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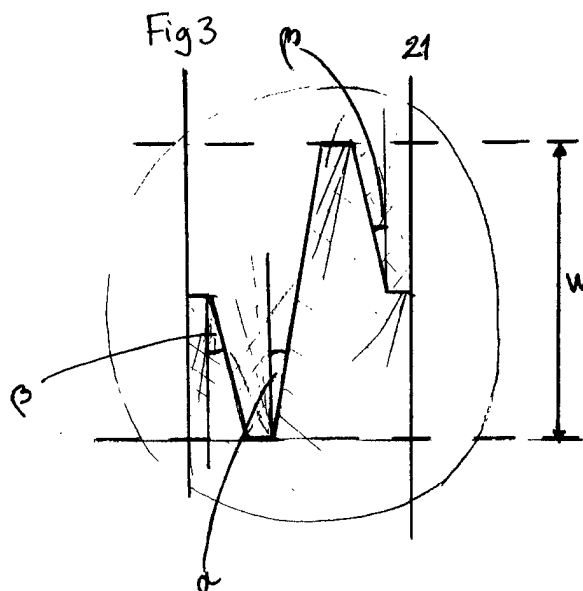
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(54) **Pallet collar**

(57) The present invention concerns a foldable pallet collar which consist of a frame made of boards, where the sides consists of at least one side section which con-

sists of at least two matched boards with a considerably narrow board as basic material. The boards are made of timber taken from peripheral parts of a log and are then matched by using a tongue-and-groove joint.



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## Description

### Technical field

**[0001]** The present invention concerns a foldable pallet collar, which consists of a collapsible frame made of boards, and a method for forming said pallet collar. The pallet collar is placed on a pallet, which transforms the pallet into a box. As is commonly known pallets are used for distribution and storage in many different fields.

**[0002]** A pallet furnished with one or more pallet collars of the above type is used as a flexible storage space and returnable packing during distribution. To make complete packing it is also possible to place a lid of e. g. plywood on top of the upper pallet collar. It is also possible to put a wooden plate on the pallet, which will make it possible to store or/and transport small things.

**[0003]** After use/transport it is possible to fold the pallet collar together, in an easy way, into a collapsed space-saving condition, which is easy to return or store.

### Prior art

**[0004]** Pallet collars of this type is normally being interconnected at the frame corners by means of corner joining members, such as hinges. The side sections of the pallet collar are made of one board with the width of 195-200 mm and with the thickness of 20-22 mm (after planing). These are common standard dimensions of a board but other dimensions of the boards are also available. It is necessary to saw timber from the centre part of logs to get boards with that width. The centre part of the log has a higher value then the peripheral parts, depending of the possibility to get a large continuous timber and with large flexibility in range of application. The disadvantage with using only timber from the centre part of the log is that this material is much more expensive than timber from other parts of the log.

### Summary of the invention

**[0005]** One object of the invention is to manufacture a less expensive pallet collar, which is easy to build and still have an optimised resisting power against stresses from the outside and/or inside.

**[0006]** This object is met in that the side sections of the pallet collar consist of at least two matched boards with a considerably narrow board as basic material. The boards are made of timber taken from peripheral parts of a log and then matched by using a tongue-and-groove joint.

**[0007]** Further objects and advantages of the present invention will be obvious to a person skilled in the art from reading the detailed description below of preferred embodiments.

## Brief Description of the Drawings

**[0008]** The invention will be described more closely below by way of an example and with reference to the enclosed drawings.

Fig. 1 is a plan view of a pallet collar according to the invention.

Fig. 2 is a side view of a side section of the pallet collar of Fig 1.

Fig. 3 is a sectional view of a part of the side section of Fig 2 taken along the line III - III.

Fig. 4 is a side view of the tongue-and-groove profile of a board used for the pallet collar.

## Detailed Description of a Preferred Embodiment

**[0009]** The pallet collar 1 of the present invention is formed as a square-shaped frame consisting of at least four sides. Each side consists of at least one side section 22 and each side section 22 has corner joining members 20 at its both ends. As shown in fig 1, in the preferred embodiment the pallet collar 1 consists of four sides 2, 3, 4 and 5 where both of the confronting vertical sides 3 and 5 as well as the confronting longitudinal sides 2 and 4 are identically constructed. In the preferred embodiment the sides 2, 3, 4, 5 consists of one side section 22. Said side sections 22 consist of at least two boards, which are brought together, matched, with or without tongues and grooves. Said matched boards are being hingedly interconnected at the side section 22 corners by means of corner joining members 20, such as hinges.

**[0010]** As shown in fig. 2, in the preferred embodiment the side section 22 consists of two boards 14, 15. A person skilled in the art realises that it is possible to use more than two boards.

**[0011]** The board of the preferred embodiment has a rectangular shape with two long sides and two short sides and at least one of the long sides have a symmetric profile provided with tongues and grooves, a tongue-and-groove profile 10. A tongue 6, 8, is a projecting rib and the tips of the ribs are cut off, chamfered, into plan surfaces 16, 18. A groove 7, 9, is a tapering channel and the bottoms of the channels are chamfered into plan surfaces 17, 19. As shown in fig 4, the tongue-and-groove profile 10 consists of two tongues 6, 8, and two grooves 7, 9. Said tongue-and-groove profile has three sides 11, 12 and 13, where one of the sides 12 are longer than the other sides 11, 13 and two of the sides 11, 13 are identical, regarding length and tilt. A person skilled in the art realises that it is also possible to have one or more than one tongue and groove and that the sides within the tongue-and-groove profile 10 could be more than three and with different proportions of length and tilt.

**[0012]** At least one of the sides 11, 12 and 13 within the tongue-and-groove profile 10 should be slightly tilted

to accomplish a smooth and easy matching of the boards 14, 15. The tips 16, 18 of the tongues 6, 8 and the bottoms of the grooves should be, as mentioned above, chamfered to prevent damaging during the matching procedure.

**[0013]** As shown in fig 3 and 4, the shorter sides 11 and 13 are tilted with an angle  $\beta$  and the longer side 12 is tilted with an angle  $\alpha$ . The angles  $\alpha$  and  $\beta$  should be more than  $0^\circ$  and less than  $45^\circ$  in relation to a vertical line 21. A preferred angle interval is about  $15^\circ$  to  $25^\circ$ . The width  $w$  of the tongue-and-groove joint is measured from the tip of the longest tongue 6, 8 to the bottom of the deepest groove 7, 9 within the tongue-and-groove profile 10 and it should be more than 10 mm and less than 22 mm. In the preferred embodiment the angles  $\alpha$  and  $\beta$  of about  $20^\circ$  and the width  $w$  of the tongue-and-groove profile 10 of about 16 +/- 1 mm has proven suitable. A person skilled in the art realises that the angles  $\alpha$  and  $\beta$  does not have to be the same and that the width  $w$  could vary. The top surface 18 of the tongue 8 is as broad as the bottom surface 17 of the corresponding groove 7 as well as the top surface 16 of the tongue 6 is as broad as the bottom surface 19 of the corresponding groove 9. This embodiment will make it easy to match the boards 14, 15. When at least two boards 14, 15 are matched they should get the same size and shape as one of the more expensive boards, which is described in the section of Prior Art.

**[0014]** The boards 14, 15 are made of timber, which is taken from the peripheral parts of the log. When the boards 14, 15 have been cut into proper pieces they are planed and at least one of the long sides of the board 14, 15 is tongued and grooved. At least two boards 14, 15 are matched together and then cut into proper parts, to fit the measures of the side section 22 of the pallet collar 1. The matched boards 14, 15 are kept together by use of the corner joining members 20, which are mounted on the boards 14, 15 by the use of a fastening device, e.g. rivets. The side sections 22 and sides 2, 3, 4, 5 are brought together by use of the corner joining members 20. The mounting procedure of the pallet collar 1 is performed in a way that is well known to a person skilled in the art, and hence no detailed description will be made here.

## Claims

1. A foldable pallet collar 1 which consist of a frame made of boards **characterized in that** each side section (22) consists of at least two matched boards (14, 15) .
2. The pallet collar of claim 1, **characterized in that** at least one of the long sides of each of the matched boards (14, 15) has a symmetric profile with tongues (6, 8) and grooves (7, 9), a tongue-and-groove profile (10).

3. The pallet collar of claim 2, **characterized in that** the tongues (6, 8) and the grooves (7, 9) are located on the same side of the board (14, 15), and that the tips of the tongues (6, 8) and the bottoms of the grooves (7, 9) are chamfered.

4. The pallet collar of any of the claims 2 and 3, **characterized in that** there are two tongues (6, 8) and two grooves (7, 9), within the tongue-and-groove profile (10), which consists of three sides (11, 12, 13) of which two of the sides (11, 13) are identical regarding length and tilt.

5. The pallet collar of claim 4, **characterized in that** one of the sides (12), within the tongue-and-groove profile (10), is longer than the other sides (11, 13), within the tongue-and-groove profile (10).

6. The pallet collar of claim 3, **characterized in that** the tips of the tongues (6, 8) and bottoms of the grooves (7, 9) are chamfered into plane surfaces (16, 17, 18, 19) of which a top surface (16, 18) of the tongue (6, 8) is as broad as a bottom surface (17, 19) of the corresponding groove (7, 9).

7. The pallet collar of any of the claims 2 to 6, **characterized in that** at least one side (11, 12, 13) within the tongue-and-groove profile (10) is tilted.

8. The pallet collar of claim 7, **characterized in that** the longer side (12) within the tongue-and-groove profile (10) is tilted with a first angle ( $\alpha$ ), which is more than  $0^\circ$  and less than  $45^\circ$ ,

that the short sides (11, 13) of the tongue-and-groove profile (10) are tilted with a second angle ( $\beta$ ), which is more than  $0^\circ$  and less than  $45^\circ$ , and/or

that the first angle ( $\alpha$ ) is the same as the second angle ( $\beta$ )

9. The pallet collar of claim 8, **characterized in that** the angles ( $\alpha$ ,  $\beta$ ) are more than or equal to  $15^\circ$  and less than or equal to  $25^\circ$  and more preferable the angles ( $\alpha$ ,  $\beta$ ) are  $20^\circ$ .

10. The pallet collar of any of the claims 2 to 9, **characterized in that** the width ( $w$ ) of the tongue-and-groove profile (10), from the tip of the longest tongue to the bottom of the deepest groove, is more than 10 mm and less than 22 mm and more preferable 16 +/- 1 mm.

11. A method for forming a pallet collar **characterized in that** narrow boards are cut out of a log;

then the boards (14, 15) are planed and at least one long side of the boards (14, 15) are tongued and grooved;

then at least two boards (14, 15) are matched to form each side section (22) of the sides (2, 3, 4,

5) of a pallet collar (1), and are kept together by use of a corner joining member (20), which are mounted on the boards (14, 15) by use of a fastening device, and

then the side sections (22) are brought together and joined by use of the corner joining members (20).

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