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(54) **Drum packaging for cables and the like.**

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(56) References cited :
DE-B- 1 176 225
FR-A- 2 095 890
US-A- 2 763 056
US-A- 4 850 487

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Description

This invention relates to the packaging of cables and other like elongate products on drums made of wood or of other materials capable of accepting nails, staples and the like.

After an electric cable has been wound on such a drum, it is the usual current practice to protect it in transit by nailing to the circumference of the drum an enclosing layer of wooden battens, known as lagging. As each batten is individually nailed, both the application and the removal of lagging is time-consuming and there may be danger of injury or damage arising from nails projecting from a lagging batten after removal. Sometimes use of nails has been avoided by using battens that are secured solely by a surrounding metal strap, but this requires expensive battens rebated to seat on the drum flanges and further complicates application. In an attempt to mitigate these disadvantages, lagging has sometimes been applied in the form of preformed mats in which the individual battens are connected together by strings, or other flexible material, stapled to them (carpet or cat lagging). Known carpet lagging has been applied to the wound cable, inside the drum flanges, and has been made with gaps between the battens comparable with their own width; it thus gives less satisfactory protection than conventional lagging.

AU-A-21628/88 (and corresponding US-A-4850487) describes a preferred lagging mat in continuous roll form in which closely-spaced battens (which may be plain) are secured together by stapling them to a pair of ropes which are so positioned that they (or perhaps one should say the staples securing them) act as abutments engaging the inside faces of the reel flanges; one end of each rope can be secured to the respective flange but the other end of the mat is secured only by overall steel straps.

A similar package is also knwon from FR-A-2 095 890

The present invention provides a method of packaging elongate products, and the resulting package, in which plain battens can be used expeditiously without nails, and yet can be closely packed and supported by the drum flanges at each of its ends.

The invention relies on the use of lagging strips (such as wooden battens) preformed into at least one mat by two lengths of flexible material (such as strings) fixed to all the strips of the mat, the lengths of flexible material being positioned substantially on the circumference of the respective drum flanges, and is characterised in that the mat is secured by fixing the flexible material in a taut condition directly to the drum flanges at each of its ends.

Preferably (if the material of the strips permits) the or each mat is formed by stapling the flexible material to the strips. Preferably also the ends of the flexible material are fixed by stapling them to the flanges.

Preferably the or each mat is applied with the flexible material on the inside, so that the lagging strips protect it from damage. However, after the mat or mats have been secured in position as described, conventional metal straps can be applied for extra security.

Preferably a single mat preformed in one or more than one stage is used and is applied by fixing its leading end to the drum flanges and rotating the drum, either mechanically or manually, while supporting it off the ground, preferably with its axis horizontal. The preforming of the mat may overlap with its application to the drum.

The invention incurs no significant extra material cost - indeed the cost of string and staples may be less than that of nails. On arrival at site, the lagging can be removed in a very short time by cutting the metal straps (if used) and the flexible material, without leaving any projecting nails (nor staples); and since the lagging remains in the form of a mat (or a number of mats) that can be readily rolled up, there is a reasonable chance that it can be recovered for reuse in at least a proportion of cases, saving a significant cost.

The invention will be further described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a lagging mat for use in accordance with the invention;

Figure 2 is a diagrammatic representation of six successive stages one method of applying two such mats to a cable drum; and

Figure 3 is a diagram illustrating the application of a single lagging mat in accordance with the invention using a motor-driven drum stand.

The wooden cable drum used in the Example of figures 1 and 2 has a diameter of 1.7m, a traverse (that is the length inside the flanges) of 0.8m, and a flange thickness of 76mm, and is to be lagged with common softwood battens 953mm by 102mm by 38mm (52 such battens being required).

Two mats are first made (Figure 1) by laying out two groups of 26 battens 1 touching edge to edge and securing them with two polypropylene strings 2 positioned about 38mm from respective ends of the battens and each stapled to the battens by a single staple 3 positioned near the midline of each batten. Projecting ends 4 are left on the strings.

The drum 5 (Figure 2 stage 1) is now supported clear of the floor; the first of the mats 6 is brought to it and one of its ends is secured (stage b) by stapling the respective ends 4 of the strings to the flanges at 7 with three staples per string. The drum is now rotated into a position (stage c) in which the weight of the mat tends to keep it taut and the other end similarly stapled at 8. A second mat 9 is similarly applied (stages d and e), except that in this case in order to

minimise the gap between the two mats only one staple per end is driven into the flange and the string ends then each secured by three more staples driven into the end battens of the first mat 6. Lagging is thus complete except for the optional addition of metal packing bands 10 (stage f).

A possible variant of this method, at least when the drum is small enough to be easily handled, is to lay the or each mat on the floor, roll the drum onto the mat in the appropriate alignment, lift one end of the mat and staple it to the reel flanges, and then rotate the reel until the mat is properly wrapped around it; this would avoid need for any lifting equipment.

Figure 3 illustrates a further development of the method of the invention in which stapling can be done at a convenient bench-top height and in which lifting of the whole preformed mat is avoided. This improved method uses a portable worktable 11 and a motor-driven drum stand 12. Battens 1 are laid out in groups on the flat top of the worktable 11 and the string 2 (drawn from packages 13) is stapled in position to form a section of a single mat. In this case two staples 3 per batten have been shown. The completed section of mat 14 is slid down the ramped end 15 of the worktable (and eventually onto the floor 16) and more battens added and stapled in place until the required length of matting is complete (the diagram shows the third stapling operation in progress). When the leading end of the mat reaches a convenient position, the leading ends 4 of the strings are lifted and stapled to the drum flanges at any convenient position 7. It is not essential that the battens engage the drum flanges when the first staples are driven to fix the strings to the flanges, provided the spacing is substantially the same for both strings: if necessary the drum can be rotated after first stapling the string and more staples added when this brings the first batten into engagement with the drum flanges. Rotation is then commenced or resumed and continues (subject to interruption for the addition of more battens if required, depending on the drum size) until the whole mat is in place. Preferably the ends of the mat are spaced apart the width of one batten, allowing ample space for stapling the trailing free ends of the strings 2. This space is then filled with a single batten, not stapled but held in place solely by tensioned metal straps applied as in the previous example (10 in figure 2(f)).

In either case, after arrival of the drum at the site where the cable is to be used, the metal strips are first cut and the loose batten (if any) falls out; the strings are cut free from the drum flanges, and the mat or mats can be rolled up and returned.

Claims

1. A method of packaging an elongate product comprising winding it on a drum made of wood or of other material capable of accepting nails, staples and the like and applying to the drum lagging strips (such as wooden battens) preformed into at least one mat by two lengths of flexible material (such as strings) fixed to all the strips of the mat, the positions of the lengths of flexible material being such that when the or each mat is applied to a portion of the drum circumference the flexible material is positioned substantially on the circumference of the respective drum flanges, characterised in that each mat is secured by fixing the flexible material in a taut condition directly to the drum flanges at each of its ends.

2. A method as claimed in Claim 1 in which the mats are formed by stapling the flexible material to the strips.

3. A method as claimed in Claim 1 or Claim 2 in which the ends of the flexible material are fixed by stapling them to the flanges.

4. A method as claimed in any one of Claims 1-3 in which the or each mat is applied with the flexible material on the inside.

5. A method as claimed in any one of the preceding claims in which after the mat or all the mats have been positioned metal straps are applied for extra security.

6. A package in which an elongate product is wound on a drum (5) made of wood or of other material capable of accepting nails, staples and the like and enclosed by lagging strips (1) preformed into at least one mat (6,9) by two lengths of flexible material (2) (such as strings) fixed to all the strips (1) of the mat (6,9), the lengths of flexible material (2) being positioned substantially on the circumference of the respective drum flanges, characterised in that the or each mat (6,9) is secured by fixing the flexible material in a taut condition directly to the drum flanges at each of its ends.

7. A package as claimed in Claim 6 in which the or each mat (6,9) is formed by stapling the flexible material (2) to the strips (1).

8. A package as claimed in Claim 6 or Claim 7 in which the ends of the flexible material (2) are fixed by stapling them to the flanges.

9. A package as claimed in any one of Claim 6-8 in which the or each mat (6,9) is applied with the flexible material (2) on the inside.

10. A package as claimed in any one of Claims 6-9

in which additionally metal straps (10) are applied.

Patentansprüche

1. Verfahren zum Verpacken eines langgestreckten Produkts durch Aufwickeln auf einer Trommel aus Holz oder einem anderen Material, das Nägel, Klammern oder dergl. aufnehmen kann, und durch Auflegen von Schalungsstreifen (wie Holzlatten) auf die Trommel, wobei die Schalungsstreifen in mindestens eine Matte durch zwei Längsstücke aus flexiblem Material (wie Schnüre) vorgeformt sind, die an allen Streifen der Matte befestigt sind, wobei die Längsstücke aus flexiblem Material derart positioniert sind, daß dann, wenn die oder jede Matte auf einem Abschnitt des Trommelumfangs aufgelegt ist, das flexible Material im wesentlichen auf dem Umfang der entsprechenden Trommelflansche positioniert ist, dadurch gekennzeichnet, daß jede Matte durch Fixieren des flexiblen Materials eng anliegend direkt auf den Trommelflanschen an jedem ihrer Enden befestigt ist.

2. Verfahren nach Anspruch 1, wobei die Matten durch Klammern des flexiblen Materials an den Streifen ausgebildet werden.

3. Verfahren nach Anspruch 1 oder 2, wobei die Enden des flexiblen Materials durch Verklammern mit den Flanschen fixiert werden.

4. Verfahren nach einem der Ansprüche 1 bis 3, wobei die oder jede Matte auf ihrer Innenseite mit dem flexiblen Material versehen wird.

5. Verfahren nach einem der vorstehenden Ansprüche, wobei Metallbänder zur zusätzlichen Sicherung aufgebracht werden, nachdem die Matte oder alle Matten positioniert worden sind.

6. Paket, in dem ein langgestrecktes Produkt auf einer Trommel (5) aus Holz oder einem anderen Material aufgewickelt ist, das Nägel, Klammern oder dergl. aufnehmen kann, und durch Schalungsstreifen (1) eingeschlossen wird, die zu mindestens einer Matte (6, 9) durch zwei Längsstücke aus flexiblem Material (2) (wie Schnüre) vorgeformt sind, die mit allen Streifen (1) der Matte (6, 9) verbunden sind, wobei die Längsstücke aus flexiblem Material (2) im wesentlichen auf dem Umfang der entsprechenden Trommelflansche positioniert sind, dadurch gekennzeichnet, daß die oder jede Matte (6, 9) durch Fixieren des flexiblen Materials eng anliegend direkt auf den Trommelflanschen an jedem ihrer Enden befestigt ist.

7. Paket nach Anspruch 6, wobei die oder jede Matte (6, 9) durch Verklammern des flexiblen Materials (2) mit den Streifen (1) gebildet wird.

8. Paket nach Anspruch 6 oder 7, wobei die Enden des flexiblen Materials (2) durch Verklammern mit den Flanschen fixiert werden.

9. Paket nach einem der Ansprüche 6 bis 8, wobei die oder jede Matte (6, 9) mit dem flexiblen Material (2) auf der Innenseite versehen ist.

10. Paket nach einem der Ansprüche 6 bis 9, wobei zusätzliche Metallbänder (10) vorgesehen sind.

Revendications

1. Procédé pour emballer un produit de forme allongée consistant à enrouler ce produit sur un touret formé de bois ou de tout autre matériau, dans lequel peuvent être implantés des clous, des agrafes et similaires, et à appliquer au touret des bandes de garnissage (telles que des lattes en bois) auxquelles on a donné préalablement la forme d'un lattis à l'aide de deux longueurs de matériau flexible (comme par exemple des cordes) fixées à toutes les bandes du lattis, les positions des longueurs du matériau flexible étant telles que lorsque le lattis ou chaque lattis est appliqué à une partie de la circonférence du touret, le matériau flexible se trouve sensiblement sur la circonférence des joues respectives du touret, caractérisé en ce que chaque lattis est assujetti par fixation du matériau flexible dans un état tendu directement sur les joues du touret à chacune de ses extrémités.

2. Procédé selon la revendication 1, dans lequel on forme les treillis en agrafant le matériau flexible aux bandes.

3. Procédé selon la revendication 1 ou la revendication 2, dans lequel on fixe les extrémités du matériau flexible en les agrafant aux joues.

4. Procédé selon l'une quelconque des revendications 1 à 3, dans lequel on applique le lattis ou chaque lattis au matériau flexible sur le côté intérieur.

5. Procédé selon l'une quelconque des revendications précédentes, dans lequel après avoir positionné le lattis ou tous les lattis, on applique des bandes métalliques pour une sécurité supplémentaire.

6. Emballage dans lequel un produit allongé est enroulé sur un touret (5) qui est formé de bois ou de tout autre matériau dans lequel on peut implanter des clous, des agrafes et similaires, et qui est enfermé par des bandes de garnissage (1) auxquelles on donne préalablement la forme d'au moins un lattis (6, 9) à l'aide de deux longueurs de matériau flexible (2) (telles que des cordes) fixées à toutes les bandes (1) du lattis (6, 9), les longueurs de matériau flexible (2) étant placées sensiblement sur la circonférence des joues respectives du touret, caractérisé en ce que le lattis ou chaque lattis (6, 9) est assujetti par fixation du matériau flexible dans un état tendu directement aux joues du touret à chacune de ses extrémités.

7. Emballage selon la revendication 6, dans lequel le lattis ou chaque lattis (6, 9) est formé par agrafage du matériau flexible (2) aux bandes (1).

8. Emballage selon la revendication 6 ou la revendication 7, dans lequel les extrémités du matériau flexible (2) sont fixées à l'aide d'agrafes aux joues.

9. Emballage selon l'une quelconque des revendications 6-8, dans lequel le lattis ou chaque lattis (6, 9) est appliqué avec le matériau flexible (2) sur le côté intérieur.

10. Emballage selon l'une quelconque des revendications 6-9, dans lequel des bandes métalliques supplémentaires (10) sont appliquées.

Fig.1.

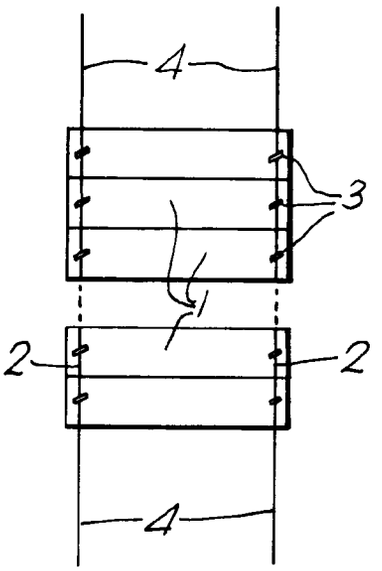

Fig.3.

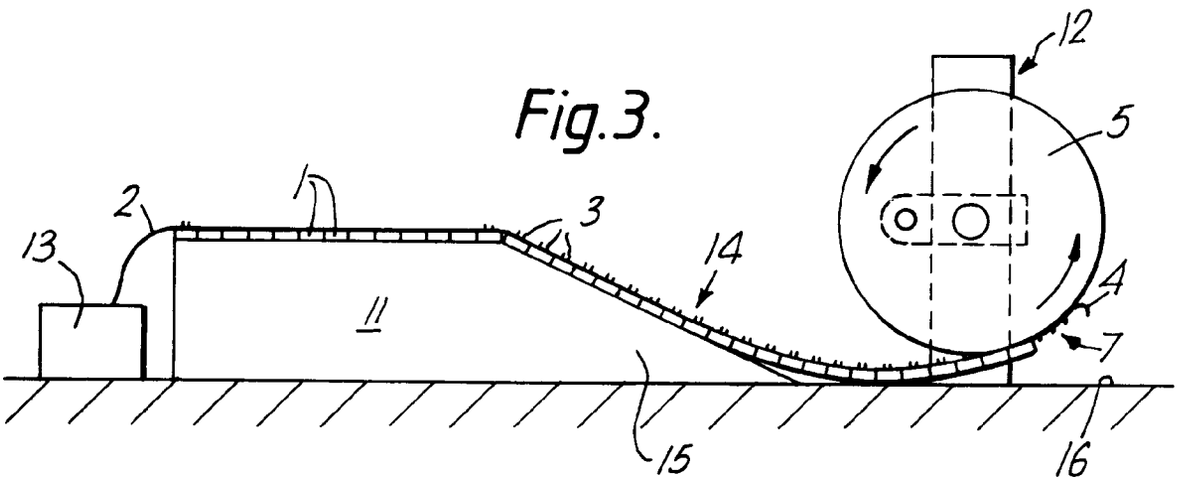

Fig.2.