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(54) **Container with lid**

(57) A container (10) includes a base (12) and a plurality of walls (14,16) extending upward therefrom. At least one lid (34) is pivotably connected to one of the walls (14,16). The lid (34) includes at least one projection (40,41) from an upper surface thereof, which contacts at least one rib (21,22) on an exterior surface of the wall (14) to prevent over-rotation of the lid (34).

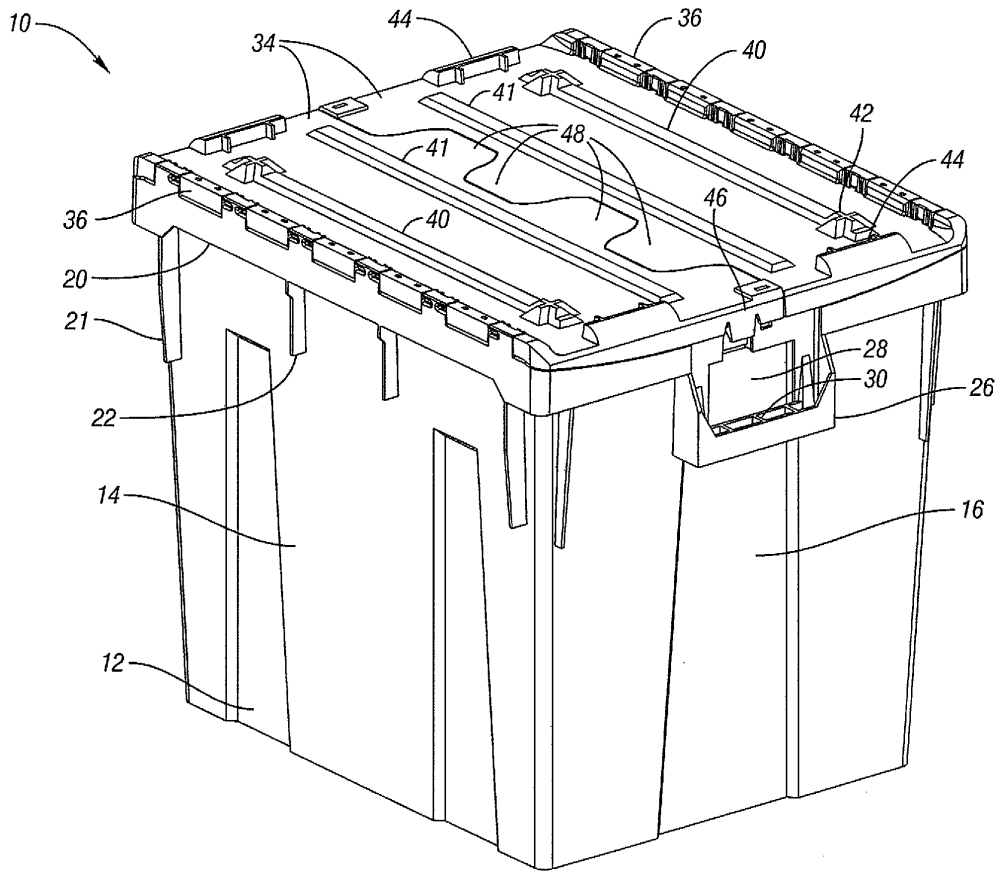


Fig. 1

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Description

[0001] The present invention relates generally to containers, and more particularly to containers with attached lids.

[0002] Containers with attached lids are used for many purposes. These containers generally include a pair of opposing side walls and a pair of opposing end walls integrally molded with a base. Typically a pair of lids are each hingeably connected to one of the side walls. The lids include a plurality of tongues that interlock in the middle of the container in the closed position.

[0003] One use for this type of containers is for medical waste. Medical waste is placed in the container, which is then closed and shipped to a biohazard facility for disposal. At the facility, the contents of the container are dumped into an autoclave for disposal. During dumping, one of the lids is open and pivoted outward until it abuts its respective side wall. The container is then tipped, with the lid resting on a wall of the autoclave, and the container is inverted to dump the contents into the autoclave. This sometimes breaks the lid and/or the hinge connecting the lid to the side wall.

[0004] After being emptied, the container must be washed prior to reuse. In order to wash the container, the container is inverted on a conveyor with the lids open. In order to prevent water from accumulating on the upper surfaces of the open lids, the lids may be tied up at an angle. The container may also be tipped onto its side by another conveyor to further assist in the drainage.

[0005] It is desirable to provide an improved such container which addresses the above described problems and/or which more generally offers improvements or an alternative to existing arrangements.

[0006] According to the present invention there is therefore provided a container as described in the accompanying claims.

[0007] A container according to one embodiment of the present invention includes a base and a plurality of sidewalls. At least one lid is pivotably connected to one of the walls. The lid includes at least one projection that contacts at least one rib on the exterior surface of the wall when the lid is pivoted to an open position. This prevents over-rotation of the lid, such as when the lid and container are resting on the wall of the autoclave prior to dumping.

[0008] In a second feature of the present invention, the lid includes at least one projection from an interior surface of the lid proximate the axis. When the container is inverted with the lid open for washing, the at least one projection contacts the support surface thereby pivoting the lid to a position where it is not parallel to the floor, thus ensuring that water drains from the lid during washing.

[0009] These and other features of the application can be best understood from the following specification and drawings, the following of which is a brief description, and in which:

Figure 1 is a perspective view of a container according to one embodiment of the present invention;
Figure 2 is a top view of the container of Figure 1;
Figure 3 is an end view of the container of Figure 1;
Figure 4 is a side view of the container of Figure 1;
Figure 5 is a perspective view of the container of Figure 1 with the lids in the open position;
Figure 6 is an enlarged perspective view of the container of Figure 5;
Figure 7 is an end view of the container of Figure 1 in an inverted position with the lids open on a support surface;
Figure 8 is an enlarged view of the hinge area of the container of Figure 1; and
Figure 9 is a section view through one of the side walls and one of the lids in the open position.

[0010] A container 10 according to one embodiment of the present invention is shown in Figure 1. The container 10 includes a base 12 integrally molded with opposing side walls 14 and opposing end walls 16. A lip 20 protrudes outwardly and downwardly from a periphery of the upper edges of the side walls 14 and end walls 16. The side walls 14 each include a pair of outer ribs 21 and inner ribs 22 extending vertically on an exterior surface of the side wall 14. The outer ribs 21 extend downwardly from the lip 20 further than the inner ribs 22. The outer ribs 21 are also a little deeper than the inner ribs 22.

[0011] The end walls 16 each include an integrally molded handle 26 defining a hand opening 28 between the handle 26 and the end walls 16. Ribs 30 are formed in the handle 26 and face upwardly.

[0012] The container 10 includes a pair of lids 34, each connected to an uppermost edge of one of the side walls 14 by a hinge 36. Each of the lids 34 includes an outer reinforcement portion 40 and an inner reinforcement portion 41. Both reinforcement portions 40, 41 are elongated in a direction generally parallel to an axis of the hinge 36. The outer reinforcement portions 40 are shorter than the inner reinforcement portions 41 in a longitudinal direction. The outer reinforcement portions 40 each include an interlocking portion 42 at each end, projecting upwardly further than the outer reinforcement portion 40. Each lid 34 also includes a latch portion 46 for latching to the lip 20. The lids 34 further include interleaved tongues 48, as is known in the art.

[0013] Figure 2 is a top view of the container 10. As can be seen in Figure 2, the handle 26 projects outwardly from the footprint of the container 10.

[0014] Figure 3 is an end view of the container 10. Figure 4 is a side view of the container 10. Again, it can be seen that the handles 26 project outwardly of the footprint of the container 10 and outwardly of the lip 20.

[0015] Figure 5 is perspective view of the container 10 with the lids 34 open. Each of the lids 34 includes a pair of projections 50 projecting downwardly from an interior surface of the lid 34. Figure 6 is an enlarged view showing one of the projections 50 on the interior surface of the lid

34, proximate the hinge 36. The projections 50 are positioned proximate the hinges 36. In this particular example, the projections 50 are positioned much closer to the hinge 36 than the opposite edge of the lid 34. In the example shown, the distance between the axis of the hinge 36 and the projections 50 is less than a tenth of the distance between the axis of the hinge 36 and an opposite edge of the lid 34.

[0016] Figure 7 is an end view of the container 10 inverted, with the lids 34 open and resting on a support surface S, which could be a floor or conveyor. As can be seen more clearly in Figure 8, in this position, the projections 50 contact the support surface S and cause the lids 34 to pivot upwardly as shown. Preferably, the container 10 is supported solely on the projections 50, such that the weight of the container is used to pivot the lids 34 to this drainage position. In the drainage position, the lids 34 are approximately thirty degrees relative to the support surface S. Thus, without any ties, bands or hooks, the lid 34 is automatically in pivoted to a drainage position for washing. This will prevent water from accumulating on the exterior surface of the lids 34.

[0017] Figure 9 is a section view through one of the side walls 14 and lids 34 in the open position. When opened all the way, as shown, the outer reinforcement portion 40 contacts the inner ribs 22 on the side wall 14, while the inner reinforcement portions 41 contact the outer ribs 21 on the side wall 14. The outer reinforcement portions 40 do not contact the outer ribs 21, because they are too short. Thus, if the container 10 were tipped and rested on the lid 34 shown in Figure 9, the weight of the container 10 would be born by the ribs 21, 22 via the lid 34, and not solely by the hinge 36 as in the prior art.

[0018] It should be noted that variations could be utilized, including various arrangements of the reinforcement portions 40, 41 and ribs 20, 21 but still be within the scope of the present invention. Further, variations to the projections on the interior surface of the lids 34 could also be utilized within the scope of this invention.

[0019] In accordance with the provisions of the patent statutes and jurisprudence, exemplary configurations described above are considered to represent a preferred embodiment of the invention. However, it should be noted that the invention can be practiced otherwise than as specifically illustrated and described without departing from its spirit or scope.

Claims

1. A container (10) comprising:

a base (12);
a plurality of walls (14,16) extending upward from the base (12), the plurality of walls (14,16) including a first wall (14); and
a lid (34) connected to the first wall (14) and pivotable relative to the first wall (14) about an axis between an open position and a closed position, the lid (34) including a at least one projection (50) projecting from an interior surface of the lid (34) proximate the axis, wherein the at least one projection (50) pivots the lid (34) to a drain position not parallel to a support surface (S) when the container (10) is placed inverted on the support surface (S).

2. The container (10) of claim 1 wherein the lid (34) is pivoted by the at least one projection (5) to an angle approximately thirty degrees relative to the support surface (S) when the container (10) is placed inverted on the support surface (S).

3. The container (10) of claim 1 or 2 wherein the at least one projection (50) is positioned much closer to the axis than to an edge of the lid (34) opposite the axis.

4. The container (10) of claim 3 wherein the at least one projection (5) is positioned at a distance from the axis less than approximately $1/10^{th}$ a distance from the axis to an edge of the lid (34) opposite the axis.

5. The container (10) of any preceding claim wherein the lid (34) is pivotably connected to the first wall (14) about said axis by a hinge (36).

6. The container (10) of any preceding claim wherein the lid (34) is a first lid (34), the container (10) further including a second lid (34) pivotably attached to a second wall (14) of the plurality of walls (14,16), the second wall (14) opposite the first wall (14), the second lid (34) including at least one second projection (50) extending from an interior surface of the second lid (34), wherein the at least one second projection (50) pivots the second lid (34) to a drain position not parallel to the support surface (S) when the container (10) is placed inverted on the support surface (S).

7. The container (10) of claim 6 wherein the container (10) rests on the first lid (34) and the second lid (34) on the support surface (S) when the container (10) is in the inverted position on the support surface (S).

8. A container (10) comprising:

a base (12);
a plurality of walls (14,16) extending upward from the base (12), the plurality of walls (14,16) including a first wall (14), the first wall (14) including at least one rib (21, 22) on an exterior surface; and
a lid (34) pivotably connected to the first wall (14), the lid (34) including at least one projection (40,41) projecting upwardly, the lid (34) pivotable to an open position where the at least one

projection (40,41) contacts the at least one rib (21,22) to prevent over-rotation of the lid (34).

9. The container (10) of claim 8 wherein the at least one projection (40,41) includes a first reinforced portion (41) that is elongated generally parallel to an axis about which the lid (34) is pivotably connected to the first wall (34).

10. The container (10) of claim 9 wherein the lid (34) is connected to the first wall (14) by a hinge (36) and wherein the at least one projection (40,41) further includes a second reinforced portion (40).

11. The container (10) of claim 10 wherein the second reinforced portion (40) is between the first reinforced portion (41) and the hinge (36).

12. The container (10) of claim 11 wherein the second reinforced portion (40) is elongated generally parallel to the axis.

13. The container (10) of claim 11 or 12 wherein the at least one rib (21,22) includes a first rib (21) and a second rib (22) and wherein the first reinforced portion (41) contacts the first rib (21) in the open position and the second reinforced portion (40) contacts the second rib (22) in the open position.

14. The container (10) of claim 13 wherein the second reinforced portion (40) does not contact the first rib (22) in the open position.

15. The container (10) of claim 13 or 14 wherein the first rib (21) is lower on the first wall (14) than the second rib (22).

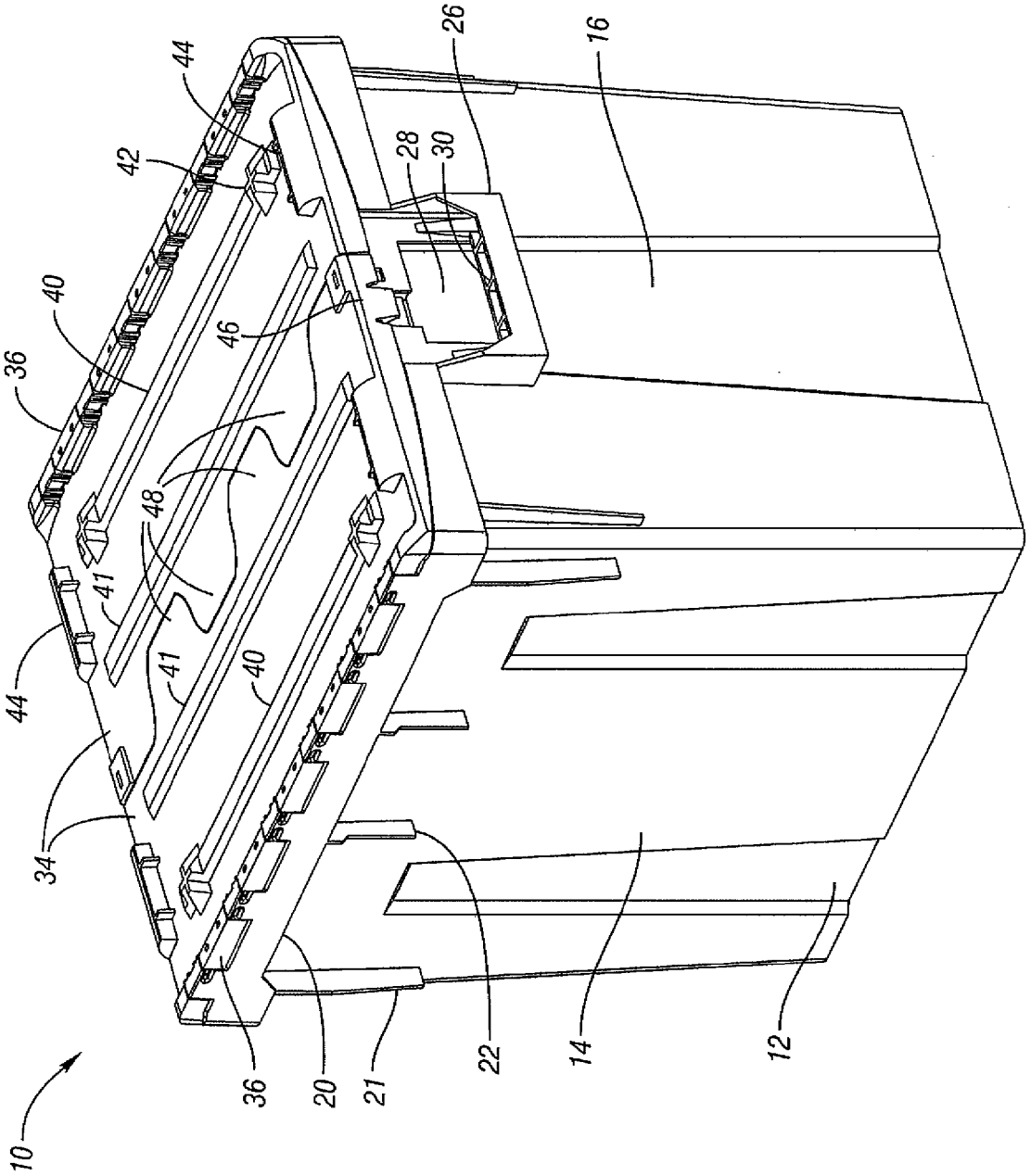


Fig. 1

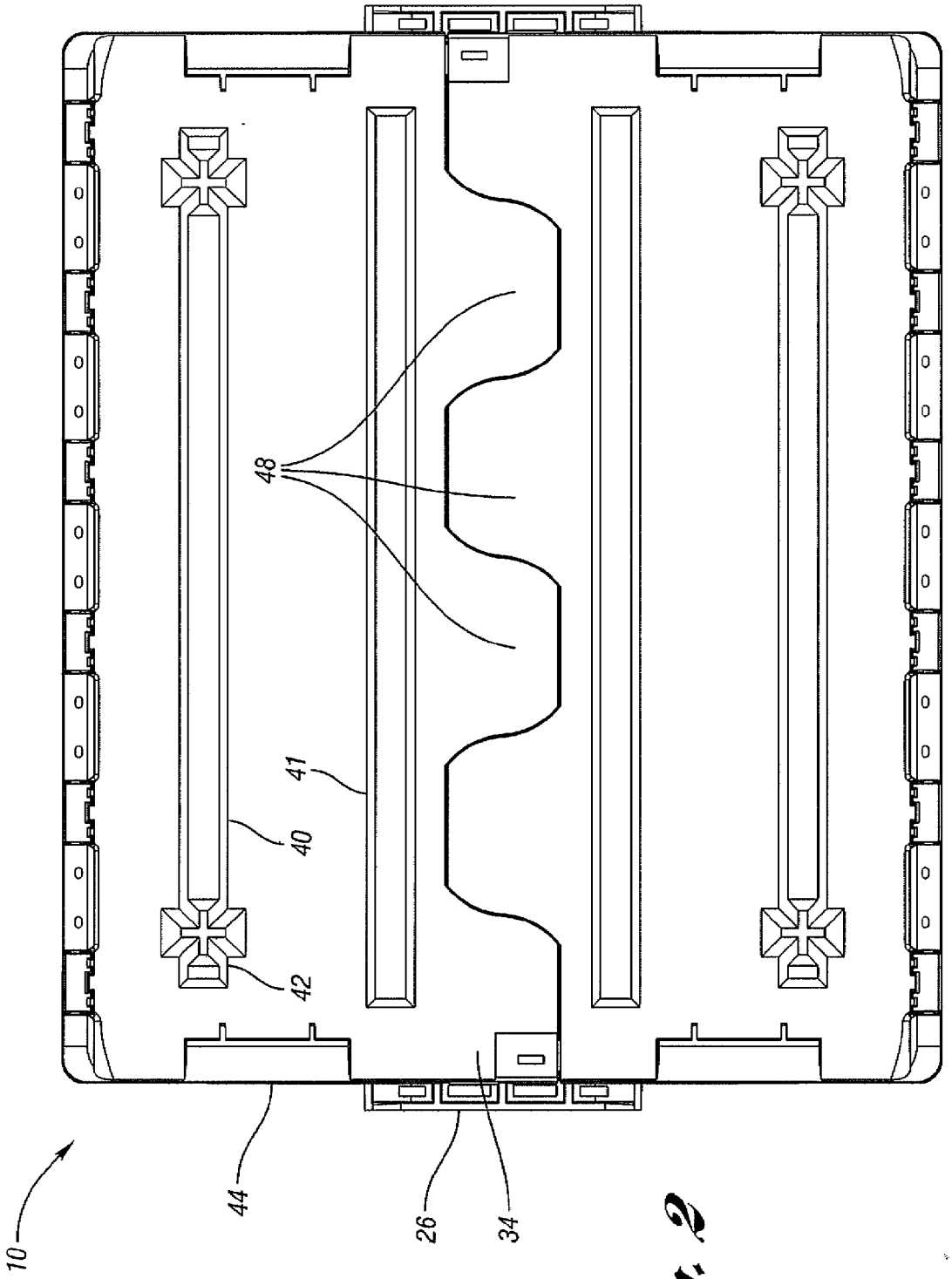


Fig. 2

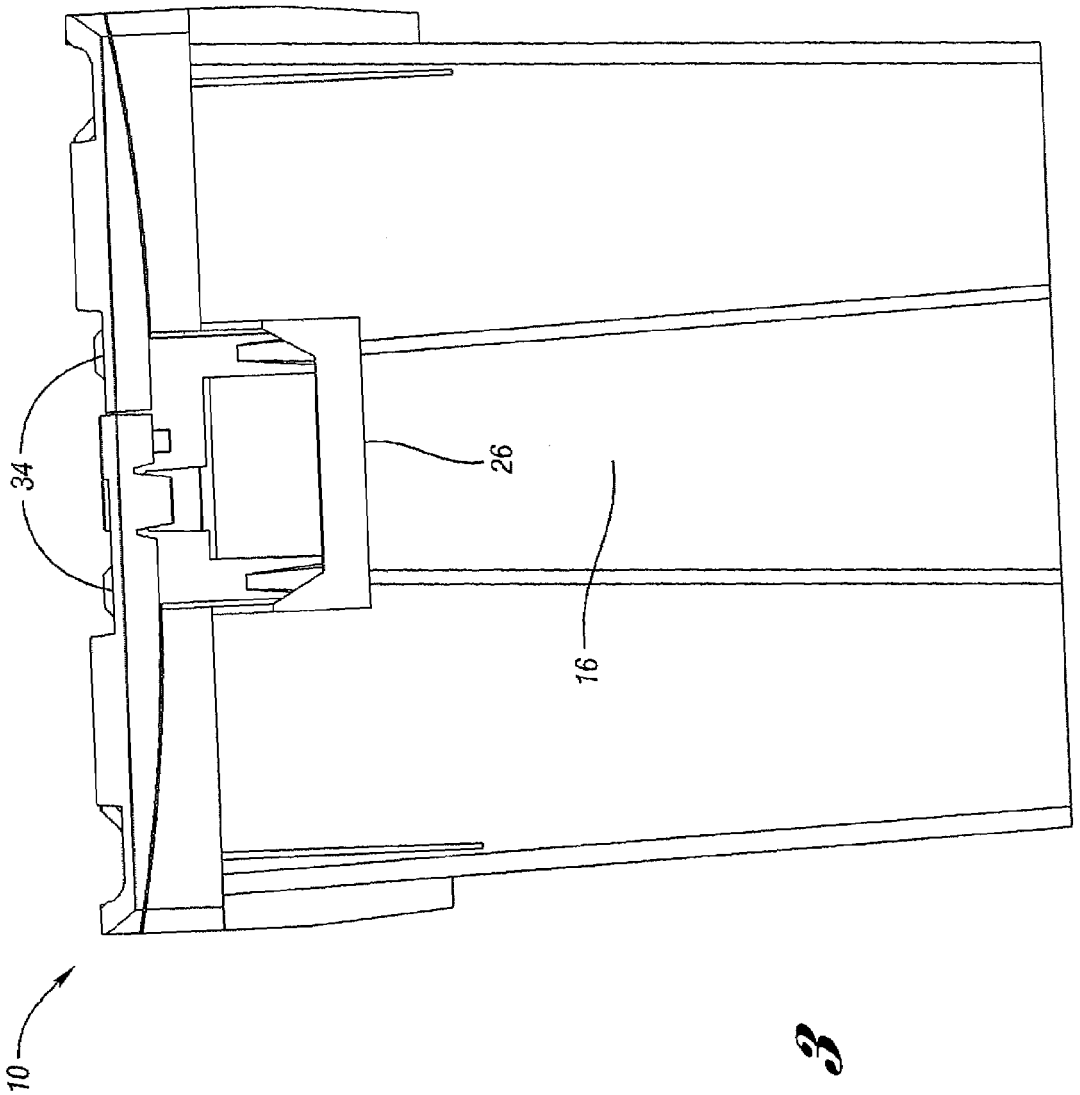


Fig. 3

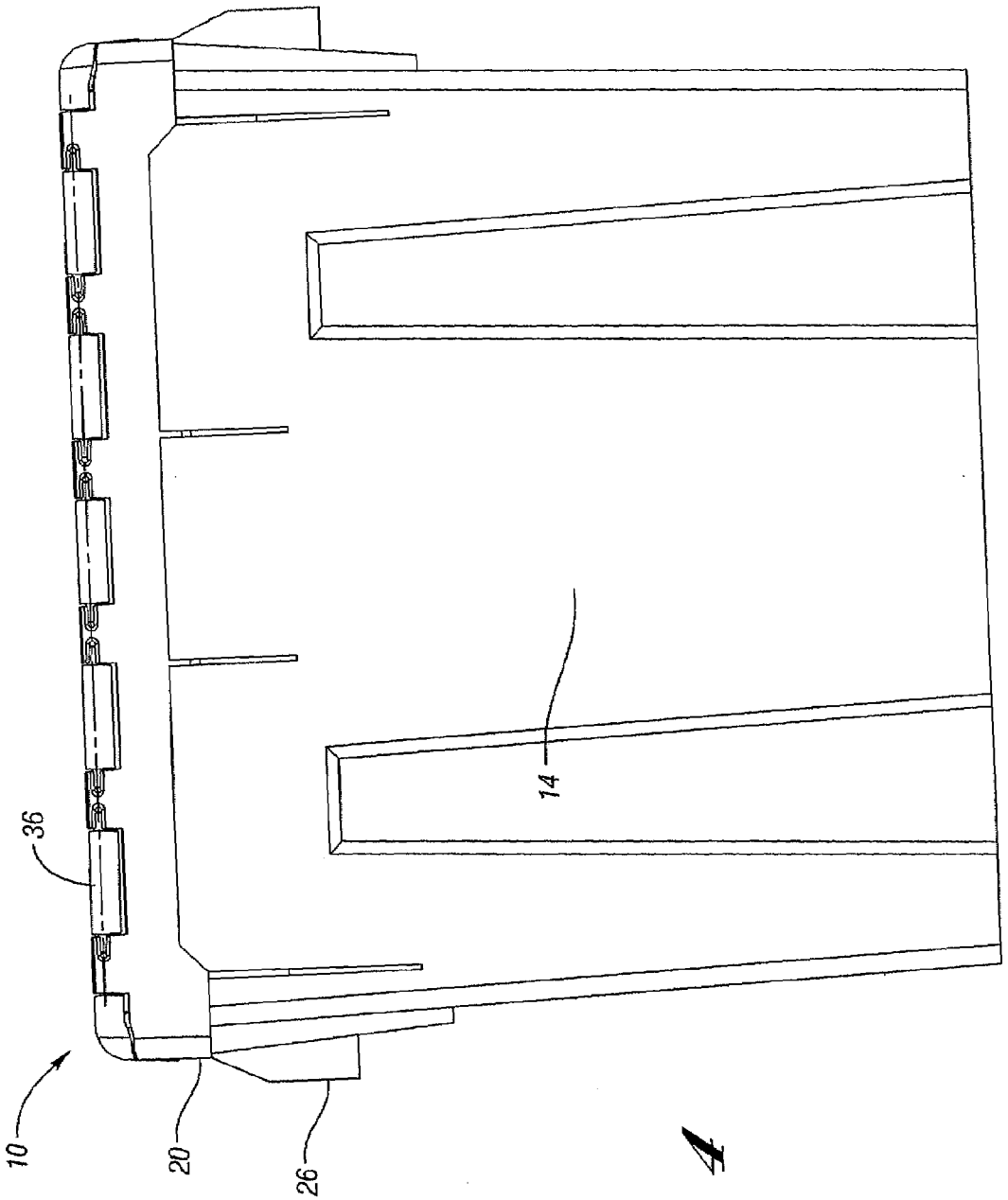


Fig. 4

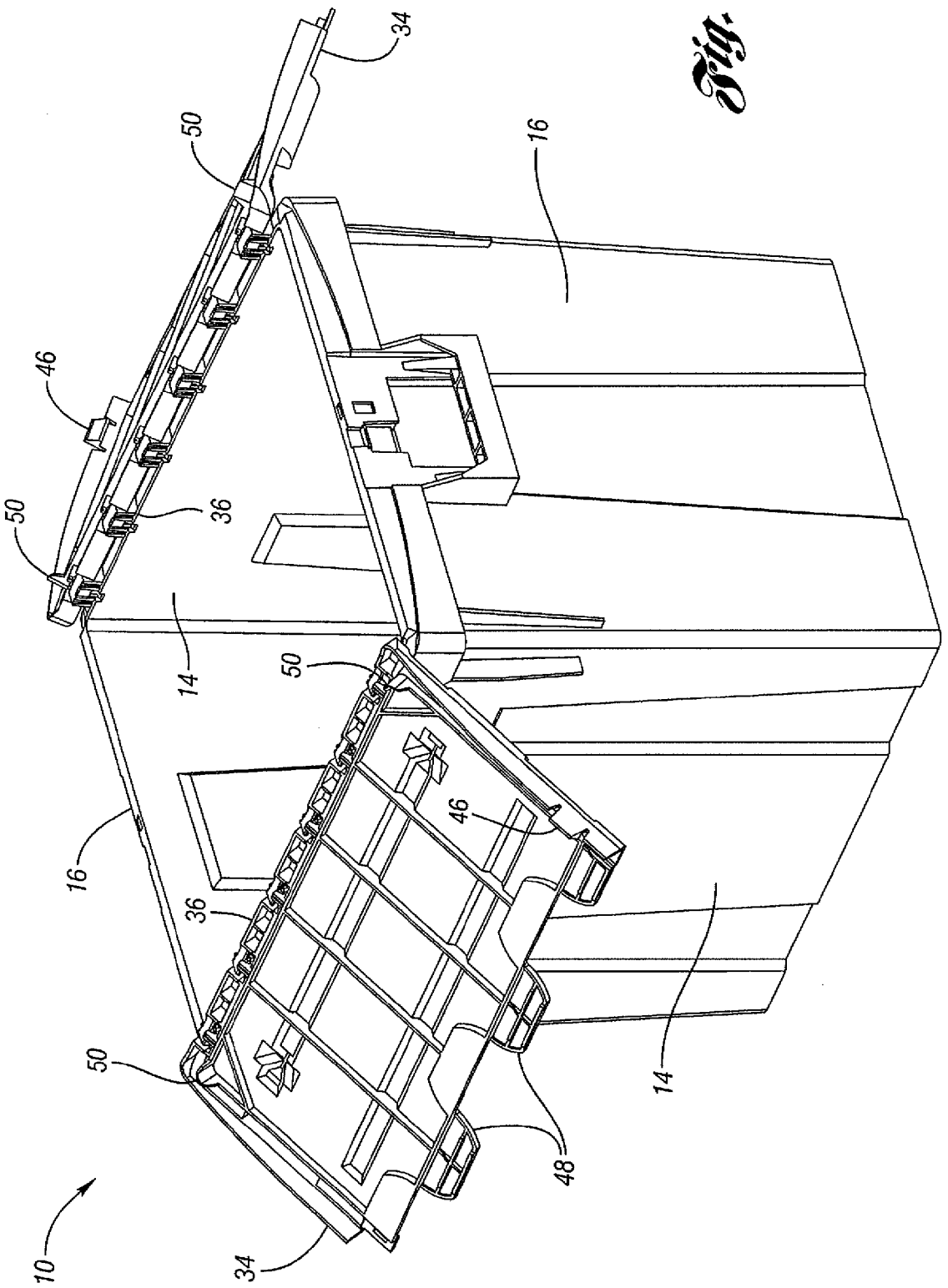


Fig. 5

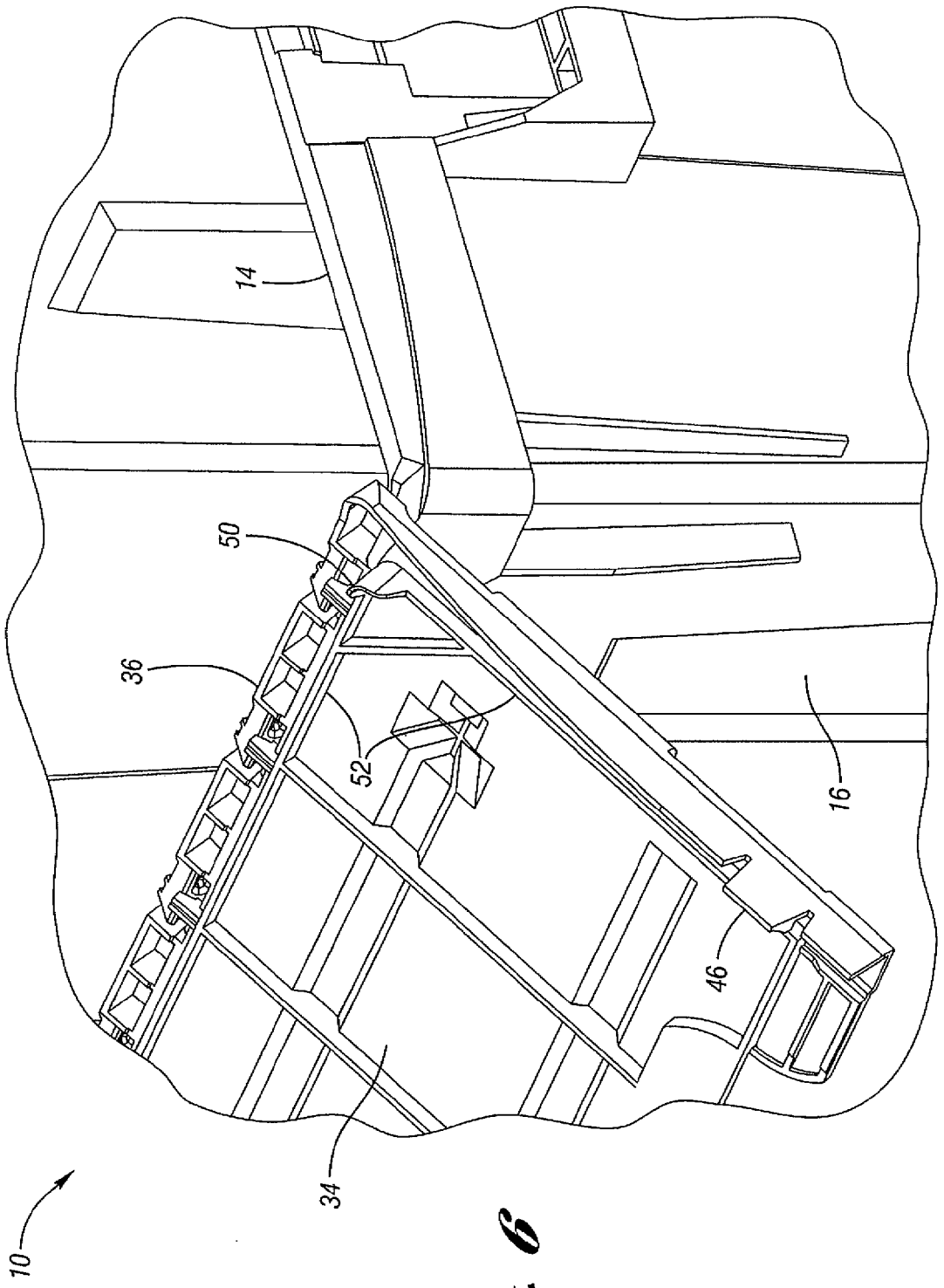


Fig. 6

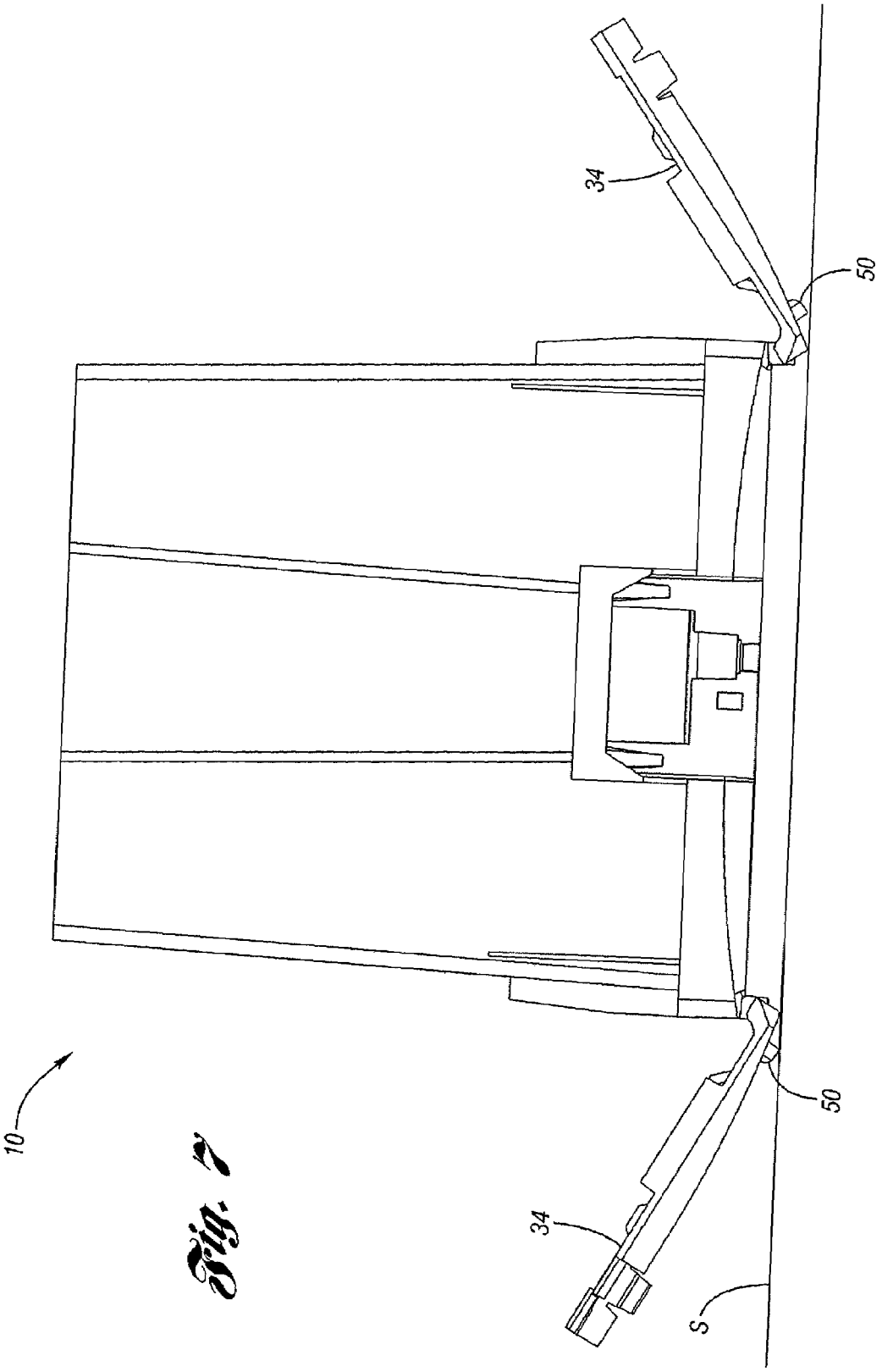


Fig. 1

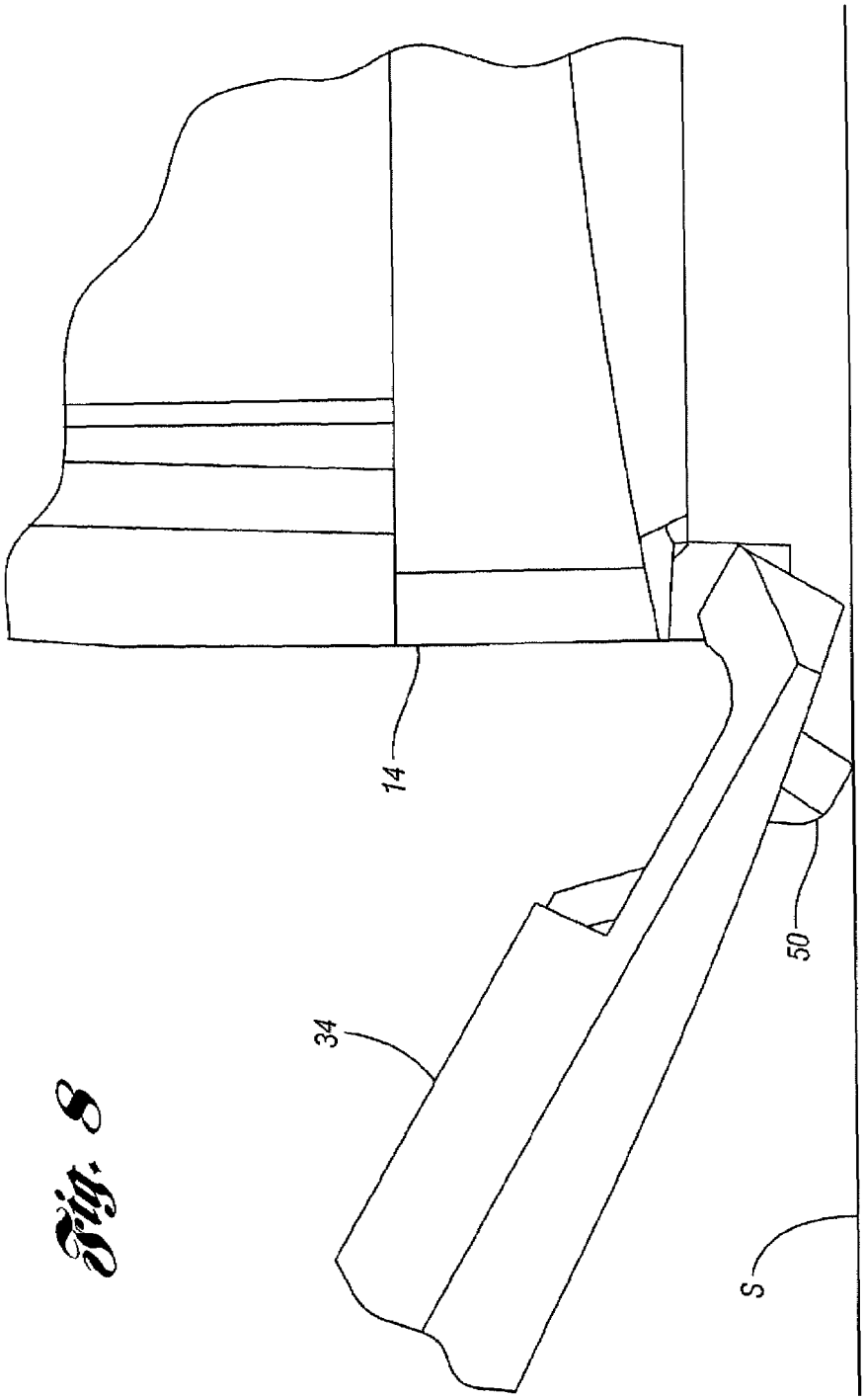


Fig. 8

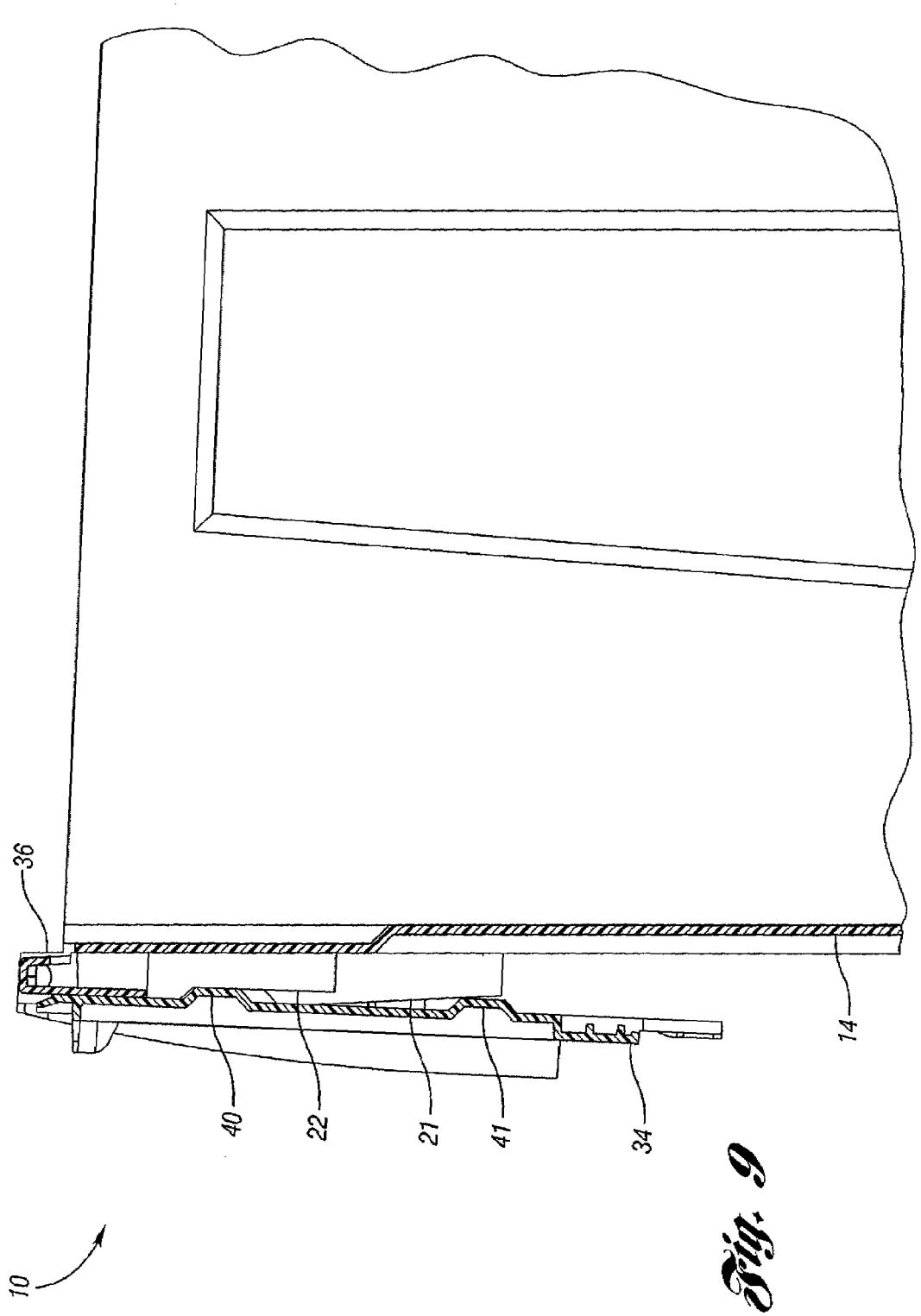


Fig. 9