July 6, 1937. C. MOFFA 2,086,300

PACKING FOR GLASS BULBS OR PHIALS

Filed Aug. 20, 1935

Fig. 4.

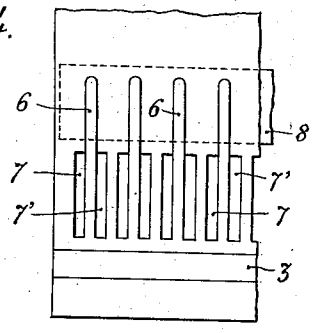


Fig. 5.

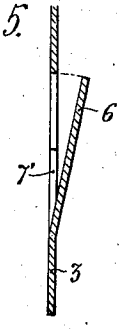


Fig. 6.

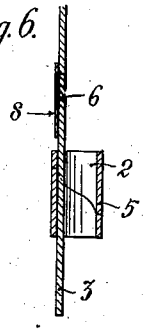


Fig. 1.

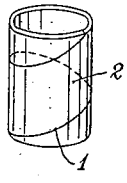


Fig. 2.

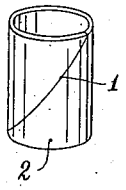


Fig. 3.

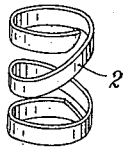


Fig. 7.

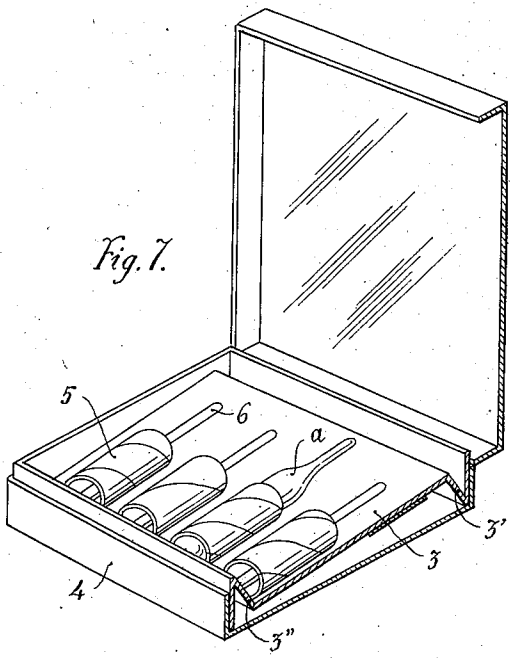
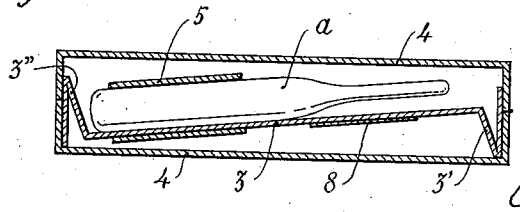


Fig. 8.



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PACKING FOR GLASS BULBS OR PHIALS

Cesare Moffa, Milan, Italy

Application August 20, 1935, Serial No. 37,084
In Italy November 12, 1934

2 Claims. (Cl. 206—65)

The invention refers to a packing for keeping and shipping glass bulbs or phials.

Such packing cases are well known: usually they are made as card-board boxes in which the phials are ranged in good order by means of divisions, clasps, strips or the like and are protected from shock from other bodies by means of different kinds of packing material.

The means heretofore adopted for supporting such glass bulbs do not secure any firmness: very often they get loose either on account of the weight of the glass bulbs or due to their insufficient reaction of the clasps to said weight: the phials leave their nesting place and, striking one another, break. On the other hand the protective packing is very expensive, not only on account of the cost of the materials but also for the labor required. It should be added that such packing-cases have a quite ephemeral life and therefore all the care and money spent in their manufacture is finally spent in pure loss and adds to the cost of the chemicals enclosed in the phials.

The present invention has for its object a packing-case avoiding radically all these drawbacks.

According to the invention, the cells retaining the phials have a tubular shape and the elastic grip on the phial is obtained in such a manner that the same can in no way slip-off: to this object said tube is provided with a helical slit traced from one end to the other. Moreover, said cells are carried elastically in the packing-case, so that, moving flexibly within the packing, they reduce and check any shock from the outside without requiring a packing material.

The invention will be better understood by means of a few examples of its achievement hereafter specified and shown in the accompanying drawing.

Figs. 1, 2, 3 show the details of the tubular cells according to the invention;

Figs. 4, 5, 6 show the details of means for attaching said cells to their supports;

Figs. 7 and 8 show respectively a perspective view of the open packing box, partially sectioned, and a cross section of the same, closed.

Of course, the examples given are purely demonstrative and do not limit in any way other possible embodiments of the invention.

Each cell is tubular in shape and has a slot **1** cut helically: it is easy to understand that such a slot, whilst given a certain elasticity to the tube, offers to the phial no means of slipping out, as the same is clasped in a helicoidal strip. It is only possible to push out with some effort the phial axially from its cell.

Such cells can be manufactured out of a straight tube cut along the desired helix: they can be obtained also by rolling a strip **2** helically into a tube, and cutting away from it the cells required. The helix can have a long or a short pitch (Figs. 1 and 2), eventually with an air gap (Fig. 3): all depends on the size and weight of the phials and of their contents. The material out of which the cells can be manufactured can be either cardboard, metal sheet or any other proper material.

Cells prepared as above are lined up side by side on a wall **3** of the stand, which, in order to be able to absorb shocks is fitted springingly into the case. The spring suspension of this wall **3** is obtained by arranging it as a double bottom to the case **4**, with two sides **3'** and **3''** folded hingewise so as to shift freely. Walls **3'** and **3''** can be separate or obtained by folding up and down wall **3**, the folded edges forming a sort of hinge. Due to the freedom allowed to wall **3**, the cells **5** are elastically suspended in the cavity of the case, as clearly shown in Fig. 8. Wall **3** has always the tendency to return to a mean position of equilibrium—as shown in the drawing—due to the fact that when it shifts from this mean position, the two angles it forms with the walls **3'** and **3''** vary inversely viz. when one opens the other closes and reciprocally. Of course, the relative size of the different elements of the case are chosen in such a way as to never allow the phials *a* to come into contact with the outer walls of the case for any possible position of wall **3**.

It is essential that the cells **5** should be firmly held by wall **3**. To this object they are not glued to it, but they are inserted (Figs. 4, 5, 6) each one on a strip **6** cut out from wall **3**. Two openings **7**, **7'** are cut out from wall **3** along said strip for receiving the cells, when the strip **6** is replaced along wall **3**: the strip is then glued to the wall with a tape **8** on the back of wall **3**. This attachment is very rugged: other similar attachments may be conceived within the limits of the present invention.

What I claim is:

1. A packing case for phials with retaining means formed by straight tubular cells with an helical slot cut from end to end and arranged in the case by fixing them to a movable wall forming a double bottom to the case and hinged on two opposite walls which are hinged on two opposite walls of the case, the two double hinges

being elastic and working one against the other, allowing said movable wall to shift elastically about a middle position to which it is always retrieved without ever allowing said phials to strike any point of said case.

2. A packing case for phials with retaining means formed by straight tubular cells with an helical slot cut from end to end and arranged in the case by fixing them to a movable wall, forming double bottom to the case and hinged on the same, the hinges being elastic and working one against the other, allowing said movable wall to shift elastically about a middle position to which it is always retrieved, without ever allowing said phials to strike any point of said case; strips cut out from said movable wall, on which are slipped said cells; a tape for fixing the free end of said strips to the movable wall on its back; apertures cut in said movable wall along said strips to receive said cells fixed on the strips.

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