

Dec. 24, 1963

T. HAUSER

3,115,247

PACKING FOR AMPOULES OR THE LIKE

Filed June 12, 1961

Fig. 1

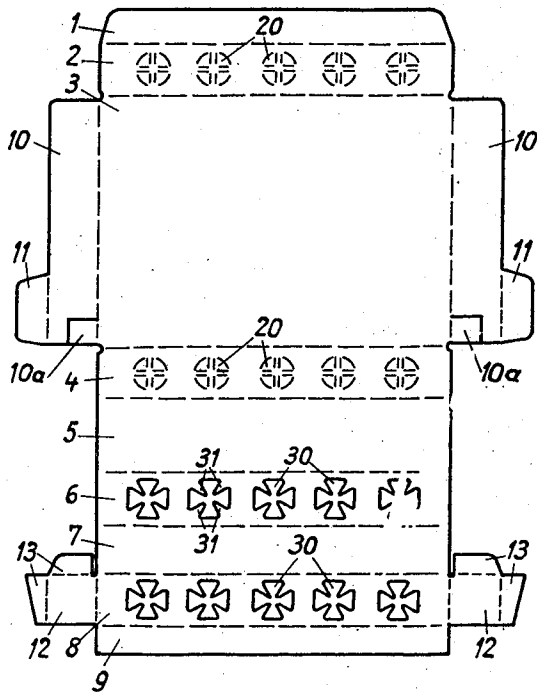


Fig. 4

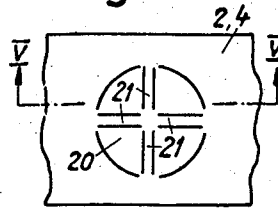


Fig. 5

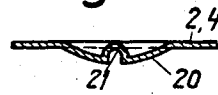


Fig. 6

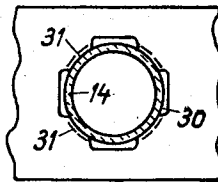


Fig. 2

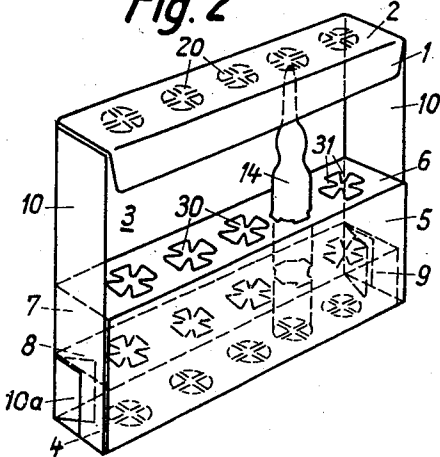
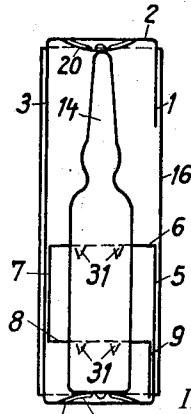


Fig. 3



INVENTOR.
Theodor Hauser
BY
Werner W. Kleeman
ATTORNEY

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PACKING FOR AMPOULES OR THE LIKE

Theodor Hauser, Haus Zum Freulereck,
Nafels/GL, Switzerland

Filed June 12, 1961, Ser. No. 116,616

Claims priority, application Switzerland June 10, 1960

6 Claims. (Cl. 206-65)

The present invention relates to a blank and packing for ampoules or the like formed of a cut-out and pre-folded semi-stiff sheet material having a bottom surface adjacent to the ampoule rear ends and a covering surface adjacent to the ampoule front ends and two intermediate parallel surfaces provided with perforations arranged one above the other for the purpose of guiding the ampoules.

Such packings, which may be manufactured of light cardboard in the manner of the known folded packs, are capable of efficiently protecting the glass ampoules against lateral shocks while particular measures are required to absorb impacts on the bottom or top surface, i.e. in the longitudinal direction of the ampoules. A known method of solving this problem in packings of this type is to provide a resilient intermediate insert on the inside of the bottom and top surfaces which is formed by a pair of opposite tongues integrally cut which are folded against one another and of which the free ends are so connected that the lengths of pairs of such tongues between the folded point and the connection are greater than the distance between the folding points. This solution, however, presents the disadvantage that the tongues to be integrally cut out will laterally extend from the actual blank width when unfolded, so that the necessary width of the material is more than twice that of the finished width, which results in comparatively large pieces of waste material in the cutting operation.

The present invention is designed to eliminate these disadvantages. It is characterized by the fact that the bottom and top surfaces are provided, underneath and above the said perforations, with inwardly embossed indentations in the sheet material and that means are provided for centering the ampoules relative to these indentations.

Accordingly, it is an important object of the present invention to provide an improved package for supporting articles, particularly ampoules or the like, in a safe and reliable manner.

A further important object of the present invention is to provide an improved blank construction which can be folded into a carton or package for articles, particularly for ampoules or the like, in a relatively simple and quick manner, and is particularly adapted for packaging such articles by semi-automatic or fully automatic processes.

Another important object of the present invention is to provide an improved blank structure for a carton which can be manufactured and assembled in an efficient and economical manner.

Still a further important object of the present invention is to provide an improved blank which can be folded into a carton without requiring adhesive material for joining together the panels of said carton.

Another important object of the present invention is to provide an improved blank and carton formed from such blank which can safely support articles therein, such as ampoules or the like, is provided with means defining shock absorbing surfaces for said articles, as well as means permitting aligning and support of said articles within said carton, even if the outer contour of said article is not uniform.

A further object of the present invention is to provide an improved blank and carton structure including means for supporting the article receiving panels of said carton

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without requiring the use of adhesive material to assemble the blank into carton form.

An embodiment of the packing according to the present invention is shown in the drawing and will be described in greater detail below. In the drawing,

FIG. 1 shows the packing unfolded in the form of a blank;

FIG. 2 is a perspective view of the as-folded packing;

FIG. 3 is a vertical section thereof;

FIG. 4 shows an individual indentation seen from the outside at a larger scale;

FIG. 5 is a cross-sectional view taken along line V—V in FIG. 4, and

FIG. 6 shows an article support and aligning perforation with the ampoule inserted and viewed along the axis of the ampoule.

The design of the packing is shown in FIGS. 1 through 3. The shape of the unfolded box or blank formed of a piece of light cardboard cut and prefolded in one operation is shown in FIG. 1. The fold lines are shown in broken lines. Arranged in the central portion of the flat blank are the end tongue or wall 1, the top wall or surface 2, the rear wall or surface 3, the bottom wall or surface 4, the front wall or surface 5, the intermediate wall or surface 6, the connecting wall or area 7, the intermediate wall or surface 8 and the supporting wall or tongue 9. These surfaces or panels are bent along the prefolded lines according to FIGS. 2 and 3 so that the intermediate surfaces 6 and 8 will be located in parallel relationship between the bottom wall surface 4 and the top wall surface 2. Laterally of the central blank portion are the side walls 10 with the closing tongue 11 and the side supporting tongues 12 and 13 which lend the folded box or carton sufficient rigidity and hold the intermediate wall surfaces 6 and 8 in position. Arranged at the side walls 10 is a further tongue or side flap 10a of which the height is the same as that of the supporting tongues 9. If the tongue 10a is bent slightly inwards of the box as seen in FIG. 2, they will serve as stays between the surfaces 4 and 8 so that the surfaces 7 and 3 need not be glued.

The tongues 10a are effectively inwardly foldable rear base flaps in the unit of FIGURE 2. They result from the side walls 10 being cut, as shown, first upwardly from the lower edge thereof and then inwardly to the adjacent side fold line. The height of the flaps 10a parallel to such side fold lines, as also shown, is equal to the difference in height of the front wall 5 and the connecting wall 7, such difference in height corresponding also to the height of the supporting tongue 9.

The aforesaid tongues 12 and 13 can properly be regarded as providing side supporting tongue means. Each such means is respectively hingedly connected to an opposite side edge of the second intermediate wall 8 along a fold line. Consistent with this definition, each of the tongue means includes a main section 12 and a pair of inwardly foldable top and side flaps 13.

In order to accommodate the ampoules 14, the intermediate surfaces 6 and 8 are provided with receiving apertures or perforations 30 arranged in alignment above one another and into which the ampoules are detachably inserted. The fragile ampoules are very efficiently protected against lateral impacts by the rigidity of the material. In order to efficiently absorb impacts in the direction of the ampoule axis the bottom wall surface 4 adjacent to the rear ends of the ampoules and the top wall surface 2 adjacent to the ampoule front ends are provided with inwardly embossed indentations 20 preferably integrally formed in the sheet material. These indentations are located underneath and, respectively, above the aligned apertures 30, and their configuration is shown in FIGS. 4 and 5. In order to increase the rigidity of the cup-

type indentations 20, they are provided with four radially arranged and embossed reinforcing ribs 21.

In order to ensure the cushioning and resilient action of said indentations 20, the ampoules 14 must have their longitudinal axis centered on the center of these indentations as shown in FIG. 3. As such, circular perforations adapted to the diameter of the cylindrical ampoule portion in the surfaces 6 and 8 could ensure such a centering action. However, the diameter of the ampoules differs within certain limits determined by the tolerances in manufacture, and it would be highly uneconomical to adjust the diameter of the perforations to that of the ampoules. In order to ensure perfect centering despite this fact, the apertures 30 are provided with preferably four radially directed ribs 31 which taper in the direction of the center. At least three such tongues are required per aperture in order to achieve centering. These ribs or tongues 31 are bent when the ampoules are inserted and will then rest on the wall of the ampoules. FIG. 6 clearly shows that this configuration of the perforations 30, which resembles a Maltese-cross star wheel or clover-leaf, or of the tongues 31, will take up the manufacturing tolerances of the ampoules 14; their diameter may therefore change within certain limits without adversely affecting the centering action of the tongues 31. Finally, the package can be slipped into an open-ended hollow sleeve 16 to enclose the supported ampoules 14.

The tongues 31 which in the illustrated embodiment act at no less than eight points on the surface of the ampoule, and bent over and resting against the ampoule walls furthermore have the very desirable effect, owing to their adhesive friction on the ampoule, of preventing the ampoules from slipping out also when the packing is opened so that the danger of breakage and, in particular, of confusion is substantially reduced.

As the embossed indentations 20 described enable the ampoules to be protected against impacts in their longitudinal direction without requiring tongues to be added on the sides of the unfolded blank, considerable savings in material are obtained in the manufacture of this packing. In addition, folding of the box is simplified since no tongues require folding in and connection. The manufacture of the packing is extremely simple since cutting of the blank and the perforations or apertures 30, prefolding and embossing of the indentations 20 with the ribs 21 can be effected in one operation. Naturally, modifications of the shown box holding five ampoules are possible, the number, size and relative position of the ampoules being capable of change. If the packing is required to meet very stringent demands, the resilient inserted members mentioned above may also be incorporated, if necessary in conjunction with a strip formed of a shock-absorbing material which is attached to the inside of the bottom and top surfaces, such as synthetic foam material or cellulose wadding. It is also possible to provide several inserts, e.g. as shown in FIG. 2, in a common sliding jacket or folded box to form so-called clinical packs containing from 10 to 100 ampoules.

Having now described and ascertained the nature of my said invention and the manner in which the same is to be performed, I declare that what I claim is:

1. A blank for a packing, particularly for packaging of ampoules, comprising a foldable paper material including a top wall portion and an adjacent rear wall portion having opposed side edges, said rear wall portion being hingedly connected to said top wall portion along a fold line disposed at an upper edge of said rear wall portion, opposed side wall portions hingedly connected to said opposed side edges along respective side fold lines, each of said side wall portions being cut upwardly from the lower edge thereof and then inwardly to the adjacent side fold line to provide inwardly foldable base flaps having a given height parallel to said side fold lines, a bottom wall portion arranged along a fold line at a lower edge of said rear wall portion remote from said

top wall portion, a front wall portion hinged to a lower edge of said bottom wall portion along a fold line, a successively arranged first intermediate wall portion, connecting wall portion narrower than said front wall portion by an amount at least substantially equal to said given height, second intermediate wall portion and supporting tongue wall portion, each of said successively arranged wall portions being hingedly connected to adjacent wall portions along respective fold lines, said first and second intermediate wall portions being provided with a number of aligned openings adapted to releasably receive an article, means disposed about each opening for releasably engaging and supporting an article, said top wall portion and said bottom wall portion being provided with aligned convex embossments adapted to cooperate with said aligned openings of said first and second intermediate wall portions to define shock absorbing surfaces for an article.

2. A blank as defined in claim 1 wherein each of said embossments has intersecting ribs thereon, and wherein said means disposed about each opening for releasably engaging and supporting an article comprises a series of spaced inwardly directed radial bendable ribs.

3. A blank as defined in claim 1 and further including a pair of side supporting tongue means respectively hingedly connected to said second intermediate wall portion along fold lines at respective opposite sides thereof, each of said tongue means including a main section and a pair of inwardly foldable top and side flaps.

4. A package for articles formed from a foldable blank of semi-rigid, sheet-like material, particularly for packaging of ampoules or the like; comprising a rear panel having upper and lower edges and opposed side edges; a top panel hingedly connected to said upper edge of said rear panel; a side panel hingedly connected to each side edge of said rear panel; a bottom panel hingedly connected to said lower edge of said rear panel; said bottom and top panels being provided with aligned embossments defining shock absorbing surfaces for articles; said bottom panel having a forward edge; a front panel having upper and lower edges with said lower edge thereof hinged to said forward edge of said bottom panel, said front panel extending in spaced and parallel relation to said rear panel; a first intermediate article receiving panel hingedly connected to said upper edge of said front panel, a second intermediate article receiving panel, and a connecting panel hingedly arranged between said first and second intermediate panels for interconnecting said two last-mentioned panels; said first and second intermediate panels being disposed in at least substantially parallel spaced relation to one another and to said top and bottom panels with said connecting panel disposed at least substantially parallel to said rear panel; said second intermediate panel lying between said first intermediate panel and said bottom panel, said respective intermediate article receiving panels being provided with aligned article receiving apertures, said article receiving apertures being also aligned with said embossments on said top and bottom panels; each of said side panels being provided with hingedly connected front flaps, said front flaps being disposed between said first intermediate article receiving panel and said bottom panel in underlying adjacent relation to said front panel, said side panels also being provided with rear base flaps, said rear base flaps being hinged to said rear wall and folded inwardly from said side wall panels under said second intermediate article receiving panel to support the same in spaced parallel relation to said bottom panel.

5. A package as defined in claim 4 wherein said rear panel has a substantially greater height than said front panel and wherein said rear panel, said top panel, said bottom panel, said front panel, said first and second intermediate article receiving panels, and said connecting panel are of equal length parallel to the axis of the hinged connections between said panels.

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6. A package as defined in claim 4 and further including a supporting tongue disposed in underlying adjacent parallel relation to said front panel and between said bottom panel and said second intermediate article receiving panel, said supporting tongue being hingedly connected to said second intermediate article receiving panel along an edge thereof disposed adjacent and extending parallel to said front panel.

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