PAPER PALLET

BACKGROUND OF THE INVENTION

Field of Invention

The present invention relates to pallets and more particularly to pallet of a type having its constituent components formed of laminated paper layers with improved characteristics.

Related Art

Conventionally, pallets are used for stacking materials thereon prior to storage or transportation in a warehouse. Typically, pallet is formed of timber. However, the timber pallet has a number of disadvantages. For example, timber is relatively heavy. Further, timber is not easy to obtain because woodcutting is gradually prohibited in some countries due to environmental concerns. Furthermore, insects may live in timber as time evolves. Thus, further processing of timber by, for example smoke is required. All of the above adverse factors may cause inconvenience in using timber pallets.

A type of pallet having its constituent components (i.e., boards and stringers) formed of laminated paper layers is well known. However, such paper pallet also has a number of disadvantages. For example, its manufacturing is

relatively difficult due to lack of advanced technology. Further, its manufacturing cost is relatively high. Thus, the need for improvement still exists.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a paper pallet having required structural strength and reduced manufacturing cost while eliminating the insect growth problem and the need for further smoke processing.

The above and other objects of the present invention are realized by providing a paper pallet comprising a plurality of elements each having predetermined length, width, and height and cut from a lamination formed by building up in a plurality of paper layers wherein a first group of the elements of the same size are used as boards in a top deckboard, a second group of the elements of the same size are used as stringers fastened under the top bottom deckboard by applying adhesive or by driving fasteners into joining portions of the boards and the stringers, and the boards are perpendicular to the stringers.

The above and other objects, features and advantages of the present invention will become apparent from the following detailed description taken with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of laminated paper layers to be cut into suitable sizes for being used as constituent components of a pallet according to the invention;

FIG. 2 is a perspective view of a constituent component of pallet cut from the lamination in FIG. 1;

FIG. 3 is an exploded view of a first preferred embodiment of paper pallet according to the invention, the pallet having a plurality of constituent components such as one shown in FIG. 2;

FIG. 4 is a perspective view of the built up pallet in FIG. 3; and

FIG. 5 is a perspective view of a second preferred embodiment of pallet according to the invention, the pallet having a plurality of constituent components such as one shown in FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. 1, there is shown a lamination 1 formed by building up in a plurality of paper layers 10 according to the invention. The paper lamination 1 has a structural strength substantially equal to or even higher than that of timber used as constituent component of a typical timber pallet.

Referring to FIG. 2, it shows a board 11 cut from the paper lamination 1. The board 11 has predetermined length (L), width (W), and height (H). The boards 11 are to be used as constituent components of a paper pallet of the invention.

Referring to FIGS. 3 and 4, a first preferred embodiment of paper pallet according to the invention is shown. The pallet is a double-decked pallet of parallel body and comprises a top deckboard 12 including five equally spaced parallel boards 11, a bottom deckboard 14 including three equally spaced parallel boards 11, and three equally spaced parallel stringers 13 secured between the top and bottom deckboards 12 and 14 by bonding by means of adhesive or by driving fasteners (e.g., nails) into joining portions of the boards 11 and the stringers 13. The joining portions of the board 11 are both ends 111 and 112 and a center 113 thereof. The joining portions of the stringer 13 are both ends 131 and 132 and an intermediate portion 133 thereof. Sizes of the boards 11 are different from that of the stringers 13. Further, orientations of the boards 11 are different from that of the stringers 13. Furthermore, the boards 11 are perpendicular to the stringers 13. Also, each board 11 has its height direction disposed vertically. To the contrary, each stringer 13 has its height

direction disposed horizontally. The formed pallet is structurally strong.

A plurality of entries 131a are formed in a space defined by the top and bottom deckboards 12 and 14 and the stringers 13. For example, a power lift truck or pallet truck may extend its forks into the entries 131a for lifting the pallet with materials stacked thereon for storage or transportation in a warehouse.

Referring to FIG. 5, a perspective view of a second preferred embodiment of paper pallet according to the invention is shown. The differences between the first and the second preferred embodiments, i.e., the characteristics of the second preferred embodiment are detailed below. Both the boards 11 and the stringers 13 have their height direction disposed vertically. A plurality of (nine are shown) blocks 13a are provided in which four of them are formed between the boards 11 of the bottom deckboard 14 and the stringers 13 at four corners of the pallet, the other four are formed between the boards 11 of the bottom deckboard 14 and the stringers 13 at centers of four sides of the pallet, and the remaining one is formed between a central board 11 of the bottom deckboard 14 and a central stringer 13 at a center of the pallet. The securing of the boards, the stringers, and the blocks are the same as that described above. Therefore, further description thereof is omitted for purposes of brevity and convenience only.

While the invention herein disclosed has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of the invention set forth in the claims.

WHAT IS CLAIMED IS:

1. A paper pallet comprising a plurality of elements each having predetermined length, width, and height and cut from a lamination formed by building up in a plurality of paper layers wherein a first group of the elements of the same size are used as boards in a top deckboard, a second group of the elements of the same size are used as stringers fastened under the top bottom deckboard by applying adhesive or by driving fasteners into joining portions of the boards and the stringers, and the boards are perpendicular to the stringers.

2. The paper pallet of claim 1, wherein the joining portions of the stringer are both ends and an intermediate portion thereof.

3. The paper pallet of claim 1, wherein each board has its height direction disposed vertically and each stringer has its height direction disposed horizontally.

4. The paper pallet of claim 1, wherein the stringers are arranged in a plurality of layers and wherein the stacked stringers at any side of the pallet are secured together.

5. The paper pallet of claim 3, wherein the stringers are arranged in a plurality of layers and wherein the stacked stringers at any side of the pallet are secured together.

6. The paper pallet of claim 1, wherein a third group of the elements of the same size are used as blocks fastened under the boards in the top deckboard.

7. The paper pallet of claim 1, wherein a fourth group of the elements of the same size are used as boards in a bottom deckboard, the boards of the top deckboard are parallel to that of the bottom deckboard, the boards of the top and bottom deckboards are perpendicular to the stringers, and the stringers are fastened between the top and bottom deckboards.

8. The paper pallet of claim 3, wherein a fourth group of the elements of the

same size are used as boards in a bottom deckboard, the boards of the top deckboard are parallel to that of the bottom deckboard, the boards of the top and bottom deckboards are perpendicular to the stringers, and the stringers are fastened between the top and bottom deckboards.

9. The paper pallet of claim 5, wherein a fourth group of the elements of the same size are used as boards in a bottom deckboard, the boards of the top deckboard are parallel to that of the bottom deckboard, the boards of the top and bottom deckboards are perpendicular to the stringers, and the stringers are fastened between the top and bottom deckboards.

10. The paper pallet of claim 6, wherein a fourth group of the elements of the same size are used as boards in a bottom deckboard, the boards of the top deckboard are parallel to that of the bottom deckboard, the boards of the top and bottom deckboards are perpendicular to the stringers, and the stringers are fastened between the top and bottom deckboards.