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(54) Thread winding tube

(57) A thread winding tube (1), comprises a tubular body provided spirally with an easy-cut machining. And a further thread winding tube (1) has a tubular body comprising two material tapes (2,3), which partially overlap to each other and spiral, and an easy-cut machining being provided at a part of one of the material tapes (2,3) corresponding to specific adjoining parts of the other.

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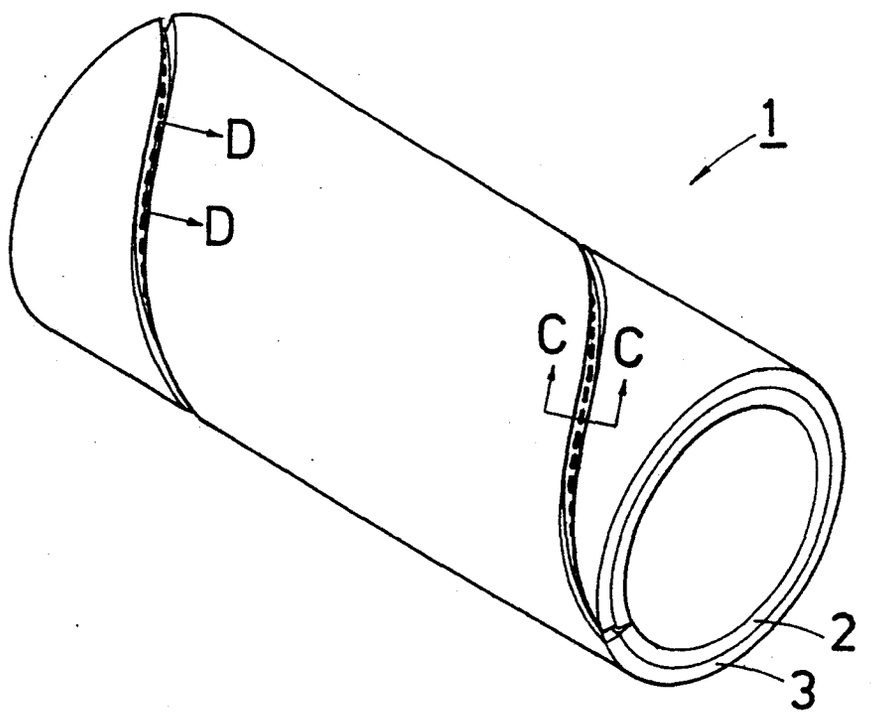


EP 0 967 170 A1

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a thread winding tube.

Prior Art

[0002] Thread wound on a thread winding tube is released generally or customarily from the outermost winding layer of the wound thread, which necessitates the turn or rotation of the thread winding tube together inevitably with the thread to thereby cause the thread to have resistance to the rotation and be occasionally damaged or cut. Moreover, it is difficult to take out the thread at high speeds by this method of releasing.

[0003] The thread may be taken out otherwise from the innermost winding layer of thread on the thread winding tube. This method does not need to rotate the thread winding tube together with thread wound thereon, so that there is no fear of damaging the thread. And the thread is further enabled to be taken out at high speeds.

[0004] However, in this case, the winding core or tube is to be removed while being cut by use of scissors or the like, which work is quite difficult and troublesome. And the cutting tools such as scissors possibly cut or damage the thread.

[0005] Thus, the desire in this field of art is such a thread winding core or tube that behaves as usual in winding thread thereon and can be readily or simply removed, after winding thread, for releasing the thread.

SUMMARY OF THE INVENTION

[0006] Under the above circumstances, the inventor zealously studied and has achieved the thread winding tube according to the present invention which is characterized in that the tubular body is provided spirally with an easy-cut machining, and also in that the tubular body comprising two material tapes, which partially overlap with each other and spiral, is provided with an easy-cut machining at a part of one of the two material tapes corresponding to specific adjoining parts of the other in the spiral.

[0007] An object of the present invention is to provide a thread winding tube which serves as an ordinary winding core in winding thread thereon and can be readily or simply removed, after winding thread, for releasing the thread.

DETAILED DESCRIPTION OF THE INVENTION

[0008] Thread referred to in the present invention may include general threads, strings, cords and the like, which are flexible and thin and can be drawn out from the inner side when wound.

[0009] The tubular body may be made of plastics or paper merely in a cylindrical form.

[0010] The reason for the spiral formation of the tubular body is an easy cutting operation, particularly, from the ends of the tubular body. Angles of the spiral may be freely selected. In case that the angles of the spiral are large with respect to the longitudinal axis of the tubular body, the cutting is easy but the cutting distances become longer. And to the contrary when the spiral angles are smaller. 40° - 80° were empirically preferable and 50° - 70° most preferable. Complete or nearly spiral formation may be adoptable.

[0011] The easy-cut machining may be local provision of apertures (e.g., perforation), cutting such area in a predetermined depth, or the like operation, for enabling the area to be more easily cut in comparison with other areas. It is preferable to provide cutting-easiness enough to allow operators to break the area simply by hands. The local provision of apertures and the cutting in a predetermined depth may be used concomitantly.

[0012] Shapes of the cuts and apertures in plan may be rectangular, round or elliptical, and particularly, triangular to fix the breaking direction in order to make easy the consecutive cutting or breaking of the winding tube from its ends.

[0013] In case that the tubular body comprises two material tapes partially overlapping to each other and spiraling, the easy-cut machining may be provided preferably at a part of one of the two material tapes corresponding to specific adjoining parts of the other in the spiral. By this feature, machining only either material tape may suffice. Either an outer or inner material tape may be subjected to the easy-cut machining. Moreover, a multiplicity of material tapes may be employed to partially overlap to each other, one or more of which is subjected to the easy-cut machining.

[0014] In this case, angles of spiral in or for the easy-cut machining may be equivalent to the feeding angles of the material tapes for manufacturing the paper tubes.

[0015] A paper tube fabricated by partially overlapping two or multiple material tapes may be subjected to the same machining as for the foregoing single layer structure. In this case, the spiral angles in or for the easy-cut machining are not limited by the feeding angles of material tapes for fabrication of the paper tube.

[0016] The thread winding tube according to the present invention may be provided on the outer surface with embossing, grooving or application of particles, for enabling an object to be wound to have ridges and grooves on the surface. Moreover, the thread winding tube may be applied on the outer surface with a thin film for protecting or other purposes which film may be removed after removal of the thread winding tube for releasing thread.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Fig. 1 is a perspective view showing an example of a thread winding tube according to the present invention.

[0018] Fig. 2 are sectional views of the perforation in Fig. 1.

[0019] Fig. 3 is a perspective view showing another example of the thread winding tube according to the present invention.

[0020] Fig. 4 are sectional views showing the easy-cut part in Fig. 3.

[0021] Fig. 5 are sectional views of the easy-cut part of modified embodiments.

[0022] Fig. 6 is a plan view of the easy-cut part.

[0023] Fig. 7 is a schematically explanatory plan view of a manufacturing method of a double-layered paper tube according to the present invention.

[0024] Fig. 8 is a sectional view showing a cutting gear 11 providing intermittent cuts.

[0025] Fig. 9 is a perspective view showing the thread winding tube provided with the easy-cut machining being cut and removed from the inner side.

EMBODIMENTS

[0026] Next, the present invention will be further detailed with referring to specific examples of the invention shown in the drawings. Fig. 1 is a perspective view showing an example of a thread winding tube 1 according to the present invention. In this example, the body has a single layer structure and is made of plastics. Perforation (apertures lined intermittently) is given spirally circumferentially of the thread winding tube 1. Fig. 2 are sectional views of the perforation, Fig. 2(a) taken in A - A in Fig. 1 and Fig. 2(b) in B - B, the shade corresponding to plastics, and curves straightened for convenience of illustration.

[0027] Fig. 3 is a perspective view showing another example of the present invention which is made of paper using two material tapes partially overlapping with each other. An inner material tape 2 is machined for the easy-cut at its part corresponding to specific adjoining parts (or a gap between them) of an outer material tape 3, which adjoining parts adjoin to each other along or with respect to the axis of the winding tube. Although the adjoining parts are apart from each other in Fig. 3, they may directly contact with each other. Fig. 4 are sectional views of the easy-cut machined part, Fig. 4(a) taken in C - C in Fig.3 and Fig. 4(b) in D - D. Fig. 4(a) shows the cut of a wedge-shaped section formed on the inner material tape 2 (correspondingly to the adjoining parts (the gap between them) of the outer material tape 3), and Fig. 4(b) showing the intermittent provision of the cuts.

[0028] Fig. 5 is drawn similarly to Fig. 4(b), showing longitudinal sections of the easy-cut parts, Fig. 5(a) illustrating the cuts formed intermittently and having trapezoidal section, Fig. 5(b) the consecutively provided shallow cuts together with the apertures intermittently formed, and Fig. 5(c) the same feature as of Fig. 5(b) having trapezoidal sections.

[0029] Fig. 6 is a plan view of the easy-cut parts shown straightly, which merely illustrates the shapes of the cuts. The easy--cut parts may comprise the mere apertures, or the consecutively provided shallow cuts together with the intermittently formed apertures. The feature of Fig. 6(a) having the triangular cuts prevents deviation of a cutting line when cutting is carried out from the left side. Fig. 6(b) shows the simple triangular cuts, and Fig. 6(c) the shape of cuts allowing the effect of the feature of Fig. 6(a) to be enhanced.

[0030] Fig. 7 is a schematically explanatory plan view of the manufacturing method of double-layered paper tube according to the present invention. A winding mandrel 4 is held by a fixing device 5. Material tapes 6 and 7 are wound on the mandrel 4 to be rotated by a belt 9 stretched on a base cylinder 8, so that the material tapes 6, 7 are partially overlapped to each other and shaped by adhesive. The shaped paper tube is cut into a predetermined length L by a cutter 10. The method for providing the easy-cut machining according to the present invention is performed by intermittently providing cuts on the inner material tape 7 correspondingly to a lateral side of the outer material tape 6 by use of a cutting gear 11. By this feature, the easy-cut part may be located under the adjoining or direct contacting parts of the outer material tape.

[0031] Fig. 8 is a sectional view showing the cutting gear 11 having teeth and intermittently providing the cuts by the teeth.

[0032] Fig. 9 is an explanatory view showing the thread winding tube with the easy-cut part being cut and removed from the inner side, in which the winding tube can be removed without influencing the thread wound on the winding tube.

EFFECT OF THE INVENTION

[0033] As seen from the above, the thread winding tube according to the present invention has the following advantages.

(1) The thread winding tube can be readily removed from the inner side, thereby allowing the wound thread to be released from the inner side.

(2) Manufacturing the thread winding tube is simple and easy, and thereby not costly.

(3) No damage occurs on the object to be wound when the thread winding tube is removed.

Claims

1. A thread winding tube comprising a tubular body provided spirally with an easy-cut machining.

2. A thread winding tube as set forth in claim 1, wherein the tubular body comprises two material tapes, which partially overlap to each other and spiral, and the easy-cut machining is provided at a part of one of the material tapes corresponding to specific adjoining parts of the other.

3. A thread winding tube as set forth in claim 1 or 2, wherein the easy-cut machining includes cutting in a predetermined depth, the cuts forming into a spiral.

4. A thread winding tube as set forth in claim 1 or 2, wherein the easy-cut machining includes intermittent cutting in a course of spiral.

Fig. 1

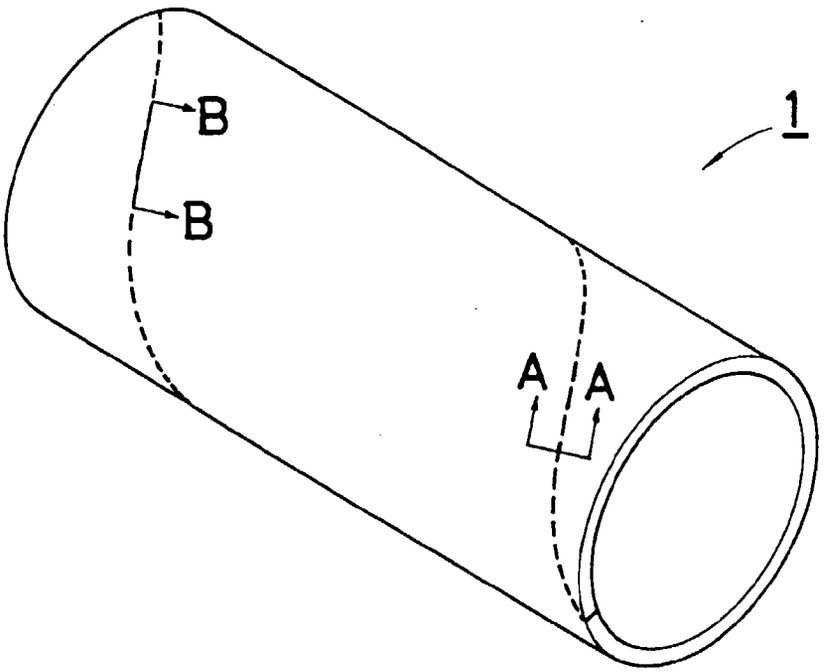
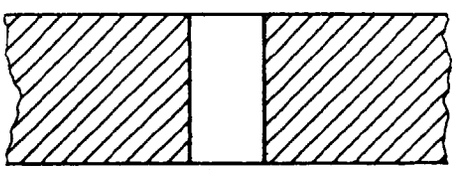


Fig. 2

(a)



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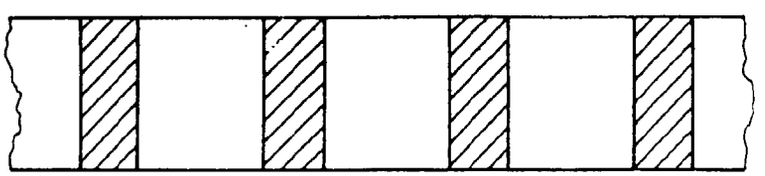


Fig. 3

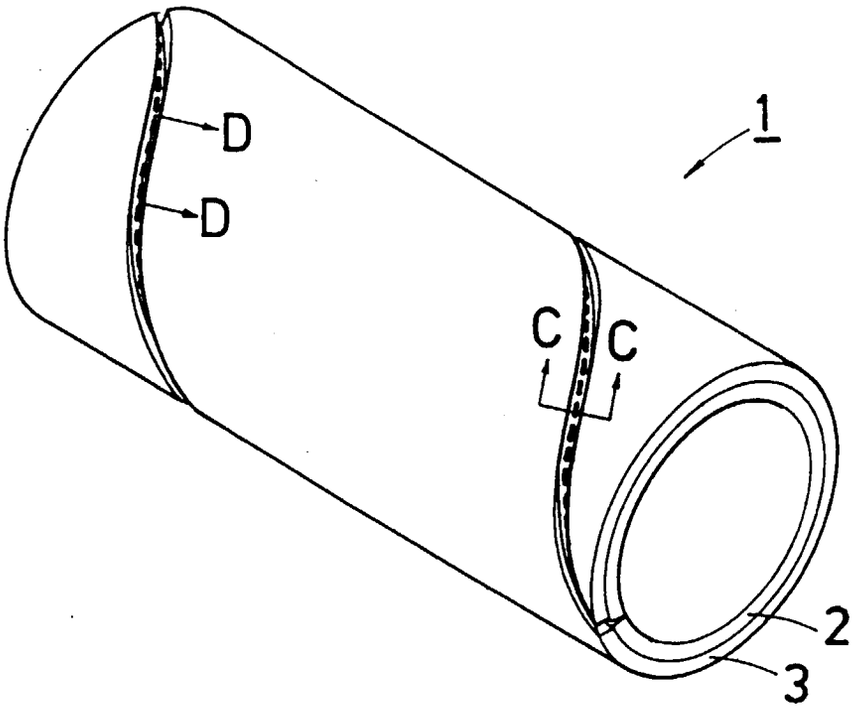
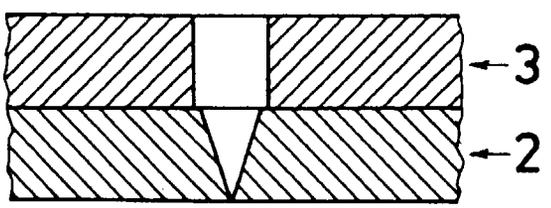


Fig. 4

(a)



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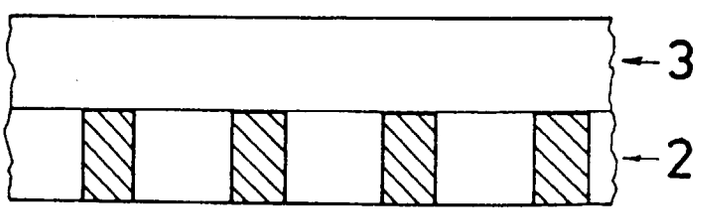


Fig. 5

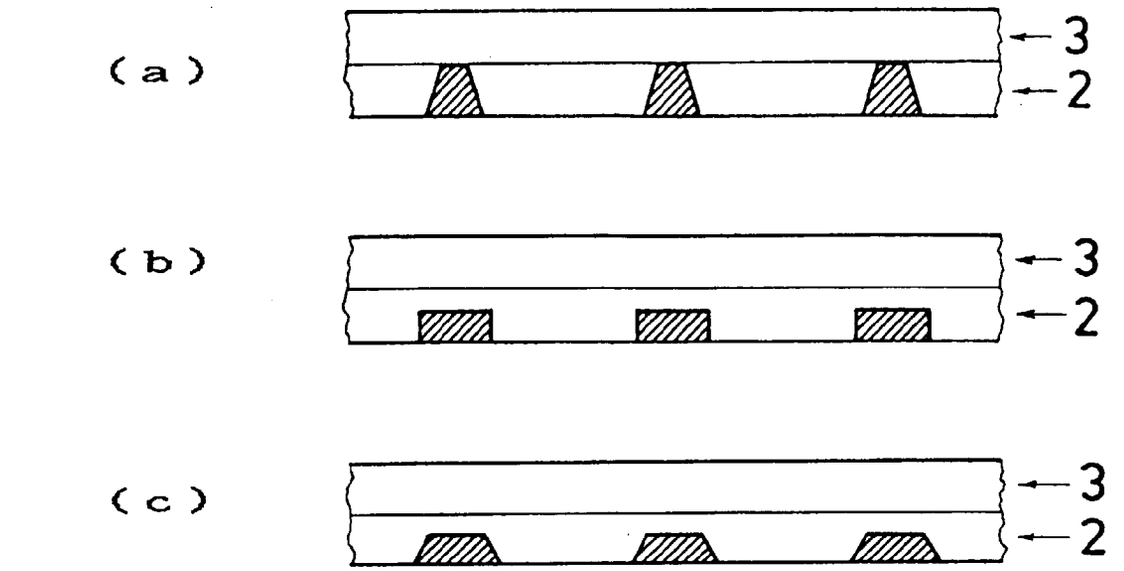


Fig. 6

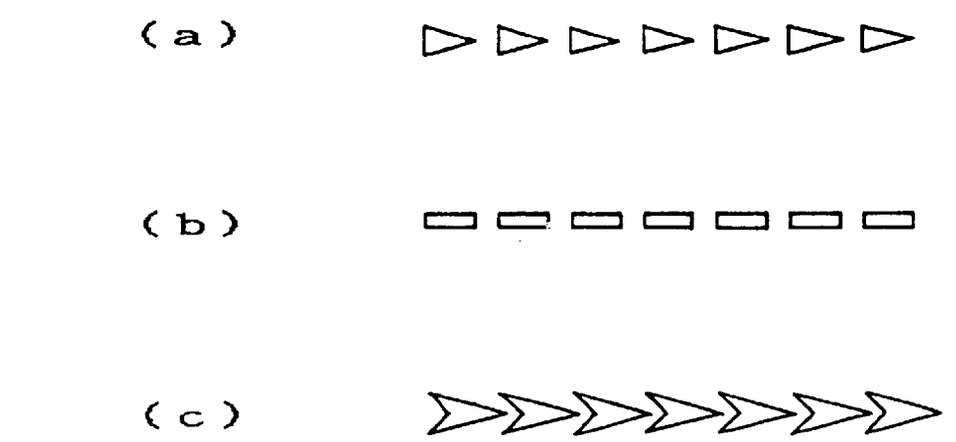


Fig. 7

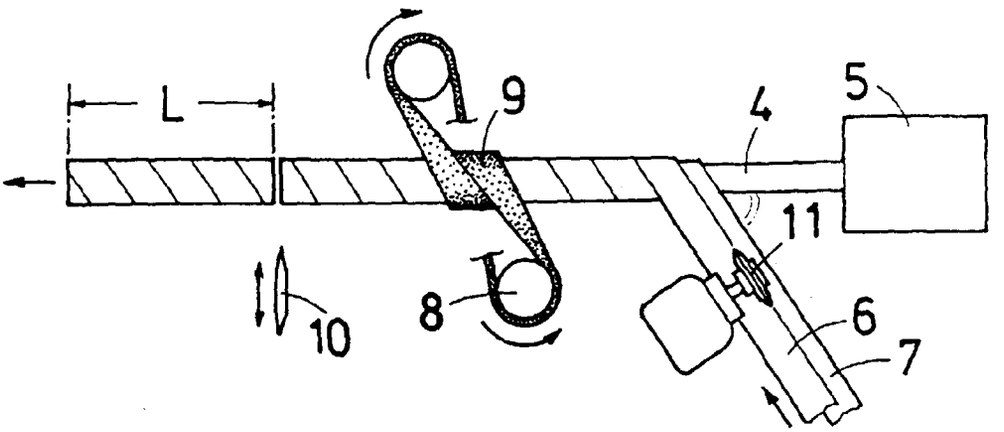


Fig. 8

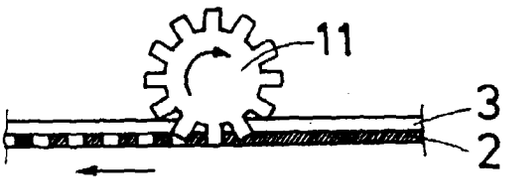
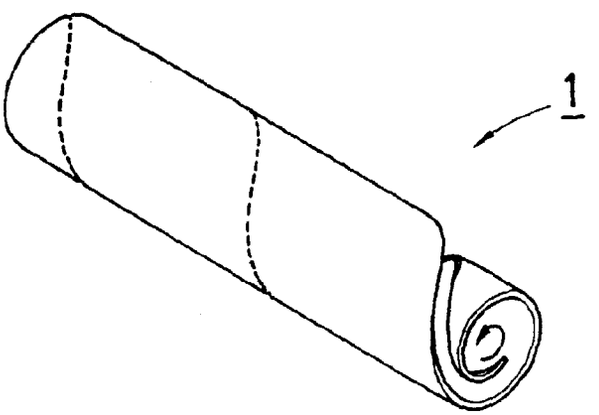


Fig. 9



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EUROPEAN SEARCH REPORT

Application Number
EP 98 11 1669

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)
X	FR 2 539 104 A (LHOMME SA) 13 July 1984 * page 1, line 14 - line 18 *	1,4	B65H75/10
Y	* page 2, line 23 - line 31 *	2	
Y	FR 2 560 585 A (SOFRATUBE) 6 September 1985 * page 3, line 14 *	2	
A	GB 1 170 782 A (ROLEX PAPER COMPANY LIMITED) 19 November 1969 * the whole document *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

B65H
B31C
B65C
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	25 November 1998	Tamme, H-M

CATEGORY OF CITED DOCUMENTS

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