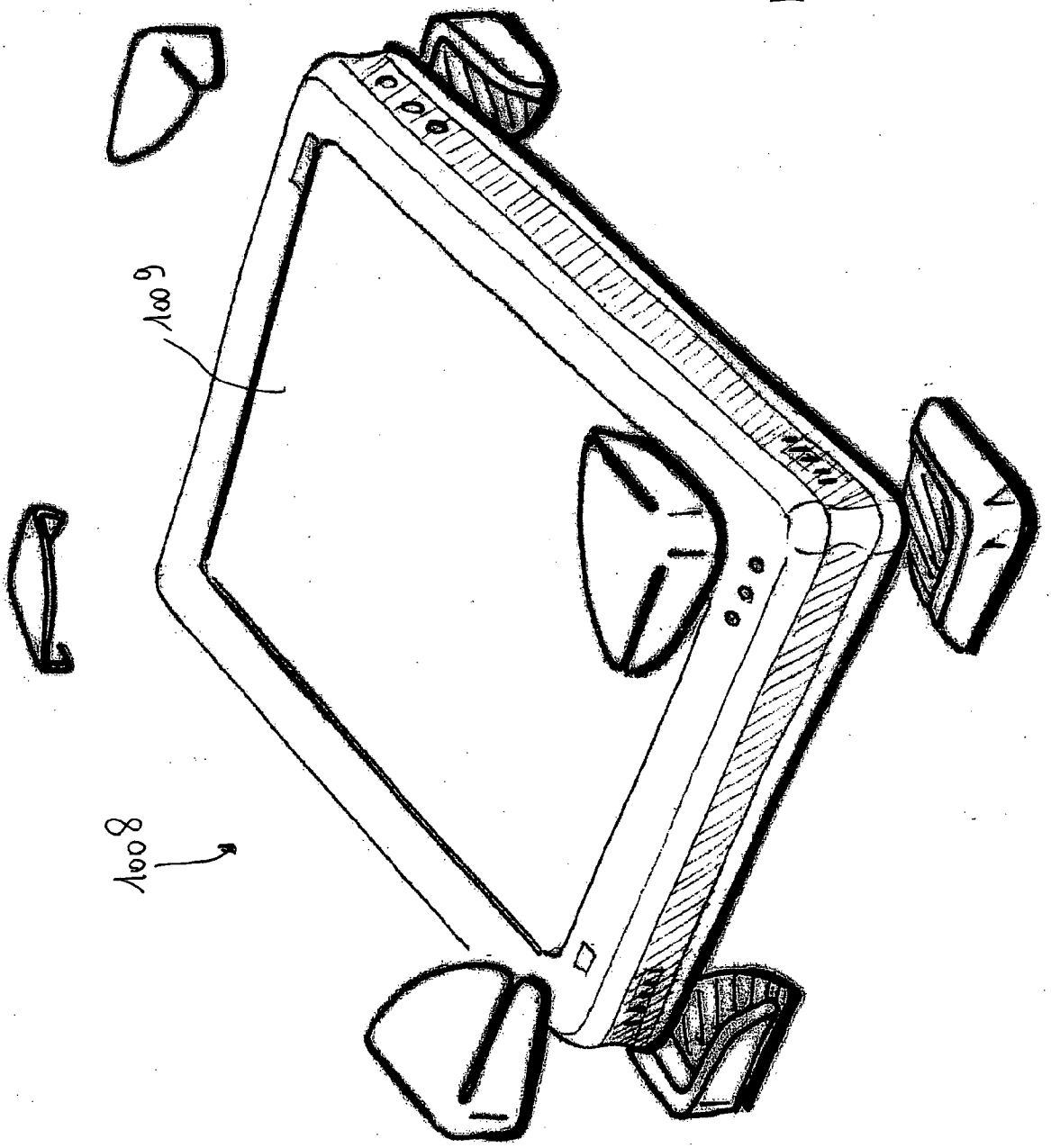


Fig. 24

Fig. 25



PROTECTION FOR LAPTOP

[0001] The invention relates to protection for a laptop and, generally speaking, for any portable electronic device, intended to protect the latter against shocks that are likely to occur while it is being transported or used. Such protection consists of a protective case or bag, for example.

[0002] Because of its portable nature, such a computer is intended to be transported depending on its place of use. This being so, it is liable to be dropped or be subjected to shocks which can damage it and sometimes even require a replacement unit. In addition, these various risks are especially aggravated when said computer is being used.

[0003] By definition, a computer is an electronic device equipped with a microprocessor and a sensory, preferably visual, reproduction interface such as a screen. As everybody knows, the electronic components of computers, especially the microprocessor and screen, are very fragile and can be disabled even by a slight knock, especially when the electronic device is being used.

[0004] Nevertheless, although the electronic components are much more fragile when the device is being used, there are just as many problems when said device is not operating. Whether the device is operating or not, it is always fragile and at risk of being damaged by a shock sustained in many locations and numerous situations during transport, storage and/or use of the device.

[0005] It should be noted that it is widely accepted that the term "laptop" denotes any portable electronic device comprising electric and/or electronic components having a microprocessor and a preferably graphical interface. This definition covers, in particular, portable electronic devices such as laptops strictly speaking, convertible portable computers, notepads, tablet PCs, mobile phones, laserdisc players, MP3 players, Personal Digital Assistants (PDA), video projectors, digital cameras, touch-sensitive tablets, electronic calculators, portable televisions, etc.

[0006] The need for protection capable of protecting such laptops as much as possible became evident almost immediately as soon as they came into use. Many owners of such computers felt a pressing need for such protection when using them since it is not uncommon for such laptops to be dropped in a situation when both the screen and the electronic components are especially vulnerable.

[0007] In fact, empirical observation shows that the electronic components are more fragile when the device is in use than when it is not in use. It is therefore while the device is in use that the need for protection is the greatest. At the same time, the fragility of a laptop that is not in use must not be overlooked.

[0008] Protective bags for such computers have been known for a long time. Document FR-A-2 796 254, for example, discloses a protective bag of the type in question consisting of a base and a cover connected to each other on one of their main edges thereby constituting hinges, the base and the cover each being provided with means of cushioning intended to absorb at least some of the shocks likely to occur, especially if the computer is dropped, or while it is being transported.

[0009] Although such a protective bag admittedly fulfils at least part of its intended purpose, namely protecting the computer, it nevertheless sometimes proves inadequate when, as in the majority of cases, the laptop complete with its bag is dropped onto one of its edges or corners or the shock affects one of its edges or corners, especially near the rear area of said computer. In fact, conventionally available protective bags have a simple connection area here between their upper surface and lower surface that acts as a hinge in order to allow the computer to be opened and closed in its bag.

[0010] In addition, the handle or handles of these bags are generally located near the front of the bags. This being so, this hinge area has no real system of cushioning shocks and does not afford the computer the desired protection.

[0011] In other words, although such a bag affords satisfactory protection at the level of the computer's main surfaces, i.e. the upper and lower flat surfaces of the laptop, it is inadequate when it comes to protecting the sharp edges and corners and, generally speaking, the sides of the computer, especially the rear surface.

[0012] The object of this invention is to overcome these drawbacks.

[0013] A certain type of protection or bag according to the prior art has no opening and this is relatively impractical when one wants to connect an external component such as a cable or CD ROM drive, recharge the battery of the device or exchange data with the device without having to remove the device from its protective enclosure, as might be the case with a digital camera. It is then necessary to open the protection in order to access the device's sockets.

[0014] This having been said, there is another type of protection according to the prior art that does have openings. However, these generally have two drawbacks that can sometimes compromise the integrity of the laptop. In fact, these openings leave exposed or unprotected areas which, although they have a small surface area and are recessed, accommodate parts of the computer that are fragile and important, namely connectors for the power supply and/or electrical signal inputs. These sockets are fragile because they consist of delicate terminals such as pins having a small cross-sectional area that are not sized to withstand stresses of even low intensity. Thus, low-intensity shocks caused by protruding objects such as a pen can cause permanent damage to a computer connector.

[0015] In addition, these openings may allow ingress of water when the laptop is exposed to a humidity source and the presence of water is obviously incompatible with reliable, prolonged use of the electrical connectors of the laptop.

[0016] The purpose of the present invention is therefore also to propose protection that affords effective protection to the equipment, especially its connectors, whilst allowing quick, practical access to these connectors.

[0017] The invention therefore relates to protection for a laptop capable of fulfilling the various functions stated above whilst overcoming the drawbacks of devices according to the prior art.

[0018] It firstly relates to protection intended to be directly or indirectly separately mounted on the upper and lower surfaces of the laptop. This protection consists of means that are fitted at least at each of the four corners of each of the (upper and lower) main surfaces of said laptop, each of said

means protruding in the two main dimensions of said surfaces relative to the latter, lengthwise and widthwise respectively, so as to constitute a preferred area for receiving shocks and even cushioning them.

[0019] In other words, the invention aims to define peripheral means of shock absorption extending beyond the lateral edges of the actual volume defined by the laptop because, regardless of the type of shock likely to be sustained by these means, the shock is at least cushioned, thus making it possible to considerably reduce breakages and other damage likely to affect said computer.

[0020] The means in question can be separately mounted on the respective surfaces of the laptop using any system, for example by using hook-and-loop systems (of the type marketed under the registered trademark VELCRO®), double-sided adhesives, mechanical snap fasteners, etc.

[0021] In addition, said means are also likely to have a protuberance that extends substantially at right angles relative to the upper and lower surfaces of the laptop on which they are intended to be fitted. This being so, these protruding protuberances help absorb shocks that occur, especially on said surfaces.

[0022] According to a more sophisticated version of the invention, this protection consists of a protective case comprising a base and a cover directly or indirectly connected to each other and capable of defining a volume or enclosed space inside which the laptop is to be placed, the base and the cover consisting of rigid or non-rigid sheets. It is characterised in that the dimensions of said sheets are definitely greater than all the main dimensions of the computer, at least near the four corners of each of said sheets so as to each define, at least near said corners, an external peripheral rim that protrudes beyond the volume that they define, said rim extending at least close to the four corners of said sheets.

[0023] According to a first feature of the invention, only the four corners of each of the sheets that constitute the base and the cover are of larger dimensions and therefore protrude relative to the volume defined by the laptop.

[0024] According to another feature of the invention, the protruding areas defining a peripheral shock absorber consist of parts separately mounted on the base sheet and cover sheet respectively, especially corner pieces.

[0025] According to another feature of the invention, all the edges of each of the two sheets that constitute the base and the cover respectively constitute an integral continuous peripheral rim that protrudes relative to the useful volume of the protective case.

[0026] According to another feature of the invention, the connection between the base and the cover of the case is provided by the actual computer, the latter being equipped for this purpose with means of reversible fixing of self-gripping, adhesive or hook-and-loop (registered trademark VELCRO®) type etc. In this configuration, the base and the cover have enclosing elements extending from the sheets that constitute their basic structure so as to define the actual space in which said computer is accommodated.

[0027] According to another embodiment of the invention, the connection between the base and the cover is provided by one or more rigid parts capable of constituting a curb that extends at a right angle relative to the plane of the base and cover sheets and are located substantially on the periphery of the latter.

[0028] In the context of this embodiment, the bottom of the corners of the curb, positioned immediately adjacent to said sheets, may have a cut-out making it possible to fit an additional cushioning element in this location, e.g. consisting of a pouch containing trapped air or gel or even a foam-based or equivalent material known for its shock absorbing properties.

[0029] According to one advantageous embodiment of the invention, at least one of said means has a fixed part and a part that can be moved relative to said laptop, the moveable part selectively defining a closed position and an opened position, making way for an external mains supply connector or any other accessory capable of cooperating with the laptop.

[0030] In other words, the protection has means or guards the shape of which matches the shapes of the corners of the laptop and at least one of these means has a moveable part that can be pushed away from the laptop so as to allow clear access to connect a cable to a socket of the laptop or insert an object into it, such as a data medium.

[0031] In practice, in the context of this embodiment of the invention, each of the means comprises:

[0032] two flat tabs extending substantially at right angles relative to each other in two of the main directions of the laptop,

[0033] a substantially flat portion intended to rest on a flat part of the laptop, defining, together with said tabs, a corner capable of cooperating with the corresponding corner of said laptop.

[0034] According to a particular embodiment of this method, at least one of the tabs forms the moveable part.

[0035] Thus, these means have an "L" shape, mounted or separately mounted on a flat element constituting a corner or a truncated trihedral capable of being placed against the corner of the laptop. They are bonded, stitched, attached by a VELCRO® type hook-and-loop system or riveted if these means are fixed on either of sheets. They are fixed by a VELCRO® system or are clip fastened to the computer equipped with fittings provided for this purpose if not.

[0036] In practice, in this particular embodiment, the moveable part may be articulated relative to the fixed part by means of a mechanical joint. In other words, the moveable part of the guard may be moveable in an easily controllable movement.

[0037] Advantageously, this mechanical joint may consist of a swivelling joint articulated around an axis substantially parallel to one of the three main directions of the corner of the laptop that is fitted with the moveable part.

[0038] In other words, the moveable part may be a flap that swivels downwards or to the side in order to make way for the connector.

[0039] Preferably, the mechanical joint may also be provided with elastic return means to return it to its closed position.

[0040] Thus, if the user forgets to replace the guard, it automatically returns to the position in which it provides protection. The guard has natural elasticity due to the material of which it is made or it is given this elasticity by means of a metal spring leaf.

[0041] According to another particular embodiment of the invention, the moveable part of the protection consists wholly or partly of a material with elastic properties allowing manual deflection in at least one direction by an amount that makes way for the external device.

[0042] It is sufficient to exert a specific force in order to deflect the moveable part, thereby bringing it into the opened position to allow connection.

[0043] Advantageously and in accordance with this embodiment, the moveable part can be compressed and/or bent in at least one of the three main directions of the corner of the laptop receiving the means with a moveable part.

[0044] In practice, the means in question may have a protruding protuberance and extend substantially at right angles relative to the surfaces of the laptop on which they are intended to be fitted. This protrusion therefore makes it possible to protect the laptop effectively.

[0045] Practically speaking, these means may be reversibly or irreversibly separately mounted in each of the corners of the laptop.

[0046] Advantageously, these means may each have an appropriate shock absorbing device, especially one consisting of a joint filled with air or gel or made of foam.

[0047] According to one variant of the invention, the protection may consist of a protective case comprising a base and a cover connected to each other and capable of defining an enclosed space inside which the laptop is to be placed, the base and the cover consisting of rigid or non-rigid sheets. In addition, the sheets have dimensions larger than the main dimensions of the laptop (length and width) so that they each define an external peripheral rim that protrudes relative to the volume that they define, the rim extending at least close to the four corners of the sheets.

[0048] In other words, it is a briefcase that entirely encloses the laptop and has "bumpers", the briefcase being equipped with elements according to the invention the special structure and positioning of which allow connection to the mains supply or connection of external devices using the moveable parts mentioned earlier.

[0049] The way in which the invention may be implemented and the resulting advantages will become more apparent from the following embodiments described, merely by way of example, reference being made to the accompanying drawings.

[0050] **FIG. 1** is a schematic three quarter perspective rear view of the protective case in accordance with the invention when it is closed and

[0051] **FIG. 2** is a similar view when it is opened.

[0052] **FIG. 3** is a schematic perspective view of a first embodiment of the invention and

[0053] **FIGS. 4*a*** to **4*f*** are schematic views showing various top and bottom views and views of each of the four lateral sides.

[0054] **FIGS. 5, 6** and **7** are schematic perspective views of three other embodiments of the invention.

[0055] **FIG. 8** is a perspective view of another embodiment of the invention when it is opened and viewed from the back.

[0056] **FIG. 9** is a schematic perspective view of another embodiment of the invention, also when it is opened but viewed from the front.

[0057] **FIG. 10** is a schematic perspective partial view of a detail of the corner of the protective case according to the invention and

[0058] **FIG. 11** is a cross-sectional view in the immediate vicinity of said corner.

[0059] **FIG. 12** is a schematic partial perspective view of a detail of a corner of the protective case according to the invention in a different configuration and

[0060] **FIG. 13** is a cross-sectional view in the immediate vicinity of said corner.

[0061] **FIG. 14** is a schematic perspective view of another version of the invention that is more minimalist and

[0062] **FIG. 15** is an exploded view.

[0063] **FIG. 16** is a schematic perspective exploded view of a laptop when it is closed equipped with protection in accordance with a first embodiment of the invention.

[0064] **FIG. 17** is a schematic perspective view of a component of protection in accordance with a first embodiment of the invention.

[0065] **FIG. 18** is a schematic perspective view of a component of protection in accordance with a second embodiment of the invention.

[0066] **FIG. 19*a*** is a schematic perspective view of a component of protection in accordance with a third embodiment of the invention and **FIG. 19*b*** shows it in another operating state.

[0067] **FIG. 20*a*** is a schematic perspective view of a component of protection in accordance with a fourth embodiment of the invention and **FIG. 20*b*** shows it in another operating state.

[0068] **FIG. 21** is a schematic perspective view of another embodiment of the invention, the laptop being shown when it is opened and viewed from the rear.

[0069] **FIG. 22** is a perspective view of another embodiment of the invention when it is opened viewed from the front.

[0070] **FIG. 23*a*** is a schematic perspective view of a component of protection in accordance with a further embodiment of the invention and **FIG. 23*b*** shows it in another operating state.

[0071] **FIG. 24** is a schematic perspective view of protection in accordance with this invention protecting a notepad, the screen of which is immovably built into the case that contains the other electronic components of the product.

[0072] **FIG. 25** is a view similar to **FIG. 24** but relates to a tablet PC.

[0073] According to a first embodiment of the invention that uses a protective case (1) for a laptop, the case basically comprises a base (2) and a cover (3), also referred to as a "lid", both consisting of a flat sheet made of a rigid or non-rigid material such as a synthetic material, especially plastic, metal, wood etc. These sheets may be solid or have cut-outs. In addition, they may be flat or curved and, in the latter case, either convex or concave.

[0074] These two sheets have the same dimensions, especially their length and width, but it is nevertheless feasible that the dimensions of one sheet are slightly greater than those of the other or even completely different.

[0075] In every case and according to a fundamental feature of the present invention, the base and the cover have a length and width that are greater than the length and width of the main dimensions of the microcomputer (8) that their assembly is intended to protect, at least in their four respective corners (4, 5, 6, 7, 4', 5', 6', 7').

[0076] This being so, the base and the cover protrude respectively at (9) and (10) at least in each of the corners, said protrusion extending relative to the space defined by the base and the cover and intended to accommodate the laptop. As shown in the Figures, these protrusions project outwardly. In addition, they may be continuous as is apparent, for instance, in **FIGS. 8 and 9**.

[0077] As will have become apparent, due to the way the structure of the previously mentioned protrusions is defined, this creates a peripheral means of absorbing shocks that are likely to occur both on the corners and on the edges of the protective case.

[0078] Advantageously, if the central structure of each of the two sheets that constitute the base (2) and the cover (3) is rigidified or even has additional rigidification (11) separately mounted by any means (**FIG. 8**), the edges of the sheets may be less rigid in order to optimise their ability to absorb shocks.

[0079] Consequently and in a known manner, the sheets in question have, on their surfaces that face inwards into the space intended to accommodate the laptop, their own means of shock absorption (not shown) both for the base and cover, and it is even possible for the shock-absorbing means of the cover to be specially optimised and bulky in terms of its volume, given the relative fragility of the screen that it is intended to protect.

[0080] In addition, the internal surface of the cover (3) is capable of accommodating a fitting (12, 13, 14) to fix, but allow relative movement, of the screen of the laptop. More precisely, this fitting consists of a well (13) attached to the internal surface of the cover (3) and defining one or more slits (14) that extend at right angles relative to the hinge line of the screen (15) of the computer on its base (16) and in which a means (12) of reversibly fixing said screen, typically consisting of an adhesive or a hook-and-loop system (e.g. VELCRO® type), is capable of moving.

[0081] Thus, when the cover (3) is opened, the screen (15) is simultaneously opened due to translational motion of the means of attaching (12) the screen to the cover in the slit or slits (14).

[0082] In the protective case configuration and in its simplest expression, said case comprises a base and a cover, i.e. one upper sheet (3) and one lower sheet (2) that are not connected to each other and are therefore independent. In such a configuration using a cover that is completely independent and can be disconnected from the base, it is the laptop itself that provides the link between the two corresponding sheets, e.g. by means of reversible or irreversible self-gripping fixing of the hook-and-loop, adhesive type etc. (**FIG. 5**).

[0083] However, in most cases, a one-piece assembly is preferred to create the case, the connection between the base and the cover being provided by one or more rigid elements that are separately mounted by bonding, stitching or other means on the base sheet and/or cover sheet.

[0084] In this context, the simplest version recommends fitting two rear pillars (17, 18), positioned substantially in the vicinity of the two rear corners of the base sheet (2). These pillars, made of polypropylene for example, extend at a right angle relative to the base sheet to a height substantially equivalent to the thickness of the computer that the resulting case is intended to accommodate. The upper end of said pillars has a flat (19), that is parallel to the base sheet and is intended to be attached, especially by bonding, to the corresponding rear edge of the cover sheet (3). This flat is rigid so that the cover sheet (3) is slightly lifted in order to make it possible to open and close said cover about a virtual hinge (20) extending below the cover sheet. This defines, even in the rear area of the case according to the invention, two protruding rims (22, 23) which act as shock absorbers, something that none of the cases and other protective bags according to the prior art made it possible to achieve.

[0085] In a slightly more sophisticated version of the invention (**FIGS. 3 and 4**), the base sheet and/or cover sheet are also fitted with rear pillars (24) made of identical or similar materials and also separately mounted by bonding or stitching. They are intended to reduce any risks of the case being crushed.

[0086] Finally, in an even more sophisticated version of the case according to the invention in which the aim is to maximise the protection provided, a peripheral curb (25) is separately mounted, especially on the base sheet (2), and extends substantially over at least two consecutive or opposite surfaces of the case, especially the front and rear surfaces.

[0087] This curb, also made of a rigid propylene type material, is also fixed by bonding, stitching or other means. This attachment is located slightly away from the peripheral edges of the base sheet in order to produce the protruding curb that is characteristic of the invention. The curb defines the actual useful volume of the protective case and is substantially equivalent to the volume of the computer to be protected. It therefore extends at right angles relative to the main plane of the base of the case to a height substantially equivalent to the thickness of the microcomputer.

[0088] In a known manner, this curb has a certain number of holes (26), intended, in a known manner, to allow the connection of various peripherals to the laptop, access to diskette or CD drives and connection of the mains power cord of said computer.

[0089] In a sophisticated version of the protective case according to the invention, the contact areas between the curb (25) and the base and cover sheets respectively in each

of the corners are hollowed out so as to fit a specific shock-absorber device (**27**) in this location, i.e. a shock absorber consisting of a joint filled with air or gel or even foam, thus optimising the absorption of shocks in this location which are statistically the most numerous (see **FIGS. 10 and 11**).

[**0090**] According to the same principle, one can fit the entire periphery of the case, especially in the immediate vicinity of the base, with such a shock absorber (**27**) (see **FIGS. 12 and 13**).

[**0091**] In both these configurations, this shock absorber is held in place, especially by stitching (**28**) an area (**29**) of said shock absorber (**27**) to the protruding peripheral curb that rises from said base.

[**0092**] **FIGS. 14 and 15** show a minimalist version of the invention. In this case, the case is replaced by a plurality of means (**30**), eight in this case, each intended to be fitted in each of the respective corners of the base (**16**) and the screen (**15**) of the laptop.

[**0093**] These means (**30**) may be permanently separately mounted in said corners, for example by bonding. However, they can also be reversibly attached by means of hook-and-loop systems (VELCRO@) or by a mechanical system such as screw or clip fastening or equivalent or even by the cooperation of a fitting with a matching permanent integral feature of the laptop. Regardless of the means of attachment used, it is essential to make sure there is effective connection so that said means can effectively fulfil their function.

[**0094**] In fact and as is apparent, said means (**30**) each protrude relative to the volume defined by the laptop. These protrusions are intended, as in the case of the protective case, to absorb, at least partially, the shocks that said computer is likely to sustain, whether it is closed or opened and being used.

[**0095**] Advantageously, said means are equipped with fixing fittings (**31**), especially reversible-fixing fittings, of the snap fastener or other type so as to allow adjustment in this location, for example adjustment of transport and carrying handles (**32**), straps, belt (**34**), etc. or any equivalent system or even an additional removable pocket (**33**) capable of being located against one of the main surfaces of the computer. Such a pocket is intended, for example, to store documents.

[**0096**] In addition, these fittings (**31**) are also capable of enabling reversible connection of the laptop on which they are separately mounted with a fixed or non fixed support or another container of the bag, briefcase, suitcase, etc. type.

[**0097**] The attractiveness of the protection according to the invention which makes it possible, by using simple means, to optimise the protection provided for a laptop regardless of the circumstances under which the shocks occur, regardless of the locations where they occur, especially on the rear surface and, finally, even when it is being used, i.e. when the laptop is opened, is readily apparent.

[**0098**] **FIG. 16** shows a portable electronic device, in this case a laptop (**108**) that is protected by protection in accordance with another embodiment of the invention. The protection comprises a plurality of means (**103**) intended to protect the laptop (**108**).

[**0099**] In accordance with the invention explained above, means (**103**) are fitted in each of the corners of the equipment (**115**). They each form an outward facing protrusion in the three main directions (**111**, **112**, **113**) of each of the corners (**115**) so as to provide a preferred contact area, especially in the event of a shock, in order to protect the laptop (**108**). In addition, the means (**103**) of protection are, in this case, directly mounted on part of the external surface of the equipment (**108**), especially by bonding, stitching, riveting or by a VELCRO® system.

[**0100**] **FIG. 17** shows a means of protection (**203**) similar to those in **FIG. 16** but illustrated in greater detail. This is a means in conformity with one feature of this embodiment of the invention because it has a fixed part (**205**) and a part that moves (**209**) relative to the equipment (not shown). Moveable part (**209**) is shown here in its opened position whereas in **FIG. 16** the moveable parts are shown in their closed position.

[**0101**] In addition, means (**203**) comprises on the one hand, a flat portion (**205**), intended to rest on a flat part of the computer and on the other hand two substantially flat tabs (**209**) that extend respectively in both the main directions of the equipment and rise substantially crosswise relative to the flat portion (**205**). In this case the two tabs (**209**) form moveable parts whereas the flat portion forms the fixed part (**205**).

[**0102**] In addition, the moveable part (**209**) is articulated relative to the fixed part (**205**) by means of a mechanical joint, in this case consisting of a swivelling joint articulated around two axes (**207**, **208**), each of said axes being parallel to one of the three main directions (211 or 212) of the corner of the equipment. These two parts are attached to each other by VELCRO® or by any other mechanical system.

[**0103**] Thus, as clearly shown in **FIG. 16**, when the user activates moveable part (**209**) in the direction shown by the arrow (**208**), the user can swivel the moveable part (**209**) from its closed position into its opened position. This makes way for an external connector (not shown) intended to cooperate with the computer, e.g. by being connected to the mains supply (not shown). This also allows the transmission of information by optical means such as an IR port which, given the opacity of the means of protection (**203**), would not be possible if there was no moveable part (**209**).

[**0104**] One can also provide elastic return means (not shown) near the swivelling joint to return the moveable part (**209**) to its closed position. Examples of such elastic means include helical springs that work in torsion.

[**0105**] **FIG. 18** shows a variant of this embodiment of the invention in which a fixed part (**304**) and a moveable part (**309**) define a means of protection similar to that in **FIG. 17**. The only differences are the presence of a fixed tab (**304**) and also, the direction of swivelling (**308**) around an axis (**306**) of the mechanical joint in another of the three main directions (in this case 311) of the edge of the laptop.

[**0106**] Similarly, **FIGS. 19***a* and **19***b* show a variant of the embodiment of the invention with two moveable tabs (**409**) and a fixed part (**404**, **405**). Nevertheless, the direction of swivelling (**408**) around a swivel axis (**406**) is different.

[**0107**] Also, **FIGS. 20***a* and **20***b* show a means of protection (**502**) in accordance with another variant of the

embodiment of the invention. In this case, the moveable parts (**509**), also located on the tabs, partially consist of a material with elastic properties such as a shape memory plastic foam or any other deformable material that can be deformed manually. As is apparent more particularly from **FIG. 20***a*, this deformation is due to compression in one of the three main directions (**511**, **512**, **513**) of the corner of the equipment by an amount that makes way for an external connector (not shown) into a receptacle (not shown).

[**0108**] **FIG. 20***b* shows this means of protection (**502**) in its closed position, the position in which it provides built-in protection for the external surface of the equipment.

[**0109**] **FIG. 21** shows protection in accordance with the invention comprising means (**603**) that are characteristic of the invention, a base (**611**) and a cover (**610**), also referred to as a lid. The base and the cover each consist of a flat sheet of a rigid material, e.g. a plastic material, metal, wood, etc. One could obviously also make provision to cover the lateral walls of the computer (**601**) although these are the less fragile parts of the computer.

[**0110**] These sheets can be solid or have cut-outs. In addition they can be flat or curved and in the latter case either convex or concave. These two sheets have the same dimensions, especially length and width, but it is feasible that the dimensions of one sheet are slightly greater than those of the other or even completely different.

[**0111**] In any case and according to a feature of the present invention, base (**611**) and cover (**610**) have a length and width that exceed the length and width of the main dimensions of the laptop that their assembly is intended to protect, at least at the corners (**615**) of the latter.

[**0112**] This being so and as shown in **FIG. 22**, base (**711**) and cover (**710**) protrude (**720**) at least in each of the corners, said protrusion extending beyond the volume defined by the base (**711**) and the cover (**710**). These protrusions can be continuous as shown in **FIG. 22** for example.

[**0113**] As will have become apparent due to the way the structure of these protrusions (**720**) is defined, this defines a peripheral means of absorbing shocks likely to occur both on the corners as well as the edges of the protection.

[**0114**] Advantageously, if the central structure of each of the two sheets that constitute the base and the cover is rigidified, the edges of the sheets can be less rigid in order to optimise their ability to absorb shocks.

[**0115**] Consequently and in a known manner, the sheets in question have, on their surfaces facing inwards into the volume intended to contain the laptop, their own means of shock absorption (not shown) both for the base (**711**) and for the cover (**710**), it even being possible for the shock absorber for the cover (**710**) to be specially optimised and bulkier in terms of its volume, given the relative fragility of the screen that it is intended to protect.

[**0116**] **FIGS. 23***a* and **23***b* show another variant of the embodiment of the invention in which the moveable part (**809**) is removable and can therefore be detached from the fixed part (**805**) and therefore taken off means (**803**) as shown in **FIG. 23***b*, thereby allowing physical access to the computer. If the user wants to connect a cable to the computer or exchange information with it by optical means such as an IR port, the user can detach the removable moveable part (**809**) from fixed part (**805**). Then, when the user has finished this operation, they can re-attach the removable part (**809**) to means (**803**) so as to ensure that the computer is protected against shocks, as shown in **FIG. 23***a*. Both these parts are connected to each other either by VELCRO®, by a magnet or by means of mechanical or elastic spring leaf type means.

[**0117**] In a sophisticated version of the protection according to the invention, one can fit, especially near the means of protection located in the corners (**103**; **203**; **403**; **503**; **603**; **703**; **803**) shock absorbers, e.g. consisting of joints filled with air or gel or even foam, thus optimising shock absorption.

[**0118**] **FIG. 24** illustrates protection in accordance with the present invention intended to protect a notepad (**908**), the display (**909**) of which is immovably built into the housing (**901**) containing the numeric keypad (**902**) and the other electronic components of this product (**908**).

[**0119**] **FIG. 25** shows protection in accordance with the invention intended, at this time, to protect a tablet PC (**1008**) equipped with a touch screen (**1009**) on which data can be entered, e.g. by using a stylus.

[**0120**] The attractiveness of the protection that is the subject of the invention is apparent; it makes it possible, by using simple means, to optimise the protection provided for a laptop regardless of the circumstances under which shocks occur, regardless of the location(s) where they occur and, finally, even when it is being used, i.e. when the laptop is opened.

[**0121**] In addition, this protection allows easy access to the sockets of the computer in order to plug a connector into them.

[**0122**] As defined, the object of the invention therefore relates to protection for a laptop consisting of protruding parts fitted at least in each of the corners of the two main surfaces of the computer. These protruding parts thus form preferred areas to receive shocks and to cushion them.

[**0123**] In addition, such protruding parts make it possible to protect the computer regardless whether it is in use or not and, for example, in the case of a laptop consisting of a base and a cover hinged onto said base, regardless whether it is closed or, if applicable, opened and being used or not.

[**0124**] The protection that is the object of the invention therefore makes it possible to optimise protection of the laptop regardless of its status, namely operating or not operating and therefore switched off or in use.

1. Protection for a laptop intended to be directly or indirectly separately mounted on the upper surface or screen and lower surface or base of the latter respectively, characterised in that it consists of means fitted at least in each of the four corners of each of the two main surfaces (upper and lower) of said laptop, each of said means protruding in the two main dimensions of said surfaces relative to the latter, lengthwise and widthwise respectively, so as to constitute a preferred area for receiving shocks and even cushioning them when said laptop is in an operating position or not.

2. Protection for a laptop as claimed in claim 1, characterised in that said means have a protruding protuberance that extends substantially at right angles relative to the surfaces of the laptop on which they are intended to be fitted.

3. Protection for a laptop as claimed in claim 1, characterised in that said means are reversibly or irreversibly separately mounted in each of the four corners respectively of the upper and lower surface of the laptop.

4. Protection for a laptop as claimed in claim 3, characterised in that said means have fixing fittings, especially reversible-fixing fittings, intended to allow the adjustment in this area of handles, straps or a belt for transporting and carrying said computer, or of a removable pocket.

5. Protection for a laptop as claimed in claim 3, characterised in that said means have fixing fittings, especially reversible-fixing fittings, intended to allow reversible attachment of the laptop on which they are separately mounted to a support or other container.

6. Protection for a laptop as claimed in claim 1, consisting of a protective case comprising a base and a cover directly or indirectly connected to each other and capable of defining a volume or an enclosed space inside which the laptop is intended to be placed, the base and the cover consisting of rigid or non-rigid sheets, characterised in that said sheets have dimensions definitely greater than all the main dimensions of the computer (length and width) so as to each define an external peripheral rim that protrudes relative to the volume that they define, said rim extending at least close to the four corners of said sheets.

7. Protection for a laptop as claimed in claim 6, characterised in that the sheets that constitute the base and the cover are solid or have cut-outs and in that they are flat or curved.

8. Protection for a laptop as claimed in claim 6, characterised in that only the four corners of each of the sheets that constitute the base and the cover are of larger dimensions and therefore protrude relative to the volume defined by the laptop.

9. Protection for a laptop as claimed in claim 8, characterised in that the protruding areas defining a peripheral shock absorber consist of parts separately mounted on the base sheet and cover sheet respectively, and especially corner pieces.

10. Protection for a laptop as claimed in claim 6, characterised in that all the edges of each of the two sheets that constitute the base and the cover respectively constitute an integral, continuous peripheral rim that protrudes relative to the useful volume of the protective case.

11. Protection for a laptop as claimed in claim 6, characterised in that the connection between the base and the cover is provided by the actual computer, the latter being equipped for this purpose with reversible-fixing means of self-gripping, adhesive or hook-and-loop type.

12. Protection for a laptop as claimed in claim 6, characterised in that the connection between the base and the cover is provided by one or more rigid parts that extend at a right angle relative to the plane of the base and cover sheets and are located substantially on the periphery of the latter.

13. Protection for a laptop as claimed in claim 12, characterised in that the connecting pieces consist of two rear pillars positioned substantially near the two rear corners of the base sheet rising to a height substantially equivalent to the thickness of the computer that the resulting case is intended to accommodate.

14. Protection for a laptop as claimed in claim 13, characterised in that the top end of said pillars has a flat that is parallel to the base sheet and intended to be attached to the corresponding rear edge of the cover sheet, said cover sheet being slightly raised in order to define a virtual hinge extending below the cover sheet and making it possible to open and close said cover relative to the base and, consequently, in order to define two protruding rear rims which fulfil a shock absorbing function.

15. Protection for a laptop as claimed in claim 12, characterised in that the connecting parts consist of a peripheral curb extending to a height substantially equivalent to the thickness of the computer that the resulting case is intended to accommodate.

16. Protection for a laptop as claimed in claim 15, characterised in that the contact areas between curb and the base and cover sheets respectively in each of the corners are hollowed out so as to fit a specific shock absorbing device in this area, especially one consisting of a joint filled with air or gel or made of foam.

17. Protection for a laptop as claimed in claim 15, characterised in that the entire periphery of the case has, in the immediate proximity of the base that constitutes it, a shock absorbing device, especially one consisting of a joint filled with air or gel of made of foam.

18. Protection for a laptop as claimed in claim 1, characterised in that at least one of said means has a fixed part and a part that can be moved relative to said laptop, said moveable part selectively defining a closed position and an opened position making way for an external mains supply connector or any accessory capable of cooperating with said laptop.

19. Protection as claimed in claim 18, characterised in that each of said means comprises:

two flat tabs extending substantially at right angles relative to each other and in two of the main directions of said laptop,

a substantially flat portion intended to rest on a flat part of said laptop, defining, together with said tabs, a corner capable of cooperating with the corresponding corner of said laptop,

and in that at least one of the tabs forms said moveable part.

20. Protection as claimed in claim 18, characterised in that the moveable part is articulated relative to the fixed part by means of a mechanical joint.

21. Protection as claimed in claim 20, characterised in that the mechanical joint consists of a swivelling joint articulated around an axis that is substantially parallel to one of the three main directions of the corner of the laptop accommodating the means with the moveable part.

22. Protection as claimed in claim 20, characterised in that the mechanical joint is also provided with elastic return means to return it to its closed position.

23. Protection as claimed in claim 18, characterised in that the moveable part wholly or partly consists of a material with elastic properties allowing manual deformation by an amount sufficient to make way for said external device.

24. Protection as claimed in claim 23, characterised in that the moveable part can be compressed and/or bent in at least one of the three main directions of the corner of said laptop receiving said means with a moveable part.

25. Protection as claimed in claim 18, characterised in that the moveable part is removable.

26. Protection as claimed in claim 18, characterised in that the means have a protruding protuberance that extends

substantially at right angles relative to the surfaces of the laptop on which they are intended to be fitted.

27. Protection as claimed in claim 18, characterised in that said means are reversibly or irreversibly separately mounted in each of the corners of the laptop.

28. Protection as claimed in claim 18, characterised in that said means each have an appropriate shock absorbing device, especially one consisting of a joint filled with air or gel or made of foam.

29. Protection as claimed in claim 18, consisting of a protective case comprising a base and a cover connected to each other and capable of defining an enclosed space inside which said laptop is to be placed, the base and the cover consisting of rigid or non-rigid sheets, characterised in that said sheets have dimensions larger than the main dimensions (length and width) of said laptop so that they each define an external peripheral rim that protrudes relative to the volume that they define, said rim extending at least close to the four corners of said sheets.

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