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(54) Identifiable spool.

(57) Identifiable spool which is advantageously, but not necessarily only, metallic and is suitable to rotate about its lengthwise axis at up to or more than 25,000 rpm and to hold synthetic yarns and comprises a cylindrical body (11) bearing two terminal flanges (13) at its ends and at least two coloured identification elements (16), which can be removed and replaced and are positioned symmetrically and diametrically on at least one outer face (14).

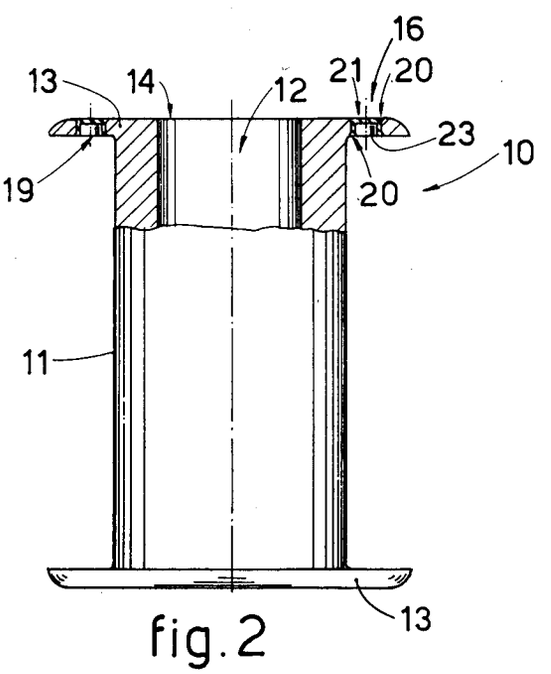

fig.2

EP 0 545 093 A1

This invention concerns an identifiable spool advantageously but not necessarily made only of metal, as set forth in the main claim.

To be more exact, this invention concerns a spool for the winding of synthetic yarns, such as Lycra for instance, the spool being, or not being, wholly made of metal and being equipped with a system to identify quickly and simply one or more features of the yarn wound on the individual spool, such as the type, the material, etc. or any other feature.

The spools advantageously, but not necessarily only, made of metal according to the invention are employed on spinning machines which set the spools in rotation at speeds of rotation reaching even 25,000 rpm.

The spools according to the invention are used in the textile industry.

At the present time, so as to identify the yarn wound on the known spools, their users generally employ a range of colours whereby each colour corresponds to a well defined feature of the yarn such as the count, material, etc. The main problem consists in the way in which the colours are applied to the various spools.

These colours are normally applied at present by marking pens or with coloured paint directly on one of the surfaces of the spool itself.

The marking by pens, however, entails the problem of becoming deleted after a given period.

The fact of using indelible marking inks or means to apply indelible colours overcomes the above problem but leads to the drawback that the spools, when once marked, can only be used again with a yarn having exactly the same characteristics as those of the yarn wound previously thereon; otherwise the markings have to be laboriously removed.

Where a coloured paint is used, there is the problem of having to clean each time the previous paint marks from the surface of the spool before the latter can be reused.

Moreover, owing to the high speed of rotation of the spools, which in the case of spools made wholly of a metal may reach even 25,000 rpm as we said above, and owing to the considerable resulting centrifugal force the paint marks may become detached from the spool or may unbalance the latter.

A spool thus unbalanced is subject to vibrations which lead to breakages and faults in the winding besides not being very safe.

The state of the art discloses various other methods to apply identification elements to spools.

DE-U-1.829.938 teaches a method to fit a coloured split ring in an annular hollow coaxial with the axis of rotation of a spool. Each colour of the ring denotes one or more features of the yarn.

US-A-1,825,567 and US-A-2,061,365 teach the insertion of coloured identification studs or disks at one end of the spool and require the use of screws or analogous retention elements, thus making the identification means solidly fixed and not readily removable but necessitating mechanical means such as screws for the fixture.

DE-U-2.789.542, US-A-3,425,149 and US-A-4,889,294 disclose identification elements for cones but not for spools with flanges; the elements cooperate with a central hole of the cone and therefore constitute a wholly different application with much less accentuated dynamic problems.

Lastly, EP-A-0.311.829 teaches the use of an identification element which is not interchangeable and only changes its axial position in relation to the end of the spool; this does not make easy an immediate identification of the message to be transmitted.

To overcome the shortcomings of the state of the art and to achieve further advantages the present applicants have designed, tested and embodied this invention.

This invention is set forth in the main claim, while the dependent claims describe variants of the main idea of the embodiment.

The purpose of this invention is to provide a spool to be used for the winding of yarns together with a system to identify the yarn wound thereon, the identification system being economical, easy to use and reliable.

The spool which can be identified according to the invention comprises means to position and fasten in a stable manner coloured identification elements, which can be replaced when so desired in a quick and simple manner.

On the identifiable spool of the invention the coloured identification elements are advantageously positioned symmetrically on at least one of the two end faces of the spool so as to avoid unbalancing the spool.

According to the invention there is a plurality of identification elements, which are more than one in number for reasons of balance and are positioned along one single circumference. Each identification element can define one conventionally selected feature.

Several circumferences can also be used, each of them cooperating with at least one pair of identification elements.

The identification elements can be coloured plastic plugs, pins, resilient studs, press-studs, split rings, etc.

The attached figures, which are given as a non-restrictive example, show some preferred embodiments of the invention as follows:-

Fig.1

is a view from above of a spool which can be

identified according to the invention;

Fig.2
shows a partly cutaway lengthwise view of the spool along the line A-A of Fig.1;

Fig.3
is a view from below of the identification element of Fig.2 in an enlarged scale;

Fig.4
shows a lengthwise section of the identification element along the line B-B of Fig.3;

Figs.5a and 5b
show two variants of the embodiment of the invention.

In the attached figures the reference number 10 indicates generally a spool advantageously, but not necessarily only, made of metal and therefore suitable to rotate at even up to 25,000 rpm., the spool being of a known type.

The spool 10 is in one piece and consists of an advantageously metallic cylindrical body 11 containing a lengthwise axial bore 12 and having two flanges 13, one at each of its ends.

A known device, which is not shown here, can be fitted within the lengthwise axial bore 12 so as to set the spool 10 in rotation or for other known functions.

According to a preferred embodiment of the invention, which is shown in Figs.1 to 4, the spool 10 contains in the outer face 14 of at least one flange 13 at least two through holes 19 which include flarings 20 at their ends and are arranged in a symmetrical and balanced manner in the flange 13.

Identification elements 16 consisting in this case of plugs 21, which consist advantageously of a coloured plastic material, cooperate with the through holes 19 and are used to identify the features of the yarn wound on the spool 10.

In this example the plugs 21 comprise terminal circumferential protrusions 22 (Fig.4) which cooperate with the flared portions 20 of the through holes 19 so as to clamp the plugs 21.

In this case the plugs 21 are hollow and include a plurality of lengthwise notches 23 to lighten the plugs 21; these notches 23 make possible a given radial, resilient deformation of the plugs 21; this deformation is advantageous during the insertion and withdrawal of the plugs 21 into and from the through holes 19.

According to a variant the through holes 19 are more than two in number and are arranged symmetrically in the flange 13 so as to avoid unbalancing the spool 10 and causing damaging vibrations; this situation enables more information to be given about the yarn.

According to the variants of Figs.5a and 5b the identification elements 16 consist of press-studs 121 or split rings 221 arranged on the flange 113 in a symmetrical manner.

The press-studs 121 cooperate with an appropriate projection 17, while the split rings 221 cooperate with an appropriate groove 18 having an inwardly inclined abutment bevel 15.

Claims

1. Identifiable spool which is advantageously, but not necessarily only, metallic and is suitable to rotate about its lengthwise axis at up to or more than 25,000 rpm. and to hold synthetic yarns and comprises a cylindrical body (11) bearing two terminal flanges (13) at its ends and is characterized in that it includes at least two coloured identification elements (16), which can be removed and replaced and are positioned symmetrically and diametrically on at least one outer face (14).

2. Spool as in Claim 1, in which the identification element (16) is a plug (21) that includes terminal protrusions (22) and cooperates with a respective through hole (19) having flared end portions (20) and contained in the flange (13).

3. Spool as in Claim 2, in which the plug (21) contains lengthwise notches (23).

4. Spool as in Claim 1, in which the identification element (16) is a press-stud (121) cooperating with a respective projection (17) included in the flange (13).

5. Spool as in Claim 1, in which the identification element (16) is a small ring (221) cooperating with a respective annular groove (18) having an inwardly inclined abutment bevel (15).

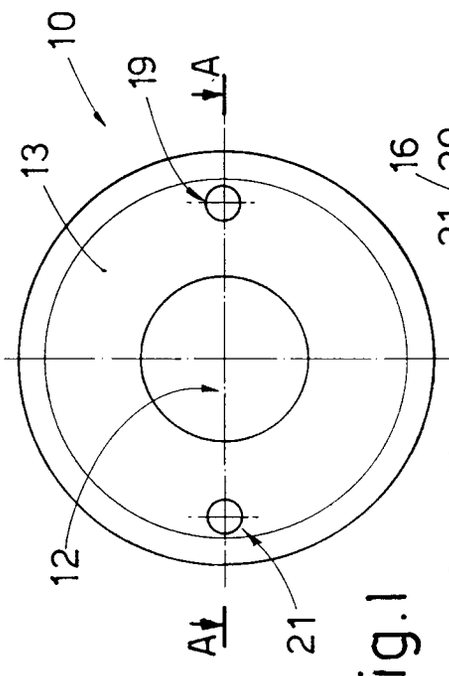

fig.1

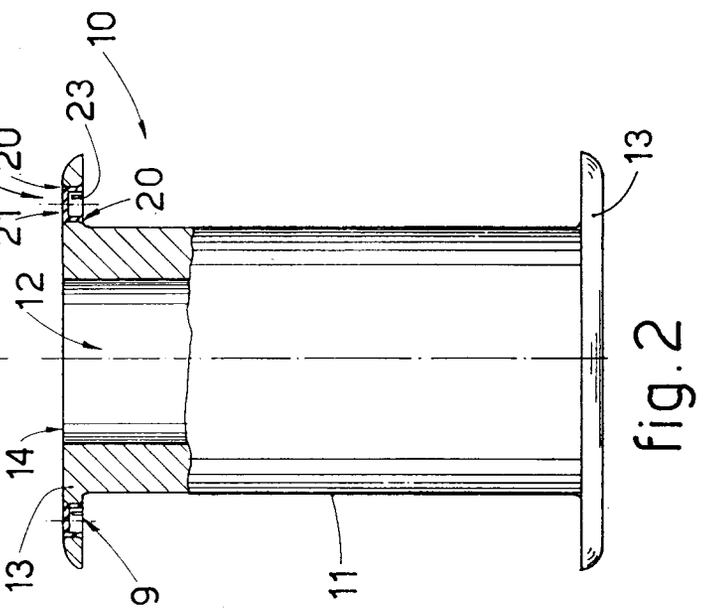

fig.2

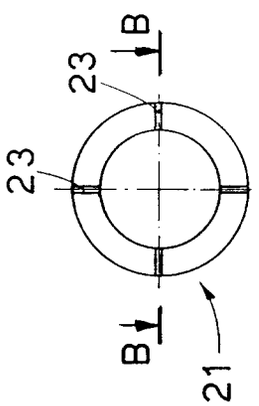

fig.3

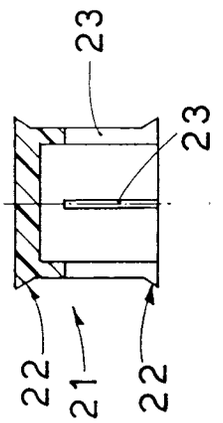

fig.4

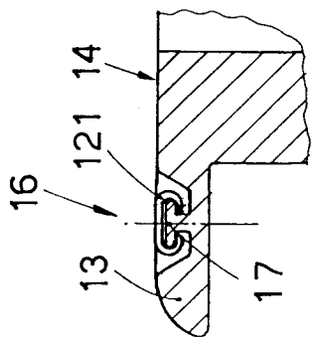

fig.5a

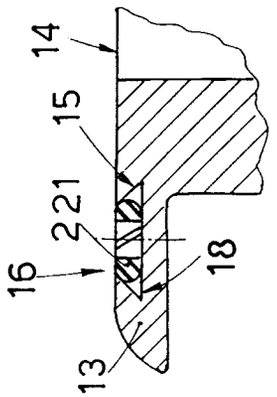

fig.5b

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 11 8945

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.5)
A	US-A-2 990 133 (G.G. TUCKER, JR) * column 4, line 13 - line 47 *	1,2	B65H75/18
D,A	US-A-1 825 567 (W.A. WOODRUFF) * the whole document *	1,4	
D,A	DE-U-1 829 938 (M. SCAGLIA S.P.A.) * the whole document *	1,4	
A	US-A-3 758 045 (D. ALLEN) * column 3, line 51 - line 60 * * column 6, line 44 - line 50 *	1-3,5	
A	US-A-4 852 823 (S.F. ADAMS; H-P BOLZ) * column 3, line 40 - line 66 *	1-3,5	
A	DE-U-1 882 405 (TEXTILSPULENFABRIK ALFRED OLSON K.G.) * the whole document *	1,2	
D,A	US-A-2 061 365 (G.B. MARKLE, JR.)		TECHNICAL FIELDS SEARCHED (Int. Cl.5) B65H G09F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04 FEBRUARY 1993	D HULSTER E.W.F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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