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M. MOUSSONG

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CLAMPING PLATES FOR SMALL CONTAINERS, PARTICULARLY AMPOULES

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Fig. 1

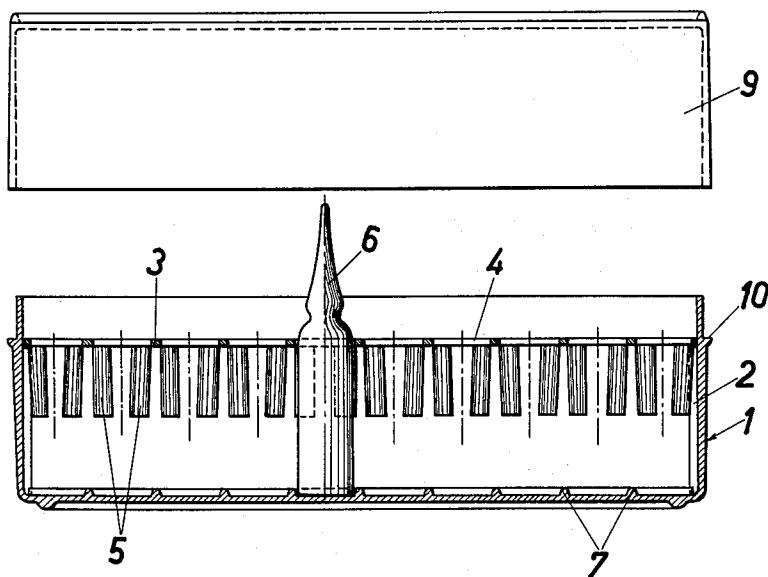
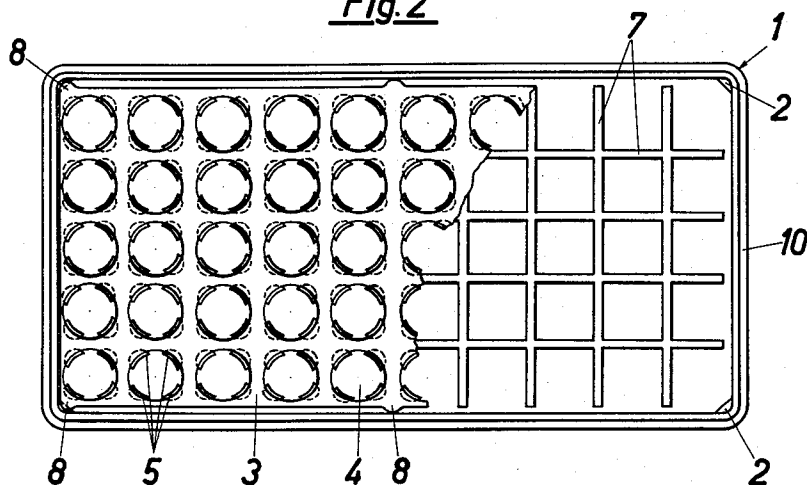


Fig. 2



INVENTOR

MONIKA MOUSSONG

BY

Smiley & Smiley
ATTORNEYS

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3,113,689

CLAMPING PLATES FOR SMALL CONTAINERS, PARTICULARLY AMPOULES

Monika Moussong, Larochegasse 19, Vienna, Austria
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1 Claim. (Cl. 217-27)

This invention relates to a clamping plate which serves for keeping and transporting small containers, particularly ampoules, and which can be inserted in housings and holds the containers, such as ampoules, in said housings.

This invention provides a clamping plate comprising a platelike member, openings in said platelike member for inserting containers in the same, lugs at the edge of each of said openings, said lugs being integral with said platelike member and consisting of resilient material, the lugs around each opening protruding on one side from said platelike member and being inclined at a small angle towards the central axis of the opening surrounded by them.

Another feature of the invention resides in that said platelike member is so inserted in a housing that said lugs are directed toward the bottom of said housing.

It is also a feature of the invention that said platelike member rests on projections provided on the inside of the housing wall.

It is a further feature of the invention that the platelike member itself is formed at its edge with projections in clamping engagement with the side walls of the housing.

The drawing shows an illustrative embodiment of a clamping plate according to the invention, which plate is inserted in a housing intended for receiving ampoules.

FIG. 1 is a vertical sectional view showing the housing with the cover lifted and FIG. 2 is a top plan view showing the housing with the cover removed and with the clamping plate shown partly broken away.

The housing 1 has a substantially rectangular plan outline with rounded corners, which are filled by projections 2 consisting of ledges. These projections 2 terminate at a point spaced from the upper rim of the housing. The projections 2 support a clamping plate 3, which occupies substantially the entire cross-sectional area of the interior of the housing 1 and has parallel rows of circular openings 4. The diameter of said openings 4 is slightly larger than the outside diameter of the ampoules to be received so that the latter can easily be inserted. To ensure a reliable holding of these ampoules so that they will not clink when the housing is shaken and cannot fall out of the housing when the same is inserted, four regularly spaced, resilient lugs 5 are provided on the underside of the clamping plate 3 at the edge of each opening 4. These lugs 5 are directed toward the bottom of the housing and are inclined at a small angle toward the axis of the opening surrounded by them. The inclination must be such that the ends of the lugs resiliently engage the ampoules to frictionally hold the same. For the sake of simplicity, only one ampoule 6 is shown in FIG. 1 of the drawing. It is apparent from FIG. 1 that the lugs 5 at the edge of the openings 4 in which no ampoule is inserted converge downwardly at a small angle and only the lugs urged apart by the ampoule 6 extend at right angles to the surface of the clamping plate 3. The lugs 5 have a lasting, non-slackening resiliency so that they will return to their inclined original position when the am-

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poules have been removed from the openings 4, and the clamping plate and the housing receiving the same can be re-used for an unlimited number of times.

Ribs 7 extending at right angles to each other are provided at the bottom of the housing 1 to define quadrangular recesses for receiving the ampoules.

The clamping plate 3 is provided at its corners and approximately in the middle of its longitudinal sides with projections 8, which engage the longitudinal walls of the housing 1 to support the plate.

The housing 1 can be closed by a cover 9, which rests on a projection ledge 10 extending around the housing 1. The height of this cover is such that its top lies above the top ends of the ampoules.

The clamping plate 3 inclusive of the tongues 5 and the projection 8, on the one hand, and the housing 1 with its projections 2, the ribs 7 and the projecting ledge 10, and also the cover 9, on the other hand, are suitably made in a single injection-molding operation from non-hardenable plastic material, preferably from synthetic material.

The housing 1 described hereinbefore may be replaced by other containers of any desired size and shape.

The lugs 5 may be of different shape. They may consist of tongues. Different from the embodiment shown, they may have a smooth cross-section tapering to a point, or may be provided with thicker ends to assist the gripping of the ampoules.

The projections 2 may be integrally cast and the projections 8 may consist of noses.

The clamping plate according to the invention may also be formed to receive a smaller number of ampoules, such as three ampoules, and be inserted in a housing of suitable size.

It is obvious that the invention includes also different arrangements of the clamping plate. For instance, the housing which receives the ampoules may have a bottom which forms the clamping plate if this bottom is provided with openings and upwardly protruding, resilient tongues disposed at the edges of said openings and grouped to hold the inserted ampoules in rows in an arrangement which is similar to that in the embodiment shown. The cover of the housing may also be provided with openings through which the ampoules may be inserted, or the cover may form a closure member having no openings.

The cover of the housing may also consist of a clamping plate provided with openings and adjacent thereto with the resilient lugs to enable the ampoules to be inserted and retained.

It is also within the scope of the invention to use the clamping plate for articles other than ampoules. In this case, it is sufficient to provide the plate with openings having a cross-section which corresponds to the cross-section of the articles to be clamped. If it is desired to use the clamping plate for articles having different cross-sections, the openings 4 will be provided to suit the largest cross-section and the tongues 5 will be given an inclination which ensures a reliable clamping also of the article having the smallest cross-section.

What is claimed is:

A clamping device for ampoules and similar small containers, comprising a substantially flat plate, spaced apart openings formed in said plate for receiving the small containers, a plurality of spaced stiff lugs extending from the plate completely around the peripheral edge

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of each of said openings and protruding from one side of the plate, said lugs being formed of resilient plastic material and being integral with the plate, and the lugs at each opening being inclined at a small angle toward the center line of the opening surrounded by them and being curved about said center line to form trapezoidal portions of a conical surface, whereby the insertion of an ampoule in one of said openings spreads the lugs thereabout to firmly engage the ampoule with a resilient clamping action.

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