

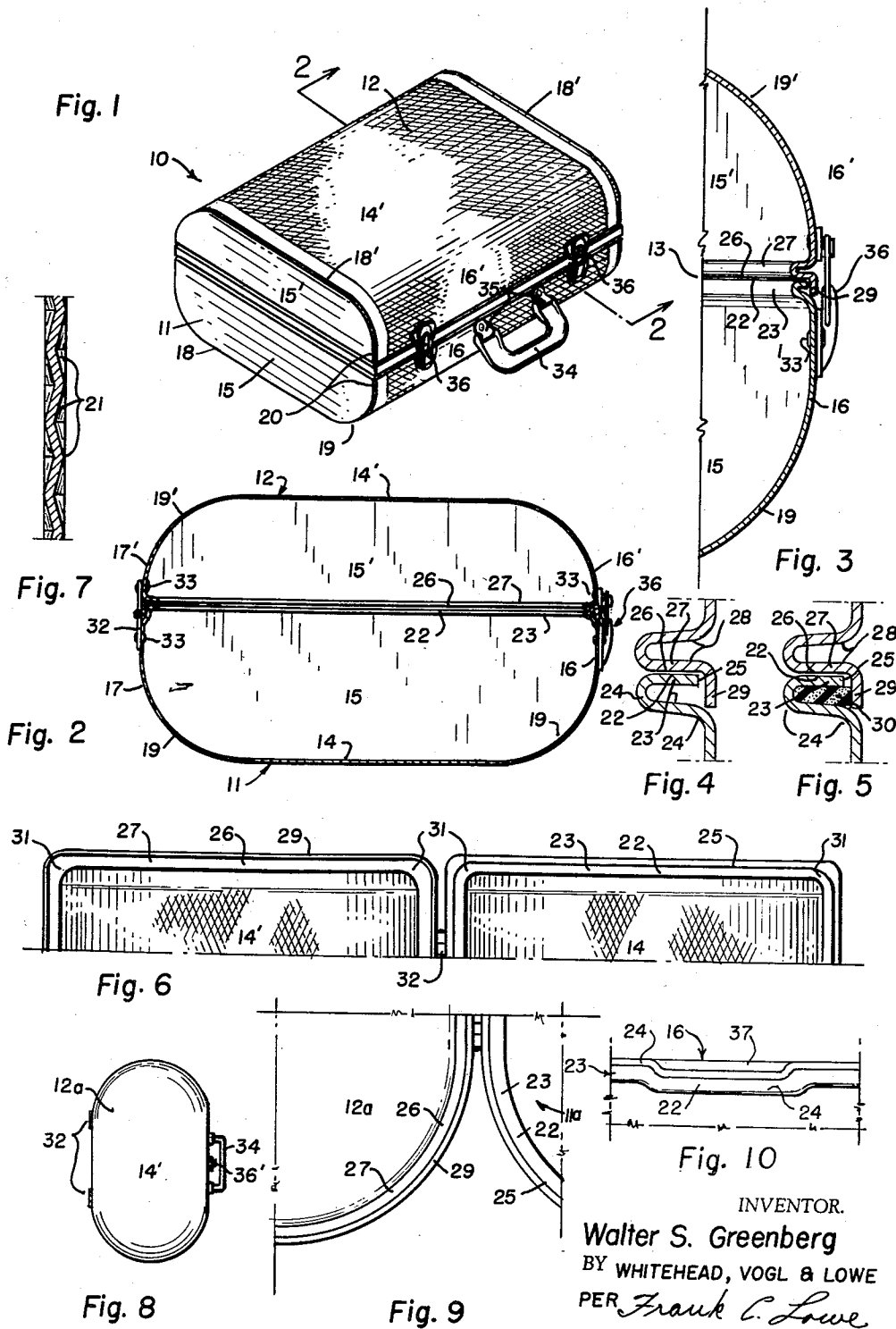
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SUITCASE CLOSURE

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SUITCASE CLOSURE

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6 Claims. (Cl. 190—49)

This invention relates to cases, such as valises, handbags and suitcases, and more particularly to a two-piece case and the closure edges therefor, hereinafter referred to as a case or as a suitcase. A primary object of the invention is to provide a novel and improved suitcase of enhanced appearance and simplicity of design.

Another object of the invention is to provide a novel and improved suitcase having its sections formed as unitary pieces of drawn plastic sheet material, such as cellulose acetate, vinyl, Lucite and the like, which are thermoplastic and may be drawn when heated.

Another object of the invention is to provide, in an improved suitcase having its sections formed as single pieces of drawn plastic sheet, a novel and improved edging at the contacting rim edges of the opposing case sections which provides for an efficient, tight closure.

Other objects of the invention are to provide in a suitcase having its sections formed as single pieces of shaped plastic sheet, a novel and improved edging at the contact rim edge of each case section which is formed from the single piece sheet material without the need for supplemental edging materials, which naturally rigidifies the section and especially the rim edge thereof, which is naturally snug fitting when the case is closed but is also adapted to receive and hold gasket material to supplement sealing thereof and provide a dust-proof fit, and which permits the use of comparatively thin plastic sheets to obtain good structural rigidity in the formation of the suitcase.

Yet other objects of the invention are to provide a novel and improved suitcase having its sections formed as single pieces of drawn plastic sheet material which provides for a case of beauty, simplicity, rigidity which is especially adapted to be embossed with selected surface designs and which is a simple, rugged and durable unit adapted for use either as large, heavy-duty suitcases or as comparatively flimsy, light-weight toy cases or handbags.

With the foregoing and other objects in view, all of which more fully hereinafter appear, my invention comprises certain novel constructions, combinations and arrangements of parts and elements, as hereinafter described and as defined in detail in the appended claims and illustrated in preferred embodiment in the accompanying drawing, in which:

Figure 1 is a perspective view of a suitcase constructed in accordance with the principles of the invention.

Figure 2 is a transverse sectional elevation as taken from the indicated line 2—2 at Fig. 1 on an enlarged scale.

Figure 3 is an enlarged fragmentary detail of a portion illustrated at Fig. 2.

Figure 4 is a further enlarged fragmentary detail of the contact edging formed according to the principles of the invention.

Figure 5 is similar to Figure 4, but illustrating one manner in which a sealing element may be incorporated into the unit if desired.

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Figure 6 is an enlarged fragmentary plan view of one end of the case shown at Fig. 1 but with the sections in the full open position and viewing the interior of the case.

Figure 7 is a greatly enlarged sectional view of a fragment of the case construction illustrating one manner in which the wall and panel portions of the case may be embossed in order to rigidify the construction of the case and to enhance the appearance of the surface of the case.

Figure 8 is a small plan view of a suitcase or bag of a different form which may be constructed according to the principles of the invention.

Figure 9 is an enlarged fragmentary plan view of an end portion of the suitcase of Fig. 8 when it is opened and with the viewing directed to the inside of the case, similar to Fig. 6.

Figure 10 is an enlarged fragmentary portion of the contacting edge of a case, illustrating how a portion of the edge may inset to form a pocket to receive a clasp or the like.

A number of plastic materials can be obtained as sheets which are easily molded and shaped under the influence of heat and moderate pressure. Valises, handbags and suitcases would, upon first consideration, appear to be easily made by such process and it would seem that suitcases formed by single-piece molded sections of sheet plastic material would be very desirable from the standpoints of rigidity, strength, economy and neatness in appearance.

However, such single-piece-section suitcases have never been truly satisfactory, primarily because they cannot be made sufficiently rigid without using reinforcing or extra heavy material. Natural rigidity of thin plastic sheets can be obtained only at the corners of a suitcase while the rim edges of the suitcase section and the flat sections are comparatively flexible. In the past, suitcases formed of molded plastic have been rib-reinforced across the flat panel sections and otherwise reinforced at the contacting rim edges of the two case sections as by metallic strips or by substantially increasing the thickness of material at the edges as by special molding or upsetting operations. In any event, additional expense is required to rigidify the suitcase body with the result that the final product can hardly compete with conventional types of construction.

It follows that there is a real and definite need for an improved suitcase which has its two sections formed as single sheets of molded plastic material with the units reinforced and rigidified by simple decorative patterns and with the contacting rim edges rigidified and formed to effect proper seating and closure of the two sections. There is a further need to accomplish this without introducing additional material to the suitcase construction and by using an absolute minimum of additional parts to complete the suitcase.

With such in view, the present invention was conceived and developed and comprises, in essence, an improved, simplified suitcase, or the like, with each section being made of a single sheet of plastic material drawn to form and having an improved lockable, rigidifying edging at the contacting rim and also having a rigidifying decorative surface pattern in selected panel portions, all with an absolute minimum of accessory elements to complete the case.

Referring more particularly to the drawing, a suitcase constructed in accordance with the principles of the invention is formed in an ordinary manner, having two box-shaped case sections which may be designated as a base section 11 and a mating cover section 12 with each section being substantially similar in form to the other

section except at the contacting edges 13 and except that the base section is preferably somewhat deeper than the cover section to locate a handle on the base section at the geometrical center of the unit if a handle is used in the unit.

Each section is formed from a flat plastic sheet and the base section includes a case-side panel 14 suitably dished as by drawing to provide for end walls 15, a front wall 16 and a back wall 17. The cover section is likewise formed from a case-side panel 14', end walls 15', a front wall 16' and a back wall 17'. These walls may optionally merge or fair into the panels as sharp corners 18 or 18', as between the panels 14 or 14' and the respective end walls 15 or 15', as illustrated; or they may merge as smooth curves 19 or 19', as between the panels 14 or 14' and the respective front walls 16 or 16' and rear walls 17 or 17', as illustrated. The body of the case may be rectangular, as shown at Fig. 1, or oval, as shown at Fig. 8, or prismatic or in any other selected form. Likewise, the walls may be differentiated from each other by distinct corners 20 or they may merge into each other as curves, as in the oval unit illustrated at Figs. 8 and 9.

In accordance with the principles of the invention, the base section and cover section are each formed of a single sheet of drawable plastic material of the type which may be easily drawn and molded as into a die when the plastic material is heated to a selected temperature to render it thermoplastic. A number of such plastic materials are known, each having a known temperature at which the sheet material becomes plastic and moldable and one may be selected in preference to another for various reasons. Likewise, procedures for drawing such material are known, such as a vacuum-draw process, where a sheet is pulled into the mold by creating a vacuum or suction within the mold. Regardless of the particular procedure of operation, the plastic sheet can be neatly and quickly formed into many desired shapes.

It was discovered, however, that in the formation of a single-piece drawn plastic suitcase section that the section was quite flexible if material of suitable thinness was used and that it was necessary to rigidify the sections. It was also desirable to provide for a surface pattern or design on portions of the panels and walls to enhance the appearance of the units and incidentally to help rigidify the panel. One such design is illustrated at Fig. 7 as being a pattern of simple undulations 21 which may be diamond-shaped or otherwise-shaped and which may function as corrugations. Such a pattern is desirable on the side panels 14 and 14' and on the front and rear walls 16, 16', 17, and 17', as in the areas designated at Fig. 1 by surface shading.

The peripheral rim edge of the walls of each section defining the contact line 13 will abut against the peripheral rim edge of the opposing section when the case is closed. To provide abutting surfaces, the plastic sheet at the peripheral rim edge of each section is folded to provide an inwardly-turned shoulder to contact, seat and seal with a similar shoulder of the opposite section.

The shoulder at the peripheral wall rim of the base section 11 is inwardly and outwardly folded over itself to define a peripheral seat 22 oriented inwardly from and transversely to the walls of the unit. This seat is thus formed upon the overfold 23 of the plastic sheet material which in section is an overturned ogee bend 24. The overfold and seat are inwardly of the wall portion, and the seat surface of the overfold 23 terminates along a line or edge 25 which also lies within the projection of the wall sections to lie within mating elements of the cover section, as hereinafter described.

The mating peripheral seat 26 at the peripheral wall rim of the cover section 12 is likewise oriented inwardly of and transversely to the wall sections of the cover section 12 to form a full contact surface with the seat 22. This mating seat is formed upon an inwardly-turned

overfold 27 of similar proportion to the overfold 23 of the base section. However, this overfold 27 does not terminate at the seat but continues as an omega-shaped bend 28 to provide for a depending lip 29 which extends beyond the seat 26 in the plane of the wall section projection a distance sufficient to overlap the edge 25 of the mating seat and abut against the base of the ogee bend 24 at the wall of the base section at a point where the outer surface of the lip 29 is flush with the walls of the case. Thus, the lip 29 and edge 25 provide for a lateral interlock of the base section and cover section when the case is closed.

This interlock formed by the lip 29 moving past the edge 25 and abutting against the ogee bend 24 permits the use of a gasket 30 set in the overfold 23 to abut against the lip 29. This gasket 30, which may be of sponge rubber or the like, will effectively and efficiently seal the interior of the suitcase against any possibility of infiltration by fine dust or the like when the suitcase is closed, the gasket being optionally installed as in the manner indicated at Fig. 5 or in any other suitable manner.

The advantages of the inward overfolds 23 and 27 are further manifest since they form flange-shaped sections which laterally rigidify the peripheral rim edges of the suitcase base and cover sections, both when the case is closed and when it is open, and these overfolds can be incorporated into the single sheet plastic as part of the draw operation involved in making the sections 11 and 12. This rigidifying of the edges is important when using drawn plastic material because, although being considered rigid material it is quite elastic and flexible as hereinbefore set forth. Also, while laterally rigidifying the edges, the double-fold flange-shaped sections allow for a springing or yielding of the contacting seating surfaces 22 and 26 in the direction of the plane of the walls of the case. This permits a continuous seating contact about the surfaces 22 and 26. In a plastic case, and especially in a drawn plastic case, precise dimensional stability is difficult to obtain and the yielding of contacting surfaces to obtain continuous seating action is very desirable. Moreover, the inwardly-directed overfolds provide for a smooth outer surface of the suitcase when the case is closed with further rigidification of the case as at the corners 20 since the inwardly-directed overfolds may be formed in a continuous bend 31 around even the comparatively sharp corners 20, all as clearly indicated at Fig. 6.

It follows that substantially the entire suitcase construction is formed of the two single sheets of plastic material with only a seal 30 being optionally added if desired. To complete the suitcase, a minimum of necessary accessories are required. A pair of ordinary butterfly hinges 32 may be fastened to the back of the case, as by rivets 33 holding a wing of each hinge onto a section of the case, and with the axis of the hinge being so located as to permit the overfolding, interlocking peripheral seat along the back walls 14 and 14' to easily open without the lip 29 wedging against the edge 25 during the opening operation.

As further appurtenances, the front wall 16 of the base section may include a carrying handle 34 mounted upon trunnion pins 35 in conventional manner and may also include a conventional pair of matched suitcase locks 36 having the elements thereof affixed to the front wall sections 16 and 16' as by rivets 33.

The constructions at Figs. 8 and 9 illustrate an oval form of suitcase or valise wherein the sections 11a and 12a have panels, side walls and end walls which merge with each other as smooth curves. Such a valise construction will include the necessary hinges 32, a handle 34 and a lock 36 in conventional manner. Further, as illustrated at Fig. 9, the matching, interlocking peripheral seats of both sections are formed the same as hereinbefore described, and the seats rigidify and hold the periph-

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eral edge of the walls of each case in proper form, both when the case is open and when closed.

In addition to forming the straight-edge and curved seats hereinbefore described, the unit may be formed with an offset 37 in the edge to form an inset pocket adapted to receive a lock such as 36 so that the lock remains flush with the face of the wall 16, as illustrated at Fig. 10. The overfold 23 forming the seat 22 is offset as is the edge and wall 16 as shown, and the mating overfold 27 forming seat 26 and lip 29 of the other side of the case, not shown, is likewise offset to effect a locking closure.

It is obvious that other forms of this case may be devised and built by those skilled in the art and I, therefore, desire that my protection extend not to the details and constructions hereindescribed, but only by the proper scope of the appended claims.

I claim:

1. A case of plastic sheet material or the like, comprising two box-like sections having opposing wall portions adapted to abut each other at contacting rim edges with the abutting edges forming co-mating seats, the wall portions of each section having inwardly and thence outwardly, laterally-disposed, double-folded rim edges defining said co-mating seats, the edge double-fold of one section being ogee-shaped with the laterally-disposed seat surface and terminal edge of the double-fold lying within the projection of the wall surface and with the edge double-fold of the opposite section being an omega-shaped double-fold with the seat surface being adapted to mate with said first seat surface and with a lip being within the projection of the wall surface and being adapted adapted to embrace the terminal edge of first said seat surface when the case is closed.

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2. The suitcase defined in claim 1, wherein the wall portions of each section are formed as a continuous member with the inward double-folds being integrally continuous therewith.

3. The suitcase defined in claim 1 including inset pockets in the wall edge disrupting the alignment of a wall edge, and said double-folds being offset at the pockets according to the offset of the pockets.

4. The suitcase defined in claim 1 wherein each wall section is formed as a continuous member of plastic sheet folded at the corners thereof with said inward edge double-folds being inwardly drawn at said corners as an integral portion of the wall section.

5. In the organization defined in claim 1 a gasket between the double-folds of the ogee-shaped seat structure adapted to contact the lip of the omega-shaped seat structure.

6. In a case of drawn or plastic sheet material or the like, comprising two box-like sections having opposing wall portions adapted to abut each other at contacting rim edges with the abutting edges forming co-mating seats, the wall portions of each section being drawn inwardly and thence outwardly as laterally-disposed double-folded rim edges with each outwardly directed return fold forming a seat.

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