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(54) **PAPER HONEYCOMB AND TUBE PALLET**

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(57) **ABSTRACT**

This invention relates to an improved pallet for material handling, shipping, packaging and the like. In particular this invention relates to a pallet that is lightweight, strong, recyclable, resistant to insect infestation, and preferably made of paper and glue.

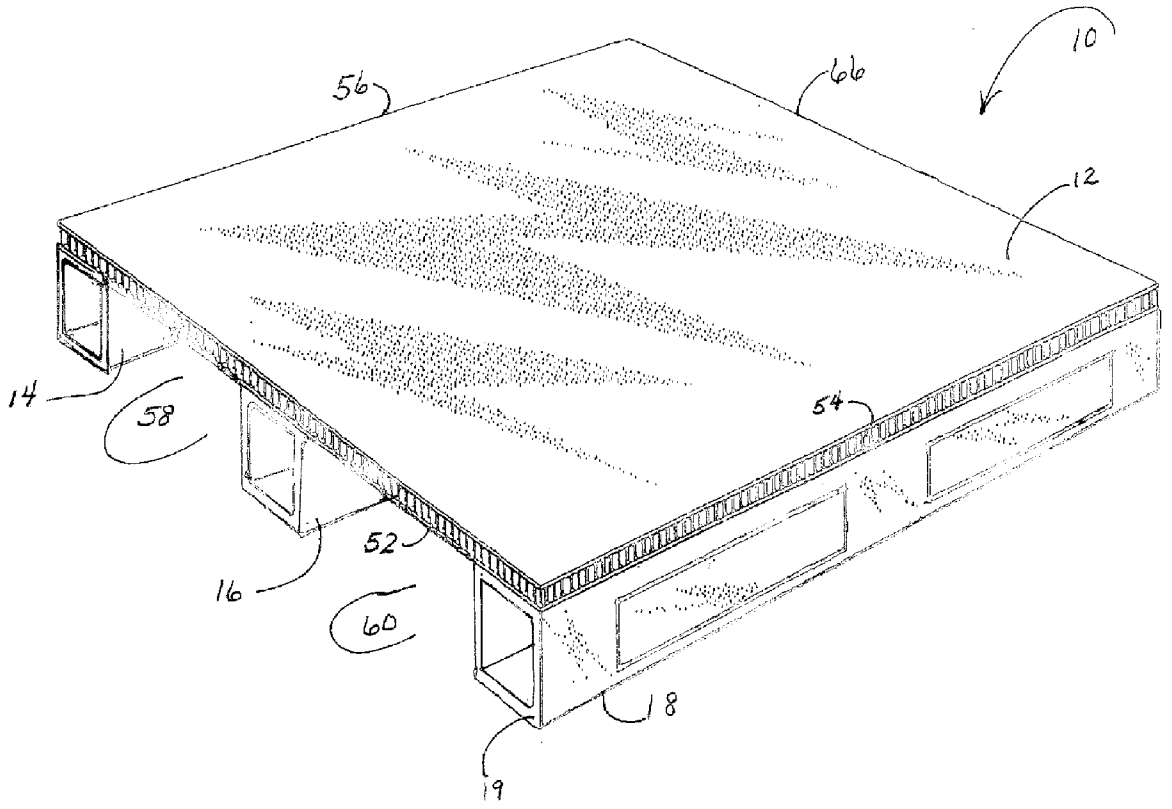
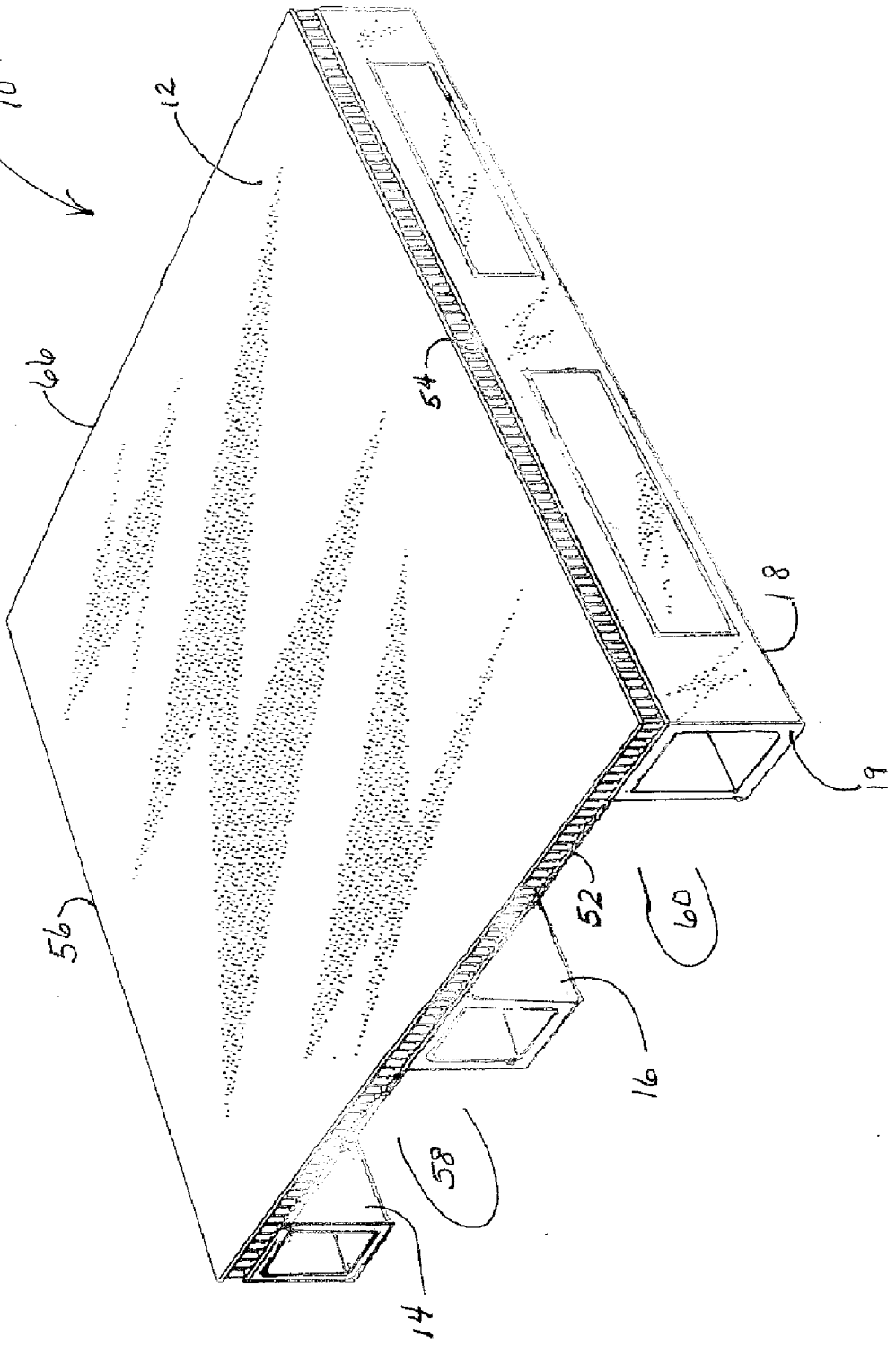


FIG. 1



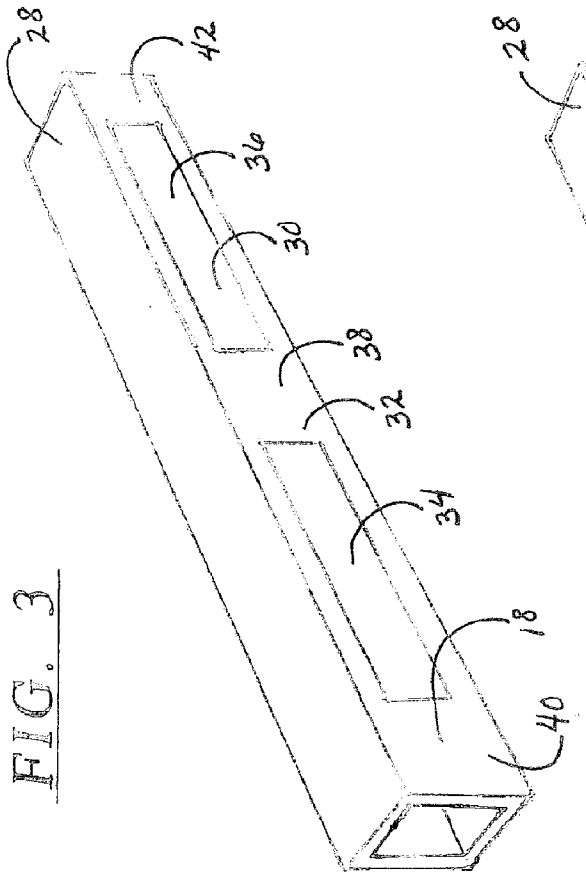


FIG. 3

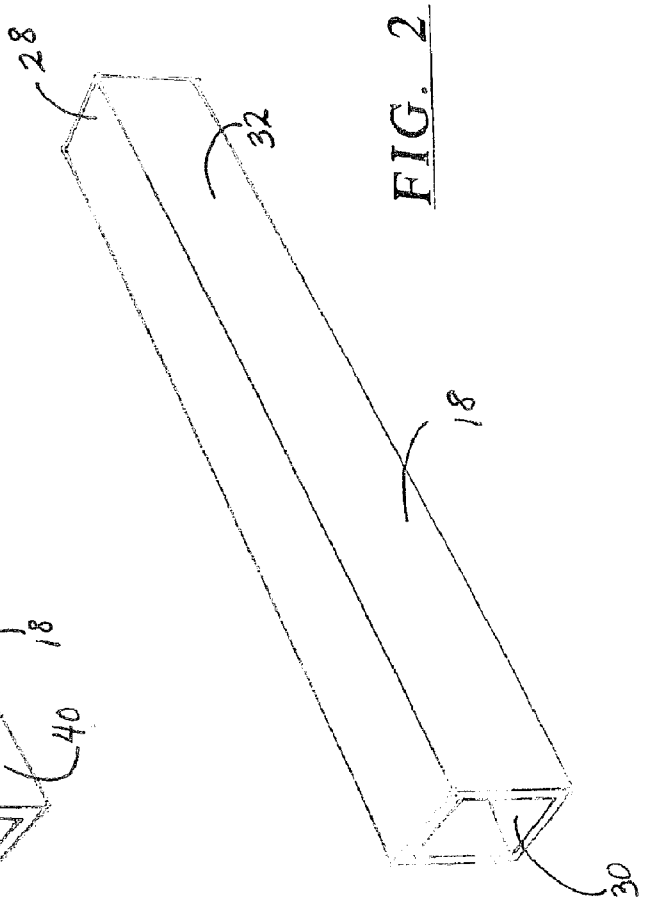
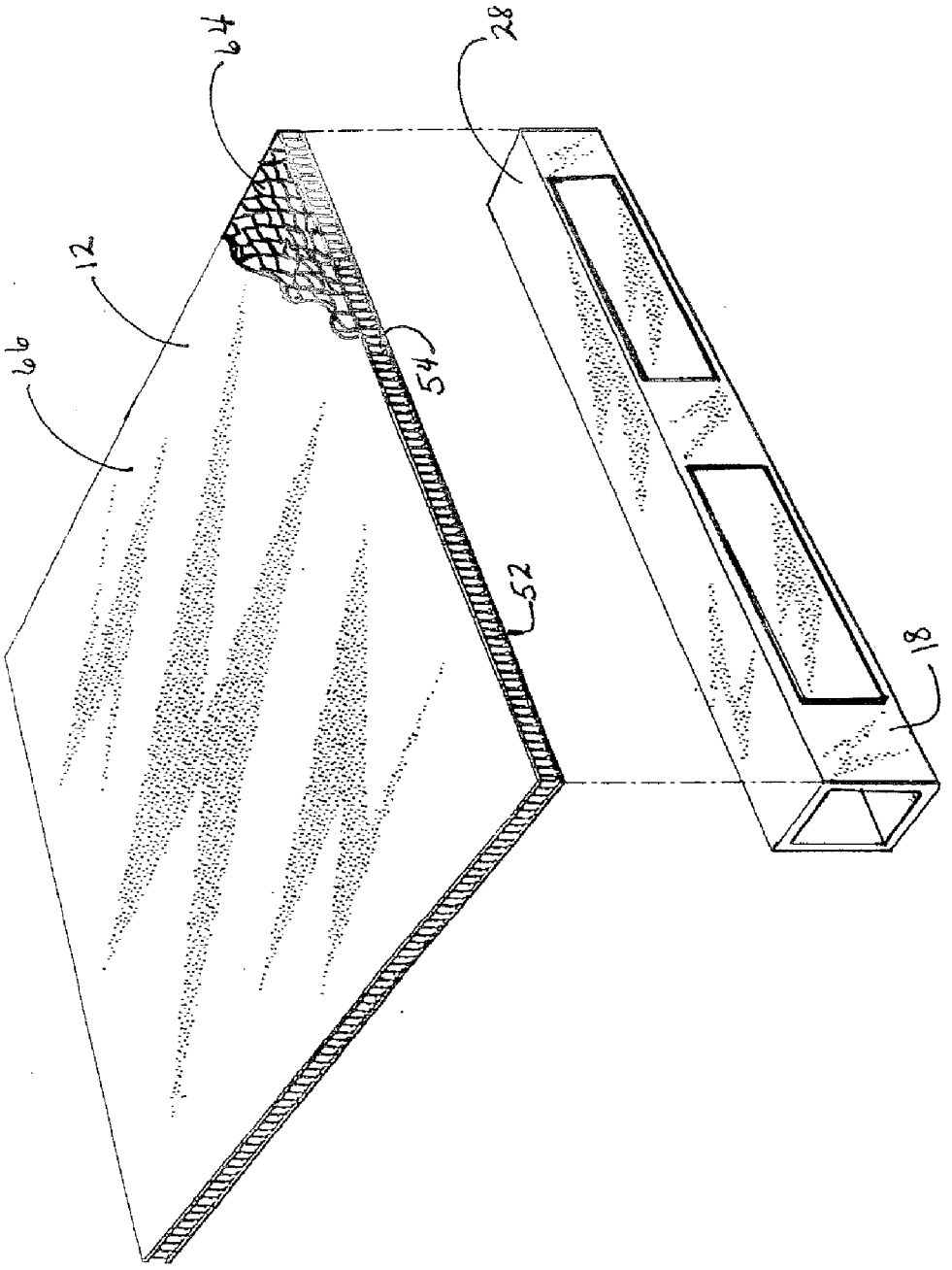


FIG. 2

FIG. 4



PAPER HONEYCOMB AND TUBE PALLET

BACKGROUND OF THE INVENTION

[0001] Traditionally, pallets have been made of wood planks nailed together. In one common structure, a series of parallel wood planks are nailed to the top of three transversely extending, parallel, and equally spaced wood support planks. Similarly, a series of parallel lower wood planks are nailed to the bottom of the three support planks.

[0002] Forklift tines can slide under the upper planks in the two parallel channels formed by the three spaced support planks. The forklift can then raise its tines which lifts the pallet and anything mounted on it.

[0003] Wood pallets are expensive, because they eventually breakdown. When they do little of the wood is useable to make new pallets. To make new pallets, new wood is required which necessitates the cutting down of tress, which is both expensive, and of great environmental concern.

[0004] Wood pallets are very heavy which increases their cost both in storage and shipping.

[0005] Wood pallets are dangerous in that they often have splinters and protruding nails, which may cause injury to material handlers and damage to product.

[0006] Wood pallets have been shown to be a harbor for insects, fungus, mold and mildew. Because of their ability to attract undesirable elements restrictions have been placed on their use in **118** countries throughout the world.

[0007] One attempt at a solution to the problems with wood pallets is the paper pallet. The paper pallet can be made out of paper honeycomb and wound paper tubes. The cellular honeycomb core provides remarkable compression strength, is lightweight, and has significantly improved cushioning ability over the wood pallet. The wound paper tubes provide tremendous carrying strength and perform similar to the bottom supports of the wood pallet on conveyors and with automatic palletizing systems.

[0008] The paper pallet is 100% recyclable, and is made from renewable resources thus helping the environment.

[0009] The paper pallet weighs ⅕th of the weight of a wood pallet, which can represent savings in both storage and shipping costs.

[0010] Paper pallets have no splinters or protruding nails and are safer to use than wood pal lets.

[0011] Paper pallets do not harbor insects, fungus, mold or mildew and have no restrictions on their use worldwide.

[0012] Therefore there is a demand for a pallet, which is recyclable, lightweight, and safe and has no restrictions on its use anywhere in the world.

SUMMARY OF THE INVENTION

[0013] One object of the present invention is to provide a pallet which can be fully assembled without any metal parts such as nails, screws, nuts or bolts which makes the invention less prone to causing injury to the user.

[0014] Another object of the present invention is to provide a pallet that can be shipped in an unassembled form to save transport costs.

[0015] Another object of the present invention is to provide a pallet which design allows for easy adaptability in size.

[0016] Another object of the present invention is to provide a pallet that is very lightweight, yet very strong.

[0017] Another object of the present invention is to provide a pallet that is recyclable, biodegradable, and non-toxic.

[0018] Another object of the present invention is to provide a pallet that will not be subject to restrictions on its use anywhere in the world.

[0019] Another object of the present invention is to provide a pallet whose components can be easily assembled without the use of any sophisticated tools.

[0020] Another object of the present invention is to provide a pallet that can be treated with moisture resistant chemicals or a moisture resistant layer such as polyethylene.

[0021] Another object of the present invention is to provide a support member, which will function similar in most respects to a wood pallet in movement of product via conveyors and automatic palletizing machinery.

[0022] These and other advantages, as well as the invention itself, will become apparent in the details of construction and operation as more fully described and claimed below.

BRIEF DESCRIPTIONS OF THE DRAWINGS

[0023] **FIG. 1** is a pictorial view of my preferred pallet.

[0024] **FIG. 2** is an exploded view of a support runner for the preferred pallet where two-way entry is desired.

[0025] **FIG. 3** is an exploded view of a support runner for the preferred pallet where four-way entry is desired.

[0026] **FIG. 4** is an exploded pictorial view showing the mounting of a support runner offering four-way entry to a paper honeycomb deck in the preferred pallet with an exploded view of the honeycomb construction of the deck.

DETAILED DESCRIPTION OF A PRESENTLY PREFERRED EMBODIMENT

[0027] In the description that follows, like elements are marked throughout the specification and drawings with the same reference character, respectively. The drawing figures are not necessarily to scale. Further, description of the assembly and various elements, components or portions of the assembly are provided according to their orientation as depicted in the drawings and are not meant to be limiting in any way.

[0028] With reference to **FIG. 1**, the preferred embodiment, generally **10**, has a rectangular pallet base **12** mounted on three support runners or beams **14**, **16**, **18**. The thickness of the base **12** varies depending on the load to be carried by the pallet **10**. The support runners, e.g., **18**, are each made with numerous sheets of paper, or chipboard, or corrugated wrapped layer upon layer and individually glued together with polyvinyl acetate or similar glue or a moisture resistant glue. The paper, or chipboard, or cardboard may be treated with moisture resistant chemicals or a moisture resistant layer such as polyethylene. The support runner **18** may be wound in either the shape of a rectangle or a square. The

wall thickness **19** of the support runner **18** will vary depending upon the weight of the load to be carried by the pallet. The wall thickness **19** of the support runner **18** has great compression and bending strength allowing it to support the pallet and its contents without the need for any additional support such as blocks of honeycomb or corrugated or paper tubes or cores.

[**0029**] With reference to **FIG. 2**, the support runner **18** has a planar top surface **28** and a planar bottom surface **30** interconnected by a transverse central planar beam section **32**. Support runner as described is typically used when a pallet requires entry from two directions.

[**0030**] With reference to **FIG. 3**, two fork channels **34**, **36** are cut in the beam section **32**. This arrangement yields (**1**) central rectangular beam section **38** between the two channels **34**, **36** and (**2**) a left rectangular section **40** and right rectangular beam section **42** at opposing ends of support beam **18**. Support runner as described is typically used when a pallet requires entry from four directions.

[**0031**] With reference to **FIG. 4**, each support runner, e.g., **18** is glued to the bottom face **52** of the pallet base **12**. Again polyvinyl acetate or similar glue, or moisture resistant glue is applied to the planar top surface **28** along its entire length, and the top surface **28** is then brought in contact with the desired portion of the bottom face **52** of the base **12**.

[**0032**] With reference to **FIG. 5**, each support block

[**0033**] In this regard, as shown in **FIG. 1**, the right support runner **18** is mounted on the bottom face **52** adjacent one outer edge or side **54** of the base **12**. The left support runner **14** is mounted adjacent the opposite edge **56** of the base **12**. Finally, the center support runner **16** is mounted equally spaced from and between the outer support runners **14**, **18**. In this manner, the equally spaced runners **14**, **16**, **18** are mounted in parallel to provide a second set of parallel fork channels **58**, **60** on the bottom side **52** of the base **12**. The first fork channel **58** is bounded by the left runner **14**, central runner **16**, and bottom side **52**; and the second fork channel **60** is bounded by the right runner **18**, central runner **16**, and bottom side **52** extending between the right and central runners **18**, **16**.

[**0034**] Structure of the honeycomb core **64** is made by joining together individual strips of paper, or chipboard, or cardboard into hexagonal shaped cells. The cells may be of any size from fractions of an inch to several inches. The cells are held together by polyvinyl acetate or similar glue or a moisture resistant glue. The honeycomb core **64** is joined to the bottom face **52** of the base **12** and the top face **66** of the base **12** by polyvinyl acetate or similar glue or a moisture resistant glue.

What is claimed is:

1. A pallet support runner made in the shape of a square or rectangle.

2. A pallet support runner made with numerous sheets of paper, or chipboard, or cardboard wrapped layer upon layer and individually glued together with polyvinyl acetate or similar glue or a moisture resistant glue.

3. A pallet support runner made with a wall thickness to create sufficient strength as to be completely self-supporting not requiring an additional reinforcement.

4. A pallet support runner, which has fork lift channels on each of its vertical sides, whereby lifting forks can penetrate through the channels to lift the pallet.

5. A pallet base having a bottom, a top, and a first pallet side opposite a second pallet side; a first pallet support secured to the bottom of the pallet base and a minimum of a second support opposing the first support.

6. A pallet support runner made with chemically treated paper to make it moisture proof.

7. A honeycomb deck made with chemically treated paper to make it moisture proof.

8. A pallet support runner covered with a moisture resistant layer such as polyethylene.

9. A honeycomb deck covered with a moisture resistant layer such as polyethylene.

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