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HINGE

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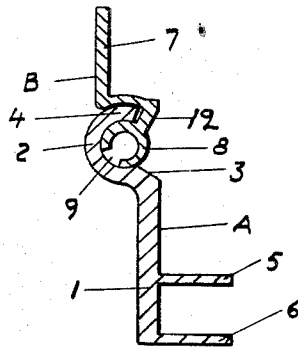


Fig. 1

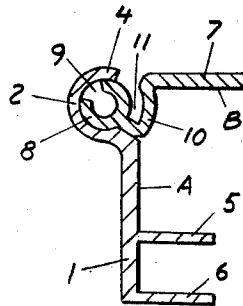


Fig. 2

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The present invention relates to hinges, and more particularly to hinges adapted to be used in the manufacture of collapsible boxes and the like.

An object of the invention is to provide a hinge of simple construction which will be strong and rugged so as to be able to withstand the stresses and strains to which it would be subjected in cases, for example, where the box is used as a shipping container.

Another object is to provide a hinge having an attachment portion which may be made in different lengths so that by using appropriate different lengths for the hinges on the four sides of a box the sides may be collapsed to lie flat on top of each other and on the bottom.

Another object is to provide a hinge which will present a smooth and attractive outside appearance, and will provide an effective seal against leakage or the entry of foreign matter.

Other and further objects and advantages will appear or be pointed out hereinafter.

To this end, the hinge according to the present invention is formed of an outer and an inner hinge member, said outer hinge member having in sectional profile the shape of an arc with a peripheral angle range exceeding 180°, said inner hinge member having a sectional profile of circular shape retained in sliding engagement within and being turnable about the axis of said arc, said inner hinge member extending through the mouth of said arc, and the turning movement of said inner hinge member being limited by the engagement with the extreme points of said arc.

The invention will now be described with reference to the accompanying drawing in which

Fig. 1 is a sectional profile view of the hinge in open position, while Fig. 2 is a similar view with the hinge in closed position. As shown the hinge has an angular turning movement of about 90°.

The hinge member A, which may be referred to as the outer or encircling hinge member, has an attachment portion 1 and a hinge portion 2, which latter includes a flange in the form of an arc of slightly more than 180°. The attachment portion 1 at the point 3 where it merges into the hinge portion extends for a short distance in a direction generally radial to the latter. The lower end of attachment portion 1 is preferably provided with the jaws 5 and 6 into which the bottom of the box or the like may be fitted in attaching the hinge thereto.

The hinge member B, which may be referred to as the inner or encircled hinge member has an attachment portion 7 and a hinge portion 8, which latter in section is of tubular shape and preferably is provided with slot 9 running through its entire length. The slot is provided in order to create a springlike action tending to urge the outer surface of the tube 8 into intimate sliding contact with the inner surface of the arc 2. The tubular hinge portion 8 is mounted concentrically within the arc 2 and consequently turns about the axis of the latter. It is retained within the arc due to the fact that the latter has an angular range of more than 180°. The attachment

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portion 7 includes a spacer portion 12 that extends from the tubular portion 8, in a substantially radial direction, and a connecting element 10 that extends in a curved direction substantially concentric with the tubular portion 8, and then at substantially right angles away from the portion 8. The curved section 10 is spaced from the tubular portion 8 a distance such as to provide a recess 11 into which the extreme end 4 of the arc member 2 may snugly fit as shown in Fig. 1. The section 10 extends for a distance substantially equal to the sectional distance through the hinge portion.

The turning movement of the hinge member B is limited by the engagement of section 12 of its attached portion 7 with the extreme ends of the arc 2. As shown in the drawings, the mouth of the arc 2 and consequently the range of movement is about 90°.

It will be observed that the attaching face of the attachment portion 7 of hinge member B in one extreme position (Fig. 1) lies in a plane at right angles to the planes of the attaching faces (5 and 6) of the attachment portion 1 of the outer hinge member A; whereas in the other extreme position (Fig. 2) it lies in a plane parallel thereto.

In utilizing the invention in connection with collapsible boxes, the attachment portion 1 of hinge member A can be secured to the bottom by inserting the edge of the latter between the jaws 5 and 6. Hinges having suitable different heights of the attachment portion 1 would be used for the four sides, so that when the box is collapsed the sides would lie flat over each other and on the bottom. In attaching the sides to the attachment portion 7 of hinge member B, the edges of the sides would rest against the section 10.

It will be understood that the hinge members A and B may extend longitudinally to any length desired; for example, in the case of the collapsible shipping box, they may extend for the full length of the sides of the box.

It is of course not necessary to have an attachment portion for the hinge members. When constructing for instance collapsible boxes or the like the hinge members can form a solid unitary piece with for instance the bottom and the sides of the collapsible box. The term "attachment portion" as used in the claims is intended to refer to the bottoms and sides in the case of such unitary construction.

Since the hinge may be made of aluminum, brass or other suitable material, and has a relatively smooth outer contour, it provides an attractive appearance.

What is claimed is:

1. A hinge comprising, in combination, an outer hinge member including a hinge portion having an arcuate flange defining an arc in excess of 180° and a substantially radially outwardly extending attachment portion integral with one end of said hinge portion flange, an inner hinge member including a tubular hinge portion having an outside diameter substantially equal to the inside diameter of said arcuate flange in rotatable sliding engagement within said outer hinge portion, a substantially radially outwardly extending spacer portion integral at one end with said tubular inner portion, an arcuate connecting element concentric with and radially spaced from said tubular portion integral with the opposite end of said spacer portion, and an attaching element integral with said connecting element, said connecting element being spaced from said tubular inner hinge portion a distance substantially corresponding to the thickness of said arcuate flange to define an arcuate recess adapted to rotatably receive said flange in bearing relationship with the facing surfaces of said tubular portion and said connecting element.

2. A hinge as set forth in claim 1, wherein said spacer element is adapted to limit relative rotational movement

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between said inner hinge member and said outer hinge member, said spacer element abutting one end of said flange at one extreme position and the opposite end at another extreme position, said defined recess of said inner hinge member being completely filled by said arcuate flange in said one extreme position, and said flange being spaced from said recess in said other extreme position.

3. A hinge as set forth in claim 2, wherein said one position and said other position are spaced substantially 90° apart.

4. A hinge comprising an outer hinge member and an inner hinge member, each of said members having a hinge portion and an attachment portion, the hinge portion of said outer hinge member having in cross-sectional profile the shape of an arc with a peripheral angle range exceeding 180°, the hinge portion of said inner hinge member having a cross-sectional profile of generally circular shape and being retained in rotatable bearing engagement within the hinge portion of the outer hinge member and being turnable about the center of said arc, the attachment portion of the inner hinge member including a radially extending element and an arcuate element concentric with and spaced from the hinge portion of said inner hinge member, said radially extending element extending through the mouth of said arc, part of the hinge portion of the outer hinge member being movably received in close-fitting bearing engagement both with said arcuate element and the hinge portion of said inner hinge member and the turning movement of said inner hinge member being limited by the engagement of its attachment portion with the edge of said hinge portion of the outer hinge member and with the attachment portion of the outer hinge member, the peripheral angle range of the mouth of said arc being substantially 90°.

5. A hinge according to claim 4, in which said arcuate element extends only for a distance substantially equal to the diameter of the hinge portion of the inner hinge member.

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6. A hinge as set forth in claim 2, wherein said tubular hinge portion is formed with a longitudinal slot rendering said tubular hinge portion resilient and adapted to accommodate limited compression and having spring-like engagement with the inside surface of said arcuate flange.

7. A hinge comprising an outer hinge member and an inner hinge member, each of said members having a hinge portion and an attachment portion, the hinge portion of said outer hinge member having a cross-sectional profile in the shape of an arc with a peripheral angle range exceeding 180°, the hinge portion of said inner hinge member having a cross-sectional profile of generally circular shape and being retained in rotatable bearing engagement within the hinge portion of the outer hinge member and being turnable about the center of said arc, the attachment portions each including a radially extending element and the inner hinge member including an arcuate element concentric with and spaced from the hinge portion thereof, the radially extending element of the inner hinge member extending through the mouth of said arc, part of the hinge portion of the outer hinge member being movably received in close-fitting bearing engagement both with the hinge portion of said inner hinge member and said arcuate element and the turning movement of said inner hinge member being limited by the engagement of the radial element of its attachment portion with the edge of said hinge portion of the outer hinge member and with the radial element of the attachment portion of the outer hinge member, the angle between said edge and last-named radial element being substantially 90°.

References Cited in the file of this patent

UNITED STATES PATENTS

880,757	Rugg	Mar. 3, 1908
1,734,810	Jeffers	Nov. 5, 1929
2,658,233	Kimmel	Nov. 10, 1953