May 26, 1970 H. LEONG ET AL 3,513,951

LUGGAGE CONSTRUCTION

Filed March 4, 1968 2 Sheets-Sheet 1

Fig-1

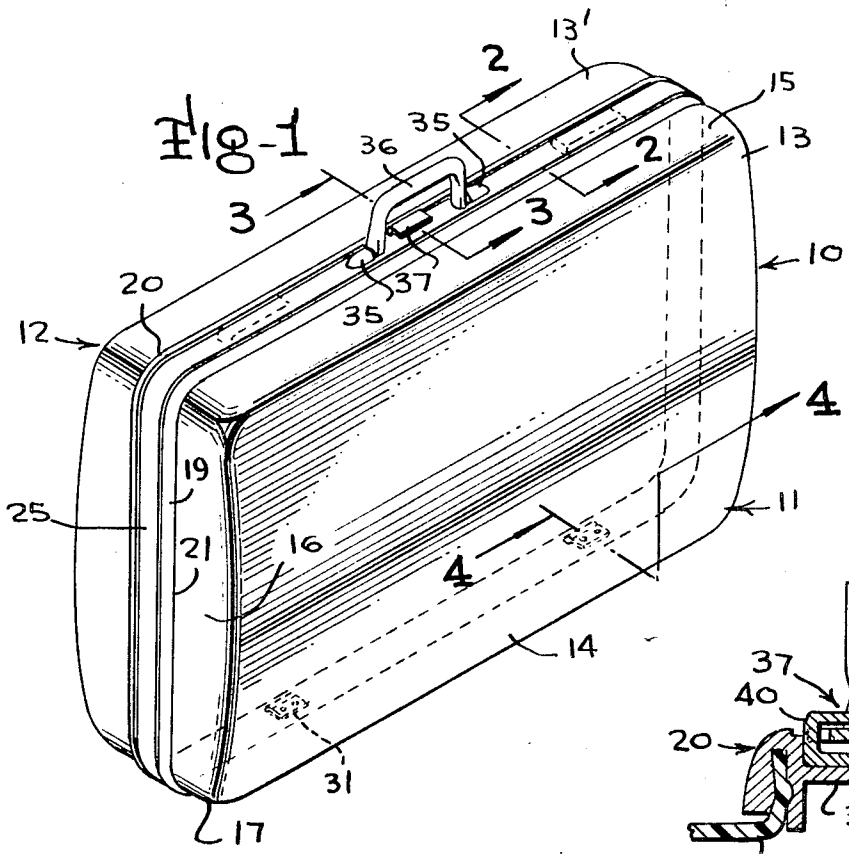


Fig-3

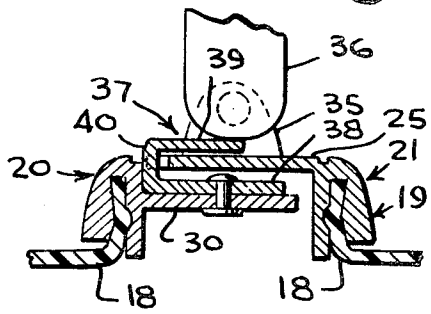
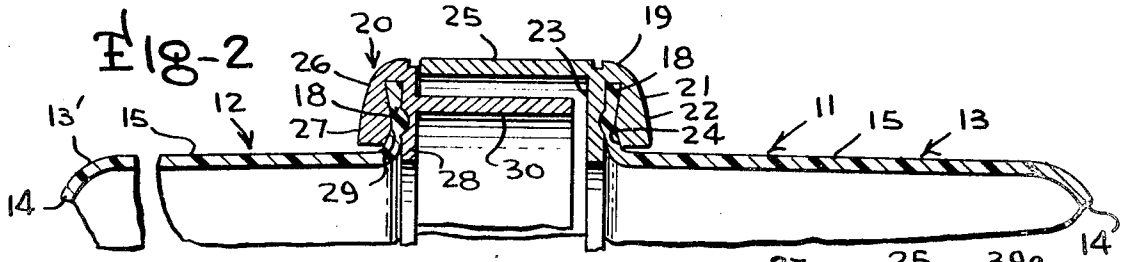


Fig-2



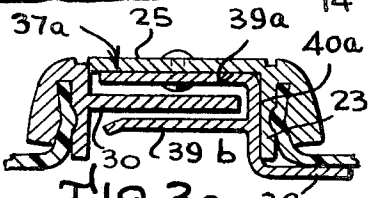
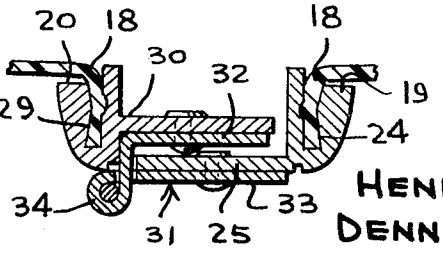


Fig-3a

Fig-4



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LUGGAGE CONSTRUCTION

Filed March 4, 1968 2 Sheets-Sheet 2

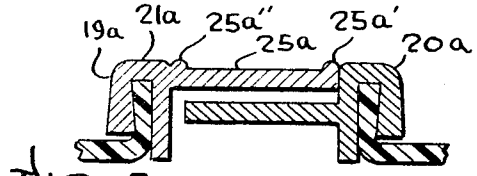


Fig-5

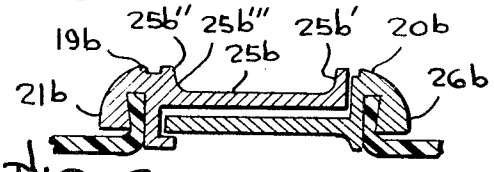


Fig-6

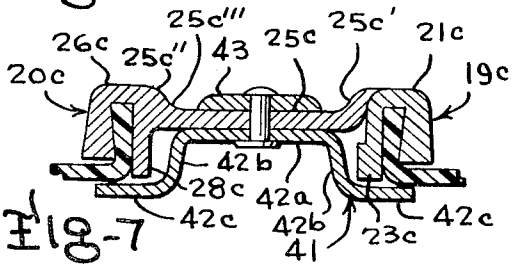


Fig-7

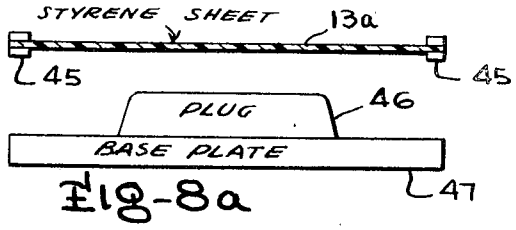


Fig-8a

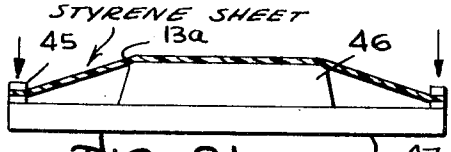


Fig-8b

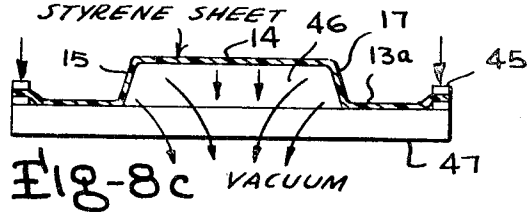


Fig-8c

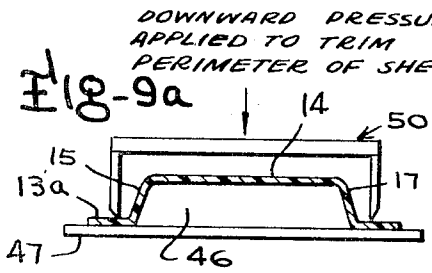


Fig-9a

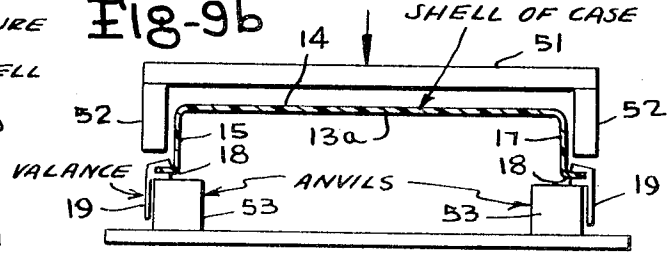


Fig-9b

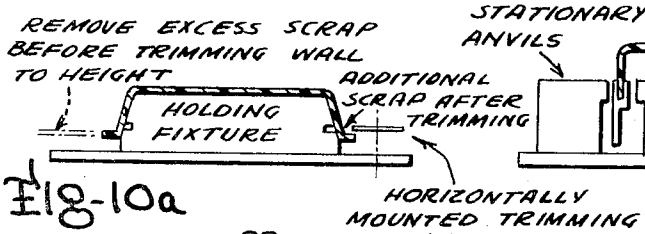


Fig-10a

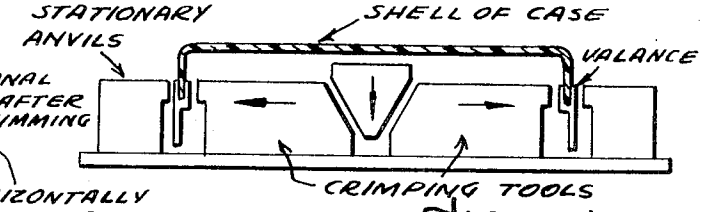


Fig-10b

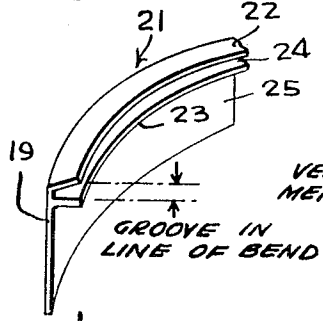


Fig-11a

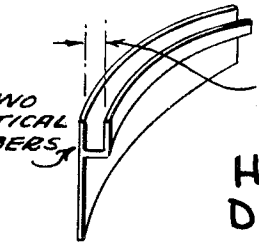


Fig-11b

GROOVE MUST BE FILLED PRIOR TO BENDING & UNLOADED AFTER BENDING

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3,513,951

LUGGAGE CONSTRUCTION

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Int. Cl. A45c 13/04, 13/36
U.S. Cl. 190—49 3 Claims

ABSTRACT OF THE DISCLOSURE

A luggage case having a pair of hinged sections, each section being formed of a concave shell and a frame strip extending about the edges of the shell. The shell has a base wall paralleling the medial plane of the case and sdiewalls extending toward the latter terminating in outwardly projecting flanges paralleling the plane and secured in channels in the frame strips.

SUMMARY AND BACKGROUND OF THE INVENTION

The present invention relates in general to luggage cases and methods of producing the same, and more particularly to the construction of and methods for producing luggage cases of the type having two concave sections or halves, each formed of a molded concave shell and a metallic frame strip secured to and extending entirely around the perimeter of the molded shell to meet and be aligned with a similar frame strip of the other luggage case section, such frame strips being frequently termed valances.

Heretofore, a number of luggage cases have been commercially produced, wherein the peripheral edges of opposed concave case sections formed primarily of molded plastic shells have had valance strips or metallic frame strips secured thereto, which reinforce and protect the edges of the molded shell for each section, and to which the luggage hardware, such as hinges, handle support and lock, are secured. It has been customary heretofore to provide in such valance strips or frame strips a channel for receiving and clamping the edges of the sidewalls of the molded shell, which, in the finished luggage case, define the top, end and bottom wall portions of each case half. In such prior art case sections, these channels have their channel sides lying in the same plane as the adjoining molded shell sidewalls. That is to say, the edge portions of the sidewalls of the molded shells lying within the channels of the valance or frame strips extend in the same plane as those portions of the shell sidewalls lying externally of the valance or frame strips.

Manufacture of luggage cases of the aforementioned type of construction has presented a number of problems. Trimming vacuum formed or similarly molded shells to adapt them for interfitting with the valance or frame strips of this prior construction results in considerable amount of waste scrap material, it is quite difficult to obtain the desired degree of accuracy and evenness of cut in trimming the molded shell, and considerable hand labor is required. Also, costly special cam operated crimping tools

are usually required to effect crimping of the edge portions around the perimeter of the shell sidewalls into the channels in the valance or frame strips, and a number of operations are usually required because the crimping forces must be applied in directions parallel to the planes of the plane of separation of the two luggage case sections, and thus perpendicular to the four sidewalls of the shell. Also, due to the orientation of the shell sidewalls relative to the channels in the valance or frame strips, forces tending to pull the shell edges out of the valance strip channels are parallel to the planes of the channel sidewalls, and thus it is difficult to provide sufficient holding strength to secure the shell and valance strips against accidental separation during use of the luggage case, especially when the cases are packed with excessive bulk of contents.

An object of the present invention is the provision of a novel luggage case construction for luggage cases having sections formed of a molded shell and a frame or valance strip secured to and extending around the perimeter, or substantial portions thereof, of the shell of each section, which is less expensive to manufacture, which can be produced with lower tooling costs and lower labor costs, and which provides greater shell strength and greater accuracy of mating halves.

Another object of the present invention is the provision of luggage cases as described in the immediately preceding paragraph, wherein the molded shells can be formed with considerable reduction of waste scrap material.

Another object of the present invention is the provision of a novel luggage case construction having a pair of hinged sections each formed of a concave molded shell and a reinforcing and protecting frame or valance strip secured about the perimeter of each shell, wherein the edge portions of the shell perimeter are crimped in a channel in the associated frame or valance strip in such manner that the shell edge portion within the channel is at a substantial angle, approaching right angular relation, to the portions of the shell lying externally of the associated frame or valance strip to provide greater strength and stability in the finished luggage case.

Other objects, advantages and capabilities of the present invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 is a perspective view of a luggage case constructed in accordance with the present invention;

FIG. 2 is across section view taken along the line 2—2 of FIG. 1;

FIG. 3 is a section view taken along the line 3—3 of FIG. 1, illustrating one form of device which may be used in the handle region of the luggage case to distribute the load to both sections of the luggage case when the case is lifted by the handle;

FIG. 3*a* is a section view similar to FIG. 3, showing another form of a load distributing device;

FIG. 4 is a section view taken along the line 4—4 of FIG. 1, illustrating the manner of mounting the hinges at the bottom of the case;

FIGS. 5, 6 and 7 are fragmentary cross section views through frame or valance strips of slightly modified construction;

FIGS. 8*a*, 8*b* and 8*c* diagrammatically illustrate steps in the vacuum forming of the shell for the luggage case sections;

FIGS. 9*a* and 9*b* are diagrammatic views illustrating the procedure for trimming the perimeter of the molded shells and crimping the same to the frame or valance strips in accordance with the present invention;

FIGS. 10 and 10*b* are diagrammatic views illustrating the trimming and crimping procedures for typical prior art luggage cases formed of a molded shell and valance strips, and

FIGS. 11*a* and 11*b* are diagrammatic perspective views of curved corner sections representative of the frame or valance strip of the present invention and of prior art valance strips, respectively.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings, wherein like reference characters designate corresponding parts throughout the several figures, and particularly to FIGS. 1 to 4, inclusive, showing one preferred embodiment of the invention, the luggage case constructed in accordance with the present invention, generally indicated by the reference character **10**, includes two sections or halves **11**, **12**, each of generally concave configuration. Each section **11**, **12** is formed of a molded shell, generally indicated at **13**, **13'**, which may be fabricated of a wide variety of materials, such as various semi-rigid plastics, molded plywood, metal, or fiberglass, or may be molded from styrene sheet material as a specific example. Each of the shells **13**, **13'** has a large, flat, generally rectangular base wall **14**, from the edges of which shell sidewalls **15**, **16**, and **17** integrally extend at approximately right angles to the principal plane of the shell base wall **14** to define the top, end and bottom walls of the case section when the case is positioned as illustrated in FIG. 1. Each of the shells **13**, **13'**, therefore, forms a concave shell body, preferably having rounded corners.

The free edge portions of the shell sidewalls **15**, **16** and **17**, which define the perimeter of the shell, are provided with integral flange formations **18** which extend outwardly from the shell sidewalls **15**, **16** and **17** in a plane substantially perpendicular to the planes of the adjoining shell sidewalls and substantially parallel to the plane of the shell base wall **14**. In the molding of these shells, as will be described more fully hereinafter, the sheet material from which the shell is to be molded is generally disposed in a horizontal position, and thus the base wall **14** in the molded shell lies in a horizontal position as well as the flange formations **18**. For ease of reference in subsequent description, therefore, the sidewalls **15**, **16** and **17** will be referred to as vertical sidewalls of the shell, and the flange formations **18** as horizontal flanges, as these components are thus oriented during the molding procedure.

The free edge portions of each of the shells **13**, **13'**, defined by the flange formations **18**, are protected and reinforced by frame strips or valances **19**, **20**, which do not interfit as do many valances heretofore commercially produced, but merely meet adjacent a preselected plane of separation between the two case sections **11**, **12**, when the two case sections are drawn together about their hinge axis along the bottom of the luggage case. Each of the frame strips or valances **19**, **20** may be extruded as an elongated strip of desired cross section from light weight metal, such as aluminum or magnesium, or suitable alloys, or may be formed of plastic material. The frame strip or valance **19** includes a channel formation **21** having an outer channel wall portion **22** and an inner channel wall portion **23** collectively defining a channel-shaped recess **24** therebetween, the channel sides lying generally parallel to the plane of separation of the two luggage case sections and thus parallel to the planes of the shell flanges **18** and base wall **14** and generally perpendicular to the planes

of the shell sidewalls **15**, **16** and **17**. The shell flange formations **18** are nested or seated in the channel-shaped recess **24** and crimped or clamped therein between the outer and inner channel wall portions **22**, **23** in a manner more fully described hereinafter.

If desired, the confronting surfaces of the outer and inner channel wall portions **22** and **23** may be shaped as illustrated in FIGS. 2, 3 and 4 to provide a generally S-shaped configuration for the recess **24**, or the confronting surfaces of these channel wall portions **22** and **23** may be flat parallel surfaces, or a bead may be provided on one or the other of the channel wall portions **22**, **23** to assist in securely clamping the shell flange formations **18** within the channel-shaped recess **24**. A web or tongue portion **25** extends integrally from the outermost portion of the channel formation **21** for a selected distance, forming a valance segment for the frame strip **19**, and has its outermost surface flush with the outermost surface of the channel formation **21**. In the example illustrated in FIGS. 1–4, a shallow score line is formed at substantially the juncture of the web portion **25** with the channel formation **21**.

Similarly, the frame strip **20** for the case section **12** has a channel formation **26** like the channel formation **21**, having outer and inner channel wall portions **27** and **28** defining a channel-shaped recess **29** therebetween like the channel-shaped recess **24** of the strip **19**, to similarly receive the flange formations **18** of the shell **13'** therein in securely crimped or clamped condition. The frame strip **20** has a web or tongue portion **30** extending integrally from the inner channel wall portion **28** at a location substantially midway between the outermost and innermost limits of the channel formation **26** to underlie and be spaced inwardly from the web portion **25** of frame strip **19** in substantial parallelism with the latter when the case sections are in closed condition.

The two sections **13**, **13'** of the luggage case may be attached together at the bottom by two or more hinges, such as the hinger **31**, illustrated in FIG. 4. The hinge may comprise an inner hinge plate **32**, riveted or otherwise secured to the web portion **30** of frame strip **20** to lie flat against the outer surface thereof and extend between the latter and the web portion **25** of frame strip **19**, and an outer hinge plate **33** similarly secured to the web member **25** against the outer surface thereof. The conventional hinge knuckle formations of the two hinge plates **32**, **33** are coupled together by a conventional hinge pin **34** to define the hinge axis for the two luggage case sections, the knuckle portions of the hinge plates **32**, **33** being disposed in accommodating cutouts formed in the free edge portion of the web portion **25**. It will be apparent that a single long hinge having a length to span the whole bottom of the case may be used, if desired, instead of plural hinges.

Conventional luggage latches or locks, as shown in broken lines in FIG. 1, may be mounted on the web portion **25** of the strip **19** along the top of the luggage case in conventional manner. Also, handle supports or mounts **35** of conventional construction may be secured to the web portion **25** of strip **19** between the location of the luggage latches or locks to pivotally support a conventional handle **36**. In order to distribute the load of the luggage case to both of the frame strips **19**, **20** when the luggage case is being carried by the handle **36**, a convenient load distributing member **37**, as shown in FIG. 3, may be provided, which is in the simple form of a U-shaped plate of thin metallic or similar material having an inner flange plate **38** of suitable thickness to fit between the web portions **25**, **30** riveted or otherwise secured to the web portion **30** of the frame strip **20** flush against the exterior surface thereof, and having an outer flange plate **39** spaced outwardly of the flange plate **38** a sufficient distance to accommodate the web portion **25** therebetween and bear against the outermost surface of the web portion

25. The bridge portion 40 of the load distributing member extends upwardly through a suitable cutout in the free edge portion of the upper web portion 25, as illustrated in FIG. 3.

Another form of load distributing member 37*a* is illustrated in FIG. 3*a*, which may be used instead of the member 37 of FIG. 3. The member 37*a* comprises a flat strip of sheet material formed to a substantially Z-shaped cross section providing parallel, vertically offset flanges 38*a*, 39*a* and an interconnecting vertical web 40*a*. The upper flange 39*a* is adapted to lie between the web portions 25, 30 and be secured, as by rivets or the like, to the underside of web 25. The web 40*a* lies against the inner channel wall portion 23 between the latter and the free end of web 30 and thus eliminates the need for a notch in either of the webs. A flange segment 39*b* is struck from the flange 39*a* and an upper portion of web 40*a* and bent into parallelism with flange 39*a* to immediately underlie web 30. Thus when the case is lifted by its handle, the flange segment 39*b* bears upwardly against the bottom of flange 30 and transmits a share of the load to the frame strip 20 to distribute the load.

Other specific configurations which the companion frame strips may take are illustrated in FIGS. 5, 6 and 7, with the components corresponding to those of FIGS. 1 to 4 indicated by the same reference numerals followed by the characters *a*, *b*, and *c*, respectively. In FIG. 5, the web 25*a* is provided with outwardly convex beads 25*a'* and 25*a''* at the free edge and adjacent the juncture with the channel formation 21*a* to provide a symmetrical external ornamental appearance for the companion frame strips 19*a*, 20*a*. In the construction illustrated in FIG. 6, the strips 19*b* and 20*b* are similarly constructed, except that the web portion 25*b* is spaced somewhat inwardly from the outermost limits of the channel formations 21*a*, 26*a* of the respective strips to define an outwardly opening, channel-shaped recess 25*b'''* between the shoulder surfaces 25*b'* and 25*b''*.

The construction shown in FIG. 7 likewise employs similar channel-shaped formations 21*c* and 26*c* on the companion frame strips 19*c*, 20*c*, with the web portion 25*c* located similar to the one shown in FIG. 6, but with the recess 25*c'''* having gradually inwardly converging inclined sidewalls 25*c'* and 25*c''*. There is also illustrated in FIG. 7 an alternate form of load distributing device 41 serving the same purpose as device 37 of FIG. 3, but having a generally channel-shaped cross-section defining a channel base wall 42*a* secured by rivets or the like to the web portion 25*c* and, if desired, to a handle support 43. The inwardly extending, or downwardly projecting, as shown in FIG. 7, channel sides 42*b* terminate in parallel, oppositely projecting flanges 42*c* which extend under and abut or nearly contact the innermost edges of the inner channel wall portions 23*c*, 28*c* of the frame strips 19*c*, 20*c* to cause the frame strip 19*c* to share some of the load when the luggage case is lifted by the handle.

The luggage case sections 11 and 12 of the previously described construction have considerable advantages in regard to the strength and stability afforded to the finished case. Because the flange portions 18 of the shells 13, 13' clamped within the channels 24, 29 of the frame strips 19, 20 extend substantially at right angles to the immediately adjoining sidewall portions 15, 16, 17 of the shell, the flange formations 18 are restrained much more securely against accidental or undesired withdrawal from the channel-shaped recesses of the frame strips 19, 20. This represents a considerable factor in the overall life of the luggage case. Problems have been experienced in the past in connection with valance type luggage cases where the sidewall portions of the shell adjoining that part which extends into the valance channel is parallel to the sidewalls of the valance channel rather than perpendicular thereto. In such luggage cases, when these are packed with an excessive bulk of contents and an effort is made to force the case closed, considerable force is exerted on the point at which the shell and the valance are secured to one another, with the result that separation can occur. With the present construction wherein the shell flange portions within the frame strip channels lie at substantially right angles to the sidewall portions of the shell immediately adjoining those flange portions, this type of failure is much more successfully resisted.

The above described luggage case construction also yields significant advantages in the manufacture of such luggage cases. In the process of vacuum forming styrene or similar sheet material, it is necessary to clamp the sheet around its entire perimeter and hold it in a horizontal plane. This is illustrated diagrammatically in FIG. 8*a*, the styrene sheet being indicated by the reference character 13*a* and the clamps being indicated by the reference character 45. The styrene sheet 13*a* and clamps 45 are shown in FIG. 8*a* in the horizontal position spaced above the conventional pre-shaped plug 46 supported on a base plate 47 for imparting the appropriate shape to the center portion of the styrene sheet 13*a* designed to form one of the shells 13, 13'. This rigidly held sheet 13*a* is then heated and drawn over the pre-shaped plug 46, forming a drape, until such time as the clamped sheet mates with the surface of the base plate 47 to which the plug 46 is mounted, as illustrated in FIG. 8*b*. The draped sheet is then subjected to a vacuum, introduced through a series of holes or slots in the plug 46, drawing the styrene sheet 13*a* into close contact with the plug 46, as illustrated in FIG. 8*c*. Upon cooling of the clamped sheet 13*a*, the sheet retains the configuration imparted to it by the exterior surface of the plug 46 and the adjacent surface portions of the base plate 47.

If the molded shell is to be used in the conventional valance type luggage cases, wherein the sidewalls of the channels in the valance strips parallel the planes of the adjoining shell sidewalls lying outwardly of the valance strip channels, the conventional method of final shaping of the molded shell is first to remove excess surplus material from the periphery of the shell after forming the same, as illustrated in FIG. 8*c*, and then mount the formed shell onto a holding fixture, as indicated in FIG. 10*a*, after which the height is gauged and the sidewalls of the shell are trimmed, using a horizontally mounted saw or trimming wheel. Generally, this is a hand operation, requiring the operator to revolve the shell until the entire perimeter is cut. If, during this operation, constant pressure is not applied to the top of the shell, the resulting cut is uneven in height. It will be noted that considerable amounts of scrap material result from this process, as the shell must be cut along the generally vertically extending shell sidewalls, rather than at some point along the molded sheet between the location of the plug 46, as shown in FIGS. 8*a*, 8*b* and 8*c*, and the clamps 45. Further, to securely attach the channel portions of the conventional valance strips to the generally vertically extending sidewall portions of the shell produced by the mold, anvils are required, which must be spaced accurately around the perimeter of the case and crimping tools must be provided to be moved in a horizontal plane in order to effect crimping or clamping of the valance channel portions to the shell sidewalls, as diagrammatically illustrated in FIG. 10*b*. Generally, these crimping tools are cam operated and costly and cannot crimp the entire perimeter of the shell in one stroke.

The novel shell and frame strip construction hereindescribed avoids production of excessive waste material, eliminates preliminary operation and substantially reduces labor costs while producing consistently accurate shells of greater structural strength. After the molded shell 13*a* is produced in the manner described in connection with FIGS. 8*a*, 8*b* and 8*c*, no preliminary trimming is required, and final trimming is immediately performed in a vertical plane, rather than in a horizontal plane, by using a cutting die 50, as illustrated in FIG. 9*a*, which is preshaped to the required peripheral size for the shell. Sur-

plus material can be trimmed instantaneously by a single blow to the top of the trimming die **50** when the die is placed in overlying contact with the shell sheet **13***a* formed in the mold, as shown in FIG. *9a*. Using this method of trimming, not only are consistently accurate shell produced with a minimum of waste, but the resulting horizontal flange left on the shell and extending from the lower edges of the shell sidewalls adds to the rigidity of the shell sidewalls.

The crimping procedure for crimping or clamping the frame strips **19, 20** to the shell flange formations **26**, in accordance with the present invention, is illustrated diagrammatically in FIG. *9b* and involves merely the use of a simple crimping tool **51** having depending crimping tool portions **52** whose lower surfaces define a closed rectangular path corresponding to the path to be assumed by the channel portions of the frame strips to be applied to the shell. The frame strips **19** or **20** are simply disposed with the inner channel wall portions **23** or **28** thereon lying on a rectangular anvil structure **53** and a single downward blow on the crimping tool structure **51** achieves simultaneous crimping of the entire frame strip or valance to the flange portions of the shell. The simplified tooling employed for such a crimping arrangement does not need to be made to the cost or accuracy of side actuated tooling such as is required for the earlier types of valance and molded shell structures.

Further, because the channel portions and channel sidewall portions of the frame strips **19, 20** extend from the web or tongue portions **25, 30** in substantially right angle relation to the outer surface of the latter and thus lie substantially parallel to the plane of separation of the luggage case sections, the frame strips **19, 20** can be readily bent through appropriately curved arcs to define the curved corners of the frame strips, as illustrated diagrammatically in FIG. *11a*, without danger of collapsing the channel sidewalls toward each other or otherwise distorting the channel formations. However, in the prior art types of valance strips, wherein the side walls of the channels parallel the plane of the remaining valance portion and are perpendicular to the plane of separation of the luggage case sections, the gap or channel between the two channel sidewall portions must be filled with some pre-shaped flexible material to prevent the outer channel portion from collapsing toward the inner channel portion when the valance strips are curved about an axis paralleling the channel sides to define the four curved corners of the valance strip, one of which is indicated diagrammatically in FIG. *11b*.

Instead of relying solely upon application of mechanical pressure to the channel wall portions of the frame strips to crimp or clamp the peripheral flange formations of the shell into the channel formations, it will be apparent that other means for attaching the frame strips to the plastic shell may be employed which will effectively resist separation of these elements due to the dispositon of the flange portions at approximately right angles to the shell sidewalls located immediately outwardly of the frame strips. For example, the shell flange formations may be secured in the channel formations of the frame strips by use of an adhesive, or, if the confronting surfaces of the outer and inner channel wall portions defining the channel sides are made irregular, as by providing an S-shaped cross-sectional configuration, or providing beads, barbs or serrations in the channel sidewalls, the shell flange formations may be secured in place by application of heat when the flange formations are disposed in the channel formations to correspond to the shape of the channel and secure an interlocking effect.

While a number of specific embodiments of the present invention have been particularly shown and described, it will be apparent that other modifications may be made therein within the spirit and scope of the invention, and it is desired, therefore, that only such limitations be placed on the invention as are imposed by the prior art and set forth in the appended claims.

What is claimed is:

1. A luggage case comprising a pair of opposed concave sections having peripheral edges which meet adjacent a reference plane when the case is closed, each of said sections comprising a concave shell having a base wall spaced from and substantially paralleling said plane and shell sidewalls integrally extending at a substantial angle from the base wall toward said plane, said shell sidewalls terminating in shell edges having outwardly directed integral flange formations paralleling said plane and collectively defining a continuous substantially rectangular flange perimeter at the shell edges, and a frame strip extending continuously around at least most of the flange perimeter for each section having an inwardly opening channel receiving the flange formations in secured relation therein, and the frame strip for one of said sections having an integral portion extending toward the frame strip of the companion section to abut the latter when the case is closed, said frame strips each including a channel formation projecting outwardly from the adjacent sidewalls having channel side members defining confronting channel side surfaces bounding said channel and extending generally parallel to said plane, said integral portion being a web defining a valance wall substantially spanning the space between said channels, said case including handle means interconnected with and adjacent the web portion, and a load-distributing member adjacent said handle means including first and second rigidly interconnected portions respectively bearing against corresponding faces of the respective frame strips in directions to transmit from the web portion interconnected with said handle means to the other frame strip a portion of the load borne by the handle means during carrying of the case.

2. A luggage case as defined in claim **1** wherein each of said frame strips includes an integral web portion extending substantially perpendicular to said plane from said channel formation toward the channel portion of the companion frame strip, said web portions of the respective frame strips being in spaced parallelism with each other with the free edge of the outermost one of said web portions lying immediately adjacent the channel formation of the companion frame strip when the case is closed, said handle means secured to the outermost one of said web portions, and a U-shaped load distributing plate including a first plate portion interposed between said spaced parallel web portions and secured to the innermost web portion and a second plate portion outwardly overlapping the outermost web member to be engaged by the latter when the case is carried and transmit part of the load on the handle means to the innermost web portions.

3. A luggage case as defined in claim **1** wherein each of said frame strips includes an integral web portion extending substantially perpendicular to said plane from said channel formation toward the channel portion of the companion frame strip, said web portions of the respective frame strips being in spaced parallelism with each other with the free edge of the outermost one of said web portions lying immediately adjacent the channel formation of the companion frame strip when the case is closed and wherein hinges pivotally couple said frame strips of the companion case sections along a hinge axis adjacent one corresponding edge of the sections, each of said hinges comprising a pair of hinge plates having hinge knuckle formations interconnected by hinge pin means for relative pivotal movement, one of said hinge plates being disposed in the space between the outermost and innermost web portions of said frame strips and secured to the latter and the other hinge plate lying outwardly of the outermost web portions and being secured thereto, the hinge axis defined by said hinge pin means lying outwardly of said outermost web member and the latter having a recess in

the free edge thereof accommodating passage therethrough of a portion of the hinge knuckle formation of said one of said hinge plate members.

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