Aug. 6, 1963 L. T. ROY 3,100,073

CORNER HINGE CONSTRUCTION

Filed Feb. 2, 1959

FIG. 1

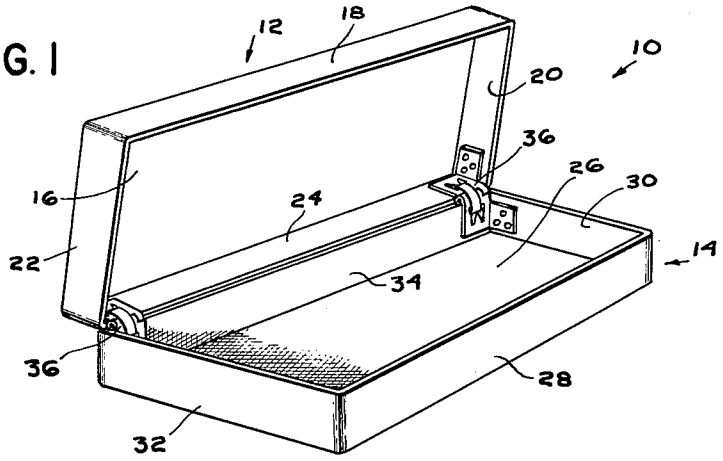



FIG. 2

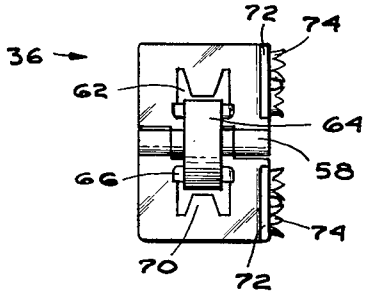



FIG. 3

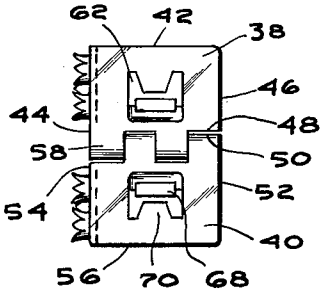



FIG. 4

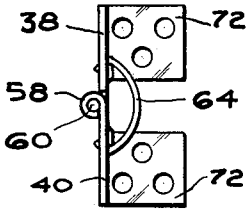
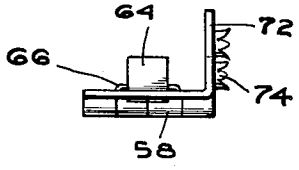



FIG. 5




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# CORNER HINGE CONSTRUCTION

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The present invention relates generally to a hinge construction, and more specifically to a novel and improved hinge for use with boxes of cardboard or other structurally weak material, such as are commonly used in connection with the shipment and display of jewelry articles and the like.

A longstanding problem in the art relating to small hinged boxes of cardboard and the like has been the complete lack of structural rigidity which exists in such boxes. More specifically, it has heretofore been customary to hingedly attach the body and cover sections of such boxes by means of hinge plates secured to the rear walls of the sections. This arrangement, of course, imparts a certain degree of rigidity to the rear wall of the box, but the side walls and front walls are completely unsupported unless some sort of metal liner is provided, and this is undesirable for many reasons in boxes of this type because of resulting increased cost, weight, etc.

Furthermore, where boxes of this type are hinged at their rear walls, a relatively weak structural foundation is provided for the hinge elements due to the inherent flexibility and weakness of the rear walls. This is particularly true in connection with boxes having relatively long, shallow rear walls, as, for example, illustrated in FIG. 1 of the drawings, and it has been found that this results in disadvantageous relative movement of the hinge elements relative to the box proper due to flexure of the structurally weak rear walls on which the hinge elements are mounted.

Thus, where small hinged jewelry boxes and the like are constructed of cardboard or some other equally structurally weak material and the hinges are rearwardly mounted as above described, there has been a tendency for the box to lose its shape with continued usage. This distortion not only provides an unsightly appearance, but it also makes effective closing of the box difficult, if not impossible. For example, where the box is of rectangular shape as is customary in boxes of this type, it has been found that virtually no resistance against deformation of the side walls exists unless some sort of corner supports are employed. In other words, there is a tendency for a rectangular box to assume the shape of a parallelogram upon the exertion of very little force, and, as hereinbefore indicated, the only way this inherent weakness can be overcome is by the provision of some sort of metal liner or corner supports, which is undesirable for the reasons hereinbefore enumerated. Also, since the hinges are normally mounted to a portion of the box which is structurally weak, a sort of flopping action commences to exist after continued usage of the box.

Accordingly, a primary object of my invention is the provision of a novel and improved hinge which will effectively mount a box cover and body section to each other in the desired pivotal relation and which at the same time will impart a high degree of structural rigidity to both sections of the box.

Another important object of my invention is the provision of a hinge for cardboard boxes and the like, said hinge being specifically designed for mounting in the box corners, it being understood that the box corners possess a relatively high degree of strength and rigidity whereby a relatively inflexible foundation is provided for mounting the hinge.



Another object of this invention is the provision of a hinge of the character described which may be simply and economically manufactured and easily assembled with its associated box.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated by me for carrying out my invention:

FIG. 1 is a perspective view of a box and hinge assembly embodying the instant invention, said box being shown in open position;

FIG. 2 is a front elevational view of the hinge per se;

FIG. 3 is a rear elevational view thereof;

FIG. 4 is a side edge view thereof; and

FIG. 5 is a top plan view thereof.

Referring now to the drawings, and more particularly to FIG. 1 thereof, a box is generally illustrated at 10 comprising a cover section 12 and a body section 14. The box 10 is generally of the type used in connection with the shipment and display of jewelry and is constructed of cardboard or similar fibrous material characterized by its relatively low strength. It will be understood, however, that the instant invention is not limited in application to a jewelry box nor to any specific constructional material since, as will hereinafter become apparent, the basic concepts of my invention are applicable and of value in connection with any box characterized by low structural rigidity.

Still referring to FIG. 1, it will be seen that cover section 12 and body section 14 are each of substantially identical rectangular configuration. More specifically, cover section 12 comprises a top wall 16, front wall 18, side walls 20, 22 and a rear wall 24. Likewise, body section 14 comprises a bottom wall 26, front wall 28, side walls 30, 32 and rear wall 34. As will be noted, the cover and body sections are hingedly attached to each other with their rear walls in edge abutting relation by means of hinge elements generally designated as 36.

Referring now to FIGS. 2 through 5, it will be seen that hinge elements 36 comprise a pair of substantially rectangular hinge plates 38 and 40, the plate 38 having a top edge 42, side edges 44, 46, and a bottom edge 48, while plate 40 is provided with a top edge 50, side edges 52, 54 and bottom edge 56. The top and bottom edges of the hinge plates 38 and 40 are provided with interengaging hinge rolls 58 in axial alignment so as to receive a hinge pin 60, as is conventional in the art. Plates 38 and 40 are further characterized by the presence of openings 62 therein for the reception of leaf spring 64 whereby to maintain the hinge plates in either open or closed position with respect to each other, as is also conventional in the art. It will be noted that the openings 62 are provided with a dished peripheral portion 66 for receiving the bent-over ends 68 of spring 64, while oppositely disposed from said dished portions there is provided integrally extending projections 70, said projections functioning to maintain the spring from becoming inadvertently detached from the hinge during shipment and sale of the latter per se, as more fully described in my copending application, Serial No. 642,991, filed February 28, 1957.

Integrally extending from adjacent side walls of hinge plates 38 and 40 are a pair of substantially identical flanges 72, each of said flanges being of substantially rectangular configuration, although it will be understood that the shape of the flanges is in no way critical. It is important to note that said flanges extend substantially perpendicularly from the plane of plates 38 and 40 and that the flanges themselves are in the same plane. A plurality of

gripping prongs **74** are integrally struck from flanges **72** and extend in a direction away from the plates **38** and **40** for reasons hereinafter to be made apparent.

In assembly, identical hinge elements **36** are mounted in the rear corners of the box **10**, as clearly shown in FIG. 1. As will be seen, the hinge plates **38** and **40** overlie rear walls **24** and **34** at the end portions thereof whereupon the perpendicularly extending flanges **72** are adapted to engage the inner surfaces of the box side walls and are secured thereto by means of the gripping prongs **74** which are forced into the said side walls and then clinched outwardly so as to effect a tight and secure gripping engagement. It will be understood, however, that the flanges **72** could be secured to the box side walls by means other than gripping prongs **74** without departing from the spirit of my invention. At any rate, it will be seen that since flanges **72** are rigidly secured to the inner surfaces of the box side walls, hinge plates **38** and **40** will be maintained in their proper relative position even though they, in themselves, are not attached to the box rear walls, although such attachment could exist, if desired. I find, however, that a simpler and more effective assembly is obtained by leaving the hinge plates in disconnected relation with respect to the box rear walls, although in engagement therewith, whereupon the only securement which exists for the hinge elements is that of the flanges **72** to the box side walls.

Once the hinge elements **36** have been assembled to box **10** in the manner above described, it will be obvious that cover section **12** is mounted in pivotal relation to body section **14** with spring **64** functioning to maintain the sections in open position, as shown in FIG. 1, or in closed position (not shown). At the same time, since the hinge plates and their perpendicularly extending flanges snugly engage the rear corners of the box cover and body sections, it will be seen that a great deal of structural rigidity is imparted to the box and, more specifically, that the shape of the box will be effectively maintained. In addition, since the corner portions of the box are relatively rigid from a structural standpoint, it follows that by mounting the hinges at the corners a firmer hinge foundation is established, thereby promoting a more efficiently closing box. If desired, an additional hinge element could be secured to the center portion of the box rear walls, although it has been found in practice that such an additional hinge is not necessary, and hence I prefer to omit same.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangement of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described except in so far as indicated by the scope of the appended claims.



I claim:

1. In a box constructed of a material having the flexible characteristics of cardboard, a body section, a cover section adapted to overlie said body section, said body and cover sections each having front, rear and side walls, hinge means for hingedly attaching said sections to each other with their walls in substantially edge-to-edge abutting relation, said hinge means including a pair of hinge elements that are positioned at the rear corners of said box, each of said hinge elements including a first and second plate, said plates being hingedly attached to each other and each plate overlying the inner surface of the rear wall of its associated section at the opposite end portion thereof, each of said plates being in engagement with said inner surface of the rear wall of its associated section but otherwise disconnected therefrom, flanges integrally joined to said plates and extending perpendicularly from the sides thereof, each of said flanges engaging the inner surface of the adjacent side wall of the associated section and being in substantially the same plane, the edge of each of said flanges that is adjacent the outer edge of the associated plate being coextensive therewith, the other edge of each of said flanges that is adjacent the hinge axis of said hinge elements being foreshortened with respect to the edge of said plate adjacent thereto, and means for securing each of said flanges to its respective side wall.

2. In a box constructed of a material having the flexible characteristics of cardboard, a body section, a cover section adapted to overlie said body section, said body and cover sections each having front, rear and side walls, hinge means for hingedly attaching said sections to each other with their walls in substantially edge-to-edge abutting relation, said hinge means including a pair of hinge elements that are positioned at the rear corners of said box, each of said hinge elements including a first and second plate, said plates being hingedly attached to each other and each plate overlying the inner surface of the rear wall of its associated section at the opposite end portion thereof, each of said plates being in engagement with said inner surface of the rear wall of its associated section but otherwise disconnected therefrom, flanges integrally joined to said plates and extending perpendicularly from the sides thereof, each of said flanges engaging the inner surface of the adjacent side wall of the associated section and being in substantially the same plane, and means for securing each of said flanges to its respective side wall.

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