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Rolli et al.

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[54] **ROTATABLE BOBBIN CREEL FOR STRETCH-TEXTURING MACHINES**

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[21] Appl. No.: **447,216**

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Jan. 16, 1974 Switzerland 560/74

[52] **U.S. Cl.** **242/131;** 242/131
[51] **Int. Cl.²** .. **B65H 49/02;** D02H 1/00; D03J 5/08
[58] **Field of Search** ..... 242/131, 131.1; 28/32; 66/125 R, 161, 163

[56] **References Cited**

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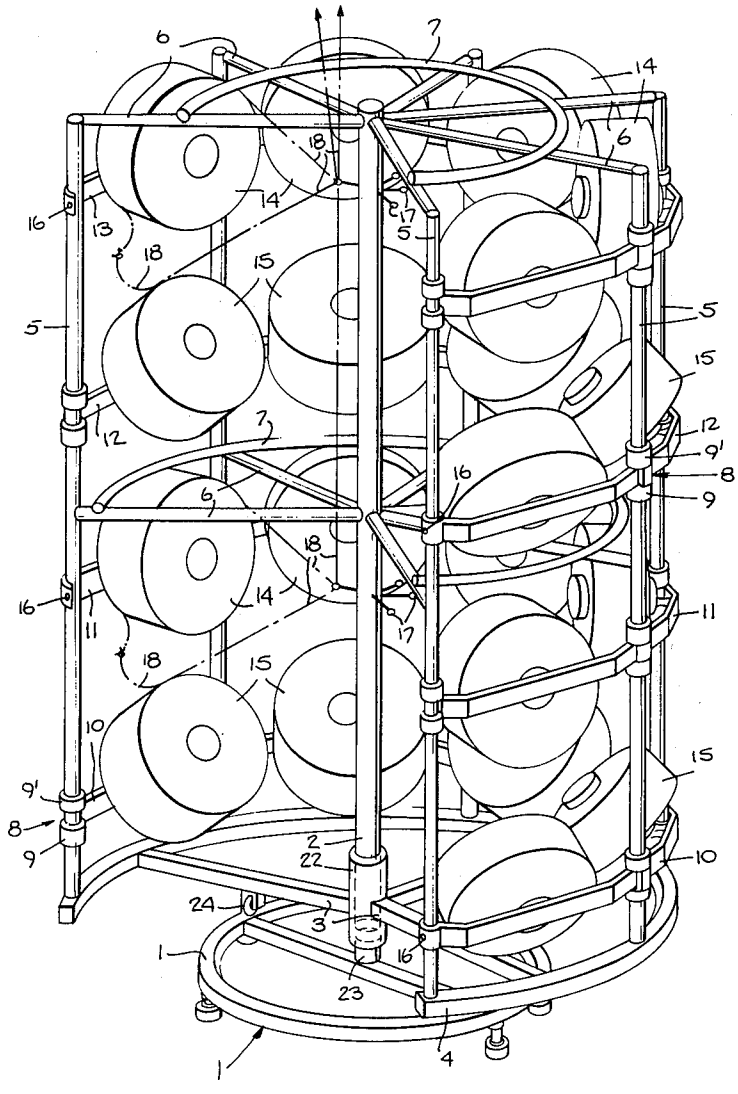
Attorney, Agent, or Firm—Fitzpatrick, Cella, Harper & Scinto

[57] **ABSTRACT**

Rotatable bobbin creel for stretch-texturing machines arranged to support a number of bobbins at different vertical levels for shifting from positions within the creel to positions extending outwardly of the creel, the creel being further arranged with a segment-shaped unoccupied space for operator access.

10 Claims, 5 Drawing Figures



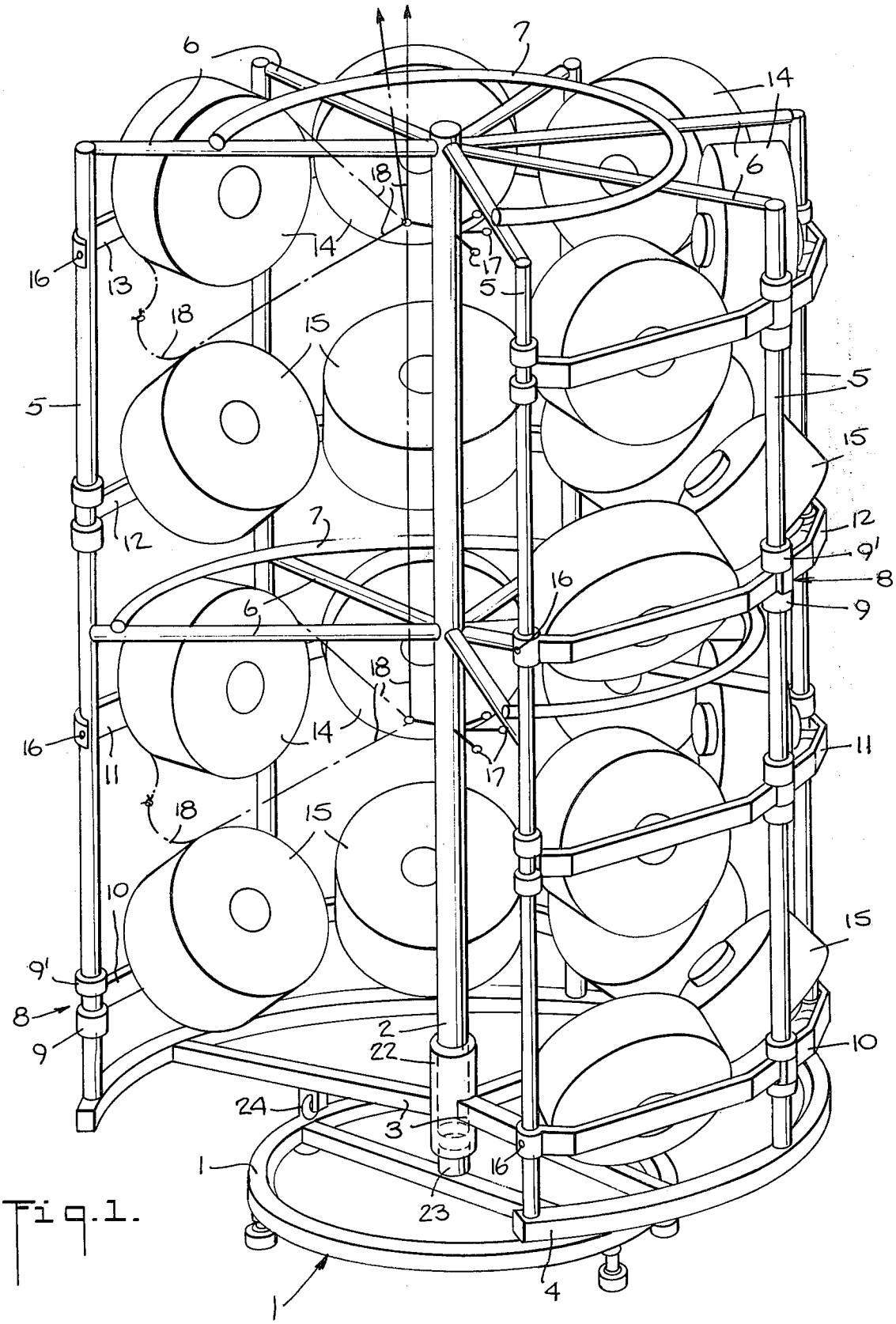


Fig. 1.

Fig. 3.

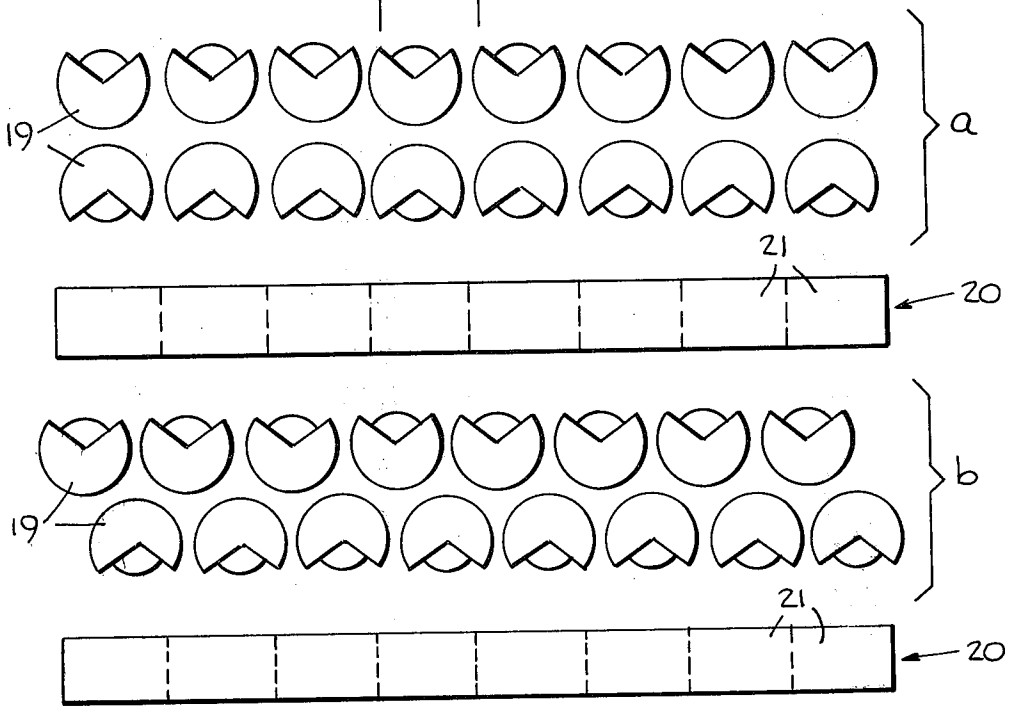
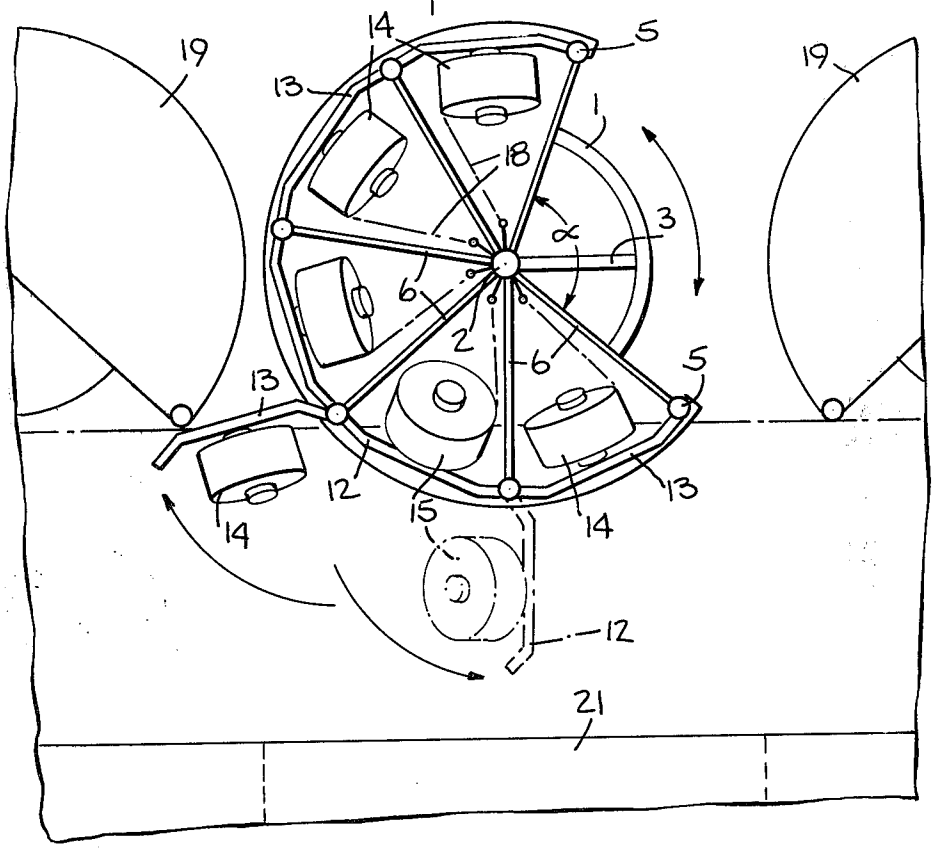


Fig. 2.



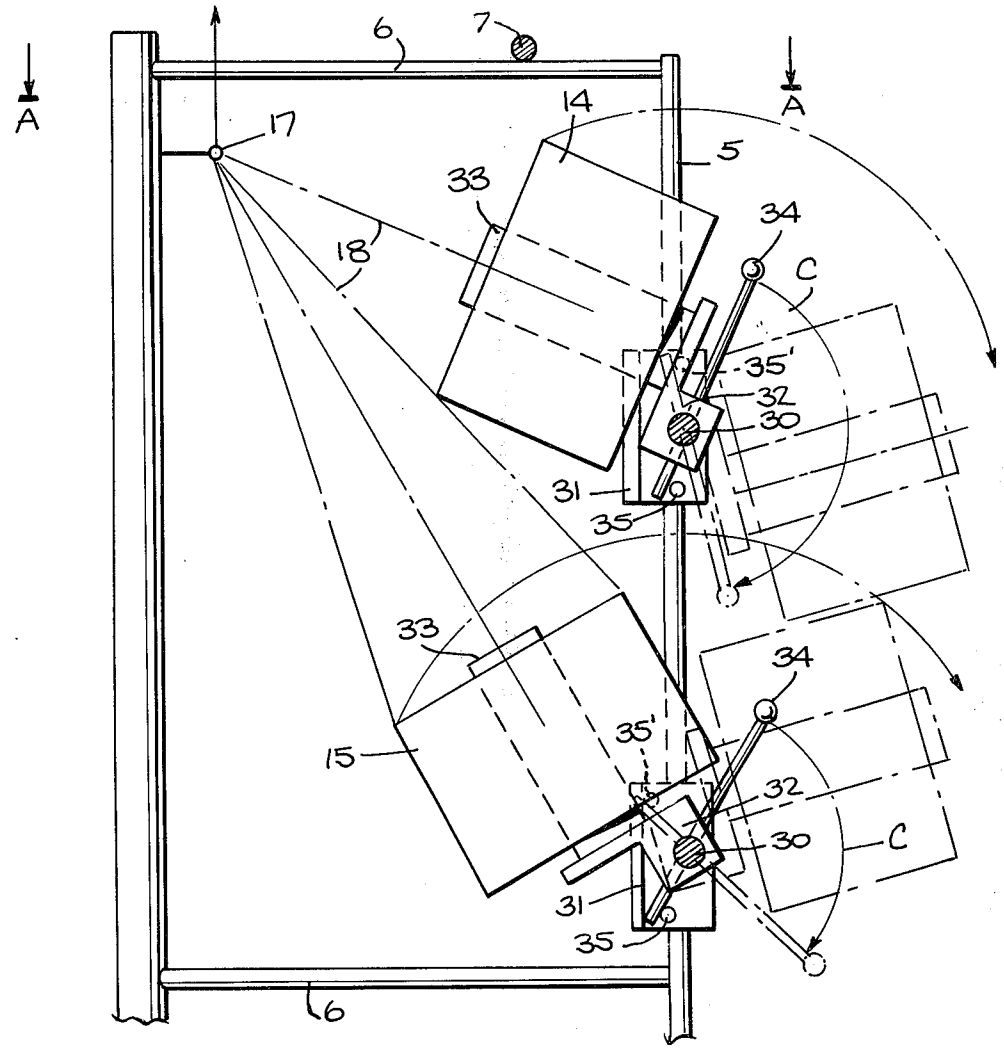

A
A
6
7
14
17
5
33
34
18
C
35'
32
30
31
35
33
34
15
35'
32
30
C
31
35
6

Fig. 5.

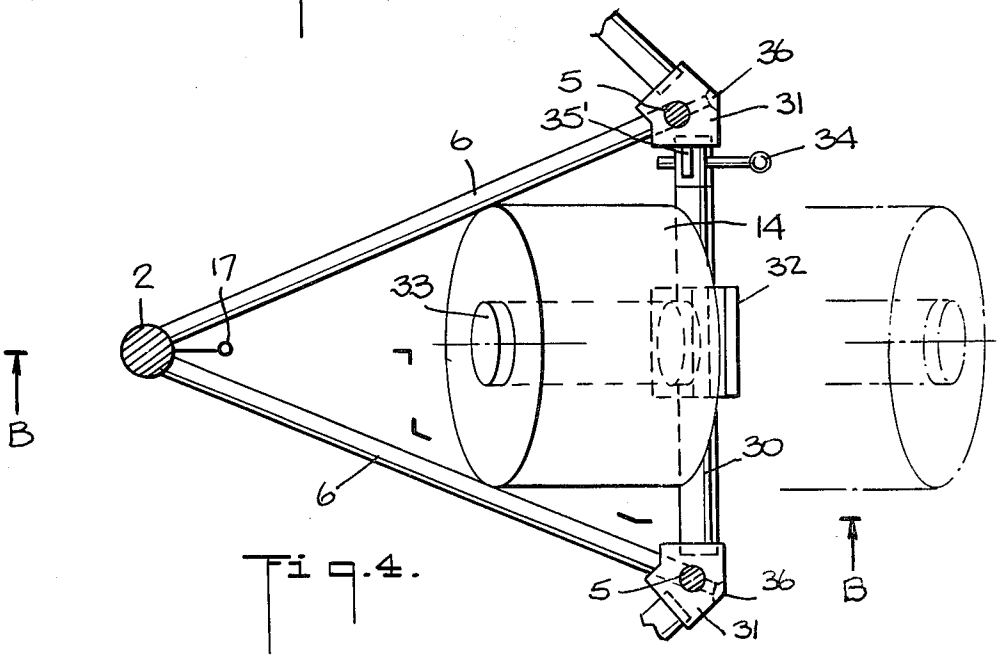

B
B
36
5
31
35'
34
6
14
2
17
33
32
30
6
5
36
31

Fig. 4.

ROTATABLE BOBBIN CREEL FOR STRETCH-TEXTURING MACHINES

The present invention relates to a rotatable bobbin creel, and more particularly to such a device for use with a stretch-texturing machine.

In the so-called stretch-texturing process, where drawn or partially drawn filaments of synthetic material are used as a starting material, the known false-twisting process is combined with the drawing process by which the filaments are oriented. For stretch-texturing, the usual false-twist machines can be used provided some modifications have been made. However, a particular problem is presented by reason of the construction of the creel for the bobbins of spun filaments since these bobbins, as delivered by the synthetic fiber industry, have diameters of between 300 and 450 mm. and accordingly occupy a considerable amount of space. The disadvantage of the arrangement of the bobbin creel above the machine, as usual in the known stretch-plytwisting machines, consists in that a special path including a second level has to be provided above the stretch-texturing machine for feeding the creel with bobbins.

Accordingly, we have conceived the present invention by which we are able to provide a creel for the bobbins of spun filaments which occupies far less space, is easily accessible and can be arranged between the individual texturing machines.

The bobbin creel according to the present invention is characterized by a support mounted rotatably on a stationary foot, the support having a vertical central shaft, a plurality of vertical studs arranged at annular distances on a circle concentric with the central shaft, which studs are fixed by means of connecting elements mounted on the central shaft so that an open circular sector is formed, as well as bobbin support means arranged on the vertical studs on various levels, each comprising a bobbin stacking pin, and means allowing the support means to be shifted to present the bobbins outwardly of the creel.

The bobbin support means may take the form of levers mounted to pivot in a horizontal plane preferably about an axis coinciding with the longitudinal axis of respective studs; and in another embodiment, such means may comprise tubes rotatable about horizontal axes extending between adjacent studs.

There has thus been outlined rather broadly the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of the invention. It is important, therefore, that the claims be regarded as including such equivalent construction as do not depart from the spirit and scope of the invention.

Specific embodiments of the invention have been chosen for purposes of illustration and description, and are shown in the accompanying drawings, forming a part of the specification wherein:

FIG. 1 is a perspective view of a bobbin creel according to the present invention;

FIG. 2 is a top plan view of the bobbin creel of FIG. 1;

FIG. 3 is a schematic view illustrating the arrangement of a plurality of the bobbin creels according to the present invention along the textile machines;

FIG. 4 is a top plan view of a portion of the creel of the present invention taken along the lines A — A of FIG. 5, and illustrates a modified form of bobbin support means; and

FIG. 5 is a view taken along the line B — B of FIG. 4.

Referring now to FIG. 1, the rotatable bobbin creel consists of a stationary base 1 having a flat track surface 1′ and a journal 23 on which a hub 22 is rotatably supported. The hub 22 receives and is rigidly connected to the lower end of the central shaft 2. A sector shaped support 4 is fixed on hub 22 by means of spokes 3, and vertical studs 5 are arranged on the support 4. On the bottom side of each spoke 3, we provide a roller 24 which rolls over the track surface 1′ of base 1. The studs 5 are kept in place by rods 6 fixed in the middle and at the upper end of the central shaft 2 and by sector shaped connection parts 7 so that an open sector is formed, the angle α of which is approximately 105°, as shown in FIG. 2. Such an open sector is suitable for the use of bobbins with diameters of up to 400 mm. When using smaller bobbins with diameters of approximately 300 mm., the open sector may have an angle α of up to about 180° whereby improved accessibility of the individual bobbins is achieved.

On the vertical studs 5, we arrange on four different levels, for example, levers 10, 11, 12 and 13 and these swivel outwardly by means of hinges 8 connecting an end of each lever to a stud 5, the levers 10, 11, 12 and 13 carrying the bobbins 14, 15 of spun filaments by means of stacking pins (not shown). Each hinge 8 can be shifted along its respective stud 5 and comprises two bearings 9, 9′ arranged at a certain vertical distance from each other and embracing the stud 5. The levers, 10, 11, 12 and 13 at their end have a resilient pressure piece which can, if necessary, be arrested on the studs 5 between the bearings 9, 9′ of the hinges 8.

The levers on each level are hinged on similar sides and those on adjacent levels are hinged on opposite sides so that all the levers which are situated on the same level can all be swivelled outwardly in the same annular direction; the levers situated on adjacent levels, however, being swivellable outwardly in opposite annular directions. A thread guide 17 is provided on the central shaft 2 opposite each bobbin 14 on the same levels as levers 11 and 13.

The filaments 18 drawn off the bobbins of spun filaments 14 overhead are passed through the thread-guides 17, led upwardly along the central shaft 2 and, after leaving the rack, reach the stretch-texturing machine via further thread-guide elements (not shown). If the contents of filaments of a bobbin 14 is exhausted, the reserve bobbin 15 situated thereunder is doffed, the filament end of which is knotted with the filament end of bobbin 14. Whereas the stacking pins of levers 11 and 13 for the bobbins 14 extend horizontally, the stacking pins for the reserve bobbins are arranged on the levers 10, 12 with a certain angle of inclination so that the bobbins 15 are inclined to provide the same filament removal angle as with bobbins 14.

The level of the levers **10, 11, 12** and **13** can be altered according to the desired operating level by appropriate shifting of the hinges **8,** and the levers can be swivelled to both sides by angles of up to 150° without causing interruption of operation.

When feeding the bobbin creel with bobbins of spun yarns, the following procedure is applied:

First the sector of the creel to be fed is turned towards the passage for the operating staff whereupon the corresponding levers, for example **12** and **13,** are swivelled to the left and to the right as can be seen from FIG. **2.** Thereupon, the bobbins **14, 15** are stacked onto the creel from the passage and then the levers **12, 13** swivelled back and locked on the support rods **5** by any suitable means. Finally, the end of the bobbin **14** is knotted with the filament end of reserve bobbin **15** and the bobbin creel turned back into the starting position, i.e. with the open sector facing the staff passage.

Upon insertion of the filaments into the stretch-texturing machine, the person operating the machine stands in the free sector for access to the bobbins and the thread-guides.

As can be seen from FIG. **3,** the individual bobbin creels **19** according to FIG. **1** may be situated (a) between the stretch-texturing machine **20** opposite each other in rows, or (b) in rows displaced with respect to each other, the arrangement (b) being still less space-consuming than the arrangement (a). Each stretch-texturing machine **20** is divided by dotted lines into individual fields **21** with, for example, **10** filament processing stations on each side, and one bobbin creel helps operating one field **21** on one side of the machine.

The bobbin creel may be rotated about the central shaft **2** to the left and to the right by 150° without causing interruption of operation due to interwinding of the removed filaments.

The bobbin creel described thus far occupies relatively less space than creels which preceded it. We have found that even greater space economy can be achieved by the modification illustrated in FIGS. **4** and **5,** which is characterized by bobbin support means comprising rods rotatable about horizontal, longitudinal axes for supporting the stacking pins, instead of the levers **10, 11, 12** and **13.** Thus, these rods may have support parts on which are arranged the stacking pins extending outwardly from the longitudinal axis of the rod. Furthermore, stops may be provided on the vertical studs for limiting the rotation of the rods about their longitudinal axes.

As far as the central shaft, the vertical studs and the connection elements are concerned, the drawings correspond to the embodiment according to FIGS. **1** and **2** and similar reference numerals designate similar parts.

According to the present modification, instead of the levers **10, 11, 12** and **13** arranged on the vertical studs **5** on different levels, there are provided rods or tubes **30** extending horizontally between the studs and rotatable about their longitudinal axes. These rods or tubes **30** are supported in bearing elements **31** provided with corresponding bores and fixed on the studs **5** at the desired level by means of set screws **36** so that the tubes can be positioned at different vertical levels along the studs. In the middle of each rod **30,** there is fixed a support part **32** on which the stacking pin **33** carrying the bobbin **14** or **15** is arranged in offset relation to the longitudinal axis of rod **30.** Each rod **30** has an operating lever **34** for rotating the same about its longitudinal axis. On the studs **5,** we provide the stops **35, 35'** for limiting the rotation of the rods **30** in both extreme positions of their movement. Upon rotation of the rods **30** about their longitudinal axes in the direction of arrow C (FIG. **5**), the support parts **32,** the stacking pin **33** and the bobbins **14** or **15** reach the position shown in chain lines, the bobbins being on a lower level than in the starting position for easy handling.

From the foregoing description, it will be seen that we contribute a rotatable bobbin creel having numerous advantages. First, it renders possible optimal use of space. The operation can be effected from the passages between the machines, and a second level is not necessary. The open sector furthermore offers good accessibility of the individual bobbins, and it is easy to effect insertion of the filaments. The adjustability of the level of the swivellable levers makes possible any chosen adaption to the size of the bobbins and to the desired operating lever. Stacking of reserve bobbins makes it possible to operate the stretchtexturing machine continuously.

We believe that the construction and operation of our novel bobbin creel will now be understood and that the several advantages thereof will be fully appreciated by those persons skilled in the art.

We claim:

1. Rotatable bobbin creel for stretch-texturing machines, comprising; a rotatable support (**3, 4, 22**), a stationary base (**1**) supporting said rotatable support, said base having a vertical central shaft (**2**), a plurality of vertical studs (**5**) spaced annularly with respect to said central shaft, connecting means (**6**) extending between said central shaft and said studs, said studs and connecting means defining an unoccupied segment-shaped space in the creel, bobbin support means (**10, 11, 12,** 13, 30) arranged on said vertical studs (**5**) on various levels and bobbin pins (**33**) carried by said bobbin support means, said bobbin support means being moveable to present said bobbin pins outwardly of the creel.

2. Bobbin creel according to claim **1,** wherein the open circular sector extends over an angle α of up to about 180°.

3. Bobbin creel according to claim **1,** wherein hinges (**8**) are shiftably mounted on said vertical studs and said bobbin support means are swivellable levers (**10,** 11, 12, 13) fixed on said hinges.

4. Bobbin creel according to claim **1,** wherein each of said swivellable levers (**10, 11, 12, 13**) comprises at its end a resilient pressure piece (**16**) which is lockable with one of said stud rods (**5**).

5. Bobbin creel according to claim **1,** wherein said levers (**10, 11, 12, 13**) situated above each other on different levels are swivellable outwardly in opposite annular directions.

6. Bobbin creel according to claim **1,** wherein said levers (**10, 11, 12, 13**) are swivellable outwardly by angles of up to 150°.

7. Rotatable bobbin creel for stretch-texturing machines according to claim **1,** wherein said bobbin support means comprise rods (**30**) extending between adjacent studs (**5**) and said rods being rotatable about their longitudinal axes.

8. Bobbin creel according to claim **7,** wherein each rod (**30**) comprises a support part (**32**) and wherein a

stacking pin (33) is mounted to extend in offset attidude relatively to the longitudinal axis of said rod.

9. Bobbin creel according to claim 7, wherein stops (35, 35') are provided on the vertical support rods (5), said stops limiting the rotation of the rods (30) about their longitudinal axes.

10. Bobbin creel according to claim 7, further comprising bearing elements (31) said bearing elements supporting said rods (30) and being shiftable along said vertical support rods (5) and fixable at the desired level thereon.

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