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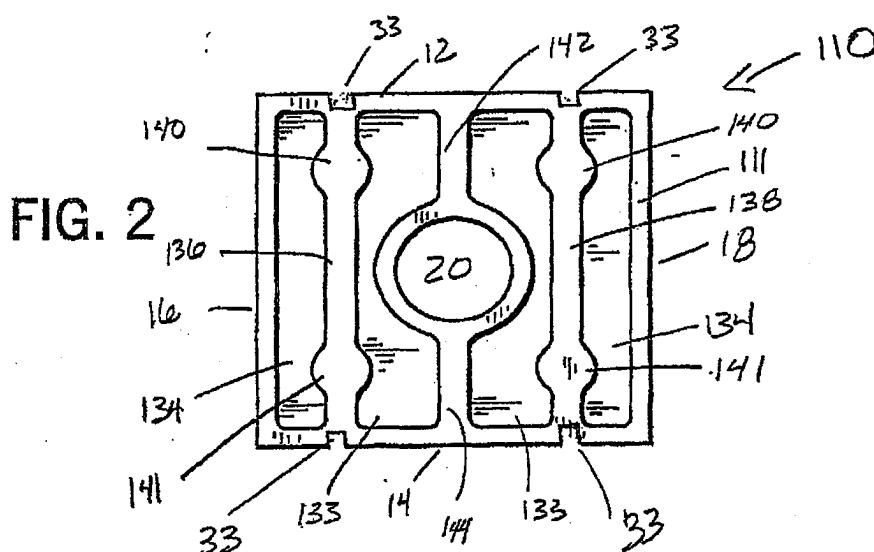
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(54) **Roll end support**

(57) An endboard (10) for supporting a roll of material is provided. The endboard consists of a substantially rigid member that is sized and shaped to receive and support the roll of material. The endboard is molded from a mixture of plastic and sawdust. The combination of plastic and sawdust provides improved loading bearing strength and allows for support of heavy rolls of material without requiring the roll to support itself on its

face. The endboard design thus prevents damage to the rolled material stored in horizontal fashion. In a preferred embodiment, the endboard has a series of elongated substantially parallel recessed portions (139,134) that are vertically aligned and at least partially define vertical ribbed portions (136,138). The recessed portions and ribbed portions thus reduce the amount of material needed for construction of the endboards, while maintaining the structural integrity thereof.



Description

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application is based on and claims priority to U.S. Provisional Application Serial No. 60/477,832, filed on June 12, 2003.

FIELD OF THE INVENTION

[0002] The present invention relates to a roll end support for packaging rolls of material. More particularly, the present invention is directed to a molded endboard for supporting a roll of material in horizontal orientation. The endboard is formed of a mixture of plastic and sawdust and has at least one recessed and/or ribbed face to provide structural support and to minimize the cost of construction of the endboard.

BACKGROUND OF THE INVENTION

[0003] Webs of materials and other types of extruded components are commonly shipped and stored as a roll of material wound around a cardboard, center core. These rolls of materials can be damaged by contact during storage and shipment and, as such, are typically shipped and stored with the center core supported along a horizontal axis. Since these rolls of material are not stackable by themselves, various types of packaging systems have been developed for transport and storage of such rolls.

[0004] Various cradle-type packages have been developed that hold a horizontal roll in place, keep it from rolling, and allow numerous horizontal rolls to be stacked. However, these cradle-type packages typically do not provide adequate support for a heavy roll and often require a heavy roll to support itself on its own face surface. Since the roll of material is typically supported along its face, the face of the roll can be damaged or marred during shipment and storage of the material.

[0005] Various suspension-type packages have been developed that suspend the roll in horizontal fashion from the roll's center core. Suspension-type packaging, however, is typically more expensive and more difficult to use than cradle-type packages. A typical suspension-type packaging system, such as the system shown in U. S. Patent Nos. 3,489,274 and 3,685,644, utilizes a particle endboard that is typically 1/2 to 1 inch thick and has a hole cut in the center of the board to accommodate the center core of the roll and a core plug. The endboards are typically square shaped, each side being approximately 1 inch longer than the diameter of the roll to be supported.

[0006] The core plug is passed through a hole in the endboard and into the center core of the roll material to be packaged, such that an endboard and core plug is required for each end of the roll to be supported. Once the pair of endboards are attached to each end of the

roll of material to be supported, the endboards can be stacked on top of each other to create a pallet for shipment and storage. Typically, most pallets include a series of metal or plastic straps to hold the pallet in a secure arrangement for shipping and storage.

[0007] It is therefore desirable to overcome the drawbacks of known horizontal roll packaging methods by providing a simple, effective, sturdy and cost-efficient packaging means for packaging and stacking multiple rolls of webs of material in a horizontal orientation. Specifically, it is desirable to provide an inexpensive suspension-type packaging construction that provides adequate support for a horizontally stacked roll, such that the rolled material is not damaged. It is further desirable to provide a packaging construction that is lightweight and that provides for easy maneuvering of the packaged horizontal roll.

SUMMARY OF THE INVENTION

[0008] The present invention relates to an endboard and system for packaging a roll of material in a generally horizontal orientation. The endboard is molded from a mixture of plastic and sawdust and comprises a substantially rigid member that is sized and shaped to receive and support the roll of material.

[0009] The endboard has a center hole sized to receive a core plug that couples the endboard to an end of a web of rolled material. The core plug is passed through the hole in the endboard and into the core of the roll of material to be packaged - one endboard/plug assembly for each end of the roll of material. The endboards are typically secured to the roll by strapping.

[0010] The endboard of the present invention is easily and inexpensively manufactured. The combination of plastic and sawdust provides a lightweight endboard that has improved load bearing strength and allows for support of heavy rolls of material without requiring the roll to support itself on its face. The endboard design thus prevents damage to rolled material stored in horizontal fashion.

[0011] In a preferred embodiment, the endboard has a series of elongated substantially parallel recessed portions that are vertically aligned when the endboard is supporting the roll of material. The recessed portions may define vertical ribbed portions. The recessed portions and ribbed portions reduce the amount of material needed for construction of the endboard, while maintaining structural integrity of the endboard.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The drawings illustrate the best mode presently contemplated of carrying out the invention. In the drawings:

[0013] Fig. 1 is a view of the exterior face of a first embodiment of the endboard of the present invention.

[0014] Fig. 2 is a view of the exterior face of a second

embodiment of the endboard of the present invention.

[0015] Fig. 3 is a view of the interior face of either at the endboards shown in Figs. 1 or 2.

[0016] Fig. 4 is a perspective view of a first embodiment of the packaging system of the present invention employing the endboard embodiment shown in Figure 1.

[0017] Fig. 5 is an exploded view of the packaging system shown in Fig. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0018] In the preferred embodiments of the present invention described in detail below, a roll end support for supporting a roll of material is provided. It should be understood that the drawings and specification are to be considered an exemplification of the principles of the invention, which is more particularly defined in the appended claims. For example, although the figures depict various embodiments of an endboard having a certain shape and construction, it should be understood that the overall shape, size and design of the endboard may vary and yet still fall within the scope of the appended claims.

[0019] The present invention relates to a roll end support for packaging and supporting a roll of material. In the preferred embodiments, the invention comprises a molded endboard formed from a mixture of plastics and wood products. Preferably the endboard is formed from a mixture of recycled plastic and scrap wood products, such as sawdust. Preferably, the endboard is formed from a mixture of sawdust and polyethylene. More preferably, the material used to form the endboard consists of between 40% and 50% by volume of fine sawdust and between 50% and 60% by volume of low-density polyethylene. The fine sawdust can be replaced with either normal or coarse sawdust while operating within the scope of the invention. Likewise, it is contemplated that the low-density polyethylene can be replaced by either high molecular weight polyethylene or ultra high molecular weight polyethylene while operating within the scope of the invention. Typically, low-density polyethylene is recovered from the recycling of paper, milk and juice cartons. Thus, the material used to form the endboard of the present invention is typically recovered from recycled plastic components and the waste materials from wood processing centers.

[0020] The unique make-up and construction of the endboard of the present invention provides several advantages. The combination of sawdust and polyethylene provides a significant amount of structural integrity and strength for an endboard that is relatively small in size. The sawdust and polyethylene further provides a lightweight endboard that is capable of securely supporting a much heavier roll of material.

[0021] Fig. 1 is a front view of a first embodiment of the endboard 10 of the present invention. The endboard 10 is generally square-shaped and, as such, has a top

edge 12, a bottom edge 14, a left edge 16, and a right edge 18. Because in the preferred embodiment the endboard 10 is square, the top edge 12, bottom edge 14, left edge 16 and right edge 18 have substantially the same length. As shown most clearly in Figs. 4 and 5, the endboard 10 is a substantially planar rigid member that is sized and shaped to receive and support a roll of material. In the preferred embodiment, the endboard 10 is about 1 inch thick.

[0022] The endboard 10 has a center hole 20 that may vary in size, but must have an appropriate diameter for receiving a core plug 21 (shown in Figs. 4 and 5), that couples the endboard 10 to an end of a rolled material, as is well known in the art.

[0023] In the embodiment shown in Fig. 1, the endboard 10 has an exterior face 11 that has a plurality of recessed areas. The form and shape of the recessed areas may vary substantially, and it should be recognized that the embodiments depicted in the drawings represent preferred embodiments and do not limit the inventive concept exemplified in the description and recited in the appended claims. It is, however, preferable that the recessed areas are substantially vertically elongated when the rolls are aligned in horizontal formation. This preferred arrangement increases the load strength of the endboard 10 and allows for heavy rolls to be properly supported.

[0024] In the particular embodiment shown in Fig. 1, a left recessed portion 22 and a right recessed portion 24 are formed in the exterior face 11 of the endboard 10 on opposing sides of the center hole 20. It is preferable that the left recessed portion 22 and the right recessed portion 24 are located equidistant from the center hole 20, such that the structural integrity of the endboard 10 remains balanced when multiple endboards supporting rolled material are stacked. The left recessed portion 22 and right recessed portion 24 are uniformly cut 5/8 inches deep into the exterior face 11 of the endboard 10.

[0025] As mentioned above, the shape of the recessed areas may vary, however as shown, the left recessed portion 22 and right recessed portion 24 are substantially equal in surface area and are elongated along the vertical access of the endboard 10 such that the left recessed portion 22 and right recessed portion 24 are substantially parallel. As shown in Fig. 1, both of the left recessed portion 22 and right recessed portion 24 have upper and lower bulged portions 30, 31.

[0026] In the particular embodiment shown in Fig. 1, an upper center recessed portion 26 and a lower center recessed portion 28 are formed in the exterior face 11 above and beneath the center hole 20, respectively. It is preferable that the upper center recessed portion 26 and lower center recessed portion 28 are located equidistant from the center hole 20, such that the structural integrity of the endboard 10 remains balanced when multiple endboards supporting rolls of material are stacked.

The upper center recessed portion 26 and lower center

recessed portion 28 are preferably uniformly cut 5/8 inches deep into the exterior face 11 of the endboard 10. The shape of the upper center recessed portion 26 and lower center recessed portion 28 may vary; however as depicted, the upper center recessed portion 26 and lower center recessed portion 28 are substantially equal in surface area and are elongated along the vertical axis of the endboard 10.

[0027] In the embodiment shown in Fig. 1, the top edge 12 and bottom edge 14 of the endboard 10 are designed to matingly couple the endboard 10 to other endboards when multiple horizontal rolls are stacked in vertical formation. Both the top edge 12 and the bottom edge 14 have a pair of uniformly cut notches 33 that are cut out of the endboard 10 at a location immediately above and below the left recess portion 22 and right recess portion 24, respectively.

[0028] Referring to Fig. 2, an alternate embodiment of the present invention is shown. Similar to the embodiment shown in Fig. 1, the endboard 110 is generally square-shaped and, as such, has a top edge 12, a bottom edge 14, a left edge 16, and a right edge 18 that are of generally the same length. As with the embodiment shown in Fig. 1, the endboard 110 is a substantially rigid member that is sized and shaped to receive and support a roll of material in a horizontal orientation.

[0029] The endboard 110 has a center hole 20 that may vary in size, but must have an appropriate diameter for receiving a core plug 21 which couples the endboard 110 to an end of a roll of material, as is well known in the art.

[0030] The endboard 110 has a series of recessed areas that are preferably uniformly cut 5/8 inches deep into the exterior face 111 of the endboard 110. As mentioned above, the shape of the recessed areas may vary, however as depicted, the recessed areas are elongated along the vertical access of the endboard 110.

[0031] More specifically, a pair of outer recessed portions 134 and a pair of inner recessed portions 133 are cut into the exterior face 111 of the endboard 110. The outer recessed portions 134 and inner recessed portions 133 are sized and shaped to define ribbed portions that are generally parallel in alignment and elongated along the vertical access of the endboard 110. More specifically, a left ribbed portion 136 and a right ribbed portion 138 are formed in the exterior face 111 of the endboard 110 and defined in shape by the inner recessed portions 133 and outer recessed portion 134. As such, the left ribbed portion 136 and right ribbed portion 138 are formed on opposing sides of the center hole 120.

[0032] It is preferable that the left ribbed portion 136 and right ribbed portion 138 are located equidistant from the center hole 20, such that the structural integrity of the endboard 110 remains balanced when multiple endboards supporting rolls of material are stacked. The left ribbed portion 136 and right ribbed portion 138 may vary in shape, however as shown, the left ribbed portion 136

and right ribbed portion 138 are substantially equal in surface area and are elongated along the vertical axis of the endboard 110. Each ribbed portion has upper and lower bulged portions 140, 141.

[0033] In the particular embodiment shown in Fig. 2, an upper center ribbed portion 142 and a lower center ribbed portion 144 are formed in the exterior face 111 above and beneath the center hole 120, respectively. It is preferable that the upper center ribbed portion 142 and the lower center ribbed portion 144 are located equidistant from the center hole 20, such that the structural integrity of the endboard 110 remains balanced when multiple endboards supporting rolls are stacked. The upper center ribbed portion 142 and lower center ribbed portion 144 may vary in shape and size, however as depicted, the upper center ribbed portion 142 and lower center ribbed portion 144 are substantially equal in surface area and are elongated along the vertical axis of the endboard 110.

[0034] As with the embodiment shown in Fig. 1, the endboard 110 shown in Fig. 2, has a pair of notches 33 formed in the top edge 12 and the bottom edge 14, respectively. The notches 33 are sized and shaped to receive strapping that further secures the endboard 110 to an end of a roll of material, as will be discussed further below.

[0035] Referring to Fig. 3, the interior face 13 of the endboard 10, 110 is shown. The interior face 13 is generally planar, square shaped and has a center hole 20.

[0036] Referring now to Figs. 4 and 5, there is shown a packaging system 50. The packaging system 50 is particularly desirable for supporting a cylindrical roll of material in a horizontal orientation, as illustrated. In the embodiment illustrated in Figs. 4 and 5, an upper pair of upper cylindrical rolls 52, 54 are stacked in horizontal fashion on top of a lower pair of lower cylindrical rolls 56, 58. In the embodiment of the invention illustrated, the upper and lower cylindrical rolls comprise a web of material 60 wound around a center core 62. The outer surface 64 of each cylindrical roll is spaced from the outer edges of the packaging system 50 such that each cylindrical roll is fully supported and spaced from other rolls packaged using the packaging system 50.

[0037] Although the packaging system 50 shown in Fig. 4 supports a plurality of cylindrical rolls of webbed material 60, such as continuous sheets of plastic film, it should be understood that the packaging system 50 may be used to support cylindrical rolls of other types of material, such as a continuous strip of extruded zipper closer profiles to used in the manufacture of recloseable packaging.

[0038] Each cylindrical roll is supported at its ends by a pair of endboards. It will be recognized by those skilled in the art that either of the endboard embodiments 10, 110 depicted in Figs. 1 and 2, respectively, may be implemented into the system 50. In the particular embodiment shown, the upper cylindrical roll 52 is supported at each end by a pair of endboards 10, such as that de-

picted in Fig. 1. The upper cylindrical roll 54 is supported at each end by endboards 110, such as that depicted in Fig. 2. The endboards 10 and 110 are aligned adjacent each other to form the upper row in the packaging system 50.

[0039] Lower cylindrical roll 56 is supported at each end by a pair of endboards 10, such as that depicted in Fig. 1. Lower cylindrical roll 58 is supported at each end by a pair of endboards 110, such as that depicted in Fig. 2. The endboards 10, 110 are aligned adjacent each other to form the lower row in the packaging system.

[0040] As is well known in the art, each endboard 10, 110 is attached to a respective end of a cylindrical roll by means of a core plug 21. More specifically, a core plug is fitted into the center hole 20 in the endboard 10, 110 and further inserted into the center core 62 of the web of material 60. In this manner, the endboard 10, 110 is securably coupled to the end of the cylindrical roll.

[0041] As is also well known in the art, the packaging system 50 is supported by a base board 66. Further support is provided by an intermediate base board 68 and a top board 70.

[0042] As is further well known in the art, strapping (not shown) may be wound around the opposing endboards and secured thereto within the notches 33. The strapping is used to further secure the endboards to each end of the roll and thus add further stability to the system 50.

[0043] Various alternatives and embodiments are contemplated a being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter regarded as the invention.

Claims

1. An endboard for supporting a roll of material comprising:

a substantially rigid member sized and shaped to receive and support the roll of the material in a horizontal orientation, wherein the member is molded from a mixture of plastic and sawdust.

2. The endboard of claim 1, wherein the rigid member is substantially planar and comprises interior and exterior faces.

3. The endboard of claim 2, wherein the rigid member further comprises at least one recessed portion formed in either of the interior or exterior faces.

4. The endboard of claim 3, wherein the rigid member further comprises a pair of elongated substantially parallel recessed portions that are generally parallel and vertically aligned when the endboard is supporting the roll of material.

5. The endboard of claim 3, wherein the at least one recessed portion is dumbbell-shaped.

6. The endboard of claim 3, wherein the rigid member is about 1 inch thick and the at least one recessed portion is about 5/8 inches deep.

7. The endboard of claim 3, wherein the rigid member further comprises at least one ribbed portion, the ribbed portion at least partially defined by the at least one recessed portion.

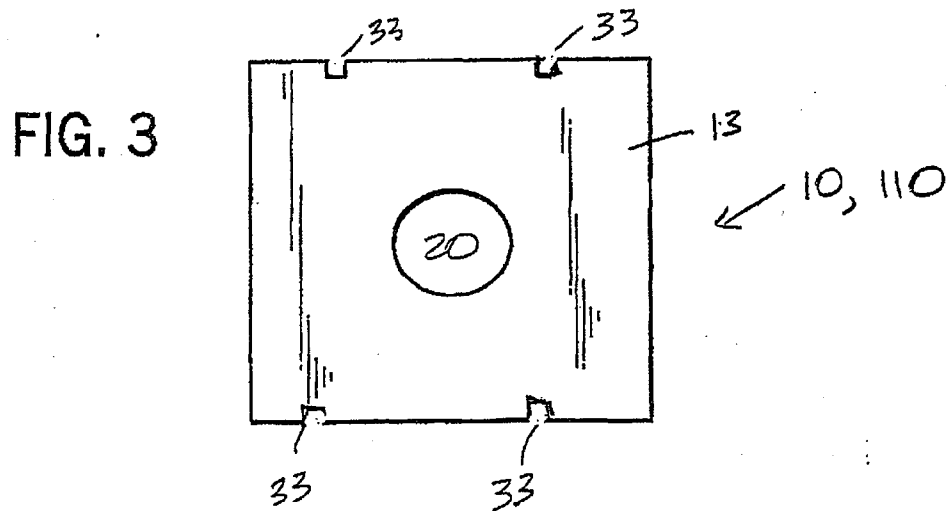
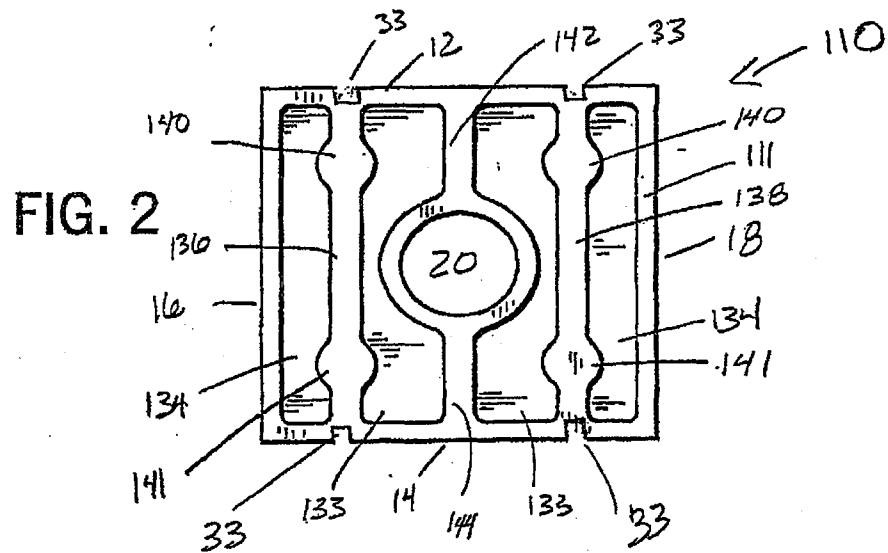
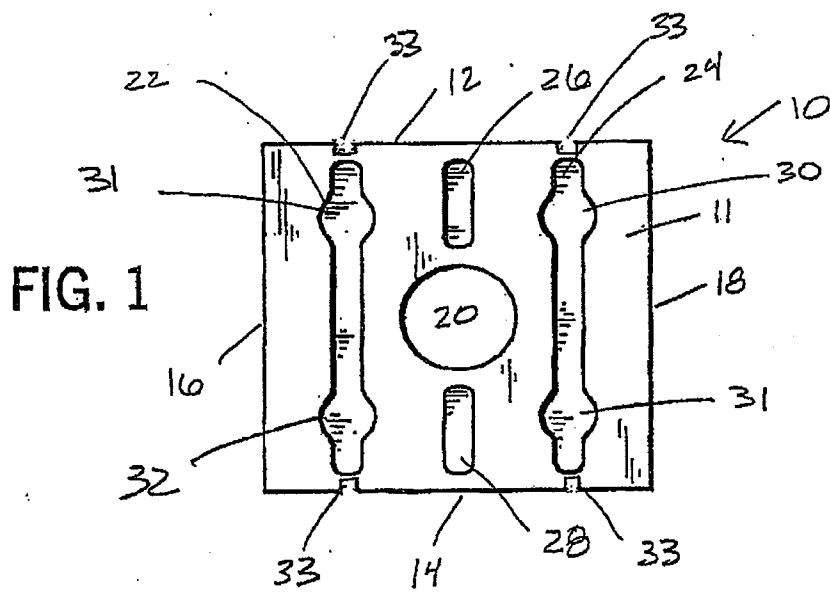
8. The endboard of claim 7, wherein the at least one ribbed portion is dumbbell-shaped.

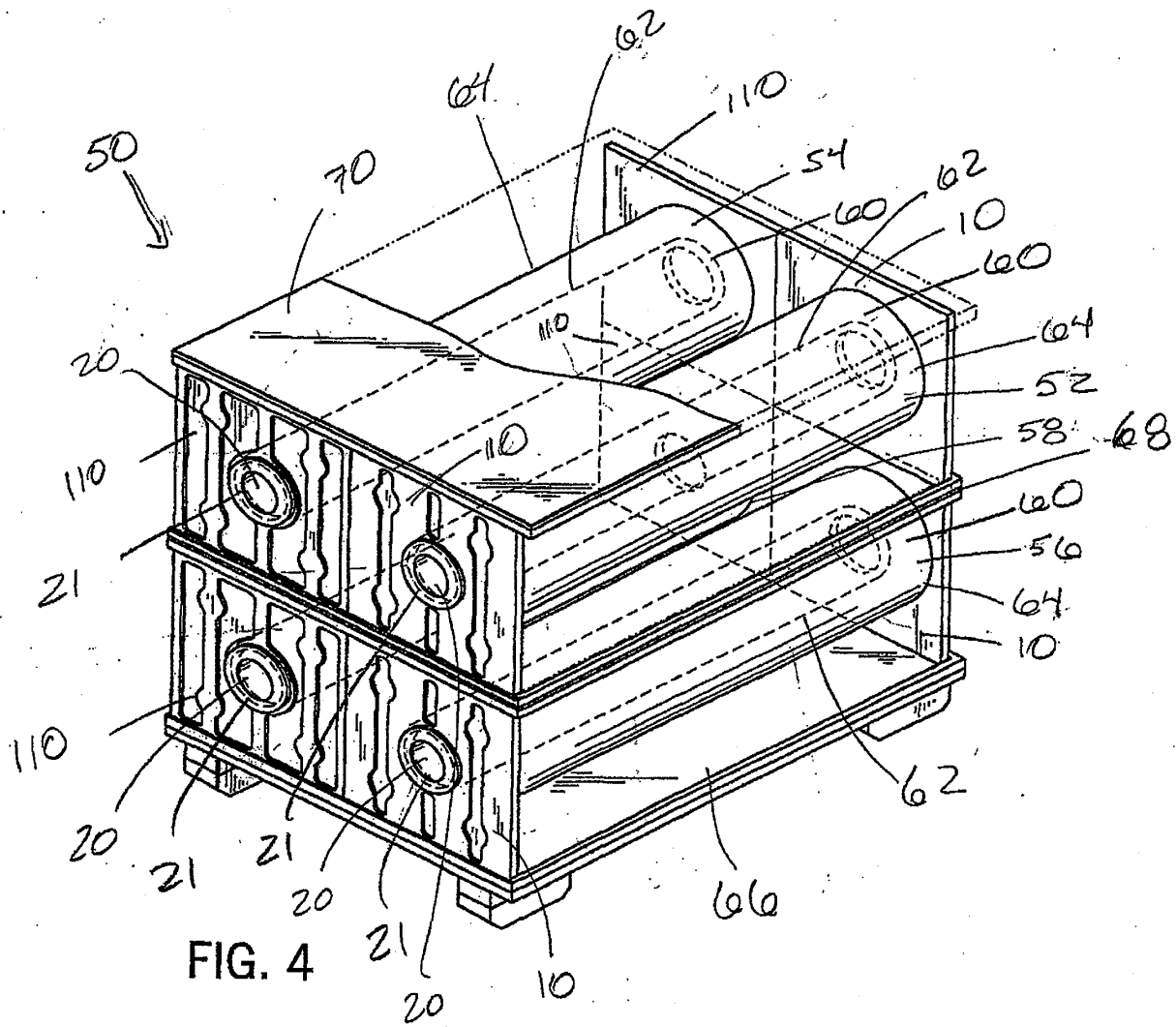
9. The endboard of claim 1, wherein the rigid member further comprises top and bottom edges and at least one notch formed in either the top or bottom edge.

10. The endboard of claim 9, further comprising two notches formed in the top edge and two notches formed in the bottom edge.

11. The endboard of claim 1, wherein the plastic comprises polyethylene.

12. The endboard of claim 11, wherein the rigid member comprises a mixture of about 40-50% by volume of sawdust and about 50-60% by volume of polyethylene.





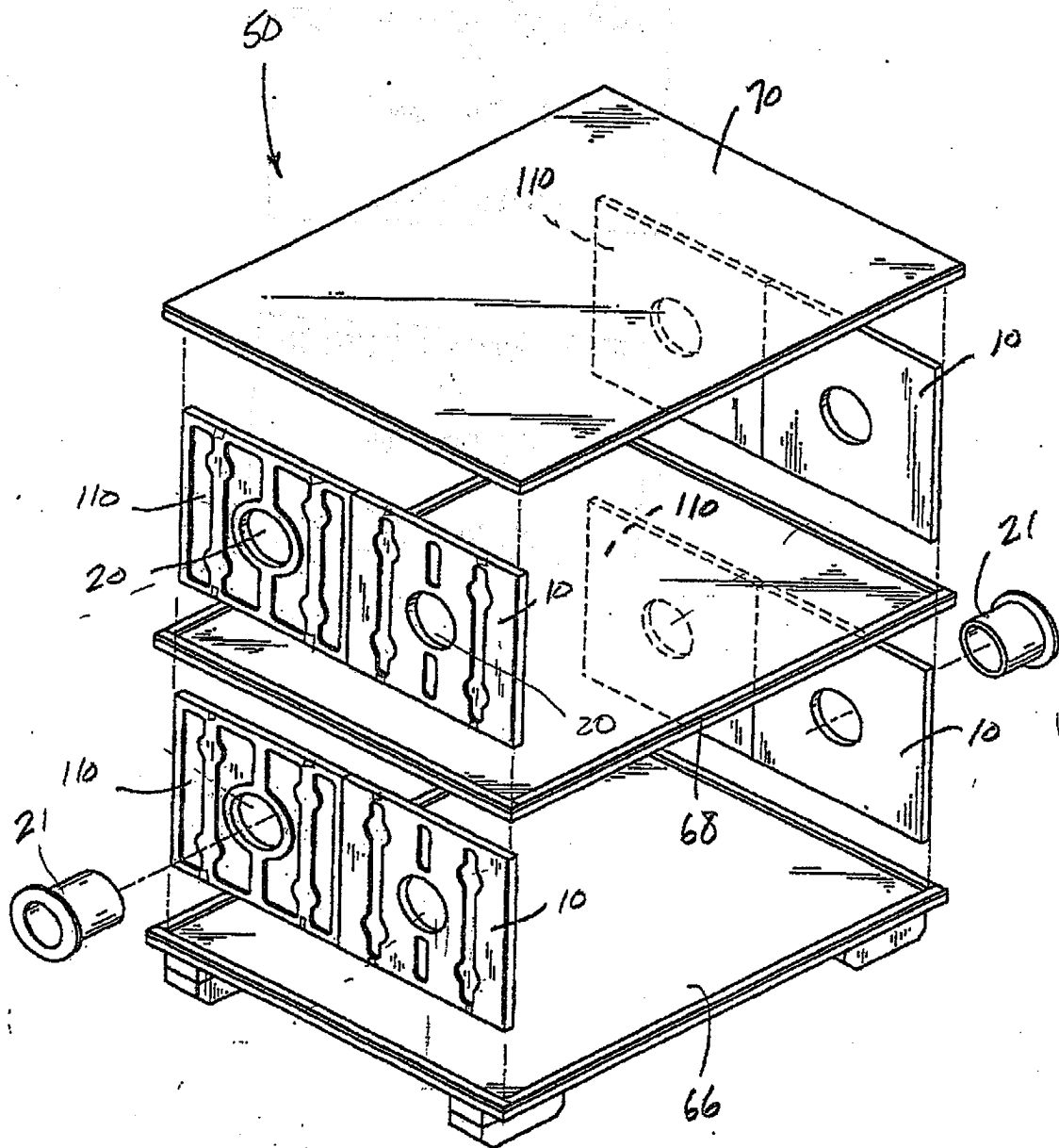


FIG. 5



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 3414

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 July 2004	Examiner Derrien, Y
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 25 3414

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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