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Spadavecchia

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(54) **TWO-PIECE VIBRATION DAMPENING PALLET ASSEMBLY**

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B65B 13/02 (2006.01)
B65D 19/38 (2006.01)

(52) **U.S. Cl.**
CPC ***B65D 19/0097*** (2013.01); ***B65B 13/02*** (2013.01); ***B65D 19/38*** (2013.01); *B65D 2519/00273* (2013.01); *B65D 2519/00293* (2013.01); *B65D 2519/00323* (2013.01); *B65D 2519/00338* (2013.01); *B65D 2519/0098* (2013.01)

(58) **Field of Classification Search**
CPC B65D 19/0097; B65D 19/38; B65D 2519/00273; B65D 2519/0098
USPC 206/386, 805, 597, 503, 509; 108/54.1, 108/55.1, 137, 57.18, 91, 102, 149
See application file for complete search history.

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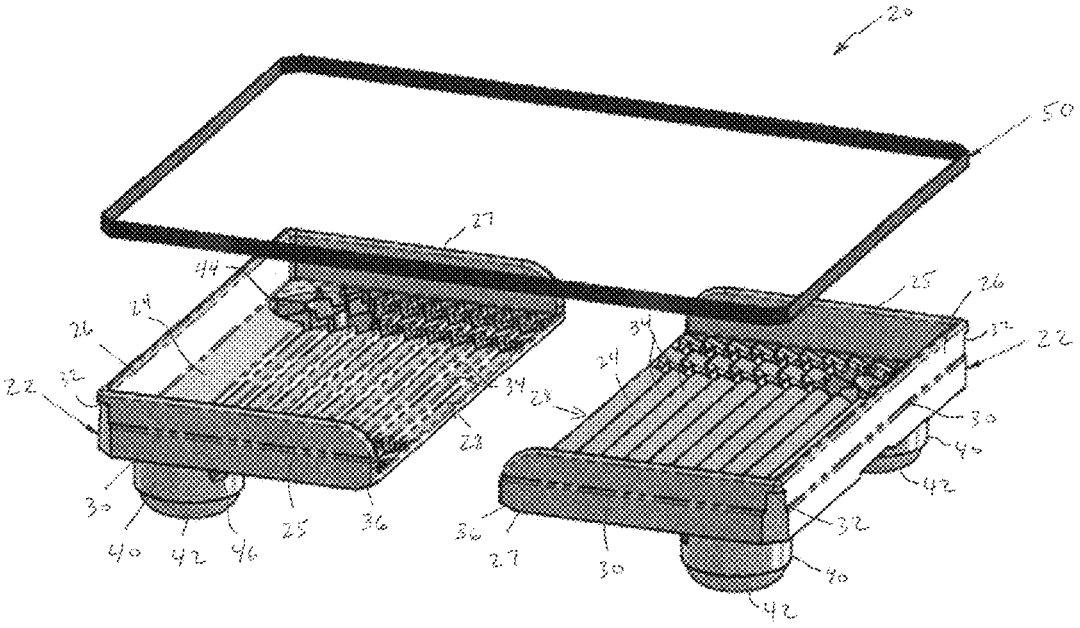
(57) **ABSTRACT**

A pallet assembly for transporting a transportable unit. The pallet assembly includes a first pallet member including a support surface with at least one wall extending upwardly therefrom and a second pallet member including a support surface with at least one wall extending therefrom. A band is configured to be secured about the at least one wall of both the first and second pallet members after the transportable unit is positioned on both the first and second pallet member support surfaces such that a unified structure for transport is formed.

13 Claims, 9 Drawing Sheets



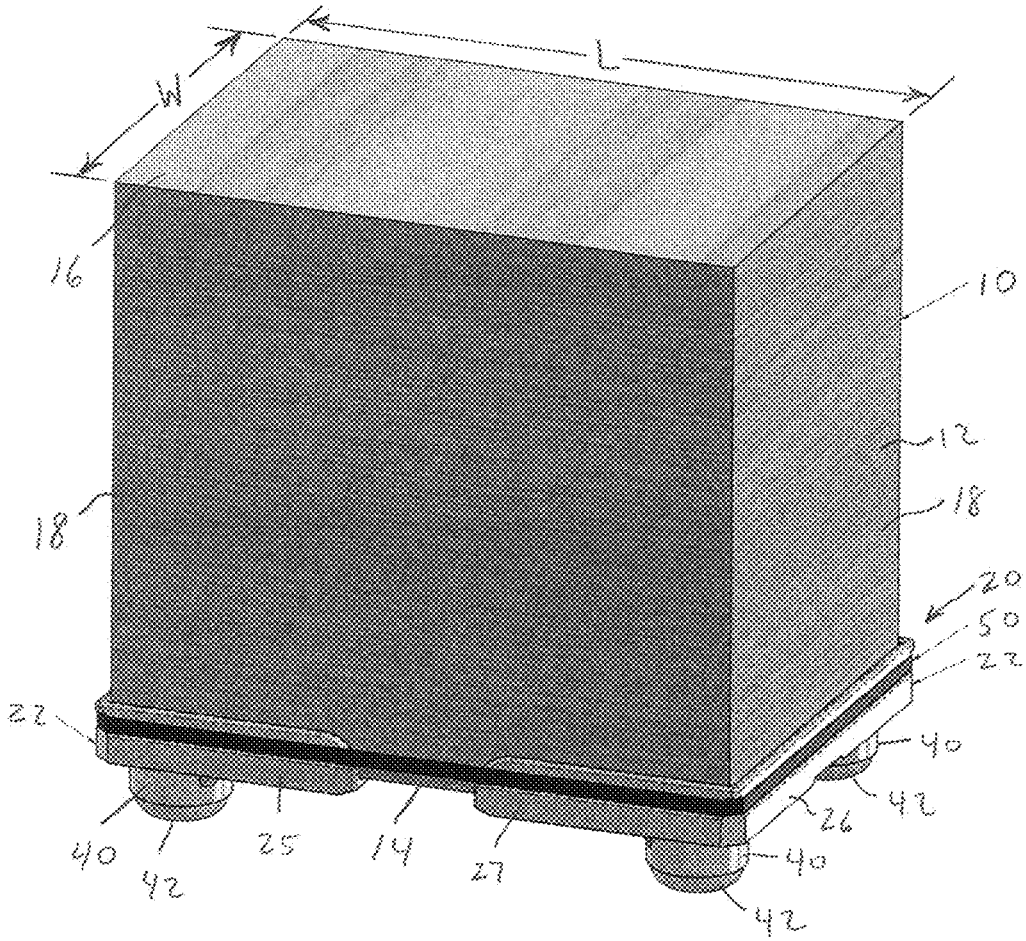


Fig. 1

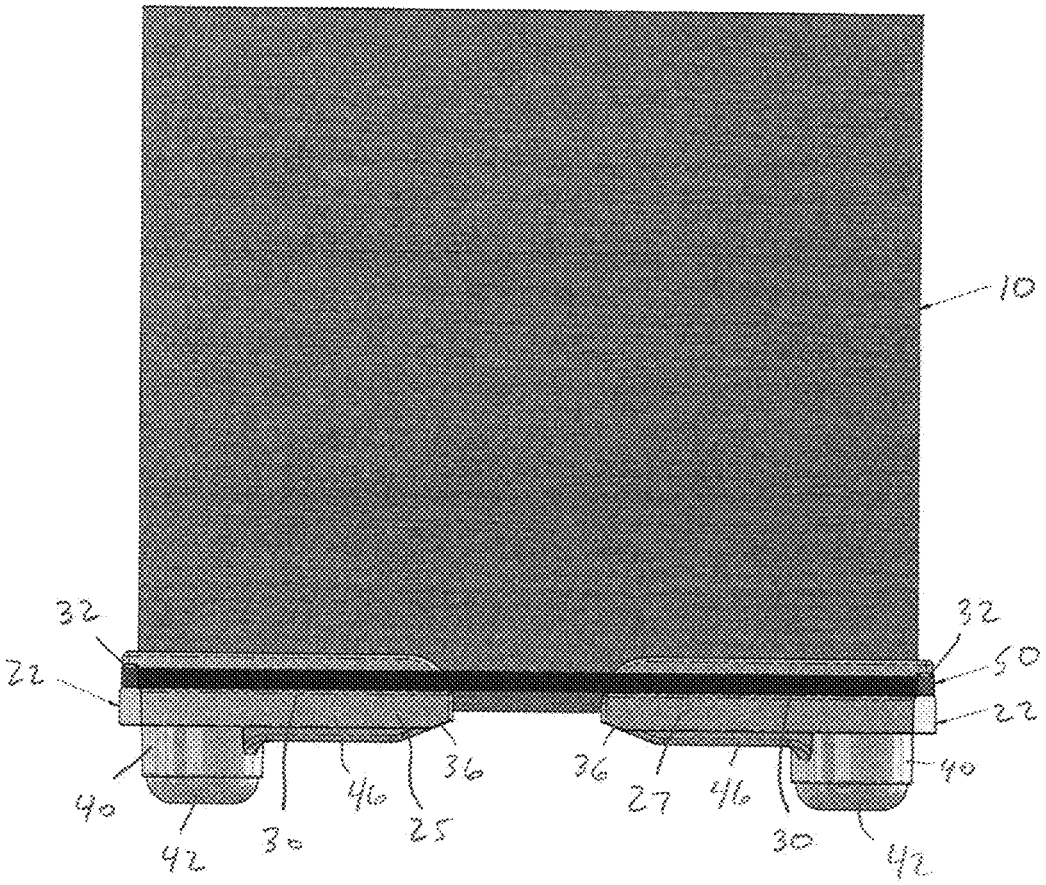


Fig. 2

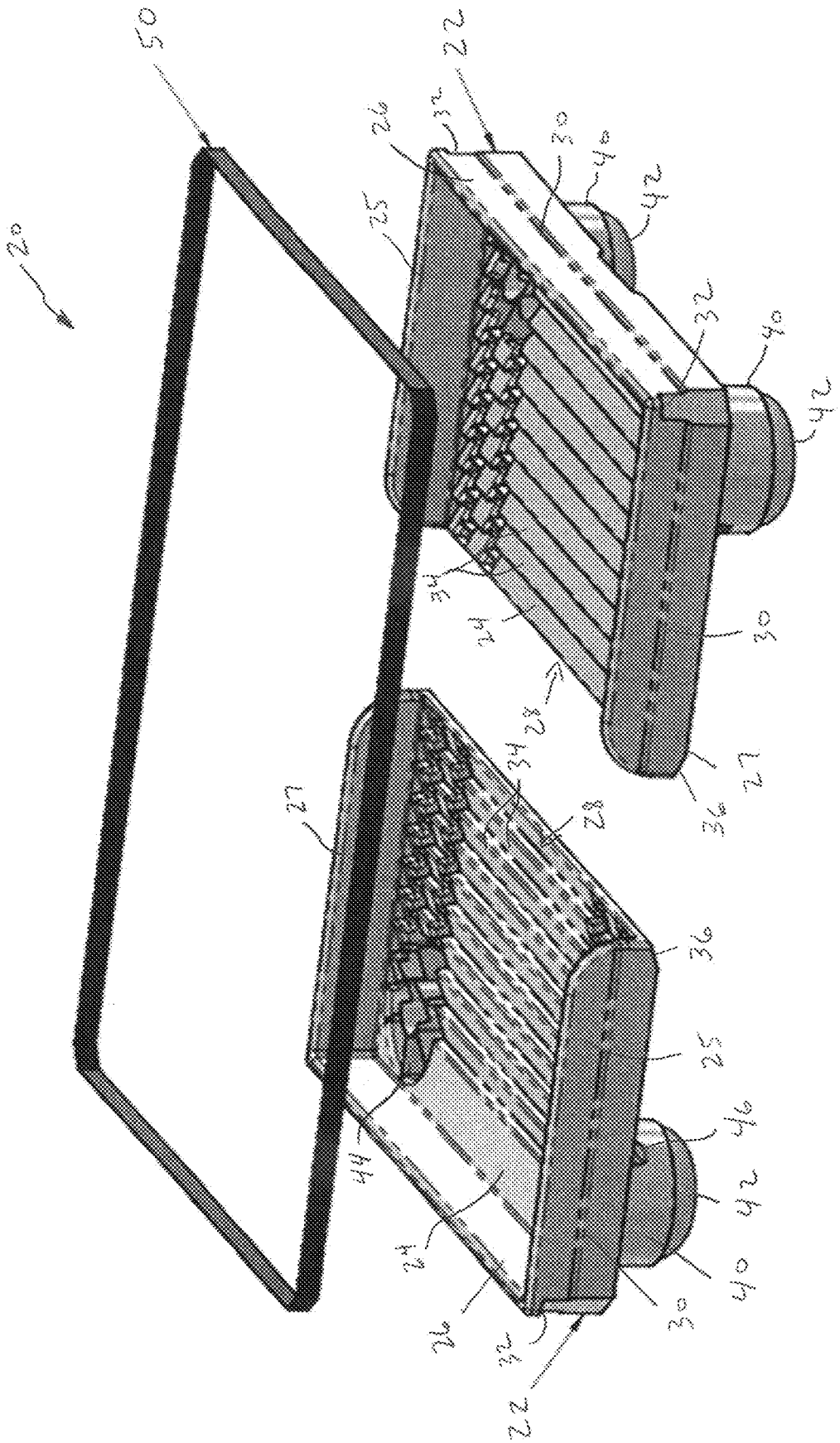

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Fig. 3

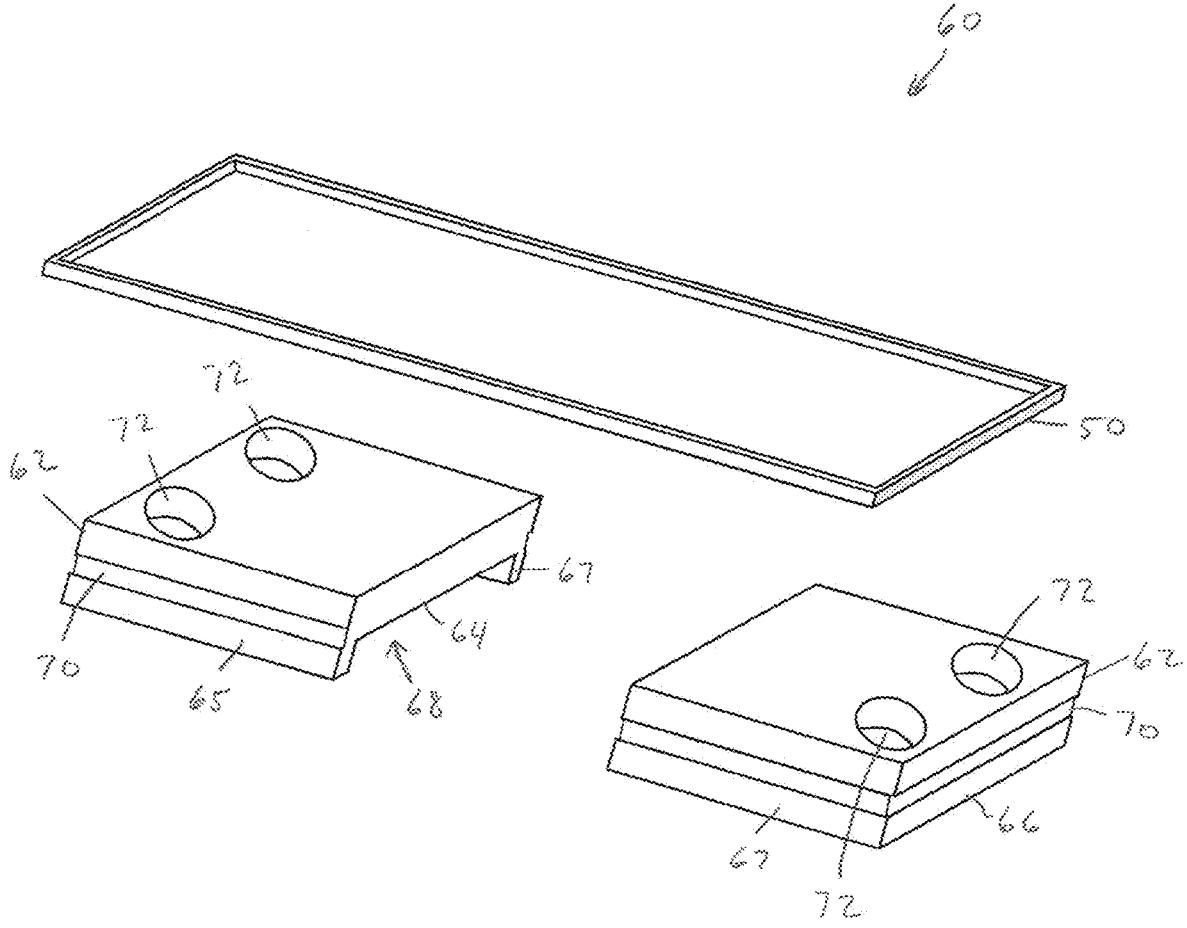

Fig. 4

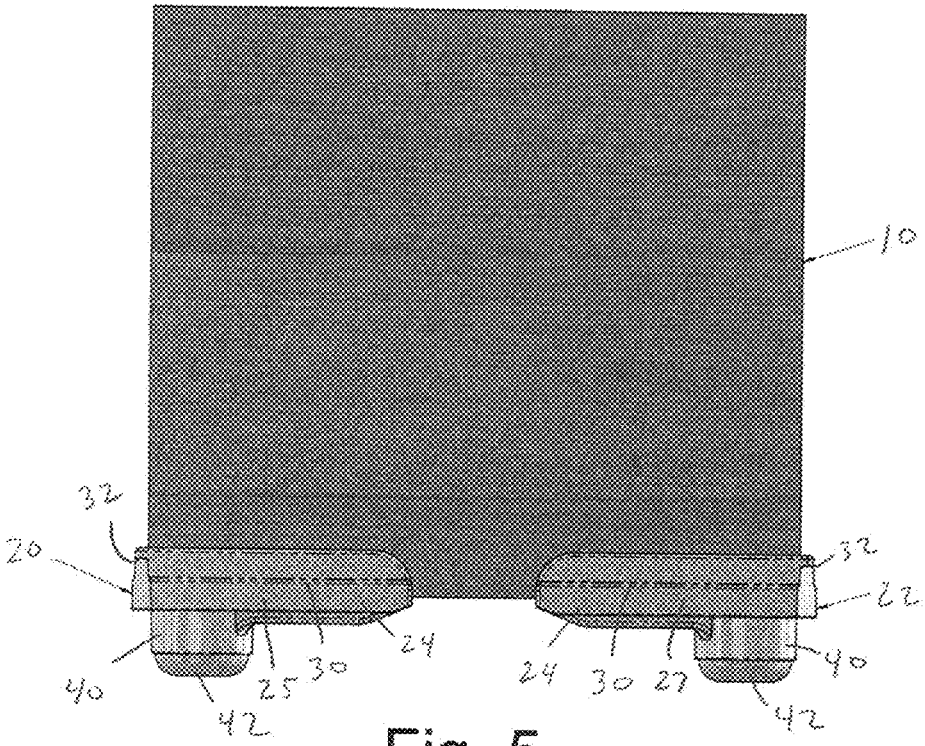
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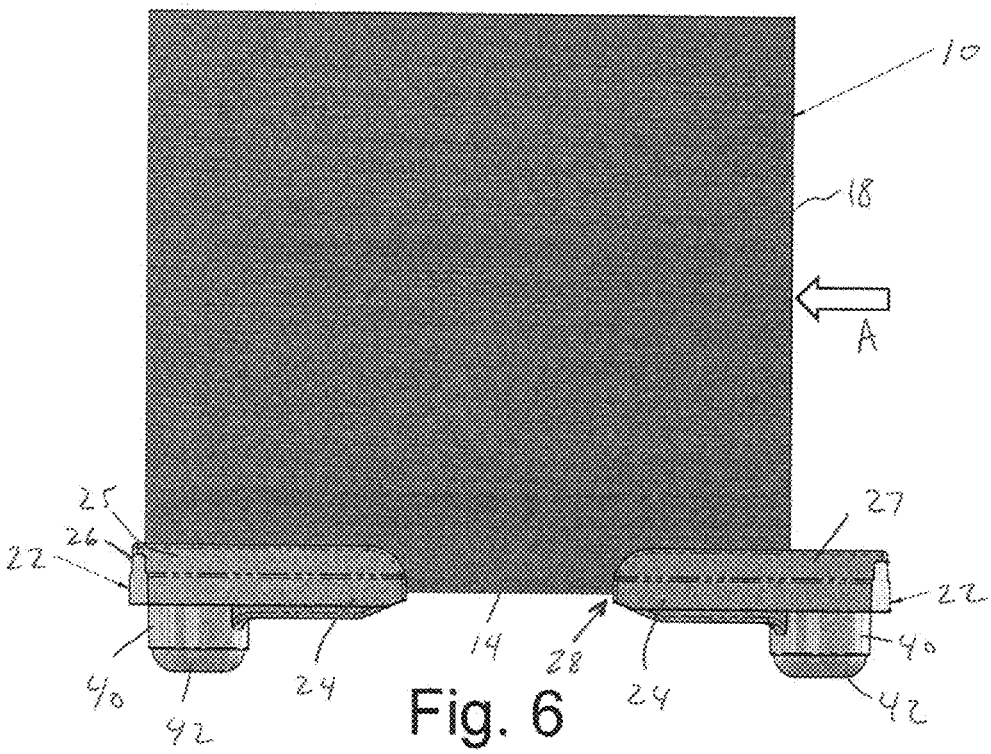
Fig. 5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A
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Fig. 6

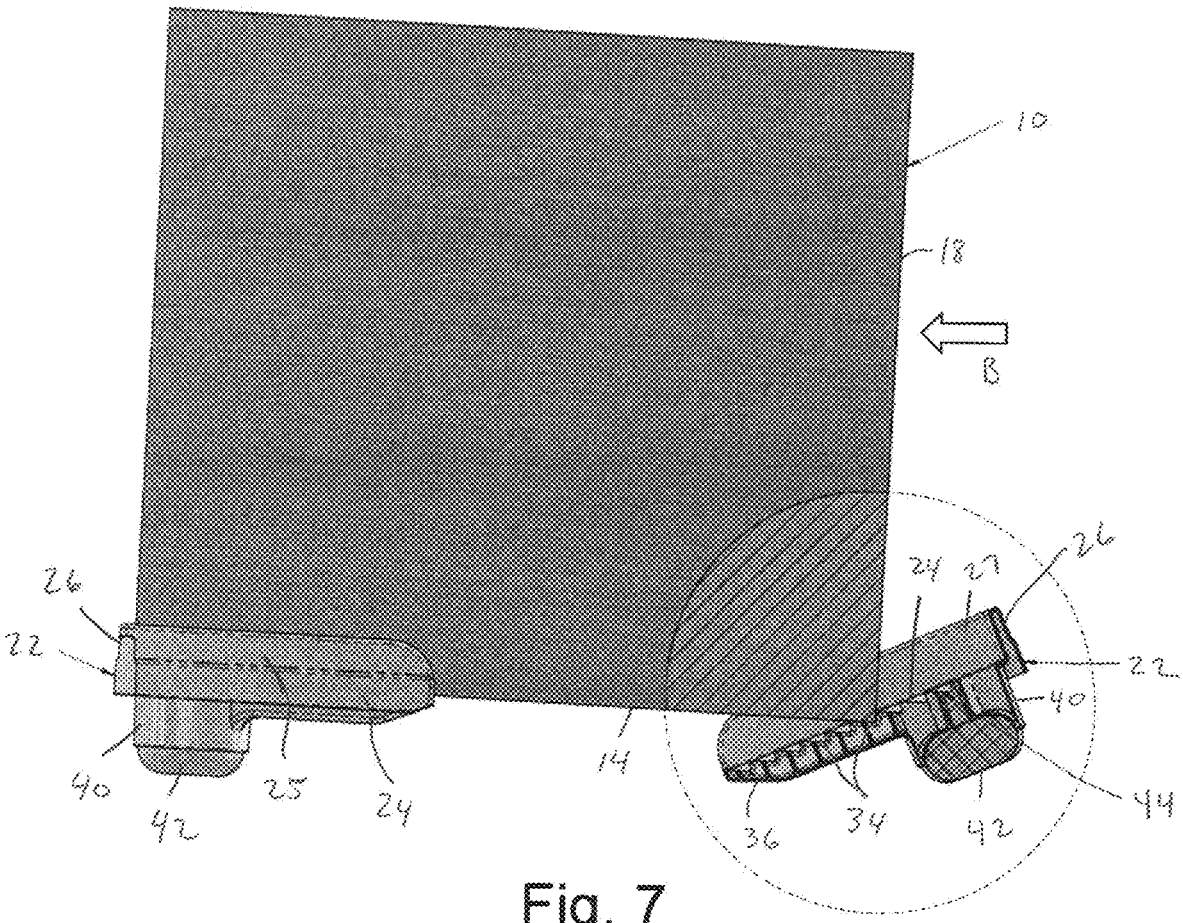

Fig. 7

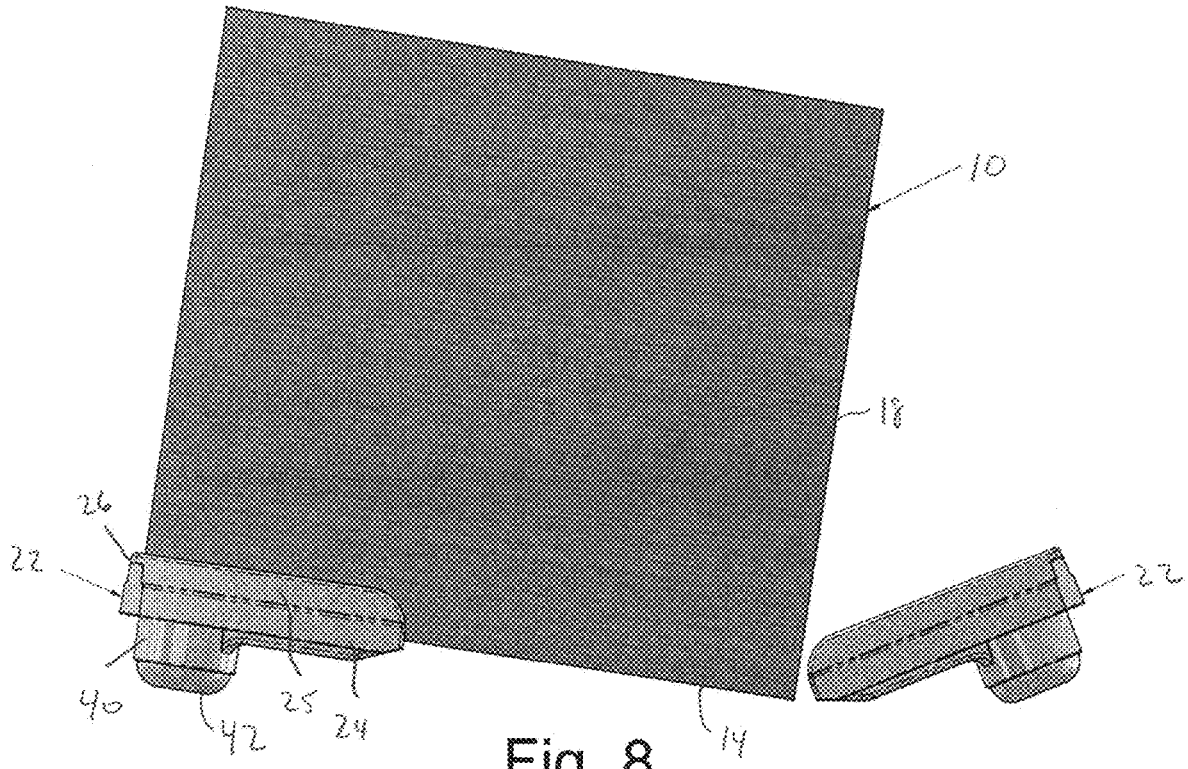

Fig. 8

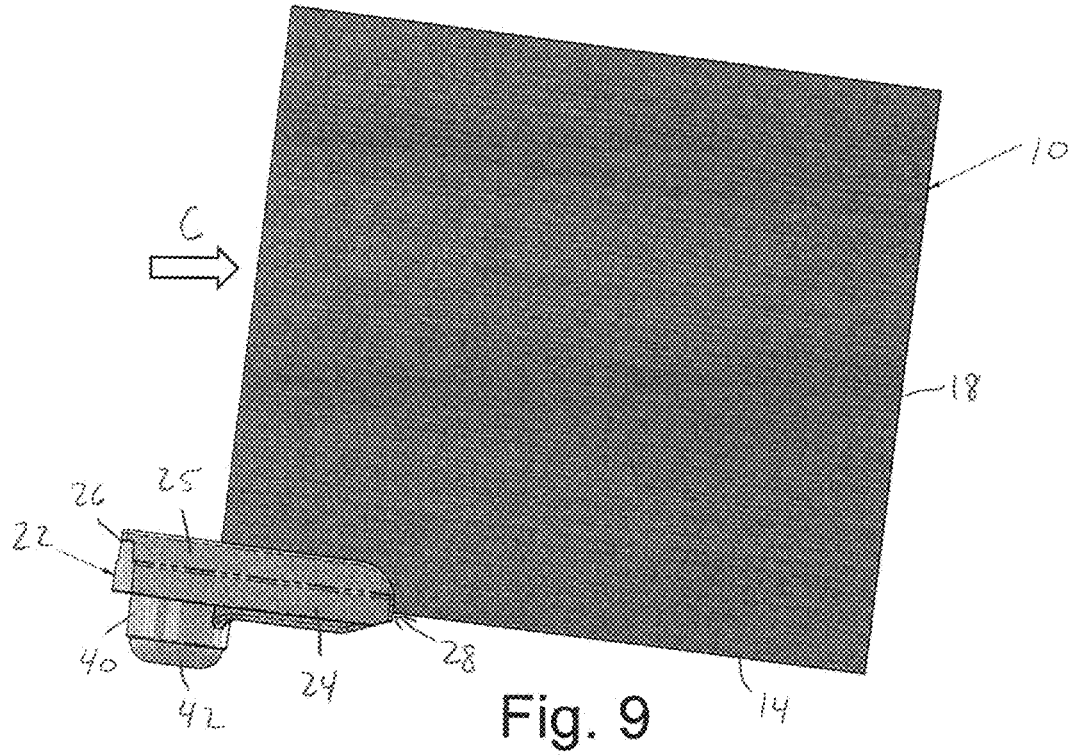

Fig. 9

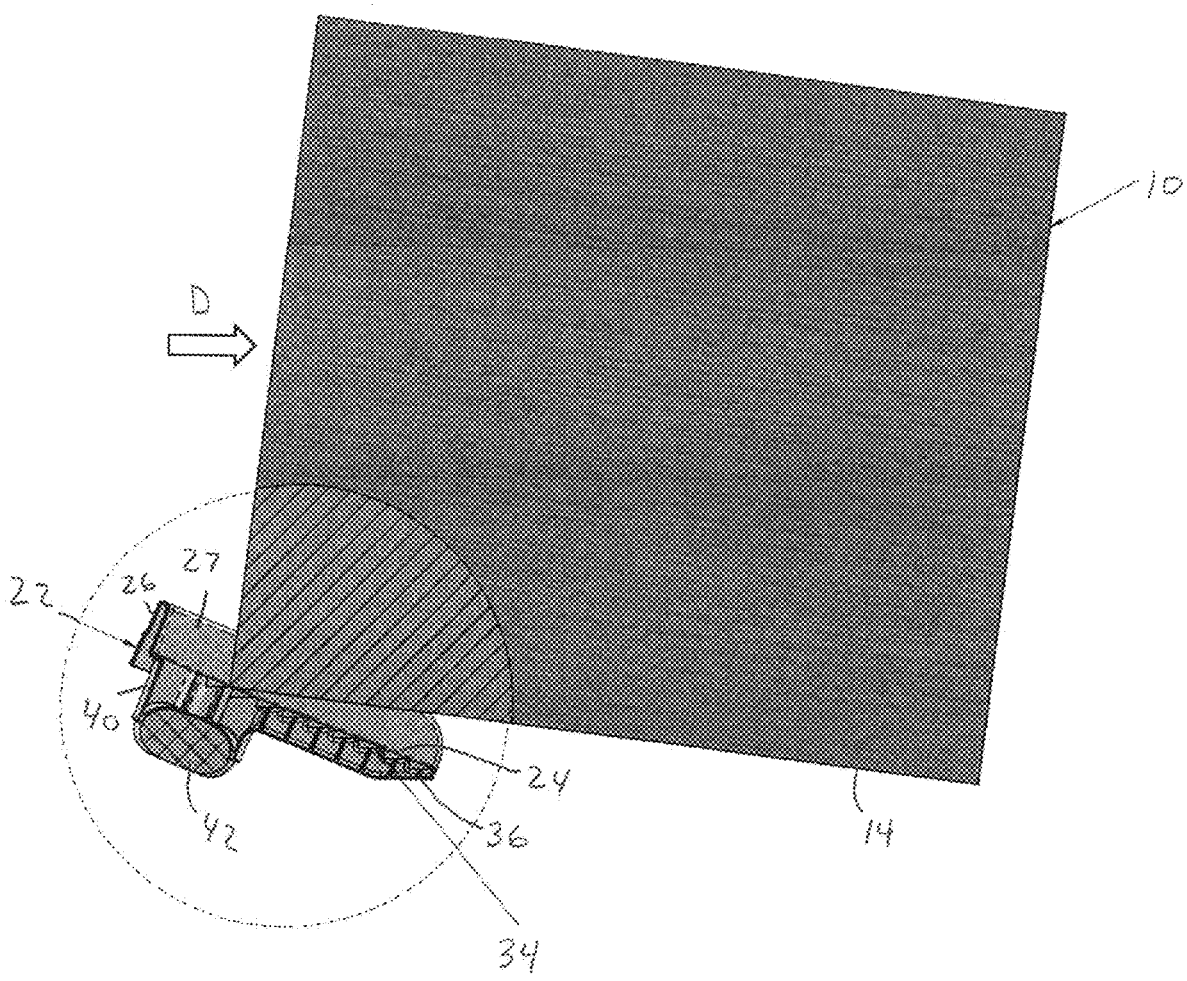

Fig. 10

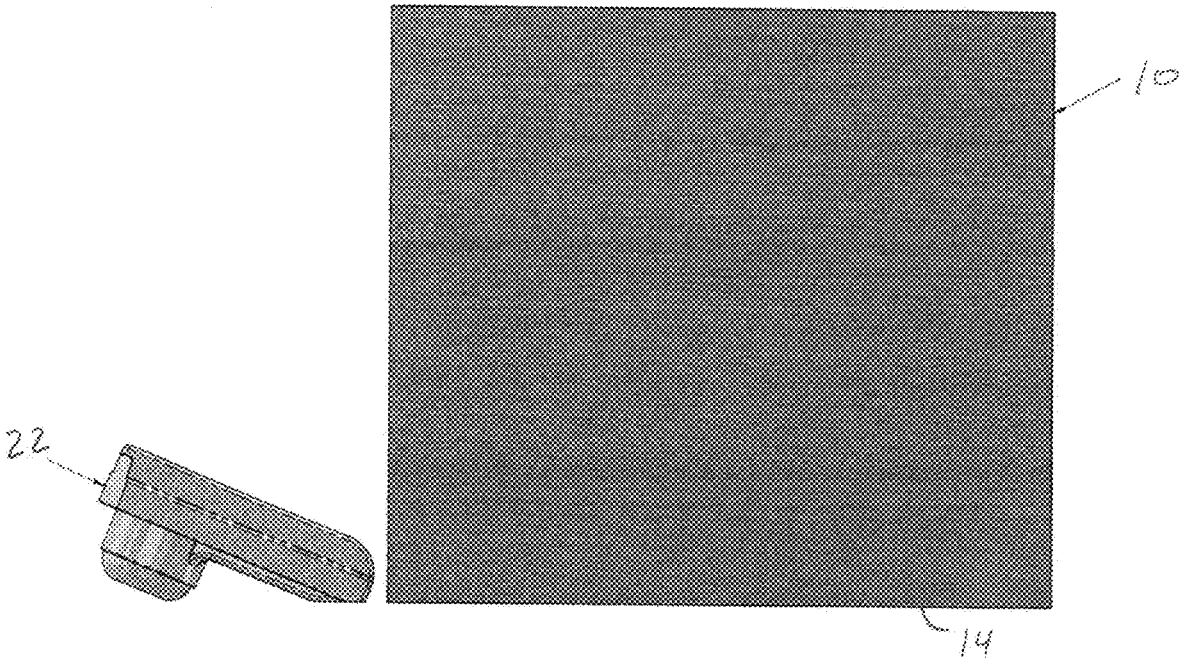

Fig. 11

TWO-PIECE VIBRATION DAMPENING PALLET ASSEMBLY

This application claims the benefit of U.S. Provisional Application No. 62/927,565, filed on Oct. 29, 2019, the contents of which are incorporated herein by reference.

FIELD

This disclosure relates to transportation pallets. More particularly, the disclosure relates to a two-piece vibration dampening pallet assembly.

BACKGROUND

Various large, fragile items are shipped between manufacturers and costumers and often change hands several times during transportation. One example of such an item is a vanity including a cabinet and a countertop. Under current shipping practices, a large number of the vanities arrive with the countertop broken. In addition to an unhappy customer, the vanity needs to be shipped back and replaced.

Under current shipping practices, the vanities are typically packed in corrugated boxes with foam polystyrene packaging materials. The packages oftent arrive via ship/container from Asia and most are intact. The packages may then be put on a pallet and enclosed within another five-sided corrugated box over the existing packaging. The five-sided box is to allow for double stacking of units in the transport truck. It has been found that vibration, and to a lesser degree shock, in transit is causing a significant amount of breakage.

Another difficulty in shipping these large, fragile items is the variations in size. Again, looking at vanities as an example, it is often necessary to have mulitple pallet sizes to accommodate the various size vanities. Even if each size pallet is used for multiple size vanities, there is still a need for multiple pallets because vanity lengths vary so drastically.

SUMMARY

In at least one embodiment, the present disclosure provides a pallet assembly for transporting a transportable unit. The pallet assembly includes a first pallet member including a support surface with at least one wall extending upwardly therefrom and a second pallet member including a support surface with at least one wall extending therefrom. A band is configured to be secured about the at least one wall of both the first and second pallet members after the transportable unit is positioned on both the first and second pallet member support surfaces such that a unified structure for transport is formed.

In at least one embodiment, a pair of feet extend downwardly from each of the support surfaces to a free end. In at least one embodiment, a respective dampener extends from the free end of each of the feet.

In at least one embodiment, the present disclosure provides a method of packaging and unpackaging a transportable unit having opposed first and second ends, the method includes: positioning the first end of the transportable unit on a first support surface of a first pallet member such that the transportable unit abuts a first end wall extending upwardly from the first support surface, the first pallet member having a pair of first feet depending from the first support surface proximate the first end wall; positioning the second end of the transportable unit on a second support surface of a second pallet member such that the transportable unit abuts a second end wall extending upwardly from the second support surface, the first pallet member having a pair of first feet depending from the first support surface proximate the first end wall; and securing a band about the first and second end walls of the first and second pallet members such that a unified structure for transport is formed.

In at least one embodiment, the method further includes removing the band; pushing the transportable unit toward the second pallet member such that the first end of the transportable unit slides down the first support surface of the first pallet member, the first pallet member pivoting about the feet thereof as the transportable unit slides there down; pushing the transportable unit toward the second pallet member until the transportable unit is clear of the first pallet member; pushing the transportable unit away from the second pallet member such that the second end of the transportable unit slides down the second support surface of the second pallet member, the second pallet member pivoting about the feet thereof as the transportable unit slides there down; and pushing the transportable unit away from the second pallet member until the transportable unit is clear of the second pallet member.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated herein and constitute part of this specification, illustrate the presently preferred embodiments of the disclosure, and, together with the general description given above and the detailed description given below, serve to explain the features of the disclosure. In the drawings:

FIG. **1** is a perspective view of a two-piece pallet assembly in accordance with an embodiment of the disclosure supporting a transportable unit therein.

FIG. **2** is a front elevation view of the two-piece pallet assembly of FIG. **1** supporting a transportable unit therein.

FIG. **3** is an exploded perspective view of the two-piece pallet assembly of FIG. **1**.

FIG. **4** is an exploded perspective view of an optional top pallet assembly in accordance with an embodiment of the disclosure.

FIGS. **5-11** are side elevation views illustrating the sequential unloading of the transportation unit from the two-piece pallet assembly in accordance with an embodiment of the disclosure.

DETAILED DESCRIPTION

In the drawings, like numerals indicate like elements throughout. Certain terminology is used herein for convenience only and is not to be taken as a limitation on the present disclosure. The following describes preferred embodiments of the present disclosure. However, it should be understood, based on this disclosure, that the disclosure is not limited by the preferred embodiments described herein.

Referring to FIGS. **1-3**, a two-piece pallet assembly **20** in accordance with an embodiment of the disclosure will be described. The pallet assembly **20** is configured to support transportable units **10**, for example, a cabinet, vanity or the like, for transport. The transportable unit **10** has a body **12** extending between a lower surface **14** and an upper surface **16** and between opposed ends **18**. The transportable unit **10** may be in the form of a box positioned about a cabinet, vanity or the like or may be the actual cabinet, vanity or the like. The transportation unit **10** has a width W and a length

L. The pallet assembly **20** illustrated in FIGS. **1-3** is configured to support various units having a common width but of various lengths. It is understood that the pallet assembly **20** may be configured to support units of varying widths as will be described in more detail hereinafter.

The two-piece pallet assembly **20** includes a pair of pallet members **22** and a securing band or strap **50**. In the illustrated embodiment, each of the pallet members **22** have the same configuration, however, it is understood that the pallet members **22** could have differing configurations, for example, if the transportable unit **10** has different configurations at each of its ends **18**. Each of the pallet members **22** is configured to be secured along the lower surface **14** of the transportable unit **10** at a respective end **18**. As shown in FIGS. **1** and **2**, with the pallet members **22** so positioned at each end, the band **50** is secured about both pallet members **22** to form a unified structure which supports the transportable unit **10**. As will be described in more detail hereinafter, each of the pallet members **22** includes depending feet **40** such that the transportable unit **10** is supported in an elevated position. This allows the unified structure to be moved utilizing manual or electric pallet jacks or with a forklift.

Referring to FIG. **3**, each pallet member **22** includes a generally planar support surface **24** which is enclosed three sides by opposed side walls **25**, **27** and an end wall **26**. The remaining side is generally open as indicated at **28** such that the transportable unit **10** may extend from the support surface **24**. In the illustrated embodiment, the support surface **24** has a plurality of steps **34** formed therein which may be utilized to gradually lower the transportable unit **10** during unloading as will be described hereinafter. It is understood that the support surface **24** may have other configurations, including a flat surface or sloped, depending on the application. Additionally, the outer surface of the support surface **24** adjacent the open end **28** may be formed with a sloped portion **36** to assist in unloading as will be described below.

In the illustrated embodiment, the support surface **24** has a width between the side walls **25**, **27** which is equal to or slightly larger than the width W of the transportable unit **10** and a length from the end wall **26** to the open end **28** which is equal to or smaller than one-half the length L of the transportable unit **10**. With this configuration, each end **18** of the transportable unit **10** may be securely received and supported on a respective support surface **24**. Because the transportable unit **10** extends from the open end **28** of each pallet member **22**, the pair of pallet members **22** may be utilized with transportable units **10** of varying lengths. Once the transportable unit **10** is positioned on the pair of pallet members **22**, the band **50** is tightly secured about the two pallet members **22** to form the unified structure.

To retain the band **50** in place, a groove or the like may be formed along the side walls **25**, **27** and/or end walls **26**. In the illustrated embodiment, the upper portion of each of the side walls **25**, **27** and end walls **26** is inward of the lower portion thereof such that a lower ridge **30** is defined along each wall **25-27**. Additionally, an overhang **32** is formed at the upper edge of each closed corner of each pallet member **22**. As such, the band **50** is held in position between the lower ridge **30** and the overhangs **32**. The bands **50** may be made from metal, nylon or any other desired material. Various mechanisms, for example, buckles, clasps, staples, welds fusion or the like, may be utilized to secured the ends of the band **50** once it is tightened about the pallet members **22**.

While the illustrated embodiment of the pallet assembly **20** is configured for use with transportable units **10** of a given width, it is recognized that the pallet members **22** may be configured such that they may be utilized for units **10** of varying widths. For example, as a first alternative, each pallet member **22** may be formed without the sidewalls **25**, **27** such that wider transportable units would overhang the sides of the support platform **24**, yet the band **50** would still engage the end walls **26** to form the unified structure. As yet another alternative, one or both side walls **25**, **27** may be supported relative to the support surface **24** in a telescoping manner. That is, for wider transportable units **10**, one or both side walls **25**, **27** may be adjusted outwardly from the support platform **24** while still supported thereby. In yet another alternative embodiment, the support platform **24** may be formed by two pieces which are telescopingly interconnected to one another such that the width of the support platform **24** may be adjusted.

Referring again to FIGS. **1-3**, each pallet member **22** has a pair of feet **40** depending from the support surface **24** proximate the closed end thereof. The positioning of the feet **40** proximate the closed end allows the pallet members **22** to provide wide support of the transportable member **10** when in the unified structure, transport configuration illustrated in FIGS. **1** and **2**, but allows each pallet member **22** to pivot to an unloading position (see FIGS. **7** and **10**) during unloading as will be described hereinafter. In the illustrated embodiment, each of the feet **40** is formed as a hollow structure with internal ribs **44** to minimize weight, however, other structures may be utilized. Additionally, external ribbing **46** maybe provided, for example, between the feet **40** and the support surface **24** for additional rigidity and/or strength.

A dampener **42** is positioned at the free end of each of the feet **40** and extends therefrom such that dampeners **42** will sit on the surface upon which the pallet assembly **20** is positioned. The dampeners **42** are elastomeric such that they absorb vibration and shock which may be transmitted to the pallet assembly **20**. The illustrated dampeners **42** have a solid structure, for example, made of rubber or an elastomeric foam structure. The dampeners **42** may have other configurations, for example, an elastomeric sack filled with air or other fluids, for example, liquids or gels. Additionally, the dampener may be sealed with a fixed amount of fluid or may be fillable to include any desired amount of fluid.

Turning to FIG. **4**, an optional top pallet assembly **60** in accordance with an embodiment of the disclosure will be described. The top pallet assembly **60** may be utilized if it is desired to stack transportable units **10** on top of one another during transport. The top pallet assembly **60** includes a pair of pallet members **62** and a band **50**. The pallet members **62** are similar to the pallet members **22** but are configured to be positioned on the top surface **16** of a transportable unit **10** and, instead of feet, the pallet members **62** include feet receiving openings **72** configured to receive the feet **40** of a pallet assembly **20** stacked thereon. More specifically, each pallet member **62** has a support surface **64** with depending side walls **65**, **67** and an end wall **66**. The end opposite the end wall **66** defines an open end **68** such that the pallet members **62** may be positioned along the top surface **16** at respective ends **18** of the transportable unit **10**. A groove **70** or the like may be defined along the walls **65-67** to receive and retain the band **50**. The upper surface of each support platform **64** defines a pair of receiving holes **72** sized and positioned to receive the respective feet **40** of a pallet assembly **20** stacked on top of the top pallet assembly **60**. Such optional top pallet assembly **60** allows the units **10** to be stacked without the need for an additional five-sided box.

Having generally described the components of the pallet assembly **20**, an illustrative method of unloading a trans-

portable unit **10** from the pallet assembly **20** will be described with reference to FIGS. **5-11**. After the unit **10** has been transported securely within the pallet assembly **20**, as shown in FIGS. **1** and **2**, it is delivered to the customer where it is ready to be unloaded. The configuration of the pallet assembly **20** allows the unit **10** to be safely unloaded by the end user without the need for any equipment.

Referring to FIG. **5**, the first unloading step is to remove the band. With the feet **40** positioned toward the closed ends of the pallet members **22**, the transportable unit **10** remains supported in a balanced position.

Next, the transportable unit **10** is pushed from one of the ends **18** towards the other end as indicated by arrow A in FIG. **6**. The unit **10** will slide along the support surface **24** of the near pallet member **22** while contacting the rear wall **26** and thereby pushing the opposite pallet member **22**.

As the transportable unit **10** is continued to be pushed as indicated by arrow B in FIG. **7**, the weight of the transportable unit **10** will no longer be above the feet **40** of the near pallet member **22** and the near pallet member **22** will begin to pivot relative to the feet **40**. As the pallet member **22** pivots downward, the support surface **24** forms a ramp for the unit **10** to slide on. The steps **34** on the support surface **24** allow for a controlled removal or unloading of heavy units **10** from the pallet member **22**. The transportable unit **10** is continued to be moved along the support surface **24** until the lower surface **14** at that end **18** of the unit **10** is on the ground as shown in FIG. **8**. The removed pallet member **22** is moved out of the way.

Turning to FIG. **9**, the opposite end **18** of the transportable unit **10** is pushed in the opposite direction as indicated by arrow C. The unit **10** will slide along the support surface **24** of the remaining pallet member **22**.

As the transportable unit **10** is continued to be pushed as indicated by arrow Din FIG. **10**, the weight of the transportable unit **10** will no longer be above the feet **40** of the remaining pallet member **22** and the pallet member **22** will begin to pivot relative to the feet **40**. As the pallet member **22** pivots downward, the support surface **24** forms a ramp for the unit **10** to slide on. The steps **34** on the support surface **24** again allow for a controlled removal or unloading of heavy units **10** from the pallet member **22**. The transportable unit **10** is continued to be moved along the support surface **24** until the lower surface **14** at that end **18** of the unit **10** is on the ground as shown in FIG. **11**.

Once the transportable unit **10** has been unloaded, the pallet assembly **20** may be returned for reuse. In addition to providing secure, vibration resistant transport and easy unloading, the pallet assembly **20** may provide additional benefits over the currently used methods of transport. For example, the pallet assembly **20** is much smaller than a standard pallet, allowing for more compact storage and lower return shipping costs. Additionally, the pallet assembly **20** will be lighter than standard pallets, lowering the transport weight and associated freight costs. Additionally, the dampeners **42** will last longer than the additional foam being utilized in current practices and will not require any further labor to install as compared to the foam. As yet another potential benefit, the pallet assembly **20** will have specific uses and therefore will be less desirable for theft, resulting in a lower loss percentage. Additionally, the pallet assembly **20** will cost less than a standard pallet, providing an initial savings and also, if an assembly is lost, the financial impact is less.

These and other advantages of the present disclosure will be apparent to those skilled in the art from the foregoing specification. Accordingly, it will be recognized by those skilled in the art that changes or modifications may be made to the above-described embodiments without departing from the broad inventive concepts of the disclosure. It should therefore be understood that this disclosure is not limited to the particular embodiments described herein, but is intended to include all changes and modifications that are within the scope and spirit of the disclosure as defined in the claims.

What is claimed is:

1. A pallet assembly for transporting a transportable unit, the pallet assembly comprising: a first pallet member including a support surface with at least one wall extending upwardly therefrom;

a second pallet member including a support surface with at least one wall extendingupwardly therefrom;

a first top pallet member including a support surface with at least one wall extending downwardly therefrom;

a second top pallet member including a support surface with at least one wall extending downwardly therefrom; and

at least one band configured to be secured about one or both of: (i) the at least one wall of both the first and secondpallet members and (ii) the at least one wall of both the first and second top pallet members after the transportable unit is positioned on both the first and second pallet member support surfaces such that a unified structure for transport is formed.

2. The pallet assembly according to claim **1** wherein a pair of feet extend downwardly fromeach of the support surfaces to a free end.

3. The pallet assembly according to claim **2** wherein a respective dampener extends fromthe free end of each of the feet.

4. The pallet assembly according to claim **3** wherein each dampener has an elastomericstructure.

5. The pallet assembly according to claim **2** wherein the at least one wall of each pallet member defines a substantially closed end and an open end of the respective support surface andthe pair of feet are positioned proximate the substantially closed end.

6. The pallet assembly according to claim **1** wherein the at least one wall of each pallet member defines an end wall along a first edge of the respective support surface and a pair of opposed side walls along second and third edges of the respective support surface with a fourthedge of the support surface defining an open edge.

7. The pallet assembly of claim **6** wherein a distance between the side walls is equal to orslightly greater than a width of the transportable unit.

8. The pallet assembly of claim **6** wherein a distance between the side walls is adjustable.

9. The pallet assembly of claim **6** wherein a distance between the end wall and the openedge is less than or equal to one-half of a length of the transportable unit.

10. The pallet assembly of claim **1** wherein the support surface of each pallet member has astepped configuration.

11. The pallet assembly of claim **1** wherein each support surface defines at least a first openedge and wherein the each pallet member has a tapered outer surface along the first open edge.

12. The pallet assembly of claim **1** wherein the at least one wall of each pallet memberdefines a strap retaining groove.

13. The pallet assembly of claim **1** wherein each of the top pallet members includes an upper surface opposite its support surface and wherein each upper surface defines a pair of feet receiving openings.

* * * * *