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H. HAIDEGGER

2,899,782

METHOD OF MANUFACTURE OF PACKING

Original Filed March 1, 1954

FIG.1

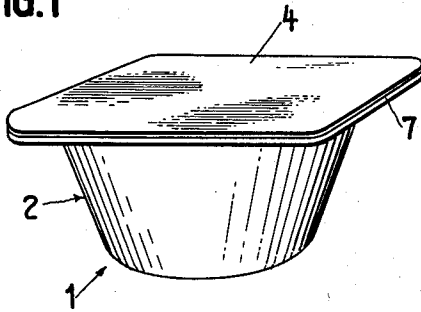


FIG.2

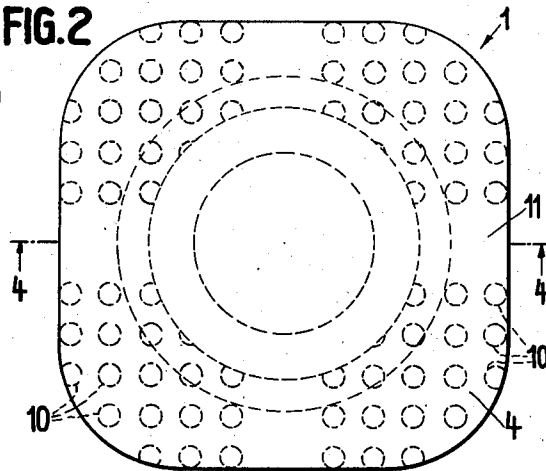


FIG.3

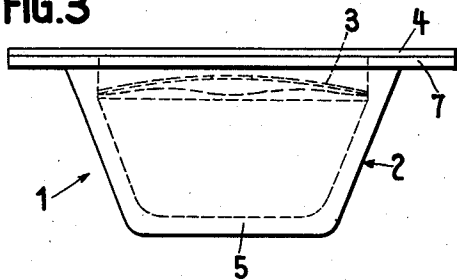


FIG.4

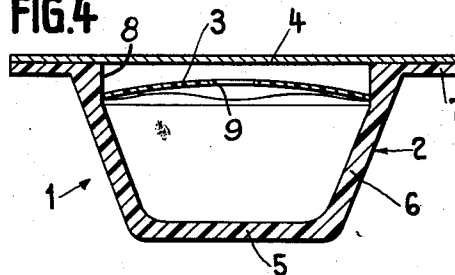


FIG.5

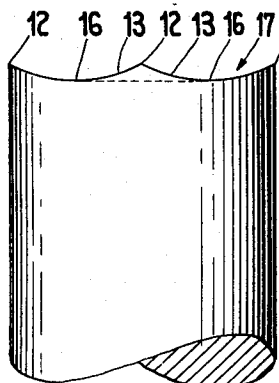
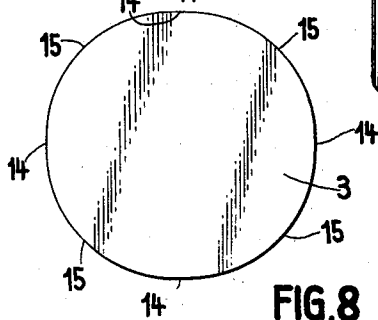
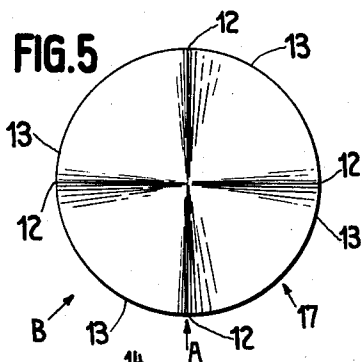


FIG.6

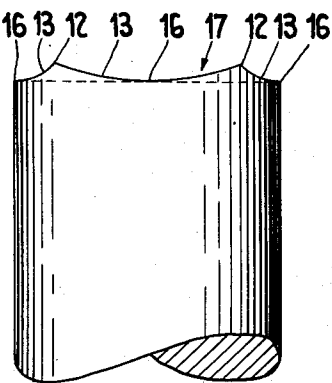


FIG.7

INVENTOR
HANS HAIDEGGER
BY *Edward V. Connor*
ATTORNEY

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2,899,782

METHOD OF MANUFACTURE OF PACKING

Hans Haidegger, Soleure, Switzerland, assignor to Ebauches, S.A., Neuchatel, Switzerland

Original application March 1, 1954, Serial No. 413,330.
Divided and this application July 10, 1957, Serial No. 676,459

3 Claims. (Cl. 53—14)

The present invention relates to a packing and to a method of manufacture of same and this application is a division of my earlier application filed March 1, 1954 for Packing and Method of Manufacturing Same, Serial No. 413,330.

One of the objects of the invention is to provide a packing which is readily provided with a partition member.

Another object of the invention is to provide a method of making a packing.

Another object of the invention is to provide a method of cutting and positioning of a partition member in a packing.

Other objects and advantages of the invention will be apparent from the following description and from the accompanying drawing.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, all as will be illustratively described herein, and the scope of the application of which will be indicated in the following claims.

Other objects and advantages of the invention will be apparent from the following description and from the accompanying drawing, which shows, by way of example, an embodiment of the invention.

In the drawing:

Figure 1 is a perspective view of the packing.

Figure 2 is a top view of the packing.

Figure 3 is a side view at an enlarged scale of the packing made in accordance with the invention.

Figure 4 is a vertical sectional view taken along the line 4—4 of Figure 2.

Figure 5 is a bottom view of the end male die for cutting a partition member or spacer of the packing from a sheet form.

Figure 6 is a view of the end male die in direction of arrow A of Figure 5, and

Figure 7 a view of the end male die in direction of arrow B of Figure 5.

Figure 8 is a top view of the spacer in its flat condition, on an enlarged scale.

Referring to the drawings, there is shown a container or packing 1 in accordance with the invention and including a cup-shaped body member 2, a partition member or spacer 3, and a cover member 4.

The body member 2 is preferably made from polystyrene, although any other suitable plastic material such as Plexiglas, an acrylic plastic or other material might be used which does not evolve vapors during storage or during a heat-sealing operation, or which does not otherwise act so as to corrode or rust the stored parts. The body member 2 is molded for instance by injection at a temperature for instance about between 135° and 150° centigrade, or drawn or pressed at a temperature for instance about between 100° and 170° centigrade to form a round flat bottom 5 between 8 and 16 millimeters in diameter. Sidewall 6 is inclined upwardly at an angle from 30 to 30 degrees from the vertical and is made of a

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height of about 6 to 12 millimeters. An annular flange 7 extends horizontally from the top edge of the sidewall 6 a distance between 2 and 4 millimeters. Preferably the flange 7 is square in top view to facilitate storage in boxes. The body member 2 is from 0.2 to 0.8 millimeters in thickness. The inner surface of the sidewall 6 is made with a vertically extending cylindrical wall 8 extending downwardly between 1.0 and 4.0 millimeters and at a right angle to the flange 7. The body member 2 is thus made with a cross-sectional shape in general bridge-truss design having great strength in proportion to the material used.

The partition member or spacer 3 is preferably made from Plexiglas, an acrylic plastic material, although any other suitable material such as for instance acetate foil, Celluloid etc. might be used which does not evolve vapors or otherwise act so as to corrode or rust the stored parts, especially if the material is not heated. The spacer 3 is made from a sheet of Plexiglas between 0.1 and 0.4 millimeters in thickness and of a size to fit the vertically extending wall 8 when the spacer is bulged outwardly or inwardly with a spherical radius between for instance 60 and 300 millimeters. The slight bulging is given the spacer 3 so as to maintain it in position in engagement with the wall 8. The spacer 3 is cut from sheet form by pressing the sheet against the upper edge of the cylindrical wall 8 with a movable end male die 17 as shown in Figs. 5 to 7, using the upper edge of the wall 8 of the body 2 as the female die. The end male die 17 has a cutting edge with four highest points 12. Each cutting edge portion 13 lying between two adjacent points 12 is shaped as curve (Figs. 6 and 7). The distance between points 12 and the lowermost points 16 of the curves 13, measured in the axial direction of the die 17, is about 0.5 to 1 millimeter. The four edge portions 13 produce together with the upper edge of the wall 8 a shearing action on the sheet form. During this shearing action the spacer 3 is gradually bulged outwardly. The spacer 3 cut out in this way has in its flat condition and in plan view a shape as shown in Fig. 8. It comprises four points 14 with smallest distance from the spacer center and four points 15 with largest distance from the spacer center. The diameter between opposite points 14 is only between about 0.1 and 0.2 millimeters smaller than the diameter between opposite points 15. At the points 15 the pressure of the bulged spacer 3 against the wall 8 is highest. It may happen that the finished spacer 3 which has been bulged outwardly during shearing action may by the tensions occurring in it jerk from the outwardly to the inwardly bulged shape. The spacer 3 is apertured in its center portion as indicated at 9. The spacer 3 which is adapted to receive a balance or gear wheel on its upper surface with the shaft extending through the aperture or opening 9 centers the balance or gear wheel over the opening. The fabrication of the partition member 3 by cutting it from a sheet of material is a considerable time-saving operation as the handling and positioning by hand is a tedious and lengthy operation. Furthermore, by this operation assurance is had that the partition member will fit tightly in the position set, which, of course, can be varied as desired by adjustment of the stroke of the male die.

The cover member 4 is preferably made of paper of a weight of approximately 250 grams per square meter and of a thickness between 0.10 and 0.5 millimeters, preferably 0.22 millimeter. The cover member is preferably square with rounded corners and between 10 and 40 millimeters on a side, and may be printed with the manufacturer's name and identification of the stored parts. The underside of the cover member 4 is coated with a solution of the same kind of polystyrene as used for the body 2 in a suitable solvent, or with a solution of acrylic

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plastic in styrene monomer or other suitable solvent so as to present a surface coating between 0.01 and 0.05 millimeter in thickness of polystyrene or acrylic plastic, and which will coalesce with the material of the body member 2. The coating may be applied by applying the plastic solution by a roller or by other usual methods. While it is preferable that the cover member be made of paper, any other suitable material such as for instance a polymer capable of being printed may be used if the coating may be readily adhered thereto. The square shape has been chosen to provide the greatest space for the printing of trademark and other identification marks. By reason of the small size of the parts and of the packing, it will be noted that a problem is presented in providing ample space for the marking.

Preferably, after the watch part has been positioned in the body member 2, the cover member 4 is placed in position and the assembly placed in a jig having an opening to receive the cup-shaped portion thereof. Heat is applied from the upper side of the cover member 4 during preferably not more than three seconds at a pressure for instance between 10 and 40 kilograms per square centimeter, preferably of 25 kilograms per square centimeter to the surface of the cover by a heated sealing member having a temperature for instance between about 180° and 220° centigrade, the sealing member comprising a plurality of spotting extensions each between 0.25 and 4 square millimeters in cross section and spaced between one and two millimeters and adapted to fuse or coalesce sealing points 10. Other methods of sealing the cover member in position may be used such as by applying a solvent to the coated surface of the cover member 4 and/or to the upper surface of the flange 7, allowing the solvent to partially evaporate, then placing the surfaces together and applying pressure and/or heat to coalesce the surfaces, but care should be taken not to use too much solvent as it may affect the stored parts. In order to permit "breathing" of the packing and to facilitate its opening, it should be noted that the spotting extensions preferably are so located as to leave unfastened portions 11 at the centers of the sides of the flange 7. The widths of the unfastened portions 11 are between two and five millimeters. By reason of the small spacing of the spot fastened areas, the cover member 4 is held close to the flange 7 providing a very narrow "breathing" space which is believed to have somewhat of a check valve action in resisting inward flow of air yet readily permitting outward flow of air and vapor. The spaces are so small as to exclude dust and moisture particles. The spaces also provide easy access by a pair of tweezers or other small tool to the edge of the cover member 4 so that it may be torn away to remove the stored watch parts.

It should be noted that the coating on the underside of the cover member 4 reduces moisture vapor transmission as well as adding to the strength of the cover member. However, the absorbability of the outer surface of the cover member is not affected, thus, it readily receives printing ink or other marking. The firm attachment of the cover member 4 to the flange 7 of the body member 2 stiffens and adds to the strength of the completed packing.

From the foregoing description it will be seen that a packing for watch parts has been provided in accordance with the invention which is light in weight, inexpensive in manufacture, and rugged in use, and which permits the merchandising of the watch parts in a practically tamper-free packing which may carry the trademark and part identification. The packing is dust and moisture resistant, and permits the necessary breathing to main-

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tain the parts in good condition, the breathing spaces also conveniently providing for access by a tool for the easy opening of the package. Additionally, the square shape facilitates the grouping of the packings in boxes with the tops or cover members of opposite packings in contact. A pair of packings so positioned is able to support the weight of a man without collapse.

It is understood that the invention is independent of any theory which may be advanced to account for the results obtained. Thus, while the spaces or tear openings 11 are described as for "breathing," it may be that the construction is such that only an outward flow of moisture vapor is permitted and that an inward flow of air is prevented by reason of a check valve action of the adjoining surfaces of the flange 7 and cover 4. In any event remarkable protection of the parts is achieved under moisture conditions, even as stated before, when the packing is immersed in water for short periods.

While the invention has been described and illustrated with reference to specific embodiments thereof it will be understood that other embodiments may be resorted to without departing from the invention. For example, while the flanged top of the body member has been described as square in top view, it is apparent that other forms such as multi-sided shapes, or even a round shape might be used. Therefore, the form of the invention set out above should be considered as illustrative and not as limiting the scope of the following claims.

I claim:

1. The method of cutting and positioning a partition member in a packing recess having a cylindrically-shaped wall comprising placing a sheet of material over a female die formed by the edge of said recess, moving a male die against the sheet of material shearing the partition member from the sheet of material against the edge of the recess by further movement of the die, and positioning the partition member in the desired position in the recess by further movement of the die.

2. The method of cutting and positioning a bulged partition member in a packing recess having a cylindrically-shaped wall comprising placing a sheet of material over a female die formed by said recess, providing a male die with cutting edge portions lying in a cylindrical surface and curved in moving direction of the male die, moving the male die against the sheet of material shearing the partition member with unequal diameter from the sheet of material against the edge of the recess by further movement of the male die, and positioning the partition member in the desired position in the recess by further movement of the male die.

3. The method of cutting and positioning a partition wall in a packing recess having a cylindrically-shaped wall comprising placing a sheet of material over a female die formed by said recess, providing a male die with curved cutting edge portions each lying between two highest points and in a cylindrical surface, moving the male die against the sheet of material, gradually shearing the partition member from the sheet of material against the edge of the recess by beginning shearing with the said highest points by further movement of the male die, and positioning the partition member in frictional condition in the desired position in the recess by further movement of the male die.

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