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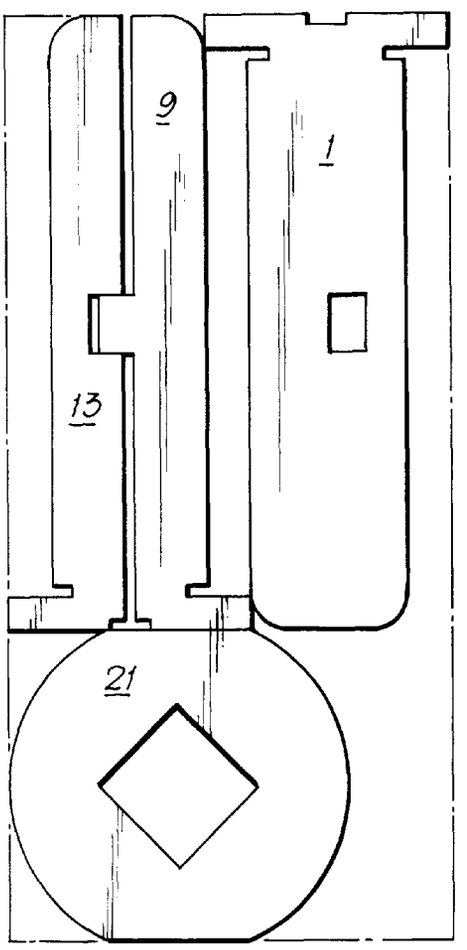
(54) Supports for coils of wire and the like

(57) A support for storage and delivery of coils of wire or like flexible elongate product comprises a first flat member having a length dimension defining the axis of the support and at least one further flat member secured to the first by hinge means so that it may be moved between a storage position in which it lies flat on the first flat member and a working position in which it projects outwardly from it. The first and further flat members have aligned slots extending inwards from the outward edges of the respective members adjacent one (the lower) end thereof. A flat base member has a non-circular aperture with shape and dimensions such that it can be passed freely over the first and further flat members and then rotated with respect to them to to engage in the aligned slots. Preferably there are two of the further flat members, forming an equal-armed cruciform with the first, in which case the aperture in the base is suitably square. The support can be made from plywood, and is lighter than current steel supports besides packing flat for storage or transport when empty.

Fig.5.



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Description

This invention relates to supports for the storage and delivery of coils of wire, tube, cable and other like elongate flexible products, and primarily for relatively stiff products of this kind, such as wires of relatively large size, small-section plain metal tubes, and large coils of mineral insulated or other small metal-sheathed cables that are bent beyond their elastic limit in forming coils of a convenient size for handling and so do not need to be wound directly onto a reel or the like.

In manufacture of large-size wires (including wirerod) it is common to wind the finished product onto a mandrel from which it falls or is otherwise removed axially onto a support (or "stator") allowing it to be transported in longer lengths than can be handled as a "self-supporting" coil with only ties to secure the turns together. Such supports are generally of steel and are weighty, rigid bodies which may or may not nest for storage (and empty return transport) but even if nested occupy considerable space.

The present invention provides an alternative form of support for this purpose which when empty is light enough to be manhandled without the use of hoists or fork-lift trucks and which packs flat for compact storage and return transport.

The support in accordance with the invention comprises:

a first flat member having a length dimension defining the axis of the support;
at least one further flat member secured to the first flat member by hinge means so that it may be moved between a storage position in which it lies flat on the first flat member and a working position in which it projects outwardly from it;
the first and further flat members having aligned slots extending inwards from the outward edges of the respective members adjacent one end thereof, defining the lower end of these members;
and a flat base member having a non-circular aperture with shape and dimensions such that it can be passed freely over the first and further flat members and then rotated with respect to them to to engage in the aligned slots.

Preferably there are two of the said further flat members, one on each side of the first flat member and hinged near its axis so that when they are in their working positions the first and further flat members form a cruciform assembly, preferably with substantially equal leg lengths. In this preferred case the aperture in the flat base member may be square.

The first flat member, the further flat member(s) and the flat base members are preferably made of plywood or other tough timber sheet material, but the use of other suitable materials (for instance plastics materials and composites) is not excluded.

The (or each) further flat member may be hinged to the first flat member using plain butt hinges of metal or plastics (or a single "piano" hinge), or any other appropriate hinge means providing the required movement. Preferably the support includes means for securing the further flat member(s) in their working positions; a preferred means, when there are two further flat members in the preferred cruciform arrangement comprises a tenon projecting from the edge of one of the further flat members adjacent the first flat member and passing through an aperture in the first flat member as that further flat member is moved on its hinge means into its working position and entering a matching recess in the other further flat member in its working position and a device for securing the tenon in the recess. Since precise positioning is not required, this device may be as simple as a strong plastics cable tie, or a twisted wire tie, threaded through adjacent holes in the tenon and the other further flat member.

Preferably the first flat member and each (or the) further flat members have extensions projecting outwardly at their bases to at least about the outside radius of the coil of wire or other material to be supported, to provide stable bearing on the ground or any other surface on which the support is to stand; preferably such projections are dimensioned and positioned to engage the underside of the flat base member.

The flat base member may be circular but it is convenient for it to have at least one flat side, so that the orientation of the support can be seen when the support is loaded with a coil of wire or other material, since it is desirable, for instance, to lift the loaded support with a fork-lift truck in a predetermined position with respect to the position of the first flat member, which is concealed within the coil.

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

Figures 1-4 are drawings of the flat members making up the major structural parts of one form of support in accordance with the invention;
Figure 5 is a cutting plan for making these members from a rectangular sheet of plywood;
Figure 6 is a plan view of this form of support; and
Figure 7 is a cross-section in the line VII-VII in Figure 6.

The first flat member 1 of this support is shown in Figure 1 and is basically rectangular with its length dimension defining the axis 2 of the support. The upper corners 3, 4 are generously radiussed to minimise risk of damage from contact with the wire or other product, and at each side of the base is a slot 5 and a projection 6 forming a foot. An aperture 7 is located about half way along the length of the member and offset laterally from the axis 2. Optionally there may be a cut-out 8 at the middle of the base to facilitate location in a winding ma-

chine having an axial boss.

The further flat member 9 shown in Figure 2 resembles the right-hand half of the first flat member (as seen in Figure 1) and corresponding features have been given the same reference numerals; its width is less than half the width of the first flat member by about half the thickness of the sheet from which it is made, so that when hinged along its left-hand long edge 10 to the front of the first flat member with the right-hand edges 11, 12 of the two members aligned, it can be turned forwards to project in a central position. The other further flat member 13 is shown in Figure 3 and is correspondingly shaped and dimensioned to be correspondingly hinged at its long edge 14 on the back of the first flat member with left-hand edges 15, 16 aligned. A tenon 17 projects from the edge 10 of flat member 9 in a position to pass freely through the aperture 7 in the first flat member 1 when the members are relatively moved on their hinges and to enter a corresponding recess 18 in the edge 14 of the flat member 13 when members 9 and 13 are both in their working positions and the three members 1, 9 and 13 form an equalarmed cruciform section, as seen in Figure 6. Holes 19 and 20 (Figures 2 and 3) allow a cable tie (or a length of wire) to be used to secure the two further flat members 9 and 13 to each other and so hold them both in working positions.

The remaining component of the support is the base 21 shown in Figure 4 which is circular but for a pair of flats 22 and has a central square aperture 23, the sides of which are at 45° to the flats.

Figure 5 shows how all the components can be cut, with relatively little waste, from a single rectangular sheet of plywood, blockboard or other suitable material. In the particular example shown, a standard board of 25mm waterproof structural plywood nominally 2.4 by 1.2m is used to make a support with a height of about 1.6m and a base diameter of about 0.9m.

To complete assemble of the support, the hinged cruciform unit comprising members 1, 9 and 13 is set in an upright position with members 9 and 13 tied in their working positions. The base 21 is lowered over the cruciform unit with its arms initially directed towards the corners of the square aperture 23, and rests on the projections (feet) 6; it is then rotated through about 45° so that it enters the slots 5 and preferably eventually bears on their ends 24 (figure 7).

The flats 22 indicate the positions of zones 25, 25 into which the forks of a lifting truck can be inserted under the base 21 without fouling any of the projections (feet) 6.

When the support is empty, it can be packed flat for storage or return simply by rotating the base through 45°, lifting it off, and then cutting the ties to allow members 9 and 13 to be folded down onto member 1.

In the particular size referred to, the whole support weighs 22kg (and with the base removed 16kg) and can be substituted for a steel support weighing 142kg).

Claims

1. A support for storage and transport of coils of wire or like elongate flexible products comprising:

   a first flat member having a length dimension defining the axis of the support;

   at least one further flat member secured to the first flat member by hinge means so that it may be moved between a storage position in which it lies flat on the first flat member and a working position in which it projects outwardly from it;

   the first and further flat members having aligned slots extending inwards from the outward edges of the respective members adjacent one end thereof, defining the lower end of these members;

   and a flat base member having a non-circular aperture with shape and dimensions such that it can be passed freely over the first and further flat members and then rotated with respect to them to to engage in the aligned slots.

2. A support as claimed in claim 1 in which there are two of the said further flat members, one on each side of the first flat member and hinged near its axis so that when they are in their working positions the first and further flat members form a cruciform assembly.

3. A support as claimed in claim 2 in which the cruciform assembly has substantially equal leg lengths.

4. A support as claimed in claim 3 in which the aperture in the flat base member is square.

5. A support as cliamed in any one of claims 1-4 in which the first flat member, the further flat member (s) and the flat base members are made of tough timber sheet material.

6. A support as cliamed in any one of claims 1-4 in which the first flat member, the further flat member (s) and the flat base members are made of plywood.

7. A support as claimed in any one of claims 1-6 in which the (or each) further flat member is hinged to the first flat member using plain butt hinges or a single "piano" hinge.

8. A support as claimed in any one of the preceding claims which further includes means for securing the further flat member(s) in its/their working position(s).

9. A support as claimed in claim 8 in which there are two further flat members in cruciform arrangement and in which the means for securing them in their working positions comprises a tenon projecting from the edge of one of the further flat members ad-

jacent the first flat member and passing through an aperture in the first flat member as that further flat member is moved on its hinge means into its working position and entering a matching recess in the other further flat member in its working position and a device for securing the tenon in the recess.

10. A support as claimed in claim 9 in which the said device is a plastics cable tie, or a twisted wire tie, threaded through adjacent holes in the tenon and the other further flat member.

11. A support as claimed in any one of claims 1-10 in which the first flat member and each (or the) further flat members have extensions projecting outwardly at their bases.

12. A support as climed in claim 11 in which such projections are dimensioned and positioned to engage the underside of the flat base member.

13. A support as claimed in any one of clais 1-12 in which the flat base member has at least one flat side.

Fig.1.

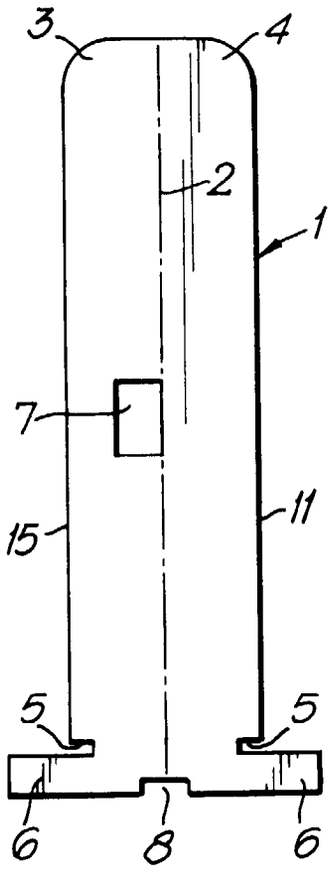


Fig.2.

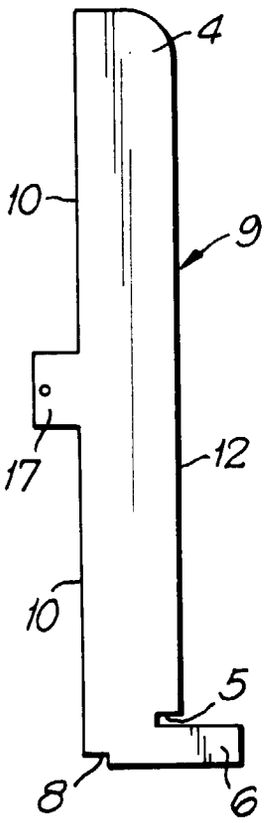


Fig.3.

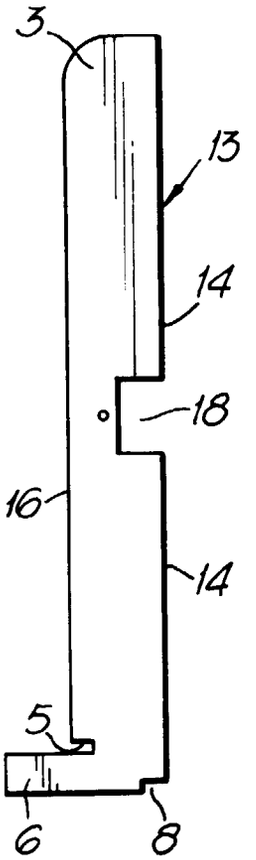


Fig.4.

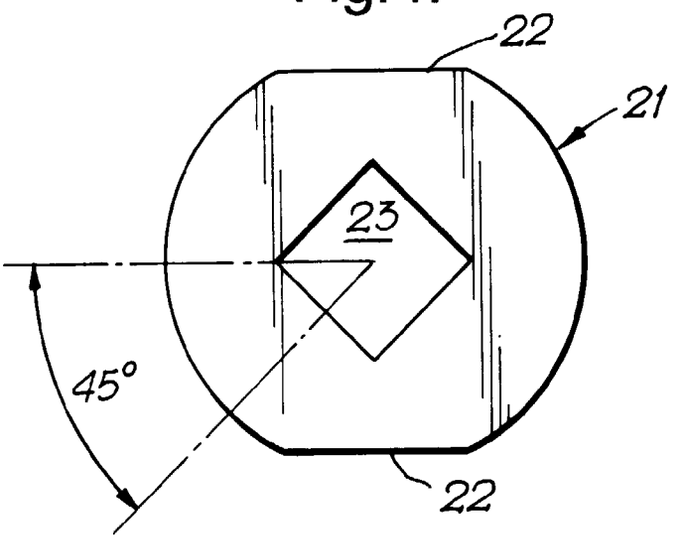


Fig.5.

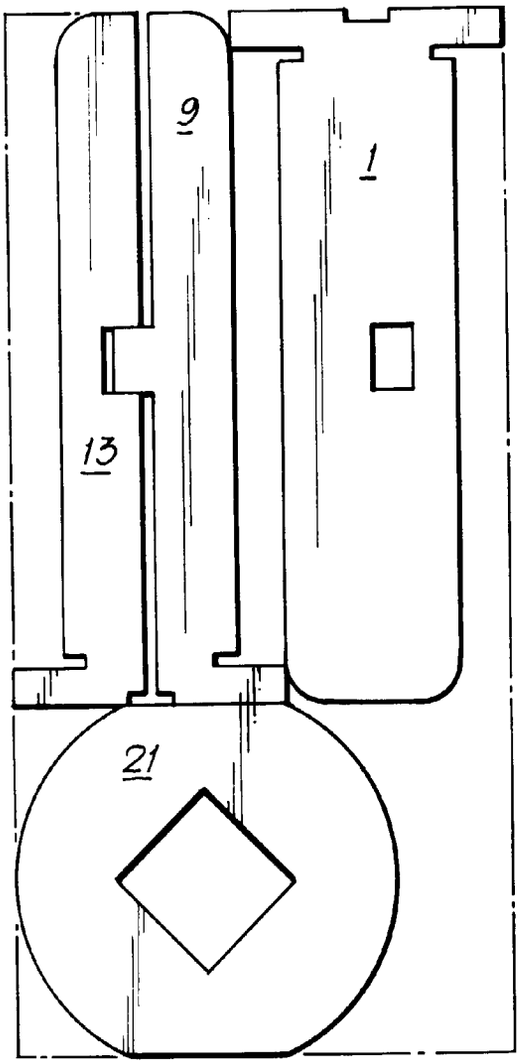


Fig.7.

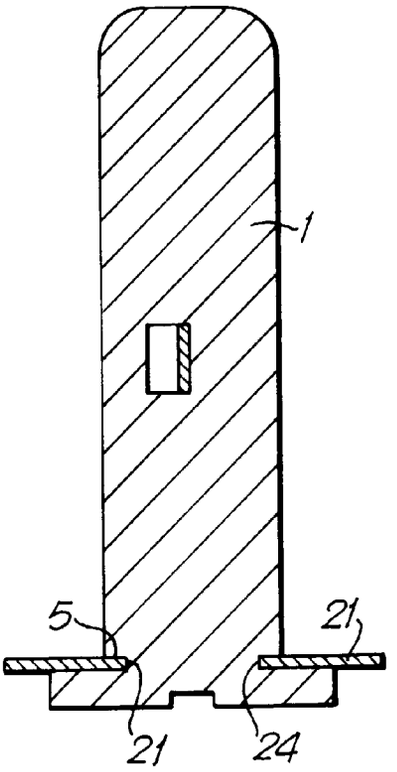
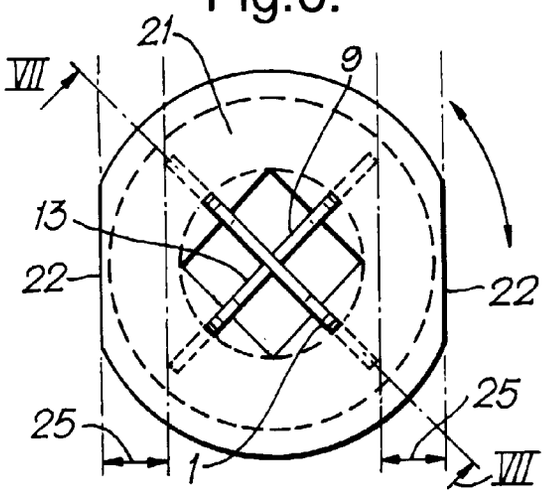


Fig.6.



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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 3606

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	GB-A-958 354 (THOMAS FRENCH & SONS LTD.) * page 2, line 44 - line 74; figure 2 *	1	B65D85/04
A	EP-A-0 624 820 (MINNESOTA MINING & MFG) 17 November 1994 * column 3, line 35 - column 4, line 50; figures *	1	
A	EP-A-0 081 427 (SAINT GOBAIN VETROTEX) 15 June 1983 * column 3, line 26 - column 4, line 37; figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
B65D
B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	27 August 1996	Olsson, B

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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