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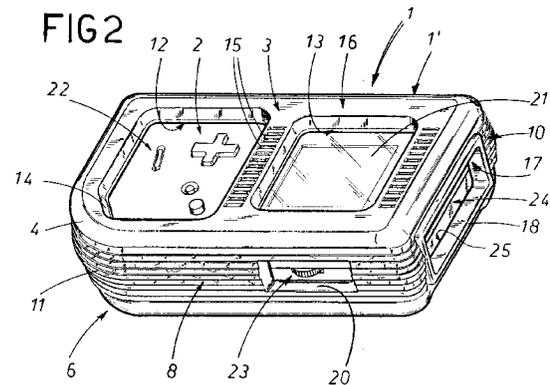
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(54) **A protective shell for portable electronic equipment.**

(57) A protective shell (1) for portable electronic equipment, which is constituted by a box structure (1') for the containing and keeping of a said item of electronic equipment (2); the said box structure (1') being internally hollow and having a shape which is complementary to that of the said electronic equipment (2); the said box structure (1') being equipped with two openings (12, 13), cut into a first of its walls (3), side-by-side and aimed at permitting access to respective determined portions of the said electronic equipment (2) contained in the said protective shell (1); the said two openings (12, 13) are also aimed at permitting, by means of elastic deformation of their edges, the insertion of the said electronic equipment (2) into the said shell (1).



The invention relates to a protective shell for portable electronic equipment. In particular, the invention concerns a protective shell realized in resilient material, to preserve portable electronic equipment such as electronic games, microtelephones, transceiver equipment, electric measuring devices (known as "testers"), remote control tv units etc. from bumps.

The prior art embraces cases or shells for portable electronic equipment, produced by die-dutting from cardboard or made in polystyrol, which are made exclusively with the aim of preserving the electronic equipment itself from eventual impacts during its pre-sale transport. Such cases, once opened for the removal of the electronic equipment contained in them, are not truly reusable, this not having been envisaged during their construction, so they do not have a good reclosing ability and are impractical for use as re-usable containers for electronic equipment.

Thus the electronic equipment is not provided, both during its use and after it, with any protection from the inevitable bumps resulting from being dropped or knocks caused in any other way.

An aim of the present invention is thus to realise a protective case for portable electronic equipment, aimed at permanently covering the said equipment, and able to guarantee excellent protection from bumps.

The invention, as it is characterized in the claims, solves the problem posed by provided a protective shell for portable electronic equipment, which is characterized by the fact of comprising a box structure for the containing and keeping of a said item of electronic equipment, made in elastomer material, being internally hollow and having a shape which is complementary to that of the said electronic equipment; the said box structure being equipped with two openings, cut into a first of its walls, side-by-side and aimed at permitting access to respective determined portions of the said electronic equipment contained in the said protective shell; the said two openings are also aimed at permitting, by means of elastic deformation of their edges, the insertion of the said electronic equipment into the said shell.

In the description that follows, the protective shell object of the present invention will, purely in the interest of providing a non-limiting example, be considered to be a protective shell for electronic games.

By the term "electronic games" in the description that follows, reference is made to those games, normally equipped with a liquid crystal display and with buttons or manual activation organs of various kinds, which are normally hand-held in one hand.

The invention will now be described, by way of non-limiting example, with reference to the accompanying figures, in which:

- Figure 1 shows, in perspective view, a preferred embodiment of a shell for portable electronic equipment, made according to the present inven-

tion;

- Figure 2 shows the shell of figure 1 with an item of portable electronic equipment inserted internally to it;

- Figure 3 shows the section made along line III-III of figure 1.

With reference to the accompanying figures, 1 denotes in its entirety a shell aimed at containing an electronic game 2.

The said shell 1 is made in resilient and easily deformable material, for example rubber or similar elastomer material, and exhibits a substantially hollow parallelepiped shape, echoing substantially the shape of the electronic game 2 which is to be housed in it.

With reference to figure 1 and to the lie in which it is represented, the shell 1 is essentially constituted by a box structure 1' and is superiorly defined by a wall or face 3 which is substantially flat and horizontal and exhibits a shape which is substantially rectangular with a rounded corner 4, and inferiorly defined by a wall 5 parallel to the wall 3 and vertically aligned with it, exhibiting peripherally the shapes of the wall 5 itself and having a rounded corner 6 equal to the said corner 4.

The walls 3 and 5 are reciprocally connected by four vertical walls, parallel two-by-two, the longer walls respectively above and below in figure 1 being denoted by 7 and 8, and the other two walls arranged respectively on the left and on the right of figure 1 itself being denoted by 9 and 10. The walls 8 and 9 are reciprocally connected, at the said rounded corners 4 and 6 of the walls 3 and 5, by a curver wall exhibiting, in plan view, the same shape as the rounded corners 4 and 6.

In two zones of the walls 3 arranged on opposite sides with respect to a line (not illustrated) intersecting the longer sides of the same wall 3, two substantially rectangular openings 12 and 13 are cut, arranged with their sides parallel to respective sides of the wall 3. The said openings 12 and 13 are substantially identical, with the one difference that the opening 12 exhibits a corner 14 adjacent to the rounded corner 4 of the wall 3, which corner 14 is beveled at about 45 degrees. Between the two openings 12 and 13 there is a rib 15, normal to the walls 7 and 8 and connecting more or less the median zones of the longer sides of a frame 16 defined by the peripheral portion of the wall 9 and projecting towards the inside of the said wall 9.

The wall 10 exhibits an opening 17 having a rectangular shape with sides parallel to respective sides of the wall 10, and from the sides of the opening 17 an annular lip describing the opening 17 perimeter projects towards the outside of the shell 1.

Two respective portions of the walls 7 and 8 arranged in proximity to and below respective sides of the opening 13 are equipped with respective rectan-

gular openings 19 and 20, exhibiting their sides parallel to respective sides of the walls 7 and 8 into which they are cut.

According to figure 2, the electronic game 2 is inserted into the shell 1 with its liquid crystal display 21 turned towards the outside of the shell 1 itself, through the opening 13, and with its activating keyboard 22 accessible through the opening 12.

The openings 19 and 20 offer manual access to portions of the electronic game 2 (only the portion accessible through opening 20 is illustrated) wherein there are activating organs constituted for example by potentiometer on/off switches and/or sockets into which plugs can be inserted (not illustrated but denoted complexively by 23).

The opening 17 makes possible access to a portion 24 of the electronic game 2 into which a floppy disk or a magnetic cassette (not illustrated) would be inserted for the use and functioning of the electronic game 2.

It should be noted that the openings 12, 13 and 17, apart from exhibiting, obviously, such dimensions as to permit access to the person wishing to use the electronic game 2 respectively to the keyboard 22, the display 21 and the portion 24, also preferably are sized in such a way as to permit, by effecting partial elastic deformation of the edges of the openings 12, 13 and 17, of inserting the electronic game 2 through the said openings into the shell 1 itself.

Though it is obvious that with regard to the openings 12 and 13 the rib 15 and the frame 16 constitute blocking elements for the electronic game 2, we should like to specify that also the third opening 17 is described by a frame edge 25 projecting towards the inside of the wall 10, which defines a stop element for the said electronic game 2, in that it acts on the face of the said electronic game 2 wherein the portion 24 is contained, once the equipment has been inserted internally to the box structure 1' (see figure 3). It should also be noted that the shell 1 could have, apart from the said openings 12, 13, 17, 19 and 20, further openings necessary for access to portions of the game 2 (not illustrated since not referred to in the preceding description).

From the preceding it is clear that the shell 1 described is able to reach the prefixed aim, since it is perfectly capable of protecting the electronic equipment from accidental impacts.

Claims

1. A protective shell for portable electronic equipment, characterised by the fact of comprising a box structure (1') for the containing and keeping of a said item of electronic equipment (2), made in elastomer material, being internally hollows and having a shape which is complementary to

that of the said electronic equipment (2); the said box structure (1') being equipped with two openings (12, 13), cut into a first wall (3), side-by-side and aimed at permitting access to respective determined portions of the said electronic equipment (2) contained in the said protective shell (1); the said two openings (12, 13) are also aimed at permitting, by means of elastic deformation of their edges, the insertion of the said electronic equipment (2) into the said shell (1).

2. A protective shell as in claim 1, characterised by the fact of comprising a box structure (1') for the containing and keeping of a said item of electronic equipment (2), made in elastomer material, being internally hollow and having a shape which is complementary to that of the said electronic equipment (2); the said box structure (1') exhibiting a wall (3) defined by a frame element (16) projecting towards the inside of the said wall (3) starting from an external border line of the wall (3) itself, two substantially median portions of two opposite sides of the said frame element (16) being connected by a rib (15) in the said wall (3), which rib (15) defines, together with some perimetral internal portions of the said frame element (16), two openings (12,13) reciprocally side-by-side which permit access to respective determined portions of the said electronic equipment (2); the said two openings (12, 13) also being aimed at permitting, by means of elastic deformation of their edges, the insertion of the said electronic equipment (2) into the said shell (1).

3. A protective shell according to claims 1 or 2, characterised by the fact that the said box structure (1') exhibits a third opening (17) cut into a wall (10) which wall (10) is substantially normal to the lie of the said first wall (3), aimed at giving access to a further determined portion of the said electronic equipment (2) and aimed at permitting, by means of elastic deformation of its edges, the insertion of the said electronic equipment (2) into the said shell (1).

4. A protective shell according to claim 3, characterised by the fact the said third opening (17) is described by an edge or frame projecting towards the inside of the said wall (10) to define a stop element for the said electronic equipment (2) and acting on the face of the said item of electronic equipment (2) once it has been inserted into the said box structure (1').

5. A protective shell according to claims 1 or 2, characterised by the fact that the said box structure (1') exhibits a fourth and fifth openings (19, 20) cut into respective walls (7, 8) which walls are sub-

stantially normal to the lie of the said first wall (3) and to the said wall (10) having the said third opening (17), to permit access to a further determined portion of the said electronic equipment (2).

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6. A protective shell as in the previous claims, characterised by the fact that the said box structure (1') exhibits a substantially hollow parallelepiped shape.

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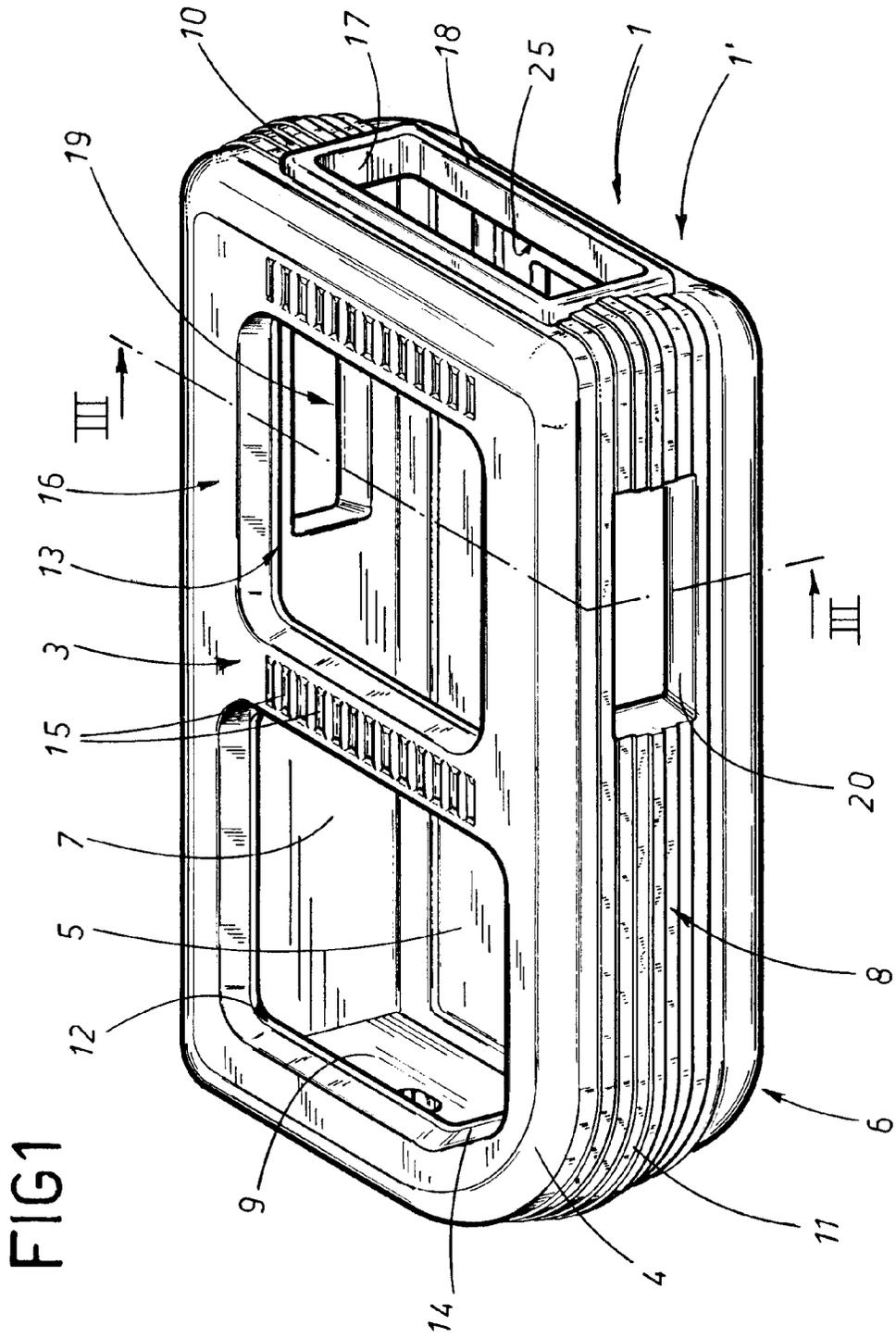


FIG 2

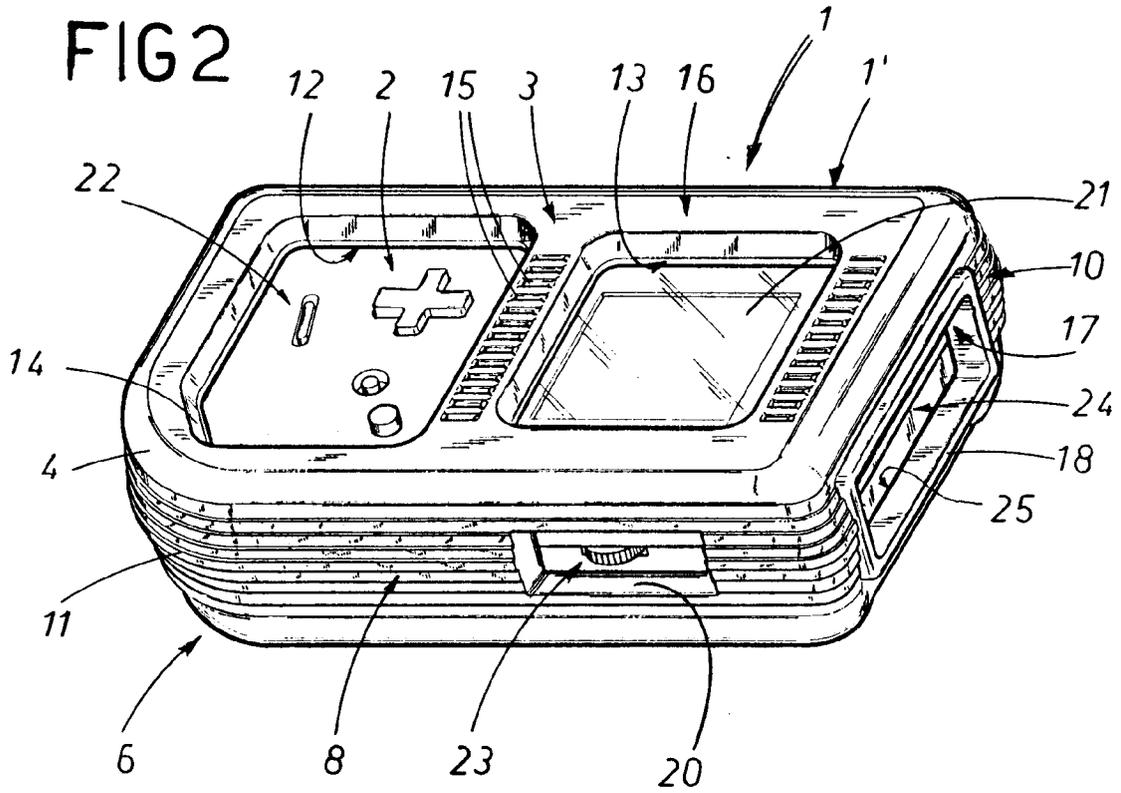
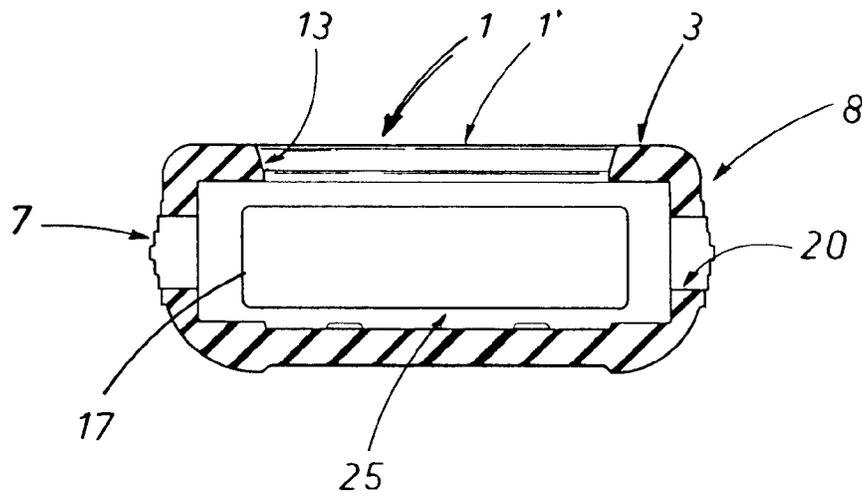


FIG 3





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 83 0436

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
P,A	WO-A-9 208 239 (DYNASOUND ORGANIZER) * the whole document * ---	1	A63F9/00
A	ELEKTRONICA vol. 36, no. 17, 9 September 1988, KLUWER, DEVENTER, NL page 35 'VOLG DE LEIDER IN DMM S' * figure * ---	1	
A	EDN ELECTRICAL DESIGN NEWS. no. 18, 16 September 1981, NEWTON, MASSACHUSETTS US pages 72 - 73 'CALCULATORS HANDICAP HORSE RACES' -----	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A63F
Place of search	Date of completion of the search	Examiner	
THE HAGUE	06 NOVEMBER 1992	TOUSSAINT F.M.A.	
CATEGORY OF CITED DOCUMENTS		I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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