Nov. 10, 1959 G. S. IKELHEIMER 2,912,080

LUGGAGE CONSTRUCTION, MEANS AND METHOD FOR MAKING SAME

Filed March 24, 1958

Fig.1

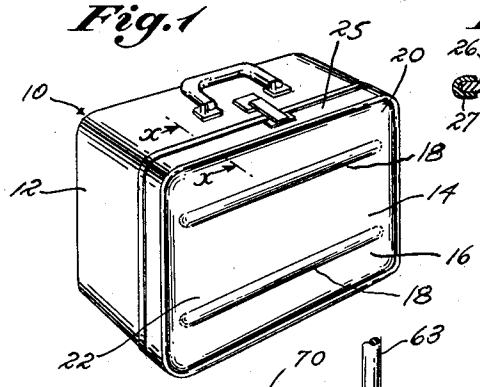


Fig.2

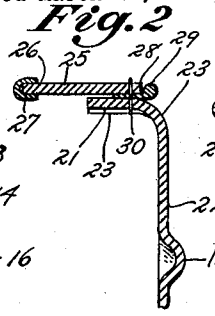


Fig.3

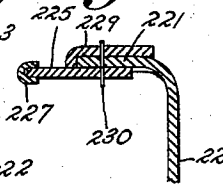


Fig.4

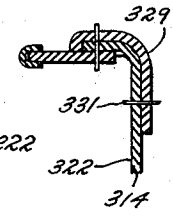
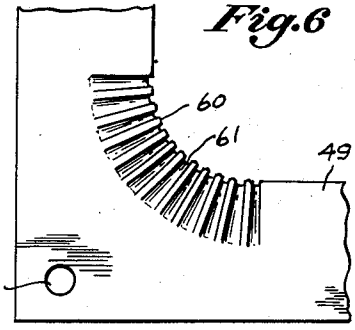


Fig.6



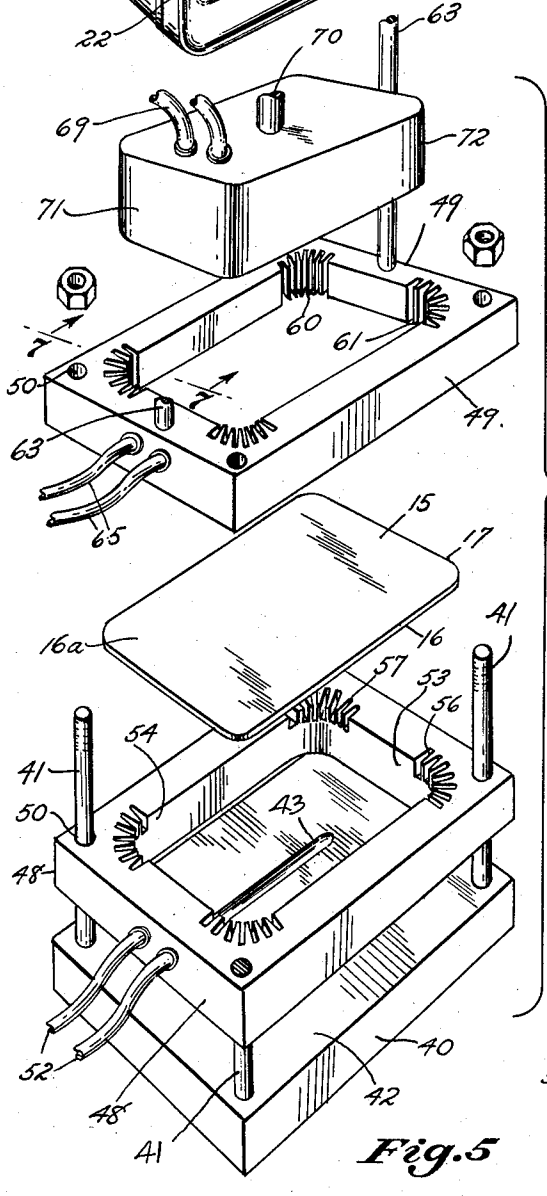


Fig.5

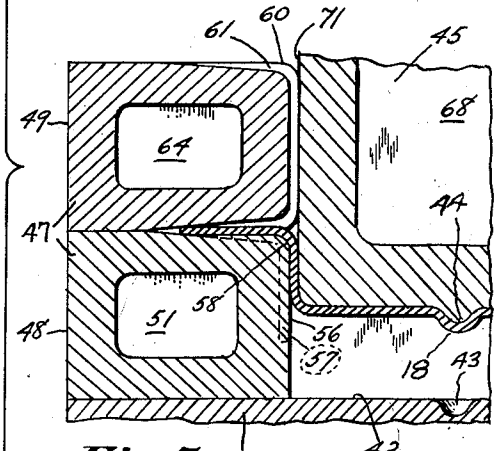


Fig.7

Fig.9

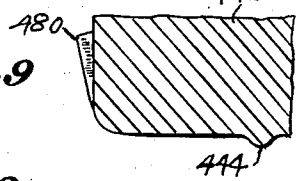
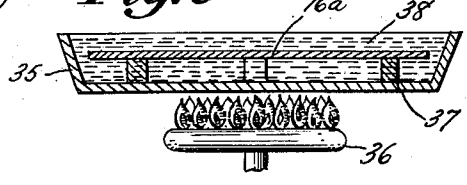


Fig.8



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LUGGAGE CONSTRUCTION, MEANS AND METHOD FOR MAKING SAME

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3 Claims. (Cl. 190—53)

This invention relates generally to luggage and more particularly to an improved construction thereof, means and method therefor.

It has been known to produce luggage and cases of various sizes and shapes in which the corners thereof are given a rounded profile. Such construction in addition to providing an aesthetically pleasing appearance also produces a corner which has superior durability, being thus enabled to stand blows and pressure of a higher magnitude without deforming or breaking. Such shaped construction has been accomplished by padding of a rigid form or by deforming a thermoplastic material, as for example, vulcanizing fibre. The use of such materials and methods created higher cost and it is, therefore, among the present objects of the present invention to provide rounded corner case or luggage construction in which relatively lower cost base materials may be used, as for example, unvulcanized fibre.

Another object herein lies in the provision of structure of the class described which as completed presents an appearance comparable to that produced with more expensive methods and materials.

A still further object herein lies in the provision of means by which luggage or case panels may be produced with rounded corners wherein the material cannot normally be rounded in two planes, such as low cost unvulcanized fibre and reprocessed thermoplastic material, such as Royalite, and the like.

A still further object of this invention lies in the provision of means by which luggage or case panels may be produced with rounded corners, wherein the materials, such as vulcanized fibre, or metal laminated to vulcanized or unvulcanized fibre or cardboard, which can by various means be rounded in two planes, may be so rounded more economically. Vulcanized fibre for instance, is normally folded or formed by heating and soaking the material in a softening agent such as water and then inserting it into a normal drawing die. The vulcanized fibre is then drawn for a part of the way and then once again heated and soaked. It may be necessary to repeat this operation three or four times for even a shallow case panel. By means of the present invention, a single heating, soaking and drawing cycle only is necessary.

These objects and other incidental ends and advantages will more fully appear in the progress of this disclosure and be pointed out in the appended claims in the drawings in which similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a view in perspective showing a case which is a first embodiment of the invention.

Figure 2 is an enlarged fragmentary sectional view as seen from the plane X—X on Figure 1.

Figure 3 is a fragmentary vertical sectional view corresponding generally to Figure 2 but showing a second embodiment of the invention.

Figure 4 is a fragmentary vertical sectional view corresponding generally to Figure 2 but showing a third embodiment of the invention.

Figure 5 is an exploded perspective view, partly fragmentary showing the die parts and a blank just prior to being formed.

Figure 6 is a fragmentary bottom plan view of the upper die element.

Figure 7 is an enlarged fragmentary vertical sectional view as might be seen from the plane 7—7 when the die elements are assembled and the ram die element has traversed part of its downward stroke.

Figure 8 is a sectional view, somewhat schematic, showing the softening of the panel blank prior to forming.

Figure 9 is a fragmentary vertical sectional view showing an alternate form of ram die element.

Turning to Figure 1, the case generally indicated by reference character **10** may, as far as the box portion **12** is concerned be manufactured in a manner the same as the cover **14** and for the purpose of avoiding needless repetition, the manufacture of the cover **14** will be described in detail. The body panel **16** is preferably fabricated from a blank having approximately the same size and may be of the shape indicated at **16***a* in Figure 5 where it may be said to have an inner surface **15**, an outer surface **16** and a peripheral edge **17**. While I have shown the blank **16***a* as having rounded corners, they may be rectangular with 90 degree corners, and these can be trimmed later in the process.

The panel **16** is provided with rounded corners indicated by reference character **20** and this rounding occurs both in the flange portion **21** and also where the relatively planar central portion **22** merges into the flange **21**, this curvature being indicated by reference character **23**. The flange **21** at the corners is provided with a plurality of corrugations which taper to nothing as they merge into the planar portion **22**. The flange portion **21**, as shown in Figure 2, may be secured to a band **25** which, in the position shown in Figure 1, may form the top wall, side wall and bottom wall portions of the cover **14**. The inner edge **26** of the band **25** may be provided with an edge reinforcement **27**, for example, in the form of a strip which is U-shaped in cross section. When made of metal the reinforcement **27** may be enamelled and squeezed on to the edge of the band **25** or may be applied in any other desired fashion. The edge reinforcing may also be made of extruded metal or plastic in a male and female closure configuration and attached by any one of a number of means, gluing for instance. The fibre may also be turned back on itself for reinforcing. Preferably interposed between the corrugations **23** and the outer edge **28** is a binding or welt **29**. The flange portion **21** at the corrugations **23** may be connected to the edge **28** by a row of rivets or stitches **30**.

By virtue of this construction, the deepest and therefore the most conspicuous portions of the corrugations are concealed by the band **25** and where they taper off into nothing, they are concealed by the rib or bead which is exposed and which forms the outer edge of the welt **29**.

For the purpose of increasing the durability and resistance to excessive flexing, the cover **14** may be provided with embossed or formed ribs **18**. These also enhance the appearance of the case **10**.

This construction produces a finished looking article of manufacture and for certain purposes may be used unlined and for others may have any well known type of lining secured upon the inner surface thereof.

Turning to Figure 3, for the purpose of avoiding needless repetition, parts corresponding to the first described embodiment are given the same reference characters with the addition of a prefix "2." The embodiment shown on Figure 3 differs from the prior described embodiment principally in that the flange portion **221** laps outwardly of the band **225** and the welt **229** is disposed outwardly

of the flange portion 221.

In the form shown in Figure 4, here again certain of the parts are given the same reference characters as the prior described embodiment with the addition of the prefix "3." This form resembles the form in Figure 3 except that the welt 329 is of considerably greater width and extends on to the exterior surface of the cover 314. An additional row of stitches 331 produces the effect in the welt of a wide binding such as is frequently used in luggage construction that produces both a protective and a decorative effect.

Turning to Figure 8, there is seen a container 35 which is provided with a source of heat 36. Preferably disposed within the container 35 are a plurality of supports 37 and upon these there is shown resting one of the blanks 16*a*. The blank 16*a* may be immersed in a suitable liquid 38, such as water, or may be subjected to the action of similar softening agents including steam. The action of the softening step is such as to make the blank 16*a* sufficiently pliable for alteration in shape by the dies shown in Figure 5. The blank 16*a* is subjected to the softening step only sufficiently to render it adequately pliable, but not so much as to damage the finish thereof. Thicker blanks require longer soaking and/or higher temperature.

Turning to Figure 5, there is seen a bottom female die 40 which may have projecting upwardly therefrom a plurality of die guide posts 41. The upper surface 42 of bottom female die 40 is provided with recesses 43 to coact with the projecting beads 44 on die 45. While shown as a separate die, die 40 may be united or integral with die 48.

The female die set generally indicated by reference character 47 preferably includes the lower die element 48 and the upper die element 49. Element 48 may be provided with a plurality of orifices 50 which position the element 48 on the posts 41. The element 48 is preferably hollow and may contain a chamber 51 which may carry steam from the supply pipes 52. Die element 48 has a central opening 53 which is of substantially the same size as the outer surface of the flange portion 21 (Figure 2) and at the corners 54 thereof is provided with a plurality of ribs 56 which are spaced from each other by grooves 57 (Figure 5). The depths of the grooves and the number and spacing of the ribs may be varied to accommodate the thickness and relative deformability of the blank 16*a*. The thicker and stiffer the material, the larger the spacing between the ribs so that the material may corrugate while being formed. For example, with an unvulcanized fiber which is one sixteenth of an inch thick, I have found that a desired rounded shape is obtained with 14 ribs arranged about a two and one half inch radius, the ribs being approximately one eighth inch thick and the spacing between them, at the bending lip 58, being approximately one quarter inch.

The upper die element 49 produces a superior result but the same may be omitted if sufficient friction is produced upon the upper surface of the blank 16*a* as the same is pushed downwardly through the opening 53 by the ram die element 45. As shown in Figure 7, the ribs 60 are arranged to coincide with the grooves 57 while the grooves 61 are arranged to coincide with the ribs 56. This aids in the corrugating produced in the blank 16*a*. In order to provide adequate tension upon the blank 16*a* as it is formed, downward pressure may be provided through which any suitable means (mechanical or hydraulic, for example) presses upon the rods 63. The particular die element 49 is reversible, it being understood that only the lower portion of said die element contacts the blank 16*a* (Figure 7). Die element 49 may be provided with a chamber 64 which may carry a heating medium such as steam provided by the pipes 65.

The ram die element 45 may have a chamber 68 which may be supplied with heating steam through the pipes 69 and said die element 45 may be forced downwardly by any suitable source of power acting upon the rod 70. The external size and spacing of the vertical walls 71 and 72 of die element 45 are such as to provide suitable clearance for the thickness of the material of which the blank 16*a* is composed (Figure 7).

In use, the softened blank 16*a* is placed upon the upper surface of the die element 48 and it is clamped in place either by the die element 49 or a pressure ring. This pressure may be supplied upon the rods 63. Next, the die element 45 is pressed downwardly which forms the rounded corners by slightly stretching the material of the blank 16*a* and corrugating the excess material produced in the shaping of the flange portion 21. The blank 16*a* may be dried due to the heat in the die elements or may be removed from the die elements incompletely dried and dried in a separate chamber or by exposure to heat.

Turning to the alternate form of male die shown in Figure 9, for the purpose of avoiding needless repetition, certain of the parts thereof corresponding to the earlier described form are given the same reference characters with the addition of a prefix "4." This die element 445 differs from the prior described one principally in the inclusion of the tapered projections 480. These taper inwardly toward the under or bottom surface of the die 445 and they are so arranged as to project into the grooves 57 so as to aid in the forming of the corrugations in the cover 14.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art to which the present invention relates.

I claim:

1. Case construction comprising a body panel composed of normally planar material, said case having a main surface of substantially flat shape, a peripheral flange angularly disposed with respect to said main surface, said case as the main surface merges into said flange having a plurality of corrugations.

2. Case construction comprising a polygonal body panel having a corner, said body panel being composed of normally planar material, said case having a main surface of substantially flat shape, a peripheral flange angularly disposed with respect to said main surface, said case as the main surface merges into said flange at said corner having a plurality of corrugations.

3. Case construction comprising: a body panel composed of normally planar fibre material, said case having a main surface of substantially flat shape, a peripheral flange angularly disposed with respect to said main surface, said case as the main surface merges into said flange having a plurality of corrugations.

References Cited in the file of this patent

UNITED STATES PATENTS

820,976	Katzinger	May 22, 1906
958,860	Dresner	May 24, 1910
972,113	Katzinger	Oct. 4, 1910
1,023,238	Becker	Apr. 16, 1912
1,881,517	Groehn	Oct. 11, 1932
2,176,738	Clark	Oct. 17, 1939