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(54) Machine for texturizing synethetic yarns

(57) Machine for texturizing synthetic yarns (11a) that comprises: positioned side by side on a supporting framework (1, 2, 3, 4), a plurality of texturizing lines, each of which comprises an initial station (10) where the bobbins (11) of yarn to be texturized are loaded, a final texturized-yarn package (9) collecting station (8) situated adjacent to the initial loading station but separated horizontally from it by a predetermined section that can form an intermediate passageway (12) for the means of distribution and collection of the bobbins (11) and yarn packages (9), as well as for inspection when required, a path for the yarn between said initial loading station (10) and the final collecting station (8), said path including a first yarn (11a) guide roller (13) mounted on a first shaft (13a) for the rollers, an oven (17) for heating the yarn as it runs longitudinally through from an entrance end (17a) to the exit end, said first guide roller (13) being adjacent to said entrance end (17a) of the oven, a device (19) for imparting false twist to the yarn, a track (18) for cooling the latter, and other deflection rollers (20, 21, 22).

This machine is such that, in order to contain the dimensions of its width while maintaining the same performance, the same quality of texturization and the same degree of automation, said oven (17) is positioned above the station (8) where the texturized yarn is collected, and the entrance end (17a) of this oven and said first guide roller (13) adjacent to this end coincide in position with said intermediate passageway (12).

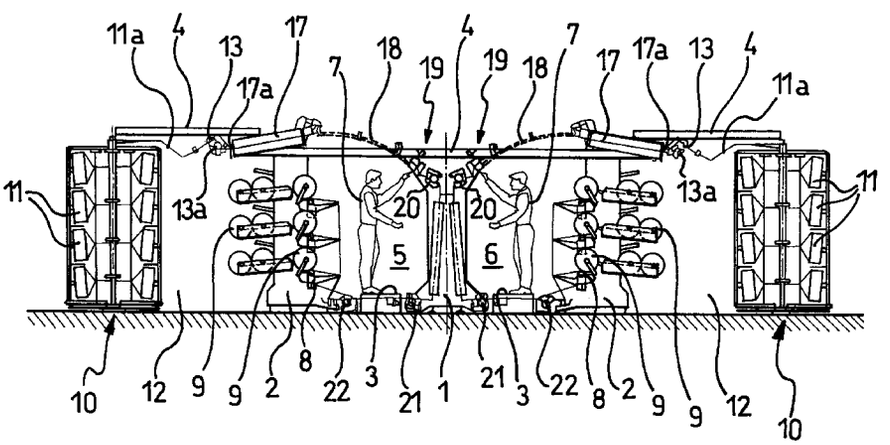

FIG.3

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Description

The present invention relates to a machine for texturizing synthetic yarns comprising: positioned side by side on a supporting framework, a plurality of texturizing lines, each of which comprises an initial station where the bobbins of yarn to be texturized are loaded, a final texturized-yarn package collecting station situated adjacent to the initial loading station but separated horizontally from it by a predetermined section that can form an intermediate passageway for the means of distribution and collection of the bobbins and yarn packages, as well as for inspection when required, a path for the yarn between said initial loading station and the final collecting station, said path including a first yarn guide roller mounted on a first shaft for the rollers, an oven for heating the yarn as it runs longitudinally through from an entrance end to the exit end, said first guide roller being adjacent to said entrance end of the oven, a device for imparting false twist to the yarn, a track for cooling the latter, and other deflection rollers mounted on respective roller shafts.

Texturizing machines of the type described above are known in the field.

One example is illustrated and described on page 684 of the journal "Chemiefasern/Textilindustrie, 44/96.Jahrgang, Oktober 1994".

According to the art represented in the example cited, in order to be able to construct machines of acceptable width, the path of the yarn, in each of the mutually adjacent processing lines, whose number determines the length of the machine, involves a section that is severely doubled back on itself, after the first guide roller, with a very sharp acute angle at the entrance end to the oven with a number of typical profiles such as, for example, the "V" profile or, between the oven exit and the entrance to the cooling tracks, with other profiles such as, for example, the "M" profile.

The presence of this angle causes serious problems for the correct performance of the texturizing process, these mainly being problems of high or excessive tension on the yarn leading to difficulties with feeding and with backward transmission of the twist.

Moreover, in order to limit the width of the machine, the section of yarn path that includes the very sharp acute angle must necessarily extend vertically, partly in order that the first yarn guide roller of all the various processing lines of the machine can be positioned within reach of the operator and accessible to him or her when threading the yarn through.

There is clearly therefore a firm technological conviction that these first yarn guide rollers must be situated where visible and accessible to the operator even to the detriment of other structural and functional aspects of the machine.

In accordance with a second known form of synthetic yarn texturizing machinery the problems associated with the excessively sharp bend in the path of the yarn prior to its introduction into the heating oven have been eliminated by making the path more or less linear, free of sharp angles, and running over the head of the operator.

However, owing to the technological conviction that the first yarn guide rollers must be visible and accessible from that part of the machine where the operator is stationed, the longitudinal length of the section of path that includes the heating oven and cooling track, is still great, and actually has an adverse effect on the total width of the machine, made barely acceptable by its excessive demands on floor space, even in spite of its improved performance in terms of speed of texturization (1200-1500 m/min) and quality of the yarn produced.

The object of the present invention is to solve the problem of the width requirement of texturizing machines of the type specified above while maintaining their high performance in terms of speed of texturization and quality of the yarn produced, by abandoning the technological prejudice regarding the position of the first yarn guide rollers.

The object is achieved in the form of a texturizing machine of the specified type, characterized in accordance with the attached Claim 1.

The invention will now be described in greater detail with reference to a practical illustrative embodiment and with the aid of the accompanying drawings in which:

- Figure 1 shows a schematic view in side elevation of a texturizing machine constructed in accordance with one prior-art form;
- Figure 2 shows a schematic view, also in side elevation, of a texturizing machine constructed in accordance with a second prior-art form; and
- Figure 3 shows a schematic view in side elevation of a texturizing machine constructed in accordance with the present invention.

With reference to the abovementioned figures, the supporting framework of the machine principally comprises a central column structure 1, side column structures 2 connected to the structure 1 by a platform 3 and by overhead beams 4 forming intermediate spaces 5 and 6 on either side of the central structure 1, intended to allow operators 7 to supervise and operate the machine.

The column structures 2 are chiefly designed to support the collecting stations 8 for the packages 9 of texturized yarn.

Alongside the column structures 2 are the loading stations 10 with bobbins 11 of yarn 11a for texturizing. These stations are separated from the collecting stations 8 by a horizontal section such as to form an intermediate passageway 12 capable of accommodating, in conventional manner, automatic means (not shown) for supplying fresh bobbins of yarn to be texturized and for picking up and removing the packages 9 of texturized yarn.

The same passageway 12 also allows access to an operator.

With particular reference to the known machine of Figure 1, it will be observed that the first roller 13 for guiding the untexturized yarn taken from the bobbins 11 is positioned in the upper part of the operator spaces 5 and 6 close to the collecting stations 8.

Because the mutually adjacent processing lines of the machine are numerous, the roller 13 of each line is mounted on a common shaft 13a which is referred to as the first roller shaft.

After these guide rollers 13, the path of the yarn, supported along each processing line of the machine by suitable conventional structures resting on the beams 4, runs along a practically vertical first ascending section 14 that is followed, after turning through angles of approximately 180° at the topmost point 15, by a descending section 16 passing through the heating oven 17 and cooling track 18.

From here the yarn, as is conventional, after having passed through the false-twist device 19, travels around deflection means, indicated schematically at 20, 21 and 22, runs under the platform 3, and finally reaches the collecting stations 8.

It can be seen, therefore, that because of the largely vertical route followed by one section of the path of the yarn, the total width of this known machine can be kept to low values averaging something like 10 metres.

Unfortunately this containment of the dimensions is adversely affected, as already stated, by the sudden changes in direction imposed on the yarn immediately after the first guide roller 13 and at the point marked 15 before it passes into the oven 17.

With reference to the known machine illustrated in Figure 2, in which structural parts corresponding to those of the machine of Figure 1 are given the same reference numerals, it will be seen that all the sudden changes in direction of the yarn path have been eliminated.

Thus, the ascending section 14 of the known machine of the previous Figure 1 has been dispensed with and the oven 17 and cooling track 18 have been brought into line with an approximately horizontal plane to give a path that runs over the upper part of the operator spaces 5 and 6.

However, although the first yarn 11a guide roller 13 is directly next to the oven 17 because the path section 14 has been eliminated, it is still situated in the upper part of the operator spaces 5 and 6 because of an evident technical prejudice to the effect that this roller must necessarily be placed in this position.

Indeed, in order to satisfy this prejudice, with this machine structure the width requirement is greatly increased, becoming on average some 14 metres.

Referring now to Figure 3, which illustrates a machine constructed in accordance with the present invention and in which the same reference numerals are again used for parts and components corresponding to those of the known machines of Figures 1 and 2, it can be seen that the oven 17 of each of the mutually adjacent processing lines is positioned above the collecting stations 8 with its entrance end 17a towards the passageway 12. The first guide roller 13, which is still immediately adjacent to the inlet end 17a of the oven, has been moved away from the conventional position in the operator spaces 5 and 6, where an evident technical prejudice has always wanted it to be placed, even at the cost either of satisfactory machine operation, as in the prior art of Figure 1, or of excessive machine width, as in the prior art of Figure 2.

In accordance with the machine structure of the invention, the yarn can be monitored around the first guide rollers 13 of the various mutually adjacent processing lines of the machine either from the normal working corridors 5 and 6 or by gaining access to the passageways 12 provided for the handling of the cores and bobbins.

Lastly, with regard to inserting the yarn around these guide rollers 13 and through the oven 17, this can easily be done with suitable tools without adversely affecting the running of the machine and the quality of the results of the texturization that can be achieved on the yarn.

The advantage in terms of space is great, as the machine can even be narrower than the minimum width achievable with the known structural form shown in Figure 1, without affecting the quality of texturization or the degree of automation of yarn bobbin loading and unloading as can be appreciated in a machine built to the structure of Figure 2.

Claims

1. Machine for texturizing synthetic yarns (11a) comprising: positioned side by side on a supporting framework (1, 2, 3, 4), a plurality of texturizing lines, each of which comprises an initial station (10) where the bobbins (11) of yarn (11a) to be texturized are loaded, a final texturized-yarn package (9) collecting station (8) situated adjacent to the initial loading station but separated horizontally from it by a predetermined section that can form an intermediate passageway (12) for the means of distribution and collection of the bobbins (11) and yarn packages (9), as well as for inspection when required, a path for the yarn (11a) between said initial loading station (10) and the final collecting station (8), said path including a first yarn (11a) guide roller (13) mounted on a first shaft (13a) for the rollers, an oven (17) for heating the yarn as it runs longitudinally through from an entrance end (17a) to the exit end, said first guide roller (13) being adjacent to said entrance end (17a) of the oven, a device (19) for imparting false twist to the yarn, a track (18) for cooling the latter, and other deflection rollers (20, 21, 22), the machine being characterized in that said oven (17) is positioned above the station (8) where the texturized yarn is collected, its entrance end (17a) and said first guide roller (13) adjacent to this end being positioned at said intermediate pas-

sageway (12).

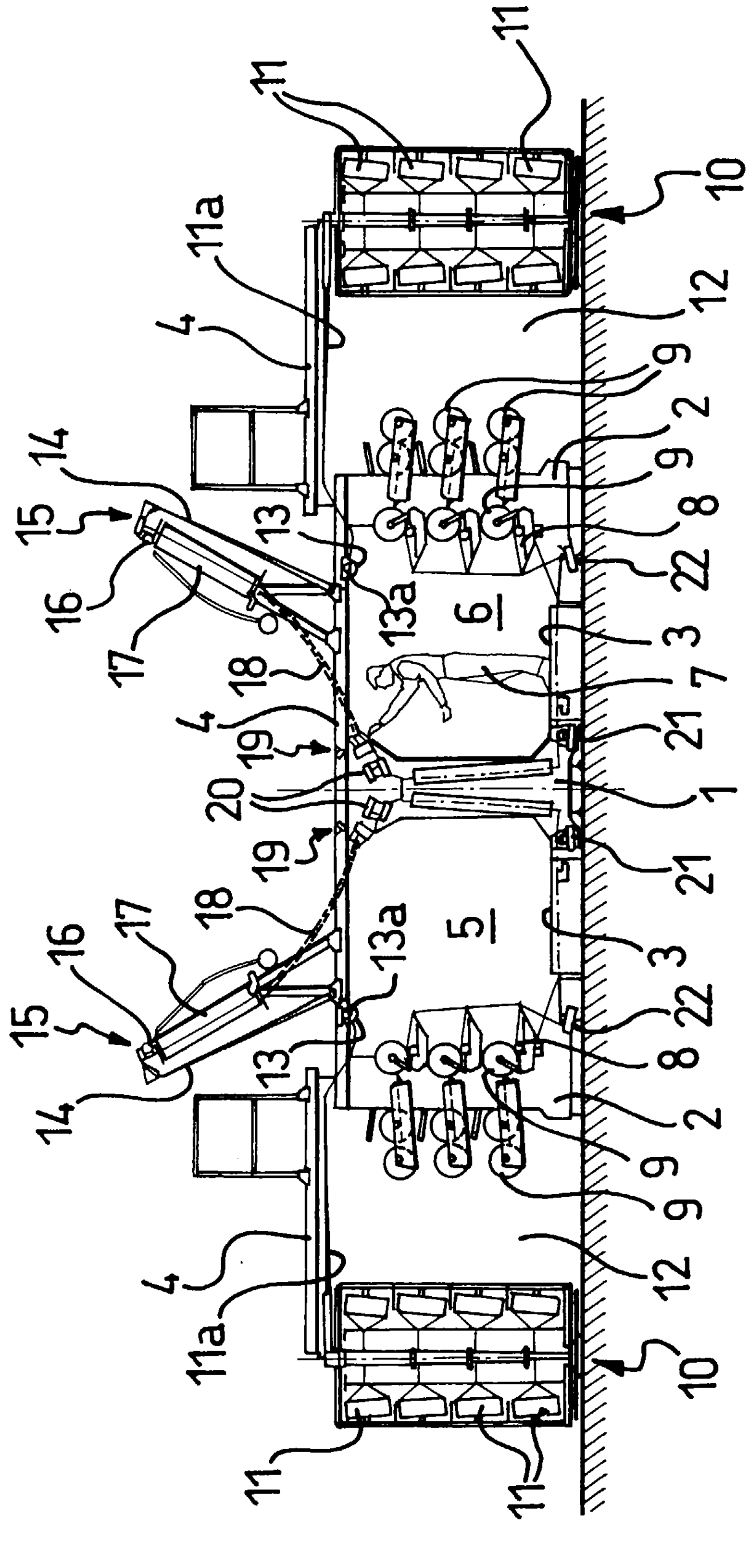

FIG.1

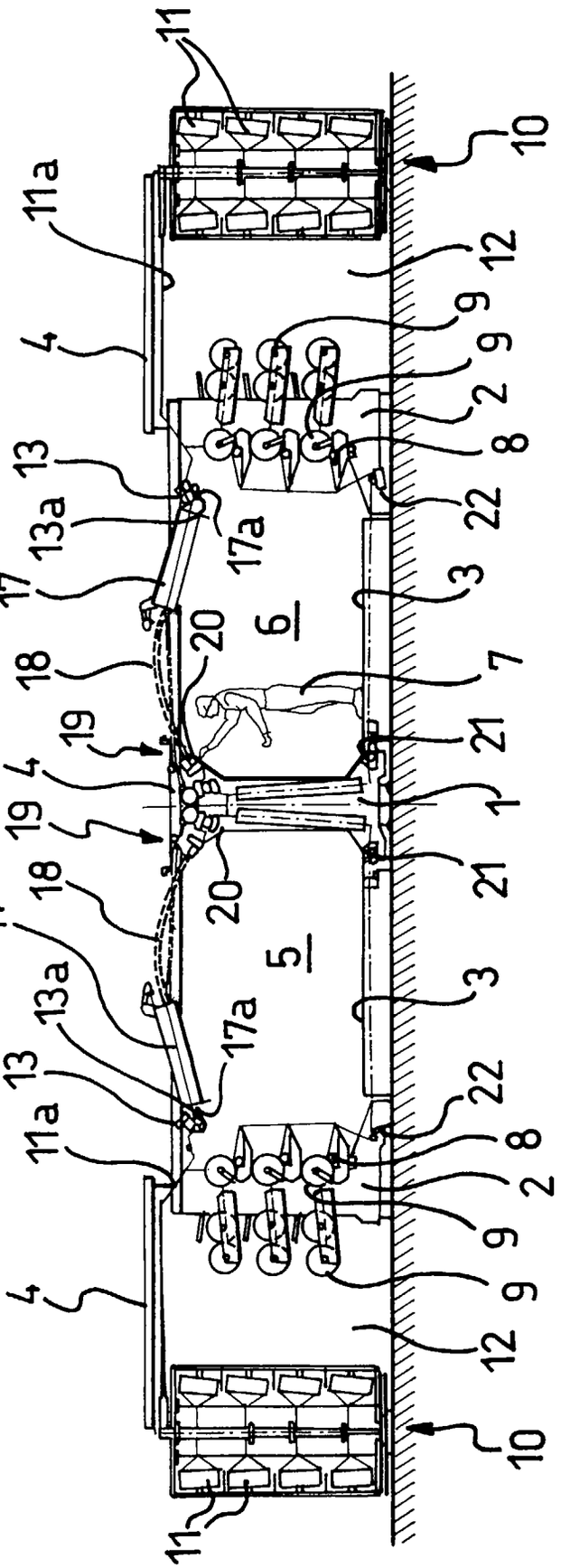

FIG.2

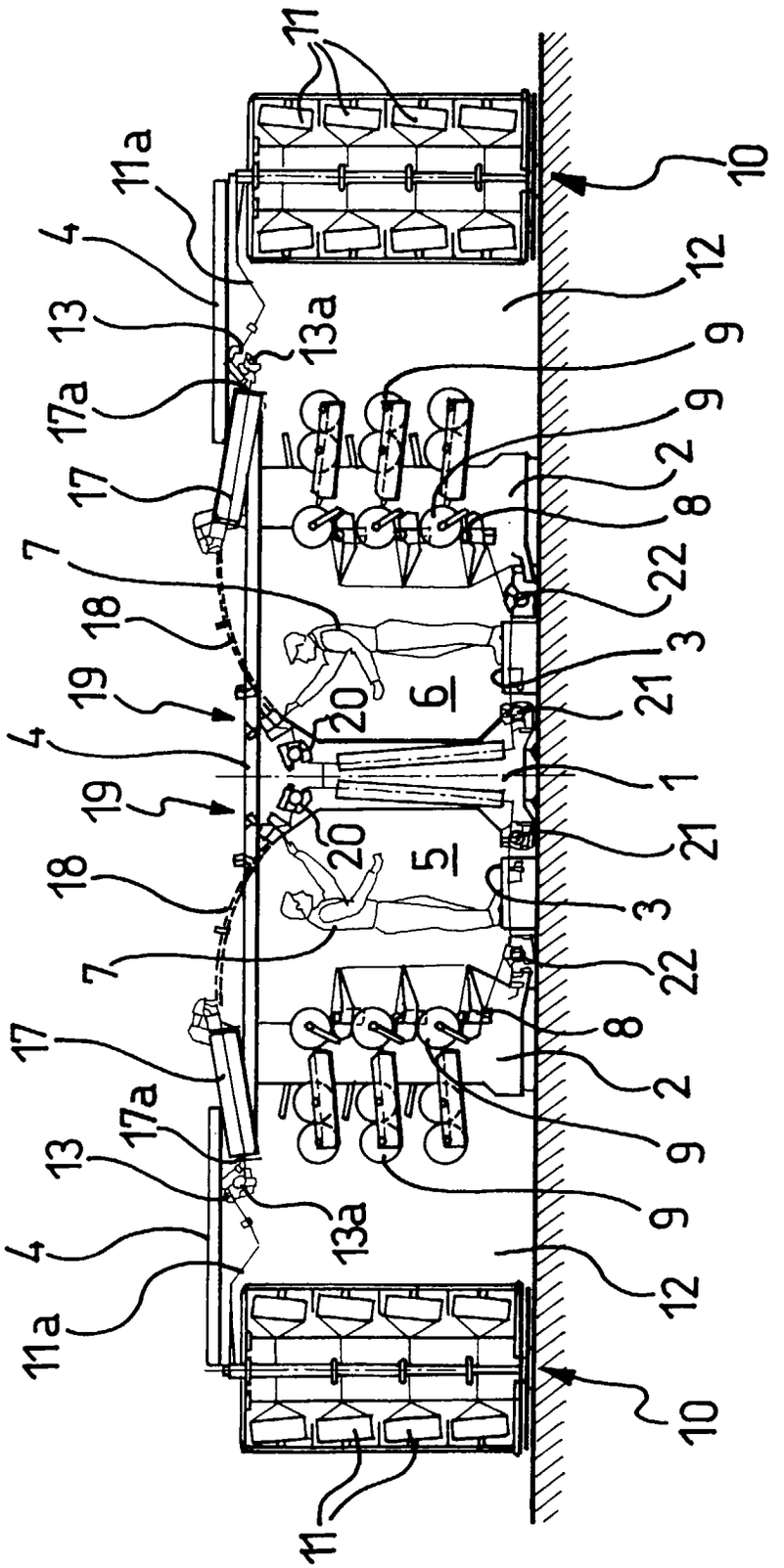

FIG.3

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EUROPEAN SEARCH REPORT

Application Number
EP 96 83 0283

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	EP-A-0 039 938 (MICHALKE FA ERNST) 18 November 1981 * page 5, line 34 - page 6, line 10; figure 1 * ---	1	D02G1/00 D02G1/02
A	US-A-4 905 468 (TANAE FUMIO ET AL) 6 March 1990 * column 3, line 13 - column 4, line 3; figure 1 * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

D02G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30 October 1996	V Beurden-Hopkins, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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