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(54) Sling system for sack lifting

(57) This system enables use thereof in automatic palletizing machines and stocking of the package of sacks arranged on the modular structure of the already slung pallet.

It has a modular, flat, stackable structure arranged in boxes, where the vacuum gage of the palletizing machines takes them individually to move them and deposit them inside the automatic palletizing machine.

This modular structure includes a polypropylene band (1) folded like a clover sandwiched between two surfaces or sheets of cardboard or the like (5) fastened by thermo-meltable glue, also having inside a porex plate upon which stably rests the top sheet of cardboard (5). From these angular areas emerge portions of the band that materialize respective handles (6) to allow extension of the lifting branches of the formed package.

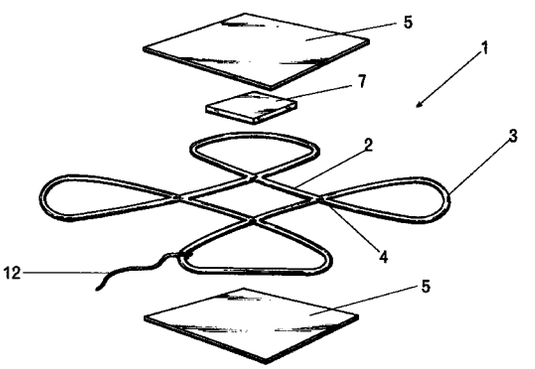

FIG. 1

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Description

OBJECT OF THE INVENTION

[0001] As expressed in the title of this specification, the present invention refers to a sling system for sack lifting, especially applicable for packaging or palletizing sacks of powdered material (flour, sugar, cement, etc.) weighing from 50 to 60 kilos, thanks to which use of automatic palletizing machines and stocking of the already slung product is made possible.

[0002] The main characteristic that this sling system must have is that it has to be totally flat, also being easily stackable so that the vacuum gage of the palletizing machine may take on unitarily each one of the "slings" for handling thereof.

BACKGROUND OF THE INVENTION

[0003] Nowadays palletizing of the type of sacks in question, cannot be done with automatic palletizing machines, but rather it inevitably has had to be done by hand since known slings are very flexible laminar elements and therefore they take on a very arbitrary shape, and thus, unitary collection by an automatic mechanism of the palletizing machine is difficult.

DESCRIPTION OF THE INVENTION

[0004] In broad outline, the sling system for sack lifting, that comprises the object of the invention, enables the "sling" to have a modular, flat, stackable structure and that therefore allows easy handling by an automatic element of the palletizing machine, such as the vacuum gage thereof.

[0005] The "sling" has a flat structure upon being formed by a polypropylene band folded in the general shape of a clover, thus defining a central portion and four loops corresponding to the leaves of the clover. Of course, the dimensions thereof are in terms of the "final" package that is to be lifted and handled. Thus, the dimensions corresponding to the width, length and expansion of each one of the handles that will allow the lifting of the formed package, are predetermined. This clover shape remains assured by means of five basic stitchings of the band of the sling (four in the crossing points and one as a closure of the endless band or strip.)

[0006] The sling thus formed, is positioned on a cardboard sheet with the dimensions corresponding to the "package", fastening it with thermo-meltable glue or similar material.

[0007] Then the lifting handles are folded in such a way that they remain inside the perimeter of the cardboard and they do not interfere with the band that forms the base of the sling, allowing the center in each one of these handles to project in each corner of the cardboard approximately some 5 to 10 cm. And it can be collected and stretched afterwards by hand by the operator, once the load has been positioned.

[0008] So that the sling is rigid enough, as well as so that it has at the top a smooth surface so that over it the vacuum gage of the palletizing machine can operate, a porex plate, that occupies the central part of the cardboard is placed above and then a second cardboard sheet will be positioned and fastened upon the sling, the assembly remaining as a sandwich with the sling itself and the porex element in the middle.

[0009] Different slings will be positioned one on top of the other, in a cardboard box with suitable measurements. This final appearance allows the following handling:

[0010] A vacuum gage system of the palletizing machine, will automatically collect a sling within the box, it will move the box and deposit the box within the automatic palletizing machine, where the package is formed.

[0011] Once the loading is completed and the package is formed on the pallet that defines the sandwich with the sling, palletizing the foreseen amount of sacks of material, the assembly will be ready for storage.

[0012] For subsequent handling, the four handles will be removed by hand and the operator will take them above the package to anchor them successively to the load lifting hook. The four handles will interconnect above the package, with the help of an elastic element and with a simple knot, which guarantees minimum stability to the package during handling.

[0013] In order to provide a better understanding of the characteristics of the invention and forming an integral part of this specification, some sheets of drawings in whose figures, the following has been represented in an illustrative and non-restrictive manner, are attached:

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

Figure 1 is an exploded perspective view of the different elements that form a pallet in order to allow for the sling system for sack lifting, object of the invention.

Figure 2 is a schematic cross-section of the pallet, in the supply position in order to feed the palletizing machine, in accordance with that which is shown in figure 1.

Figure 3 is a perspective view wherein one of the corners of the pallet is shown in detail in order to determine precisely the folded arrangement of each one of the lifting handles.

Figure 4 is a perspective view of a pallet filled with the foreseen amount of sacks of material, ready for storage.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0015] Making reference to the numbering used in the figures, we can see how the sling system for sack lifting is, which the invention proposes, allows the handling of "slings" by the vacuum gage of an automatic palletizing machine, upon having a structure materialized by the band or sling itself (1), with a clover shape, with a central portion (2) and four loops (3) corresponding with the leaves thereof. Reference (4) designates the stitching at the crossing points so that the band takes on this clover shape. This polypropylene band (1) will have a width and resistance corresponding to the established calculations so that a determined load can be lifted.

[0016] Sling (1) is located above the cardboard sheet (5) whose dimensions are proportional to those of the package to be formed, being fastened to it by thermo-meltable glue or the like, as we have indicated above.

[0017] Figure 3 shows the final result of the folding of each one of the loops (3) so that they do not project beyond the perimeter of the cardboard, with the exception of a small central portion (6) that is located in the corners or angles of the cardboard plate (5).

[0018] Above the central portion (2) of the sling is located the porex plate (7) that absorbs the irregularities inherent to the folds (8) of the loops (see figure 3), collateral to each one of the emerging central portions (6) on the part of the operator in the final stage.

[0019] Once the porex plate (7) has been situated, another cardboard plate (5) of the same material as the bottom one is placed, the assembly thus remaining like a sandwich (see figure 2). This second cardboard sheet (5) remains appropriately fastened with thermo-meltable glue or a similar material, forming the sandwich.

[0020] The generic reference (9) designates the assembly of elements that make up the pallet. A series of pallets (9) is appropriately stacked inside the boxes of the ones that the vacuum gage will be taking unitarily.

[0021] Starting with the condition shown in figure 4, corresponding to the completion of the pallet with the foreseen amount of sacks of material (10), the operator will remove by hand the four handles (6) and will interconnect them above the package (11) positioning them in the lifting hook, as indicated at the beginning of this specification. To guarantee a minimum of stability to the package while it is being handled, these four handles are connected together by means of an elastic element, such as reference (12) in figure 1 and it may be connected to the band itself (1), or else, it may be an independent element.

Claims

1. Sling system for sack lifting, which permits the use of automatic palletizing machines and stocking of the product already slung, characterized in that it has a modular, flat, stackable structure for handling thereof by the vacuum gage of the palletizing machines, this structure defined by a sling in polypropylene band (1), generally folded as a clover by means of appropriate stitching and duly rigidized by means of a sheet of cardboard or the like (5) with the dimensions of that which is packaged, in such a way that the respective central portions (6) of the lifting handles corresponding to each loop (3) of the clover conveniently folded project in the corners.

2. Sling system for sack lifting, according to claim 1, characterized in that the clover-shaped polypropylene band is arranged upon a cardboard sheet (5) and fastened with thermo-meltable glue or similar material.

3. Sling system for sack lifting, according to the above claims, characterized in that it has as an additional frame for rigidization of the assembly, a porex plate (7) placed in the central part of the sheet (5) or cardboard or the like and another plate similar to it (5) covering the first one to form a sandwich from whose angles project the portions (6) of the handles to allow unfolding by hand during the final packaging stage.

4. Sling system for sack lifting, according to the above claims, characterized in that there is also an elastic element or the like (12) which may or may not be connected to the band (1) that materializes the sling, to group and keep together above the formed package of sacks, the four handles or loops (3) to guarantee minimum stability to the package while it is being handled.

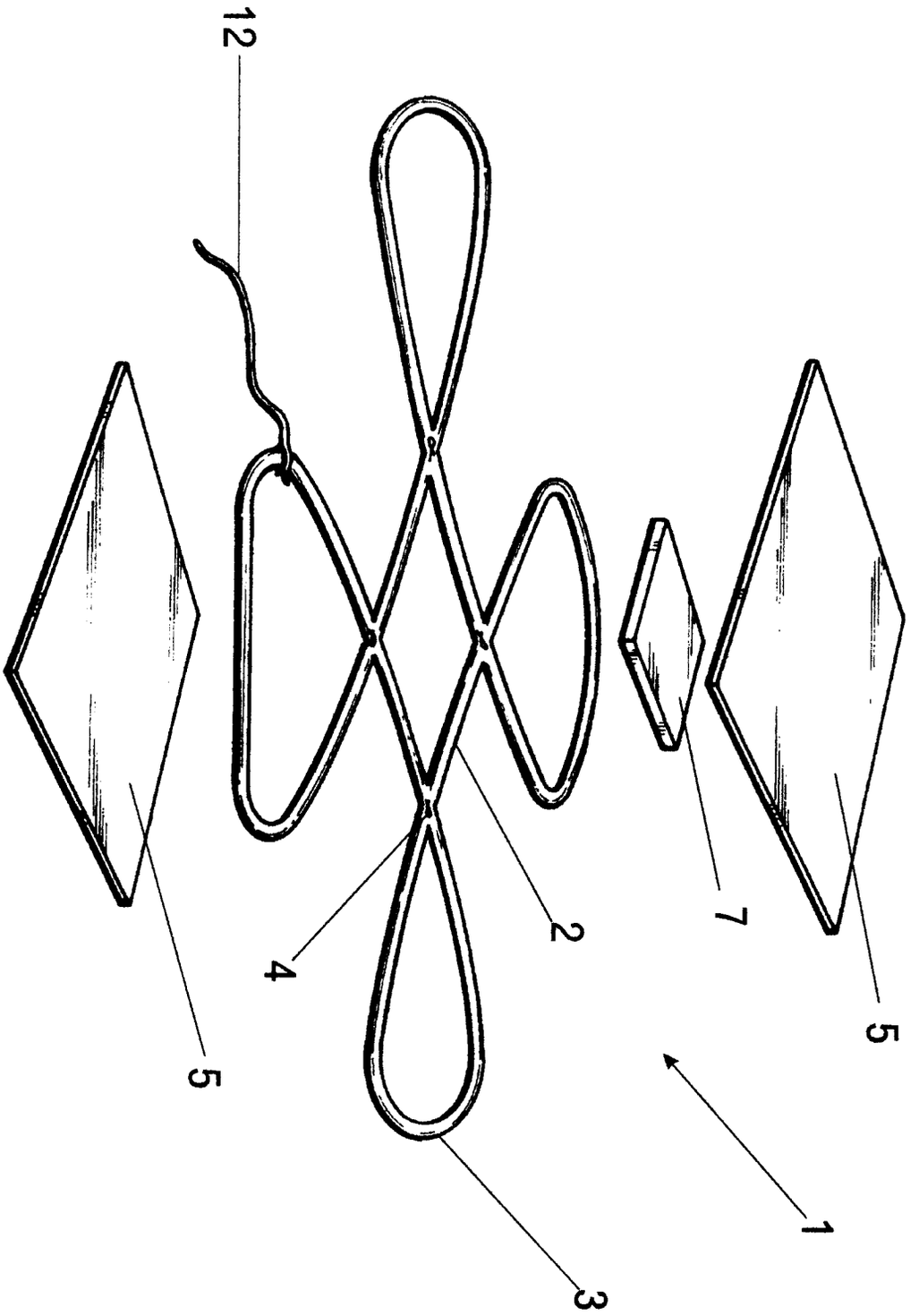

FIG. 1

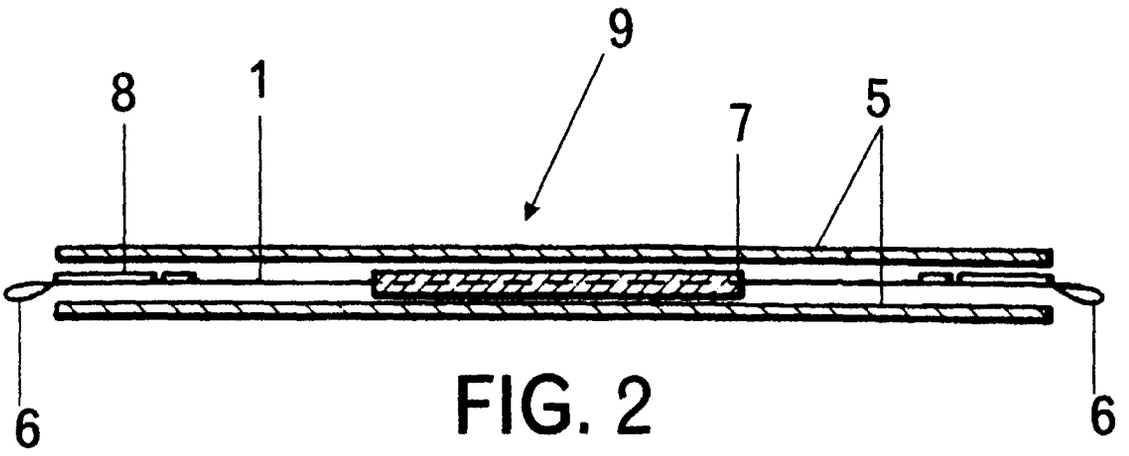

FIG. 2

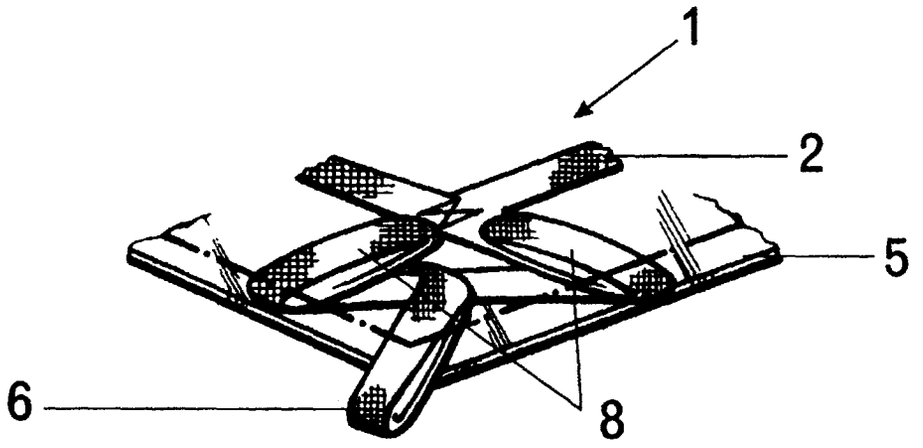

FIG. 3

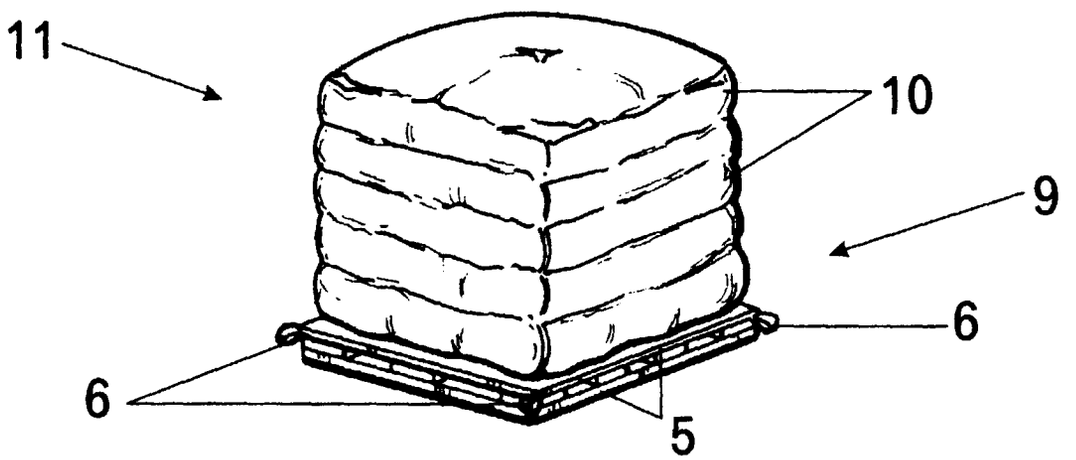

FIG. 4