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(54) Package containing a reel of sheet material.

(57) A package containing a reel of sheet material comprising a pallet, a reel of sheet material with its axis substantially vertical and the lower end of which rests on said pallet and the diameter of which is less than the minimum transverse dimension across the pallet, a top cover made from honeycomb board having a plan form substantially the same as the pallet and located on the upper end of the reel, and a number of straps extending between said pallet and the top cover to hold the pallet and the cover firmly in place against the ends of the reel.

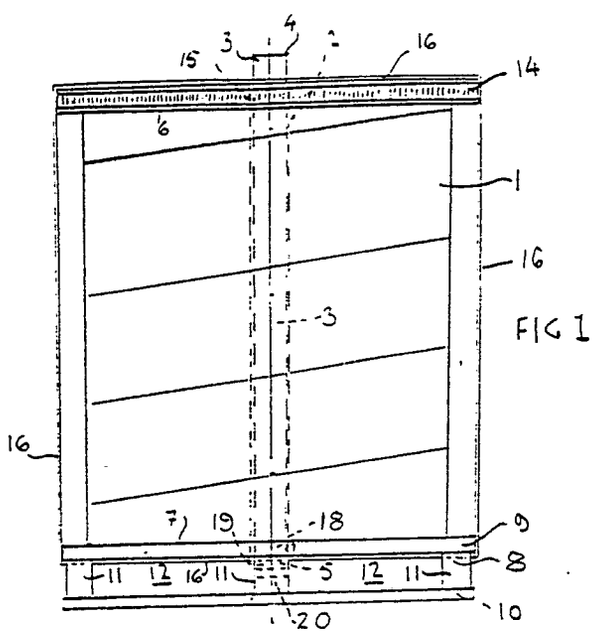

FIG 1

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PACKAGE CONTAINING A REEL OF SHEET MATERIAL

This invention relates to a package containing a reel of sheet material, for example, paper or plastics material.

The handling of large reels of sheet paper causes difficulties because they are very easily damaged in transit. It is known to wrap reels of paper with a winding of a plastics material, for example stretch film, but although this protects the paper from the elements it provides little protection against damage if the reel is struck by another object, for example another reel of paper located close to it. It is therefore usually necessary to provide an additional outer covering of, for example, thick or reinforced cardboard or paper to provide the necessary protection. One way of facilitating the transport of such heavy reels of paper is to locate them on a pallet so that they can be lifted by a fork lift truck or similar handling device.

Such reels of paper are formed with an axially extended opening at their centre to receive a mandrel or core spindle comprising, for example, part of the unwind stand of a printing machine. This opening may conveniently be utilised to locate a wooden spigot. This enables a number of reels to be stacked one above the other on the pallet with the spigot extending through the central openings in the reels to maintain them in alignment. It is also possible to locate the reel on the pallet by providing a suitably positioned socket to receive one end of the spigot in the pallet itself.

Damage is often caused to reels of this kind if they are placed side by side, for example on a delivery truck, and especially if reels of different axial lengths are placed alongside each other. If a reel tips against the upper edge of an adjacent reel of shorter length, the shorter reel is liable to damage the longer reel. The present invention is intended to provide an economic and simplified form of packaging for a reel of sheet material, for example paper, which will also reduce the possibility of accidental damage.

According to the present invention a package containing a reel of sheet material comprises a pallet, a reel of sheet material with its axis substantially vertical and the lower end of which rests on said pallet and the diameter of which is less than the minimum transverse dimension across the pallet, a top cover made from honeycomb board having a plan form substantially the same as the pallet and located on the upper end of the reel, and a number of straps extending between said pallet and the top cover to hold the pallet and the cover firmly in place against the ends of the reel.

If desired said reel can be replaced by two or more coaxial reels the lower end of the lowermost reel resting on said pallet and the top cover being located on the upper end of the uppermost reel.

Advantageously, the pallet is of rectangular and preferably of square plan form.

Due to the properties of the honeycomb board the top cover provides sufficient protection for the upper end of the reel spaced away from the pallet and is rigid enough to support the straps which extend across the top cover and the pallet. These straps act effectively as a cage which prevents the cylindrical surface of the reel from being struck, for example should the top cover of another reel fall against it. Moreover, due to the preferred rectangular or square configuration of the pallet, the reels will be stacked for transport side by side, so that should one reel topple the straight side of its top cover will tend to fall against the straps on the adjacent reel and not against the adjacent reel itself.

The honeycomb material used in the top cover is sufficiently resistant to bowing when the straps are applied under tension that a flat surface is maintained. The packages to be stacked one upon another without becoming unstable.

Preferably the straps extend between the outer edges of the pallet and the top cover, thus providing protection for a maximum included volume.

At least two straps can be provided on each side, and in a preferred construction the straps extend through the pallet and over the top cover, thus not only providing the desired protection but also acting to hold the pallet and top cover in place.

A spigot may be included which extends axially through the reel or coaxial reels and the lower end of which is located in a socket in the pallet.

The upper end of the spigot, spaced away from the pallet, can be arranged to project through an opening in the top cover so that it can engage an opening in a pallet forming part of a superimposed package. Thus, packages can be stacked one above the other with the spigot acting to keep the upper pallet of the upper package centrally in register with the top cover of the lower package.

Typically the top cover is between 30 and 50 millimetres thick and in a preferred arrangement is 40 millimetres thick.

The package may for example be used with a reel wrapped with stretch film and sheet foam which are sufficient to prevent damage by the elements and minor impact damage. Optionally, the stretch film and sheet foam may be interleaved.

The invention can be performed in many ways but one embodiment will now be described by way

of example and with reference to the accompanying drawings in which :

Figure 1 is a side elevation of a package according to the invention and including a reel of paper,

Figure 2 is a plan view of the package shown in Figure 1,

Figure 3 is a plan view, partly cut away, of a component of the package of Figures 1 and 2, and

Figure 4 is a view on the line IV-IV of Figure 3.

As shown in the drawings the package is for a reel of paper which is indicated by reference numeral 1 and which has been previously wrapped with interleaved stretch film and sheet foam for example by the process described and claimed in European Patent Application No. 88301778.2 (Publication No. 0 276 174). The reel is wound around a core tube (not shown) to provide an axially extending opening 2 in which a wooden control spigot 3 is located. The ends 4 and 5 of the spigot project from the ends 6 and 7 of the reel.

The reel is located on a pallet 8 of well known type and which is provided with upper battens 9, lower battens 10 and spacers 11. The openings 12 between the battens and spacers 11. The openings 12 between the battens and spacers allow the insertion of the tines of a fork lift truck so that the pallet and its contents can be lifted.

In plan view the pallet is substantially square, as will be seen from Figure 2, and its transverse dimensions across its widths are greater than the diameter of the reel 1.

A top cover 14 is located on the upper end of the reel 1 and is provided with an opening 15 to allow the spigot 3 to protrude through and project beyond its upper surface. This top cover 14 is made from honeycomb board material and is typically between 30 and 50 millimetres thick, preferably about 40 millimetres thick. Honeycomb board comprises an inner matrix of honeycomb configuration formed from corrugated strips of cardboard glued together to form cells having their axes perpendicular to the plane of the board. The cellular structure is sandwiched between the two layers of flat cardboard glued thereto. This type of material is light in weight but has a high resistance to flexure out of its planar configuration and is described below in more detail with reference to Figures 3 and 4.

The top cover 14 is of substantially the same dimensions as the pallet 8 and is located in register with it.

In order to hold the top cover reel and pallet together, in a unitary package straps 16 are provided. These straps 16 extend completely around the top cover and through the pallet. As will be seen from Figure 2, four straps are located on the package, thus providing two straps 16 extending over the top cover and through the pallet on each side so as to effectively form a cage around the reel. The straps can be made from any convenient material which can be tensioned without stretching, but plastic strapping is preferred. This material consists of flat webbing reinforced thermoplastics strip, the ends of which can be fastened together by staples, a clamping member or heat fusion. A tightening device is usually provided which can be manually operated to pull the two ends of the strap tightly into engagement. Straps and tensioning devices of this type are well known for use in packaging applications.

When the reel 1 is placed on the pallet 8 the end 5 of the spigot 3 is received in a socket 18 in the pallet. This socket is blind and has a closed end 19. Beneath the socket 18 is an axially aligned second socket 20 which can receive the end 4 of the spigot 3 when one package is stacked above another.

In normal transit the packages will be stacked side by side and if desired one upon the other. If one package topples towards another its upper edge will be prevented from hitting the reel in the adjacent package by the straps 16 of the adjacent package.

In certain applications the spigot 3 may be unnecessary or alternatively it may be arranged to only project from one end of the reel. With the latter arrangement the spigot locates in the socket 18 in the pallet but the opening 15 in the top cover 14 is omitted.

Although the invention has been described with regard to a method of packaging paper reels it can also be applied to packaging reels of other material, for example an easily damaged plastics material. It will also be appreciated that more than two straps 16 can be provided on each side depending upon the amount of protection sought or the circumstances of handling.

Turning now to Figures 3 and 4, these show the structural characteristics of the honeycomb top cover 14. As seen at the cut away portion in Figure 3, the core of the board from which the cover is formed comprises a series of corrugated strips of card 21, glued together at contiguous faces 22 to form cells 23 having axes perpendicular to the faces of the board.

The cell structure thus formed is faced at each end with sheets 24 of the cardboard glued thereto.

It will be appreciated that any board may be used having a cellular internal structure with walls formed perpendicularly to the facing sheets. The cells need not, for example, be hexagonal or have common walls.

If desired two or more reels can be carried in

each package by arranging them coaxially with the lower end of the lowermost reel resting on the pallet and the top cover being located on the upper end of the uppermost reel. A single spigot can be provided which extends through the reels, the lower end of the spigot again being engaged in the pallet and, if required, the upper end can project through the top cover in the manner described with regard to Figures 1 and 2.

Claims

1. A package containing a reel of sheet material comprising a pallet, a reel of sheet material with its axis substantially vertical and the lower end of which rests on said pallet and the diameter of which is less than the minimum transverse dimension across the pallet, a top cover made from honeycomb board having a plan form substantially the same as the pallet and located on the upper end of the reel, and a number of straps extending between said pallet and the top cover to hold the pallet and the cover firmly in place against the ends of the reel.

2. A package as claimed in claim 1 in which said reel is replaced by two or more co-axial reels the lower end of the lowermost reel resting on said pallet and the top cover being located on the upper end of the uppermost reel.

3. A package as claimed in claim 1 or claim 2 in which said pallet is of rectangular plan form.

4. A package as claimed in claim 3 in which said pallet is of square plan form.

5. A package as claimed in claims 1 to 4 in which at least two straps are provided on each side.

6. A package as claimed in claims 1 to 5 in which said straps extend through the pallet and over the top end cover.

7. A package as claimed in any one of the preceding claims including a spigot which extends axially through the reel or co-axial reels and the lower end of which is located. in a socket in the pallet.

8. A package as claimed in claim 7 in which the upper end of said spigot spaced away from the pallet projects through an opening in the op cover.

9. A package as claimed in any one of the preceding claims in which said top cover is between 30 and 50 millimetres thick.

10. A package as claimed in claim 9 in which said top cover is 40 millimetres thick.

11. A package as claimed in any one of the preceding claims in which the reel is wrapped with stretch film and sheet foam.

12. A package as claimed in claim 11 in which the stretch film and sheet foam are interleaved.

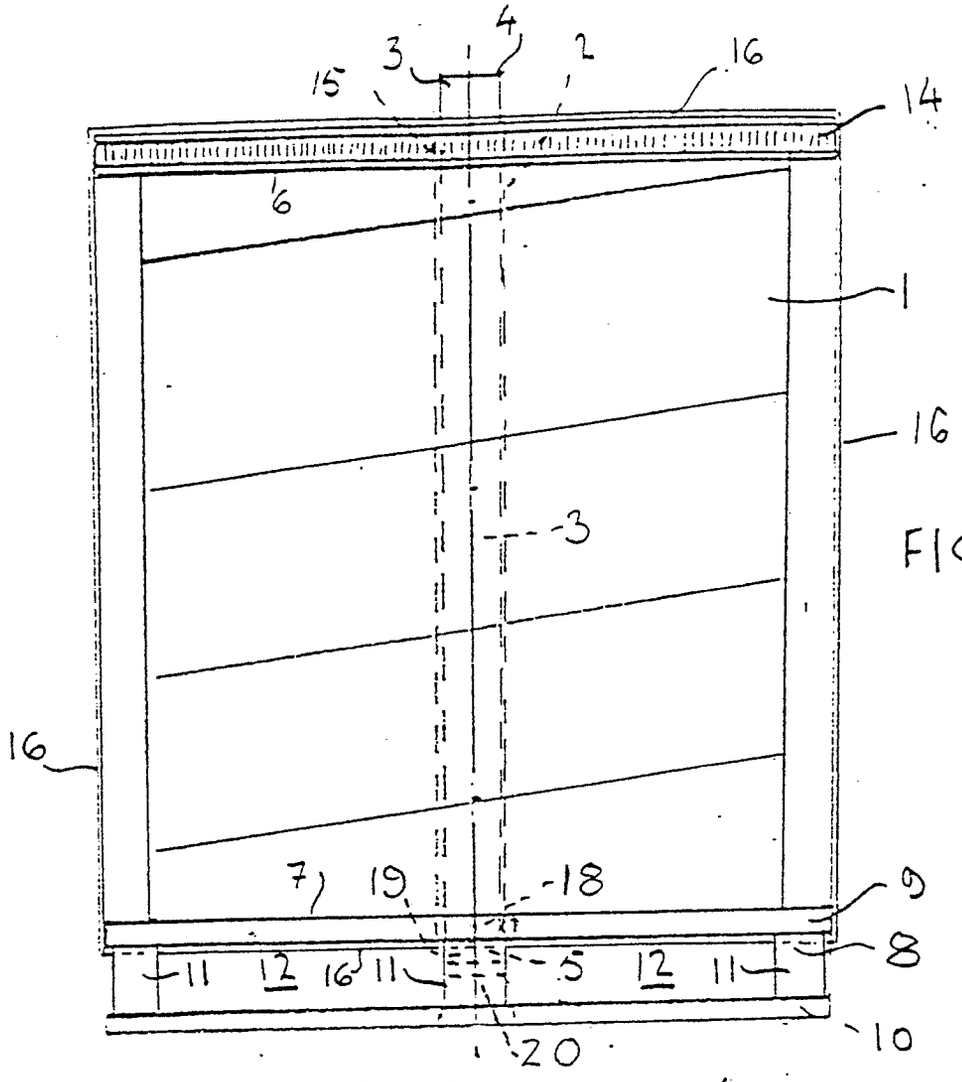
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FIG 1

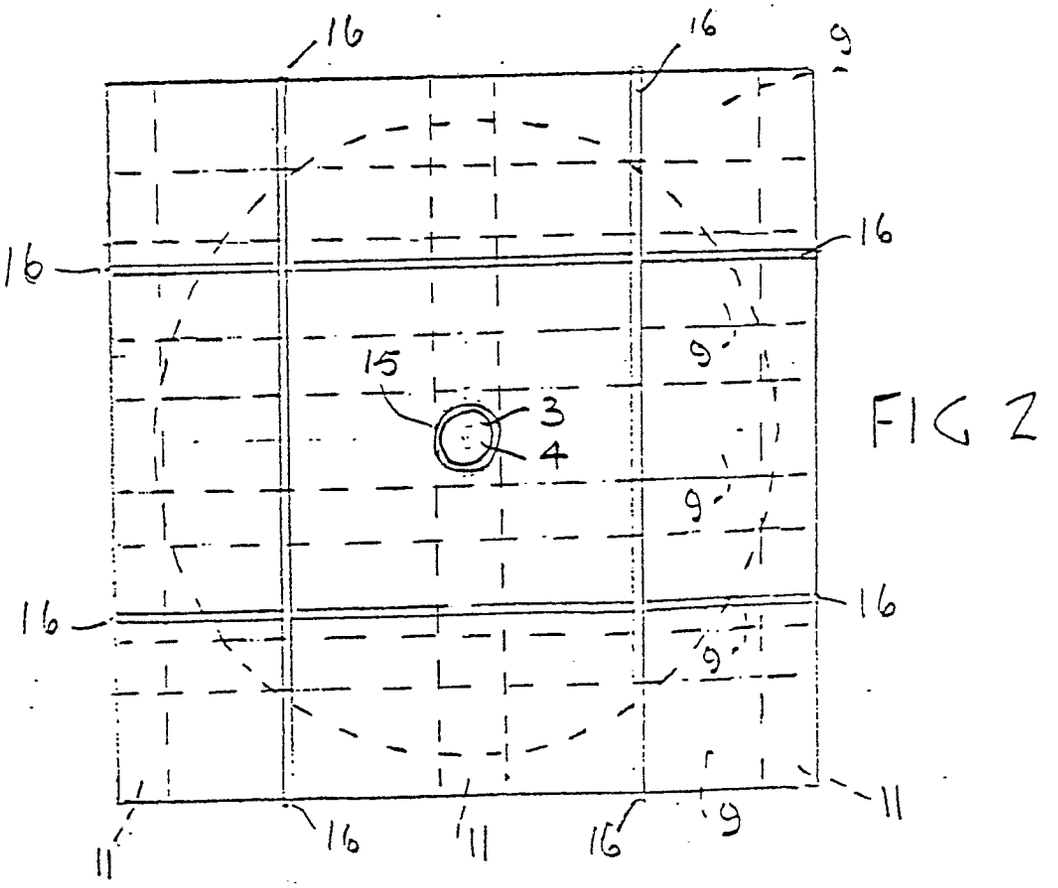
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FIG 2

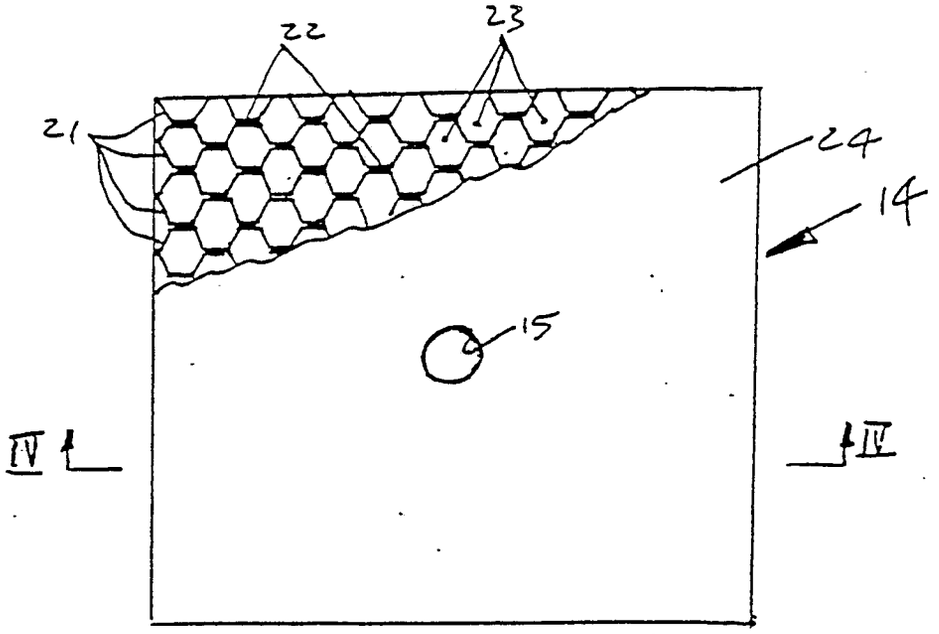

FIG.3

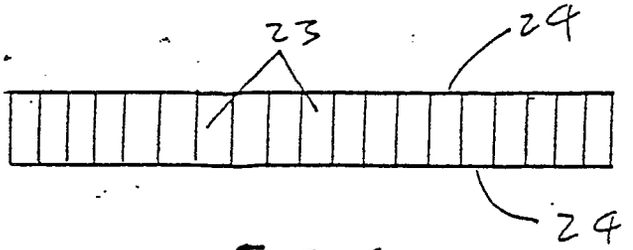

FIG 4.