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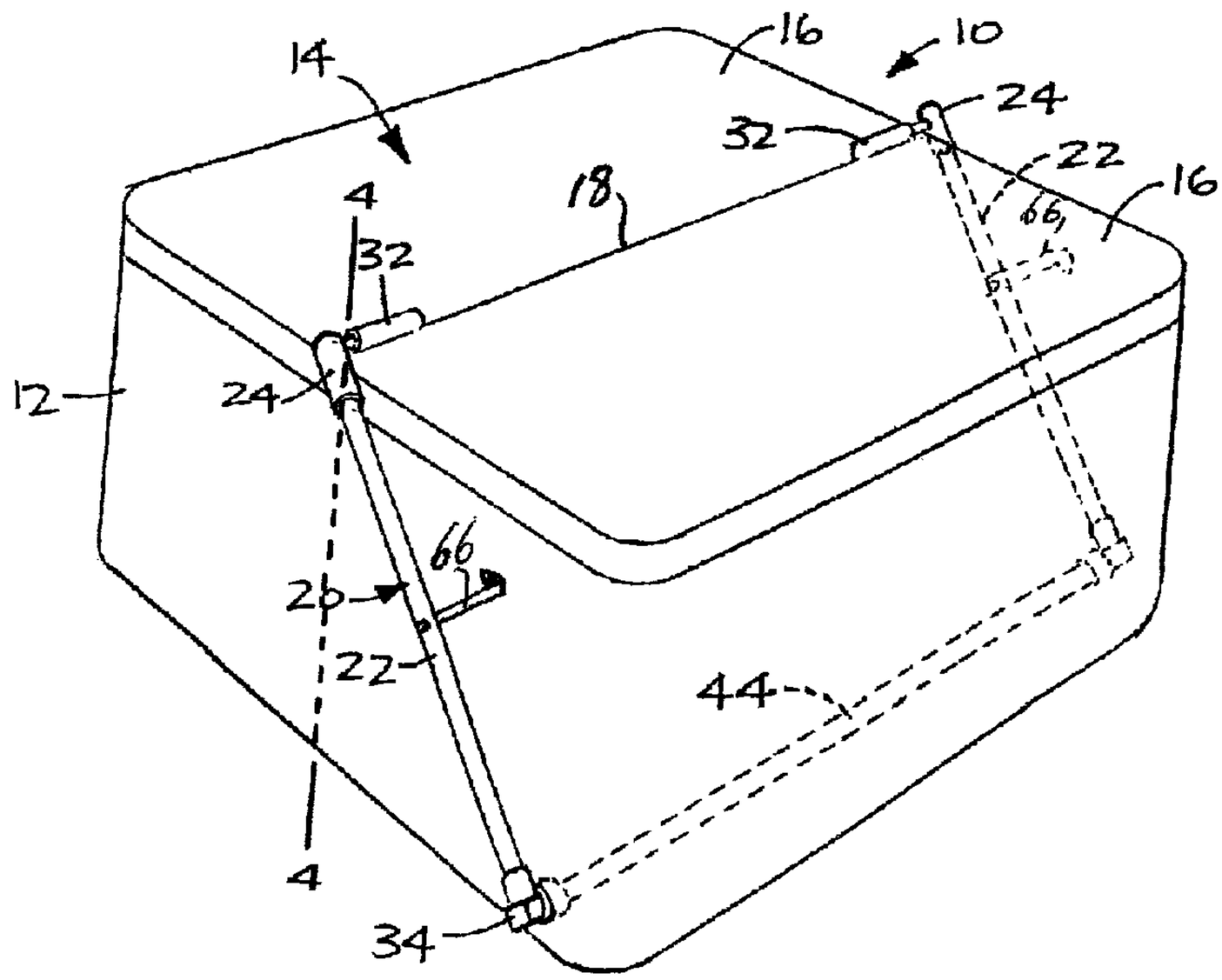
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(54) Title: SPA COVER REMOVING DEVICE



(57) Abrégé/Abstract:
A spa cover removing device has improved rigidity and includes cross pieces that fit into elongate sleeves provided at each end of a center hinge between two half sections of a spa cover. The removing device has a substantially rigid frame with a pair of parallel side bars positioned on opposing sides of the spa housing, the side bars have upper ends rigidly attached to upper elbow pieces projecting toward each other, each elbow piece rigidly joined to retainer bars to extend across the center hinge of the spa cover and support the spa cover. The side bars of the rigid frame also have lower ends rigidly attached to lower elbow pieces connected to a single square tubular pivot shaft extending across the spa housing, and the pivot shaft is supported in annular supports at the opposite sides of the spa housing, these annular supports each have an internal diameter sufficient for the pivot shaft of the rigid frame to pivot therein and hence remove the spa cover.

ABSTRACT OF THE DISCLOSURE

A spa cover removing device has improved rigidity and includes cross pieces that fit into elongate sleeves provided at each end of a center hinge between two half sections of a spa cover. The removing device has a substantially rigid frame with a pair of parallel side bars positioned on opposing sides of the spa housing, the side bars have upper ends rigidly attached to upper elbow pieces projecting toward each other, each elbow piece rigidly joined to retainer bars to extend across the center hinge of the spa cover and support the spa cover. The side bars of the rigid frame also have lower ends rigidly attached to lower elbow pieces connected to a single square tubular pivot shaft extending across the spa housing, and the pivot shaft is supported in annular supports at the opposite sides of the spa housing, these annular supports each have an internal diameter sufficient for the pivot shaft of the rigid frame to pivot therein and hence remove the spa cover.

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SPA COVER REMOVING DEVICE

The present invention relates to a cover removing device for a spa, and more particularly to a spa cover removing device for a spa cover formed of two half sections joined by a center hinge.

Outdoor spas, previously known as hot tubs, generally have an insulated cover to retain the heat of the water in the spa. The cover also keeps the water clean and prevents leaves and other foreign objects from dropping into the water.

Spa covers are usually made with a filling of insulating material generally with a plastic cover sheet, e.g. a vinyl cover sheet . Most spa covers are made in two halves with a center hinge such that the covers can be folded in half to facilitate easy removal from their spas.

In United States Patent No. 5,634,218, issued June 3, 1997 to Ouelette, there is disclosed a lifting frame for a spa cover which has opposing supports extending along a cover hinge for the cover to fold over and thus be removed. It has been found that continual use of a frame such as that disclosed in this patent sometimes causes wear to occur on the vinyl surface of the cover where it contacts the frame.

In my United States Patent No. 6,000,072, issued December 14, 1999, I disclosed a spa cover removing device having a pair of parallel side bars pivotally connected at their lower ends to opposite sides of the spa. From experience with the use of such a spa cover removing device, it has been found that there are some cases when this spa cover removing device does not have sufficient rigidity.

In my co-pending United States Patent Application Number 10/093,064 I have disclosed a more rigid frame and also a tube over the cross bar which rotates as the cover is being folded over and raised. This reduces wear on the vinyl surface of the cover.

It is accordingly an object of the present invention to provide a more rigid spa cover removing device, which is at least partially obtained by having a square tubular pivot shaft extending between the lower ends of side bars of the spa cover removing device.

A further object of the invention is to provide one or more elongate sleeves at the center hinge joining the half sections of the spa cover for receiving one or more retainer bars extending from upper ends of side bars.

It has been found that the square tubular pivot shaft tends to resist torque better than a round tubular pivot shaft and twists less for the same size of shaft. Furthermore by providing lower elbows at the ends of parallel side bars to rigidly fit in the ends of the square tubular pivot shaft, a very rigid connection is achieved.

The elongate sleeve or elongate sleeves at the hinge between the two half sections of the spa cover secure the hinge in position on the retainer bar or retainer bars.

According to the present invention there is provided a spa cover removing device for a spa cover, the cover being formed of two half sections joined by a center hinge. The spa cover removing device has a substantially rigid frame with a pair of parallel side bars positioned on opposite sides of a spa housing, and these side bars have upper ends rigidly attached to upper elbow pieces projecting toward each other. The elbow pieces are rigidly joined to at least one retainer bar at the center hinge of the spa cover and support the spa cover. The side bars also have lower ends rigidly attached to lower elbow pieces which connect rigidly to a single square tubular pivot shaft extending across the opposite sides of the spa housing, and the pivot shaft is supported in annular supports at the opposite sides of the spa housing, the

annular supports each having an internal diameter sufficient for the pivot shaft to pivot therein on removal of the spa cover.

According to another embodiment of the present invention, a spa cover removing device is provided for a spa cover formed of two half sections joined by a center hinge, the spa cover removing device comprising an elongate sleeve positioned at each end of the center hinge and a pair of parallel side bars for positioning on opposite sides of a spa housing, the side bars having upper ends rigidly attached to upper elbow pieces, and the elbow pieces being rigidly joined to respective retainer bars extending into the elongate sleeve positioned at each end of the center hinge. The side bars also have lower ends rigidly attached to lower elbow pieces connected to a single pivot shaft extending across the spa housing and supports at the opposite sides of the spa housing permitting the pivot shaft to rotate therein and hence remove the spa cover.

The present invention will be more readily understood from the following description of a preferred embodiment thereof given, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of spa provided with a spa cover removing device according to the preferred embodiment of the present invention;

Figure 2 shows a broken away perspective view of parts of the spa cover removing device according to Figure 1;

Figure 3 shows a perspective view of a spa provided with a spa cover removing device according to another embodiment of the present invention;

Figure 4A shows a partial cross-sectional view of a cover hinge and an elongate sleeve at line 4-4 of Figure 1;

Figure 4B shows the cover hinge of Figure 4A with one half section of the cover folded over the other half section;

Figure 5A shows a partial cross-sectional view of another embodiment of a cover hinge to that shown in Figures 4A and 4B;

Figure 5B shows the cover hinge of Figure 5A with one half section of the cover folded over the other half section; and

Figure 6 shows a partial cross-section through a corner of a spa housing with a drive motor for the cross-shaft according to a further embodiment of the present invention;

As shown in Figure 1 a spa indicated generally by reference numeral 10 has a housing 12 with a cover indicated generally by reference numeral 14 on top thereof. The cover 14 is formed in two half sections 16 with a center hinge 18 so that one half section 16 of the cover 14 may be folded over the other half section 16 prior to removing the cover from the spa housing 12. The spa cover removing device 20 has two side bars 22 as shown more clearly in Figure 2 and at the top end of the side bars 22 are upper elbow pieces 24 which are rigidly joined to the side bars 22 by bolts or pins 26. The upper elbow pieces 24 have retainer bars 28 extending at right angles therefrom toward each other. The retainer bars 28 pass through tubes 30, preferably made of metal, although they may be made of a suitable plastic material, which in turn fit into elongate sleeves 32 integrally formed at each end of the center hinge 18. The upper elbow pieces 24 provide a rigid connection between the cross bars 28 and the side bars 22 wherein the tubes 30 can rotate on the retainer bars 28 to reduce friction on the cover 14 that might otherwise occur when the half sections 16 of the cover 14 are being folded.

The elongate sleeves 32, as can be seen in Figure 2, are formed at opposite ends of the center hinge 18 and are provided so that when one half section 16 is folded over the other half

section 16 the elongate sleeves 32 still remain elongate sleeves and contain the retainer bars 28.

The lower ends of the side bars 22 are provided with respective lower elbow pieces 34 which each has a tubular top section 36 into which the lower end of the respective side bar 22 fits snugly and is attached by a pin or screw 38. A bottom portion 40 of each lower elbow piece 34 has a substantially square cross-section and has a cylindrical projection 42 which extends horizontally toward the lower elbow piece 34 on the opposite side of the spa housing 12.

Opposite ends of a square tubular pivot shaft 44 are attached rigidly to the lower elbow pieces 34. The square cross-section of the bottom portions 40 fits snugly into opposite ends of the square tubular pivot shaft 44 and is held in place by pins or nuts and bolts 48. Thus, the connections between the pair of parallel side bars 22 and the pivot shaft 44 are rigid and provide more resistance to torque if and when one of the two side bars 22 is raised by hand, thus facilitating removal of the cover 14.

The pivot shaft 44 is supported in annular bearings in the form of plastic tube sections or supports 50 in the opposite sides of the spa housing 12. These supports 50 have a diameter sufficient to permit the square tubular pivot shaft 44 to be easily rotated within them and yet retain the pivot shaft 44 in the desired location. Each of the annular supports 50 fits into a hole 52 in the respective side of the spa housing 12.

Figure 3 shows a single elongate sleeve 50 extending across the cover 14 at the center hinge 18. A single retainer bar 52 extends through the sleeve 50 between the two upper elbow pieces 24 on opposite sides of the housing 12.

A detail of the center hinge 18 is shown in Figures 4A and 4B joining two half sections 16 together. The hinge 18 has flexible plastic strips 56 connected to the half cover sections 16 to hold the elongate sleeve 32 there between. Figure 4A shows the half cover sections 16 in

the open position across the spa housing as shown in Figure 1. The flexible plastic strips 56 straighten when one half section is folded over the other half section as shown in Figure 4B which holds the sleeve 32 in place. The tube 30 is shown between the sleeve 32 and the retainer bar 28.

Another embodiment of a center hinge 18 is shown in Figures 5A and 5B. In this embodiment, the hinge 18 is placed between the two half cover sections 16 when they are in the open position across the spa housing 12 as shown in Figure 1. This is illustrated in Figure 5A. When one half cover section 16 is folded over the other half cover section 16, as shown in Figure 5B, the hinge 18 remains outside the half cover sections 16 which avoids any space between the folded half cover sections. The arrangement of retainer bar 28, tube 30 and sleeve 32 remains the same, only the flexible plastic straps 56 are reversed from the embodiment shown in Figures 4A and 4B.

The square tubular pivot shaft 44 may be rotated by a motor 60 as shown in Figure 6. The pivot shaft has a belt or chain drive 62 between two pulley wheels or sprockets 64. Such a mechanism avoids the necessity of a person having to manually raise or lower the spa cover removing device.

Springs in the form of elastic cables or bungee cords 66 are connected at opposite ends thereof to the side bars 22 and the respective sides of the spa housing 12 to assist in removing the spa cover 14.

Various other changes and modifications may be made to the structure disclosed herein as will be apparent to those skilled in this art, within the scope of the following claims.

Patent Claims

1. In combination, a spa cover and a spa cover removing device;

said spa cover comprising two half sections, a center hinge between said half sections and first and second elongate sleeves located opposite each other along said hinge; and

said spa cover removing device comprising:

a frame;

said frame comprising a pair of parallel side bars for location at opposite sides of a spa housing and having upper and lower ends, upper elbow pieces rigidly attached to said upper ends, first and second retainer bars extending towards one another from respective ones of said upper elbow pieces, lower elbow pieces attached to said lower ends and a pivot shaft extending between said lower end pieces; and

first and second tubes received in respective ones of said first and second sleeves, said first and second tubes rotatably receiving said first and second retainer bars therein; and

bearings for pivotally supporting said pivot shaft in opposite sides of said spa housing.

2. The combination according to claim 1, wherein said tubes comprise plastic tubes to reduce frictional wear when said spa cover is removed from its spa.

3. The combination according to claim 1 or 2, wherein said single pivot shaft is a tubular shaft of square cross-section and wherein said bearings are annular supports each having an internal diameter sufficient for said pivot shaft to rotate therein.

4. The combination according to any one of claims 1 to 3, wherein each of said lower elbow pieces has a substantially square cross-section that fits snugly within said pivot shaft to prevent relative rotational movement between said lower elbow pieces and said pivot shaft.

5. The combination according to any one of claims 1 to 4, wherein the pivot shaft is motorized to raise and lower the spa cover.

6. A spa cover removing device for a spa cover comprising two half sections, a center hinge between said half sections and first and second elongate sleeves located opposite each other along said hinge, and said spa cover removing device comprising:

a frame;

said frame comprising a pair of parallel side bars for location at opposite sides of a spa housing and having upper and lower ends, upper elbow pieces rigidly attached to said upper ends, first and second retainer bars extending towards one another from respective ones of said upper elbow pieces, lower elbow pieces attached to said lower ends and a pivot shaft extending between said lower end pieces; and

first and second tubes insertable into respective ones of the first and second sleeves for rotatably receiving said first and second retainer bars therein.

7. The spa cover removing device according to claim 6, wherein said tubes comprise plastic tubes to reduce frictional wear when said spa cover is removed from its spa.

8. The spa cover removing device according to claim 6 or 7, wherein each of said lower elbow pieces has a substantially square cross-section that fits snugly within said pivot shaft to prevent relative rotational movement between said lower elbow pieces and said pivot shaft.

9. The spa cover removing device according to anyone of claims 6 to 8, wherein the pivot shaft is motorized to raise and lower the spa cover.

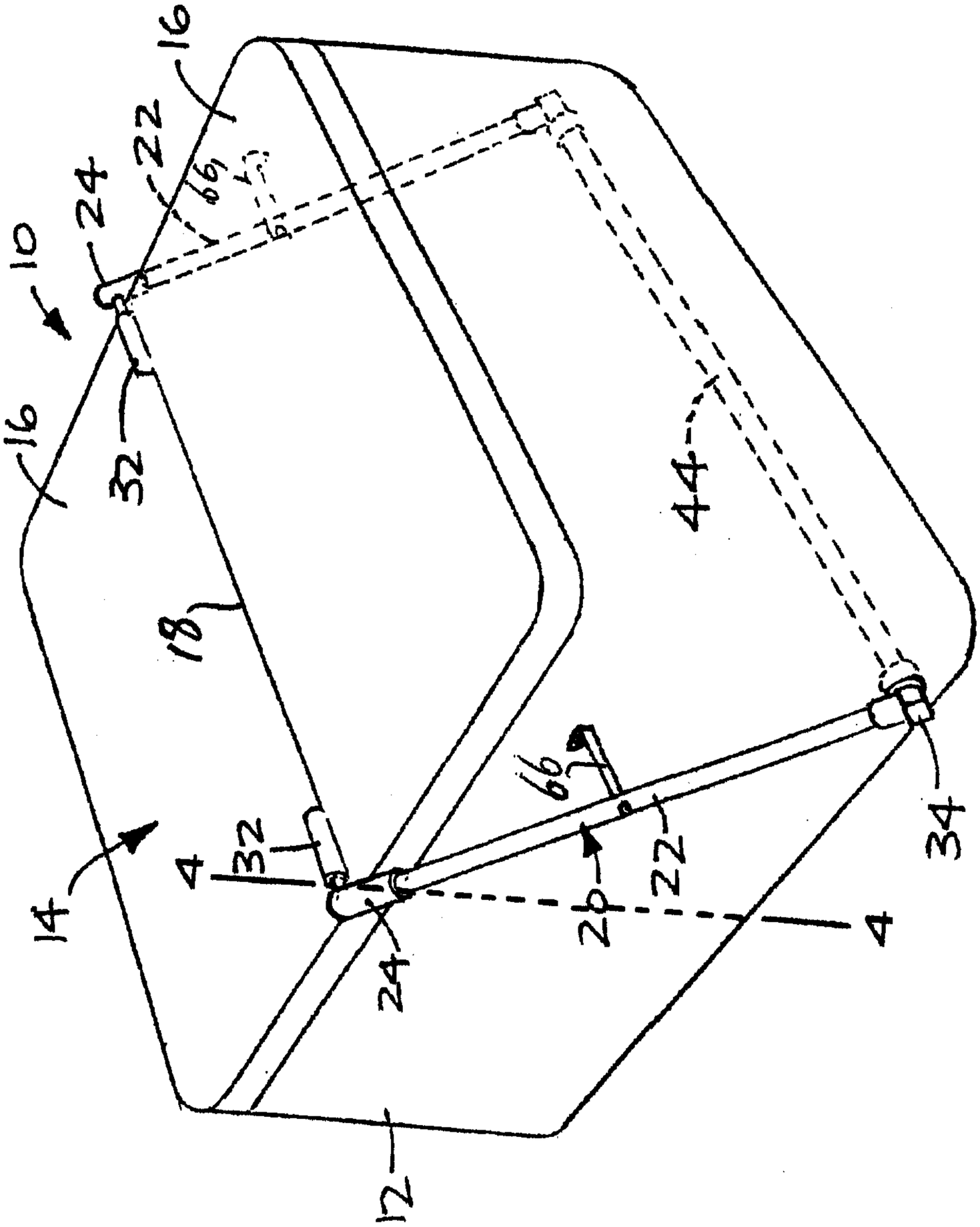


FIG. 1

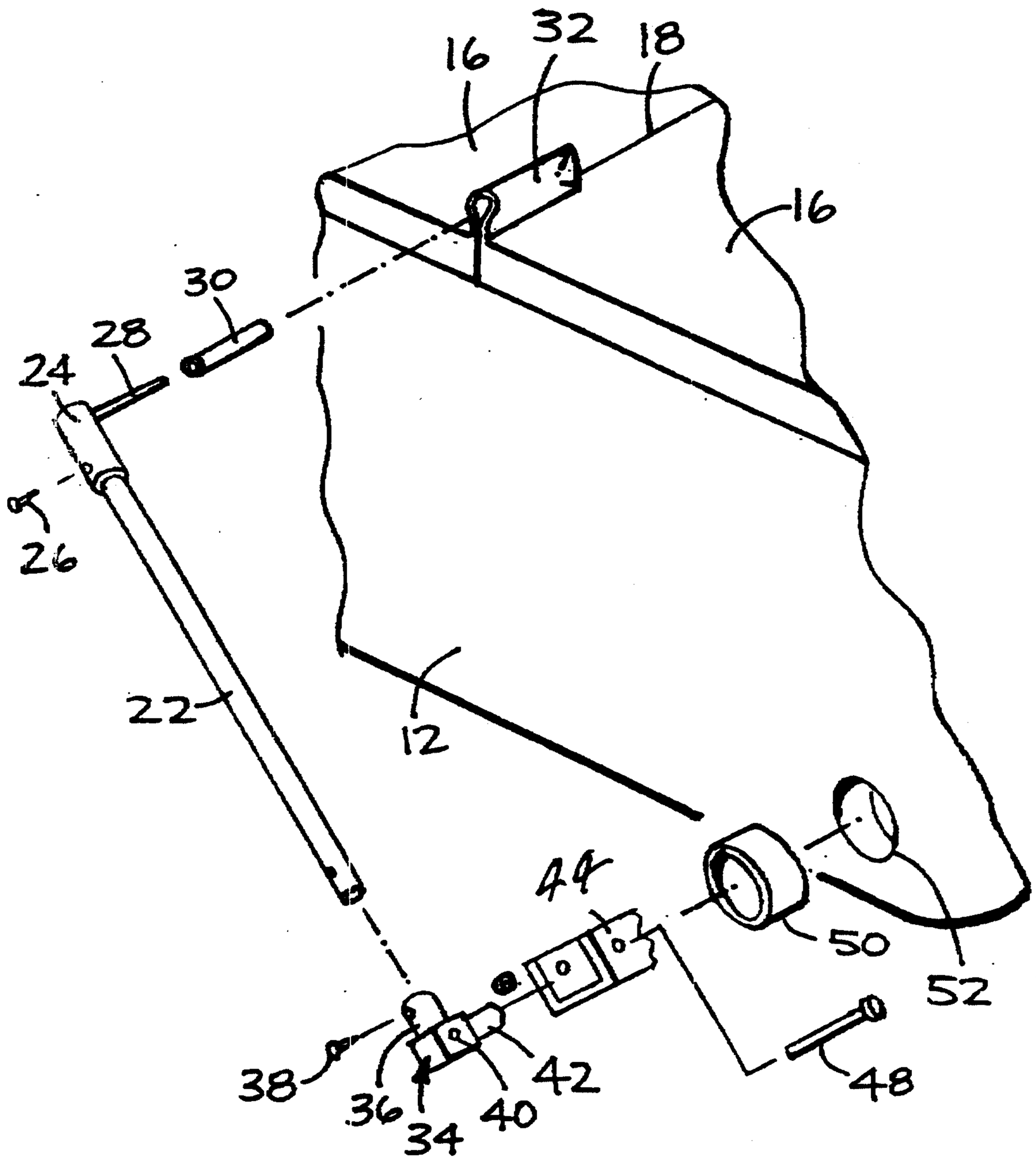


FIG. 2

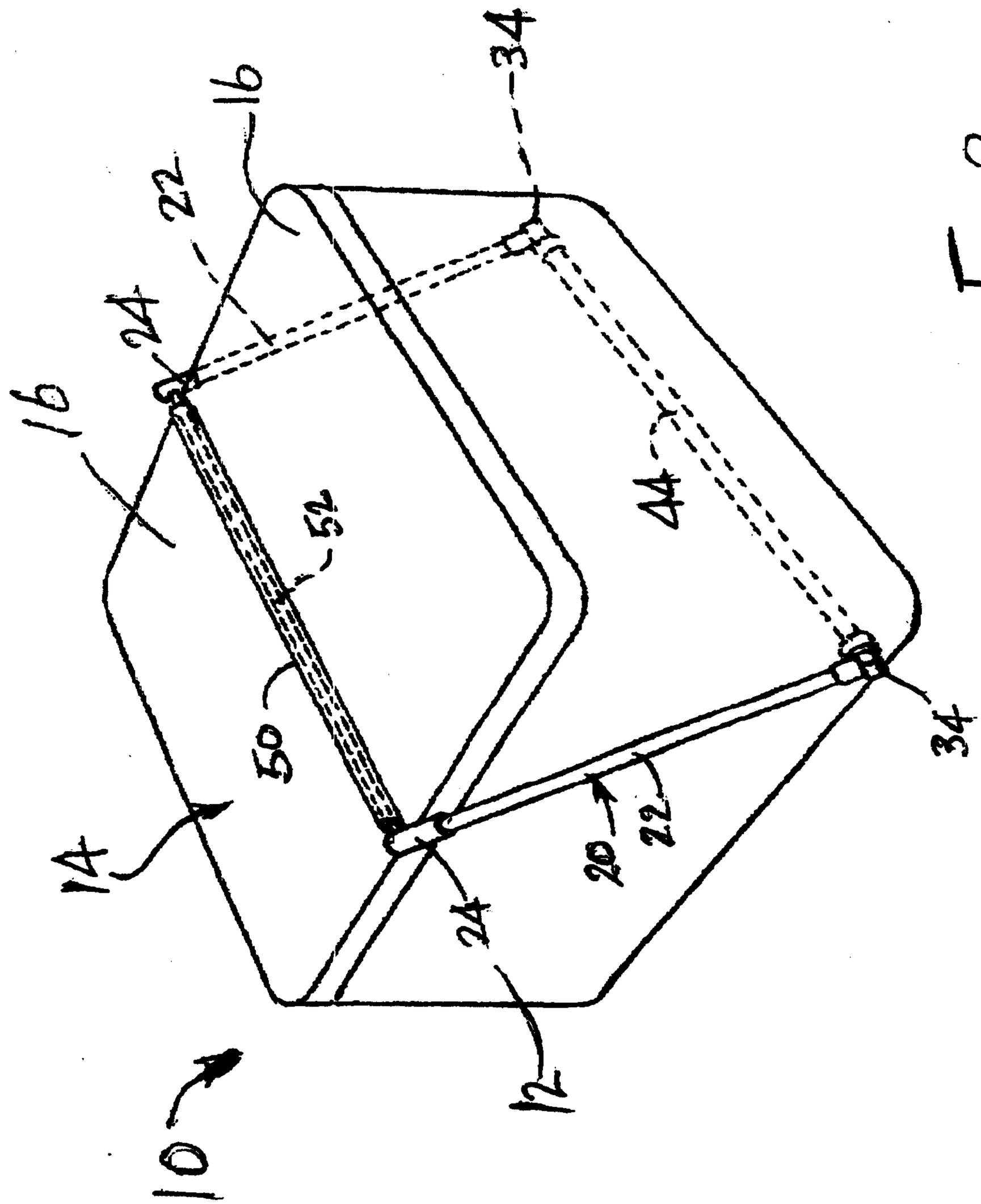


FIG 3

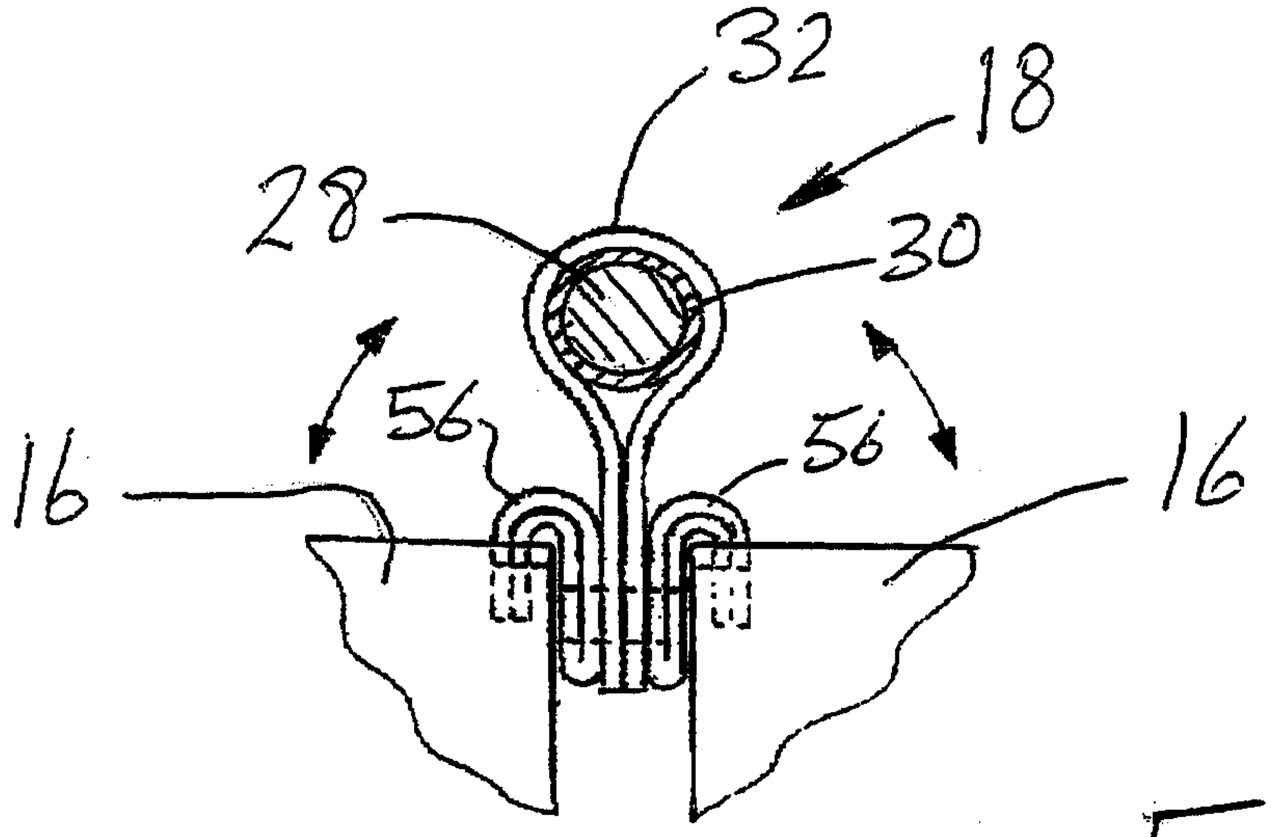


FIG 4A

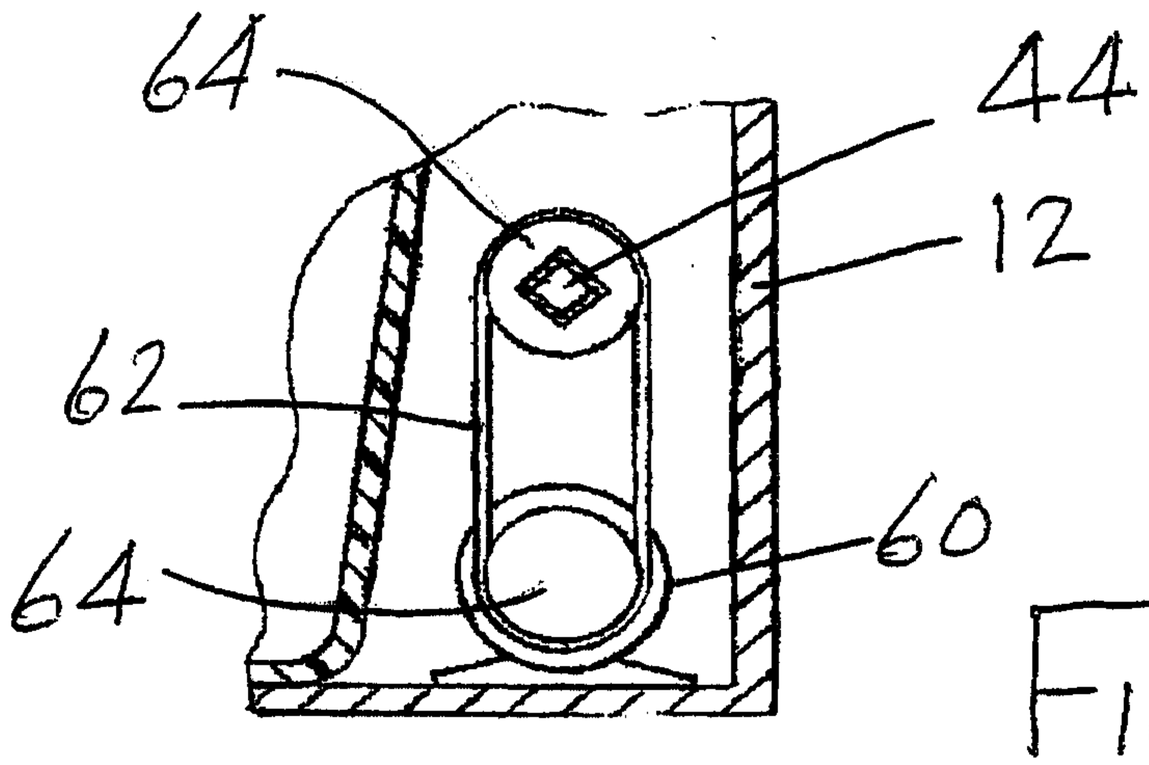


FIG 6

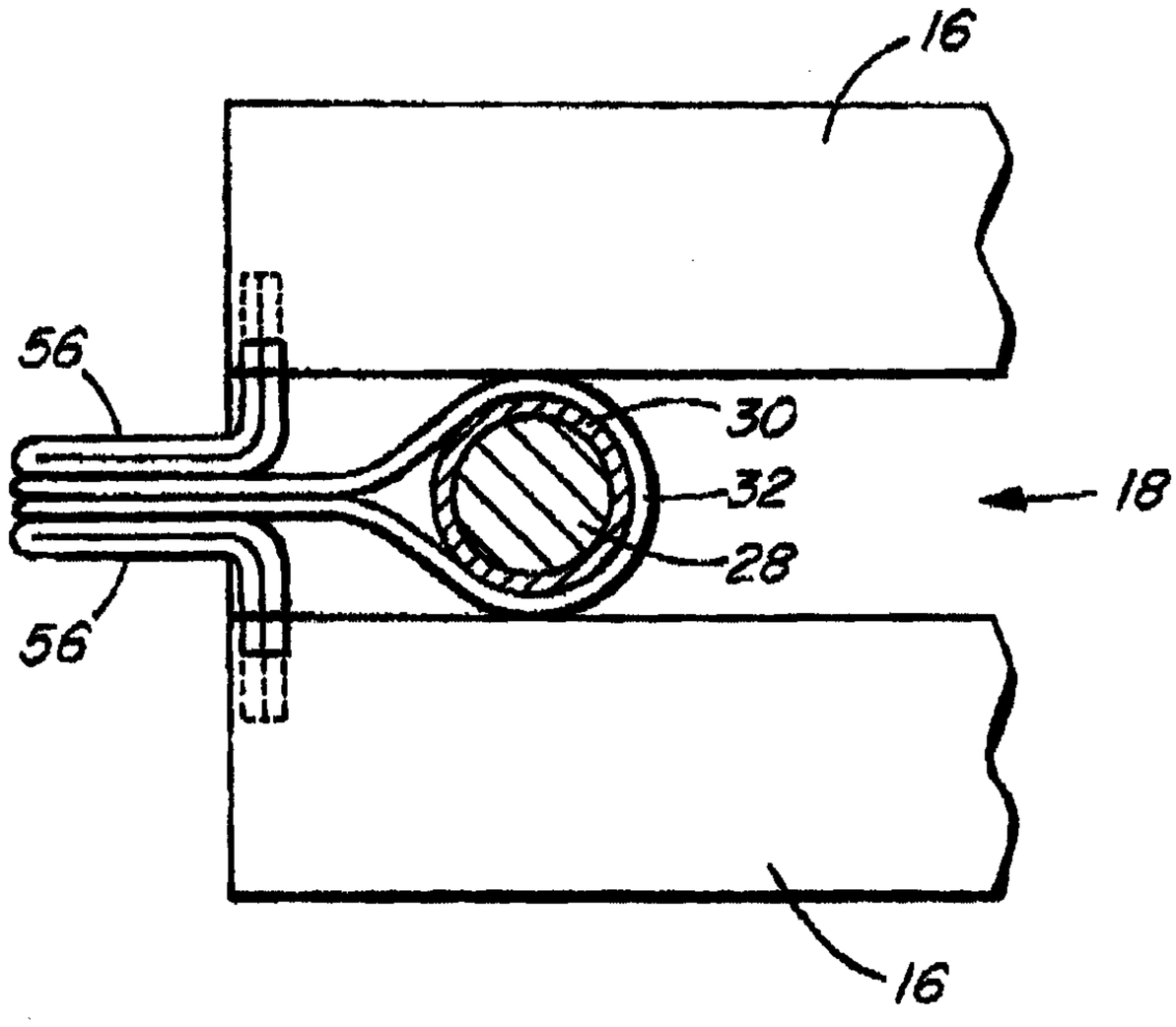


FIG. 4B

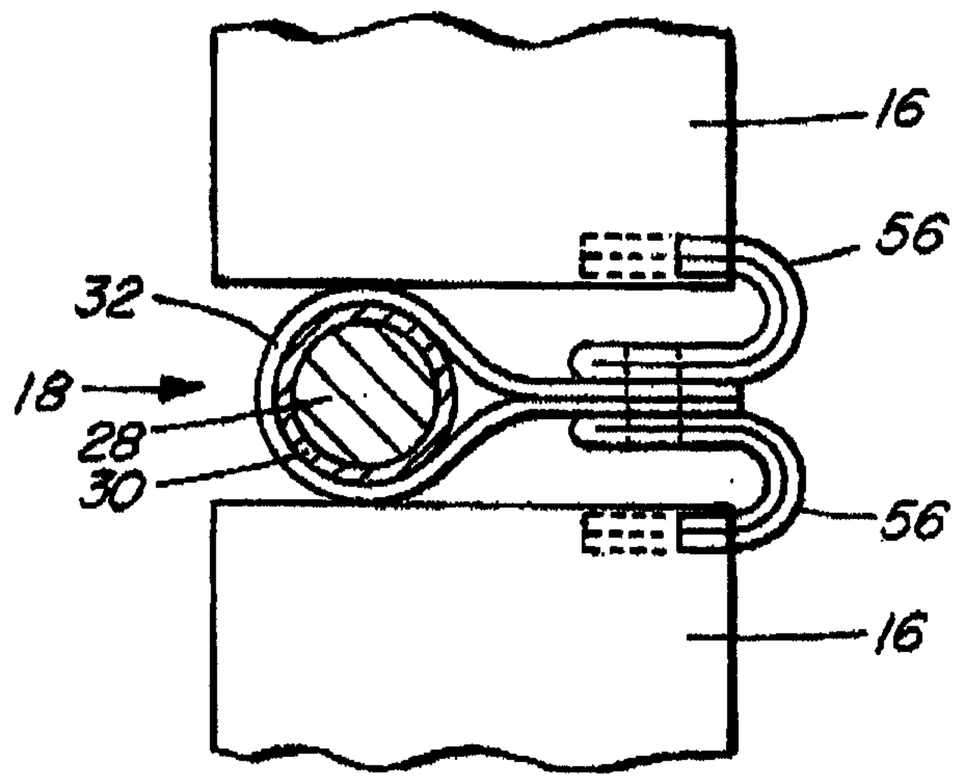


FIG. 5A

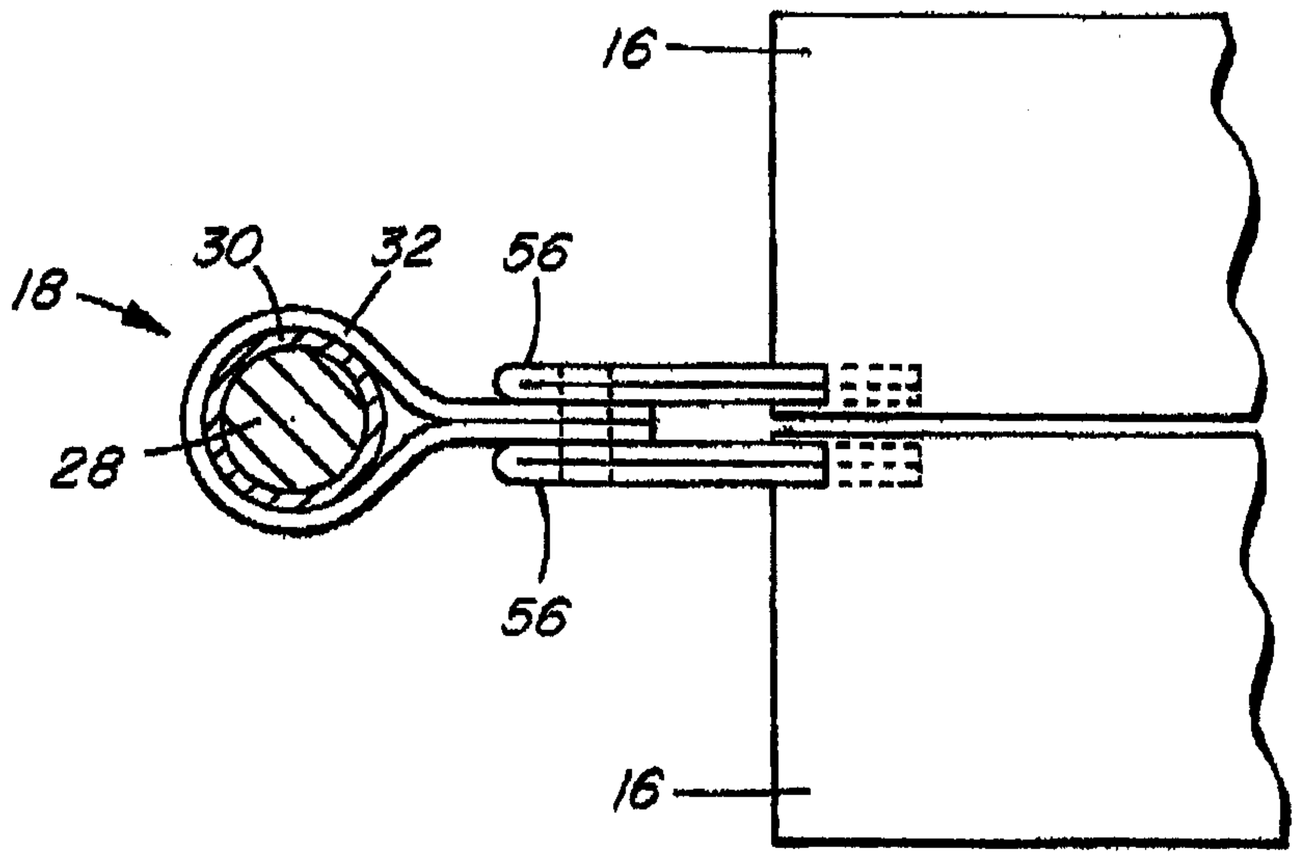
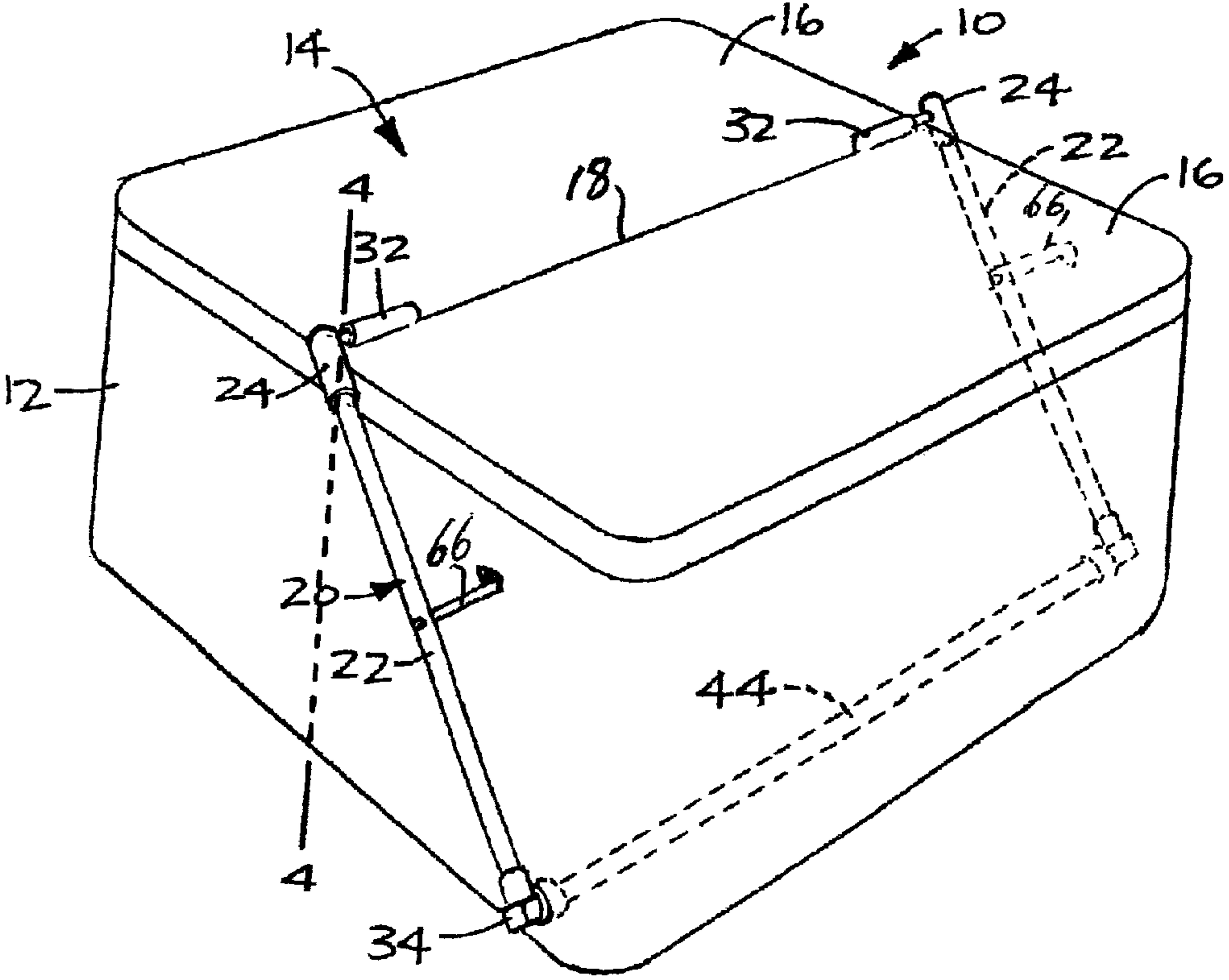


FIG. 5B


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