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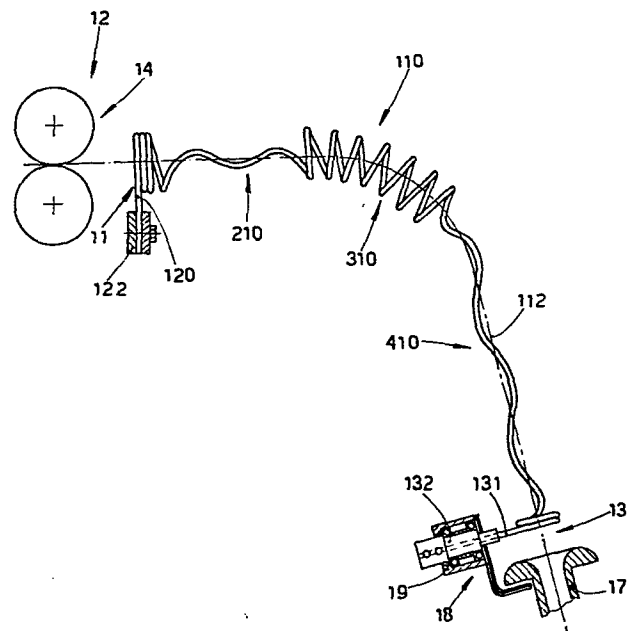
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⑭ **Compensator device for the bobbin-winding carriage in textile machines.**

⑮ A compensator device (10-110) consisting of a sliver flexible support (20-120) arranged in a bow-shape and flexibly anchored at one end (11) to the exit of the drawing frame (12) delivery calender (14) and at its other end (13) to the bobbin-winding carriage (18) transversing along the yarn bobbin (15) being formed along which flexible support (20-120) the sliver (112) is constrained to run at a constant arc length.

The yarn flexible support may be constituted by one or more flexible wire (20), a foil with yarn guide (26) fixed thereon or a coiled wire (120) within which the yarn runs.



EP 0 070 814 A1

Case n.

rif. EP 4-3432

1. Description of the invention entitled:
"COMPENSATOR DEVICE FOR THE BOBBIN-WINDING CARRIAGE IN
TEXTILE MACHINES"
in the name of OFFICINE SAVIO S.p.A. at Pordenone

5.

This invention concerns a compensator device for the carriage that winds bobbins in textile machines with one or more bobbins, said device being suitable for enabling the sliver leaving a drawing frame or derived machine to be taken up.

The main object of the invention is to provide a compensator device able to convey, and maintain a constant length of the sliver between the exit of the drawing frame or derived machine and the intake of the sliver itself by the revolving funnel of the traversing carriage that winds bobbins.

It is known that the movement of the sliver from the calender of the drawing frame to the bobbin has to take place with the fibres kept as condensed as possible so that self-regulation between the fibres does not permit false drafting to occur in the tract of sliver which runs in the compensator, for said tract of sliver has of necessity to undergo the take-up tension necessary for the formation of a compact yarn package.

It is also known that as the position of the delivery of the sliver from the drawing group stays unmoved and corre-

Gilberto Peraz

1. sponds to about the centre line of the spindle, the path of .
the sliver between said delivery position and the spindle .
will vary continuously in length, unless suitable devices .
are present, and the sliver will therefore undergo repeated .
5 stretching when it coincides with the ends of the bobbin, .
and repeated slackening when it coincides with the middle .
of the bobbin. .

Such repeated actions are enhanced by the fact that due .
to the constructional requirements of the machine the length .
10 of the path followed by the sliver between the delivery cal-
enders and the take-up spindle tends to be kept as short as .
possible. .

The repeated slackening and stretching are very harmful .
for the sliver owing to its low strength and consistency. .

15 Devices have been made to eliminate said unwanted stret-
ching and slackening and to guide the sliver along an obliga-
tory path of an always constant length. .

Said known devices obtain this result with articulated .
joint elements, pulley elements or other like elements. .

20 Our invention fulfils its purpose of guiding the sliver .
along an obligatory path of an always constant length with .
a compensator device of flexible nature which is of simpler .
and more solid construction than the known devices and which .
also enables the length of the path between the delivery .
25 point and the take-up spindle to be kept as short as poss-
ible. .

The present invention thereof proposes compensator device .
characterized by consisting of a sliver flexible support ar-
ranged in a bow-shape and flexibly anchored at one end to .
30 the exit of the drawing frame delivery calender and at its .
other end to the bobbin-winding carriage trasversing along .
the yarn bobbin being formed along which flexible support .
the sliver is constrained to run at a constant arc length. .

1. According to a first embodiment of the invention the com-
pensator device consists of at least one flexible element
which has a constant length and is arranged in a bow-shaped
position between the delivery calender and the bobbin-wind-
5. ing carriage moving backwards and forwards along the bobbin
being wound, and which is anchored at its free end by means
of a support to said carriage and fixed end to a support
located near said delivery calender, and which has a curva-
ture varying with the variation in distance between its two
10. ends and able to compensate for the variation in distance
between the delivery point of the sliver from the calender
and the point where said sliver is caused to be deposited
on the bobbin owing to the movement of the carriage.

According to the first embodiment of the invention the
15. compensator device includes at least two articulated joints
each of which is placed between one end of said flexible
bow-shaped element and the relative support, both said
joints being able to prevent the torsional stressing of said
flexible element during the movement of the carriage, and a
20. series of substantially tubular sliver-guide elements in-
stalled elastically on said flexible element and able to
guide the path of the sliver, whereby said elements have
their end portions flared where the sliver enters and leaves
them, so as to prevent said sliver scraping against the end
25. surfaces of said tubular elements.

According to another embodiment the compensator device of
the invention consists essentially of a spring steel wire
wound in coils with a spiral having its diameter and coil
pitch differentiated in at least three different tracts,
30. whereby the compensator is anchored at one end to the exit
of the drawing frame calender and at its other end to the
bobbin-winding carriage trasversing along the yarn package
being formed and whereby the sliver runs insides said coils.

1. According to one aspect of the second embodiment the
spirals of the first and last tracts have greater coil pitch
and smaller diameter as compared to the middle tract and
have the task of guiding the sliver and the additional task
5. of imparting a false twist to it at the same time.

According to yet another aspect of the second embodiment
one of the spirals or both the spirals of the first and last
tracts impart to the sliver a false twist which runs in the
reverse direction in respect of the feed of the sliver it-
10. self.

As it consists of steel wire, the compensator device of
this embodiment has the low inertia needed to resist the fat-
igue stress generated by its alternating movement in winding
the yarn package.

15. An advantage provided by the compensator device of the
latter embodiment lies in the fact that its low inertia fa-
cilitates the rapid alternating movement of the bobbin-wind-
ing carriage.

According to the second embodiment the inlet of the com-
20. pensator device is secured to the drawing frame or like ma-
chine with appendages which are clamped downstream from the
calender and the outlet of the compensator device is secured
to the bobbin-winding carriage with an appendage of the
sliver exit guide.

25. To be more exact, the inlet of the second embodiment con-
sists of two closed coils which have the task of giving
necessary elasticity for the alternating movement of the com-
pensator device, which swings and pivots on said coils in
the vertical and horizontal planes.

30. In both embodiments the actual length of the compensator
device does not vary with the variation of the position of
the bobbin-winding carriage and therefore the length of the
sliver running within the compensator device remains stricly

1. constant, thus leading to perfect compensation.

Hereinafter we shall describe two preferential embodiments of the invention as a non-restrictive examples with the help of the drawings wherein:

5. fig. 1 gives an overall view of the delivery of the drawing frame with a bobbin and with the compensator device according to a first embodiment of the invention;

fig. 2 shows a section through a guide element of the compensator of the embodiment of fig. 1;

10. fig. 3 gives a front view of a textile machine comprising the compensator device according to a second embodiment;

fig. 4 gives a side view of the machine shown in fig. 3;

15. fig. 5 shows the compensator device according to the second embodiment;

fig. 5a shows the inlet head of the compensator device of fig. 5 and the relative anchorage means of the invention;

20. fig. 5b shows the outlet end of the compensator device of fig. 5 and the relative anchorage means of the second embodiment;

fig. 6 gives a three-dimensional view of the application of the device of the invention to a bobbin-winding carriage feeding two bobbins.

25. In the figures the same parts or parts having the same functions bear the same reference numbers.

30. Figures 1 and 2 show the compensator device 10 of the invention according to a first embodiment and the sliver 112 of fibres leaving the delivery calender 14 of the drawing frame 12 and being wound onto the bobbin 15 upheld by the spindle 16 of the take-up group.

The bobbin-winding carriage 18 running on a guide element 19 is also shown.

1. Flexible bow-shaped sliver support 20, which may consist .
of a couple of harmonic wires, flexible rods or like el- .
elements is arranged between said delivery calender 14 and .
said carriage 18 and have their free ends 13 with supports .
22 anchored to said carriage 18 and their fixed ends 11 to .
a support 23 located near said delivery calender 14. .

Articulated joints 24 are located between each 11, 13 end .
of said flexible elements 20 and the relative support 22. .

The flexible support 20 have fixed thereon tubular sliver .
10. guide elements 26 which have their end portions suitably .
flared, where the sliver enters and leaves them, so as to .
prevent said sliver scraping against the end surface 28 of .
said tubular elements 26. .

Let us now look at the method of working of this embodi- .
15. ment; after been processed on the combing head, the sliver .
112 leaves the calender 14, and is made to pass within the .
sliver-guide elements 26 and carriage 18 and is wound around .
the bobbin 15 on spindle 16 of the take-up group; the path .
followed by the sliver 112 from the calender 14 to the car- .
20. riage 18 is kept to a constant length owing to the action .
of the flexible support 20, which, by varying their curva- .
ture during the to-and-fro movement of the carriage 18, com- .
pensate for the variation in distance between the delivery .
point of the sliver 112 from the calender 14 and the point .
25. where the sliver is caused to be deposited on the bobbin 15 .
by said movement of the slider 18. .

It is to be appreciated that the flexible bow-shaped el- .
elements 20 can also consist of foils of various materials or .
other flexible bodies; and that the sliver-guide elements .
30. 26 can be conformed and fitted differently without departing .
thereby from the scope of this embodiment. .

Figs. 3 to 6, refer to a second embodiment of the compen- .
sator device 110 consisting of a sliver flexible support 120 .

1. which has an inlet head 11 secured with a support 122 to .
the machine or drawing frame 12 substantially at the exit .
of the calender 14, and an outlet end 13 secured to the in- .
let of a revolving funnel 17 borne by the bobbin-winding car- .
riage 18 moving with an alternating movement on the guide .
19 located along the bobbin 15 fed with the sliver 112 .
coming from the drawing frame or machine 12. .

The sliver flexible support 120 of this embodiment con- .
sists preferably of spring wire wound in coils with a plu- .
rality of tracts of spirals having differentiated diameters .
and coil pitches. .

In this specific example the flexible support 120 con- .
sists essentially of spring steel wire wound in coils and .
stretching from the drawing frame 12 to the bobbin-winding .
carriage 18; said wire has a first tract 210 with coils .
spaced widely apart, a middle tract 310 acting as an elbow .
and having coils close together and with a larger diameter .
than the first tract 210, and a last tract 410 with coils .
spaced widely apart and a smaller diameter than the middle .
tract 310. .

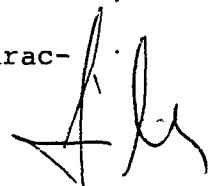
Anchorage means 30 and 31 respectively are envisaged at .
each end of the coiled wire and have the task of securing .
the inlet head 11 to the support 122 of the drawing frame .
12 and the outlet end 13 to the bobbin-winding carriage 18. .

Said anchorage means 30, 31 are solidly fixed to the rela- .
tive end portions 11, 13 of the coiled wire, and said end .
portions 11, 13 respectively consist advantageously of a num- .
ber of coils acting as an articulated joint and as a sliver .
guide at the inlet and outlet of the wire. .

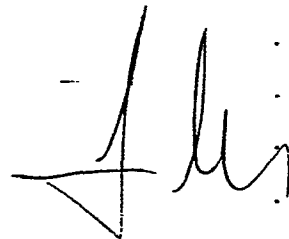
To be more exact, the end portion at the inlet 11 con- .
sists of two closed coils side by side 201 which have the .
task of providing the necessary elasticity for the alternat- .
ing movement of the compensator device 110, which swings and .

C L A I M S

1. 1. - A compensator device (10-110) characterized by consisting of a sliver flexible support (20-120) arranged in a bow-shape and flexible anchored at one end (11) to the exit of the drawing frame (12) delivery calender (14) and at its other end (13) to the bobbin-winding carriage (18) traversing along the yarn bobbin (15) being formed along which flexible support (20-120), the sliver (112) is constrained to run at a constant arc length.
- 10 2. - A compensator device (10-110) as in claim 1 characterized by the fact that the flexible support (20-120) consists of at least one flexible element which has a constant length and is arranged in a bow-shaped position between the delivery calender (14) and the bobbin-winding carriage (18) moving backwards and forwards along the bobbin being wound, and which is anchored at its free ends (13) by means of a support (22-122) to said carriage (18) and fixed end (11) to a support (23) located near said delivery calender (14), and which has a curvature varying with the variation in the linear distance between its two ends (11, 13) and able to compensate for the variation in distance between the delivery point of the sliver from the calender (14) and the point where said sliver is caused to be deposited on the bobbin (15) owing to the movement of the carriage (18).
- 20 3. - A compensator device (10) as in claim 2, characterized by the fact that the flexible support (20) consists of flexible rods, carrying a plurality of tubular elements (26) fixed thereon for guiding the sliver (112).
4. - A compensator device (10) as in claim 2, characterized by the fact that the flexible support (20) consists of a harmonic wire carrying fixed thereon tubular elements (26) for guiding the sliver (112).
- 30 5. - A compensator device (110) as in claim 1 or 2 charac-



1. terized by the fact that the flexible support (120) consists.
of a spring wire wound in coils.
6. - A compensator device (110) as in claim 5, characterized
by the fact that said coiled wire has a spiral having a di-
5. ameter and coil pitch differentiated in a plurality of dis-
tinct tracts (210, 310, 410).
7. - A compensator device (110) as in claim 6, characterized
by the fact that coiled wire is wound in at least three dis-
tinct tracts (210, 310, 410), whereby the spiral of each
10. tract has a diameter and pitches different from each of the
other tracts.
8. - A compensator device (110) as in claim 7, characterized
by the fact that the intermediate tract (310) has a spiral
with a larger diameter and a smaller pitch in comparison to
15. the diameter and pitch of the other tracts (210, 410).
9. - A compensator device (110) as in claim 8, characterized
by the fact that the coiled wire end portion (11) at the in-
let of the compensator consists of at least two closed coils
(201) solidly fixed to anchorage means (30) consisting of
20. two appendages (130) clamped to the support (122) of the
drawing frame (12).
10. - A compensator device (110) as in claim 8, character-
ized by the fact that the coiled wire end portion (13) at
the outlet of the compensator consists of a closed coil
25. (211) solidly fixed to anchorage means (31) consisting of
an appendage (131) rotatably secured to the carriage (18).



1/5

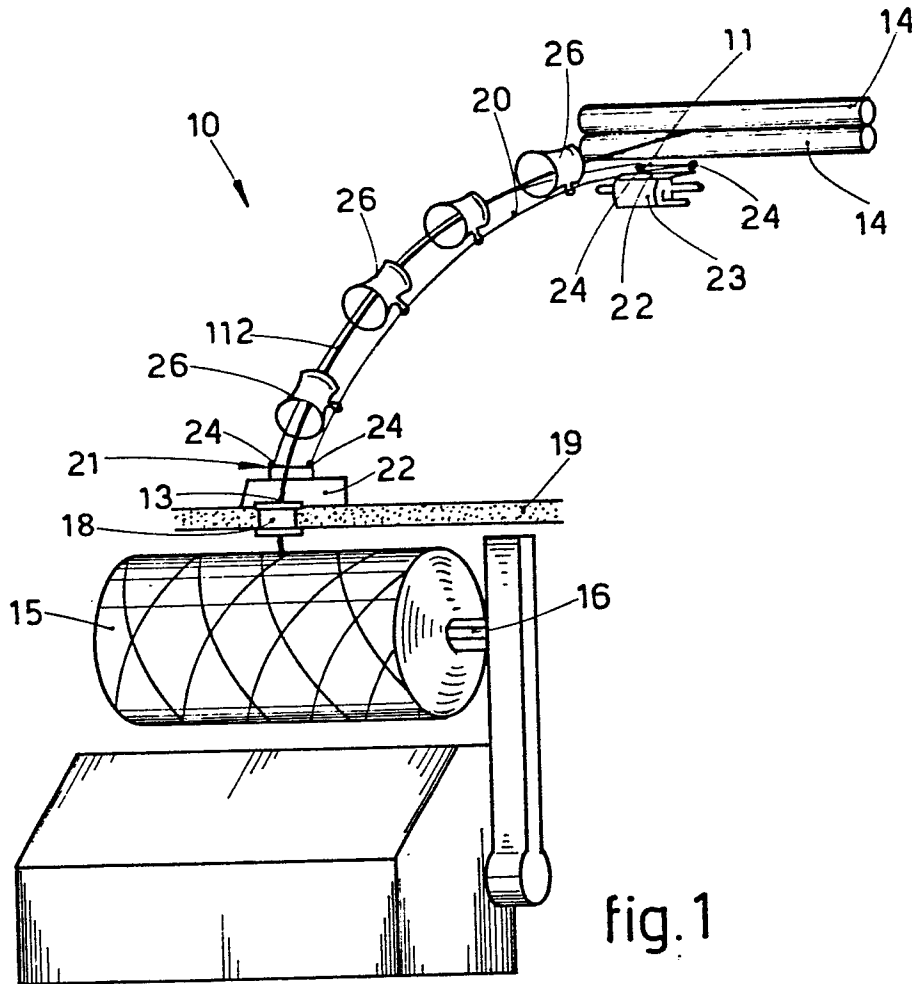


fig. 1

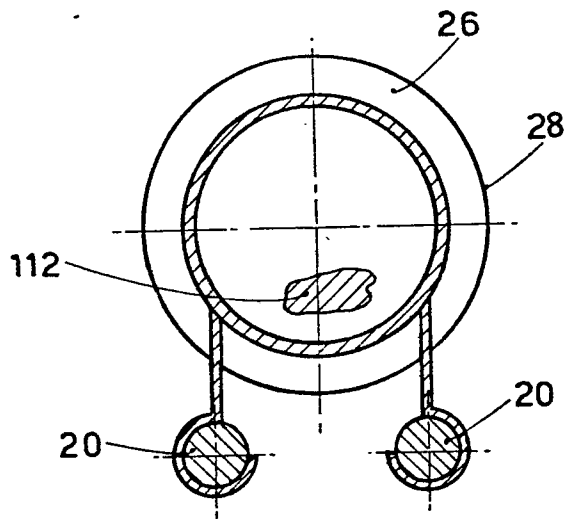


fig. 2

2/5

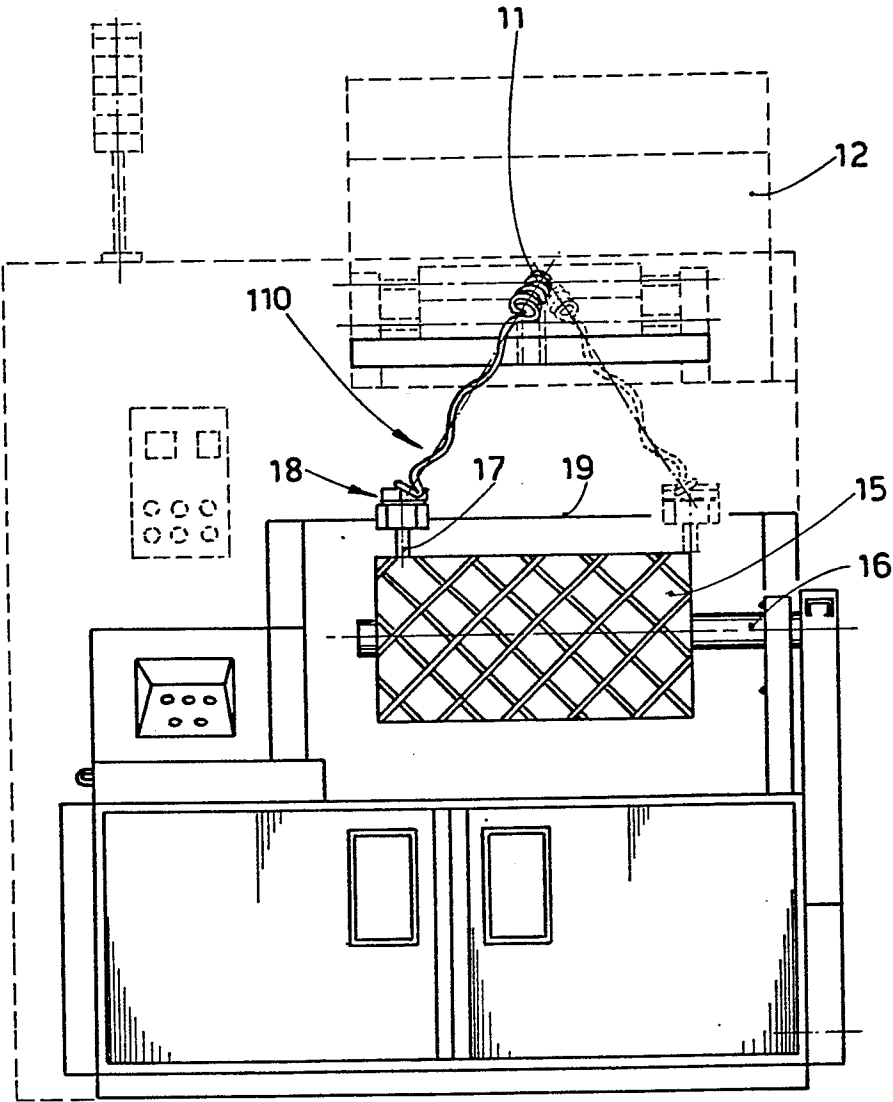


fig. 3

3/5

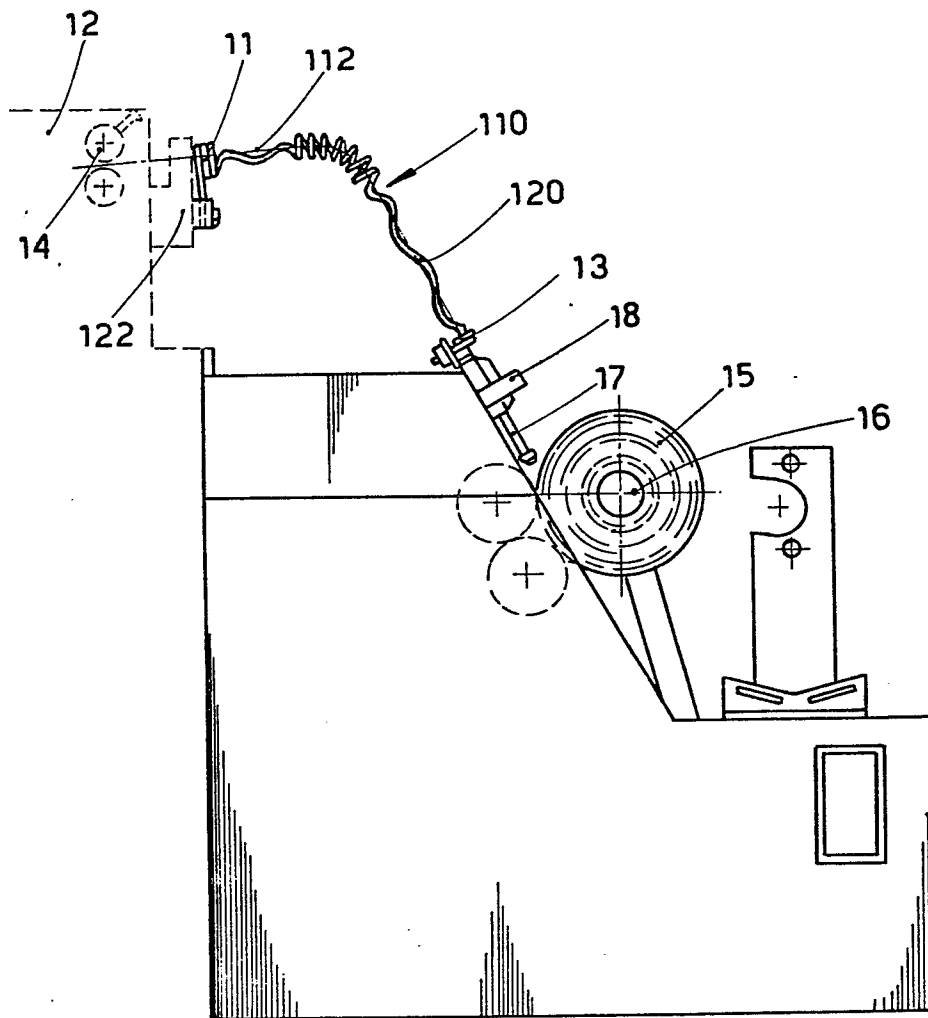


fig.4

A handwritten signature or set of initials, possibly 'Aly', written in black ink.

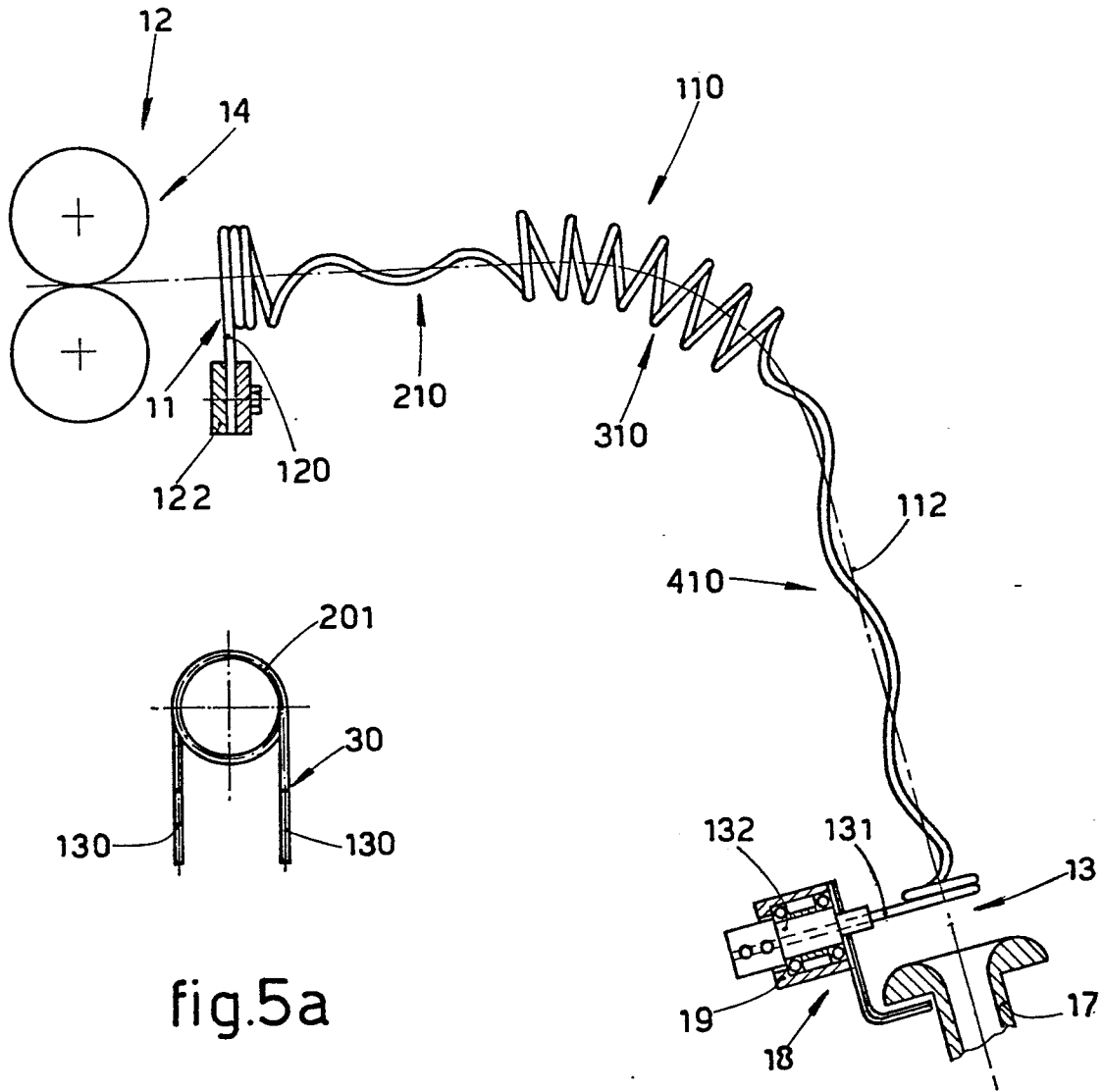


fig.5a

fig.5

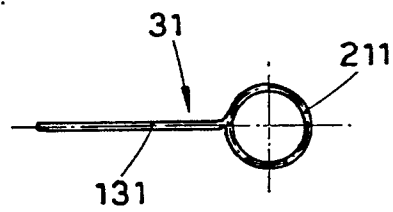


fig.5b

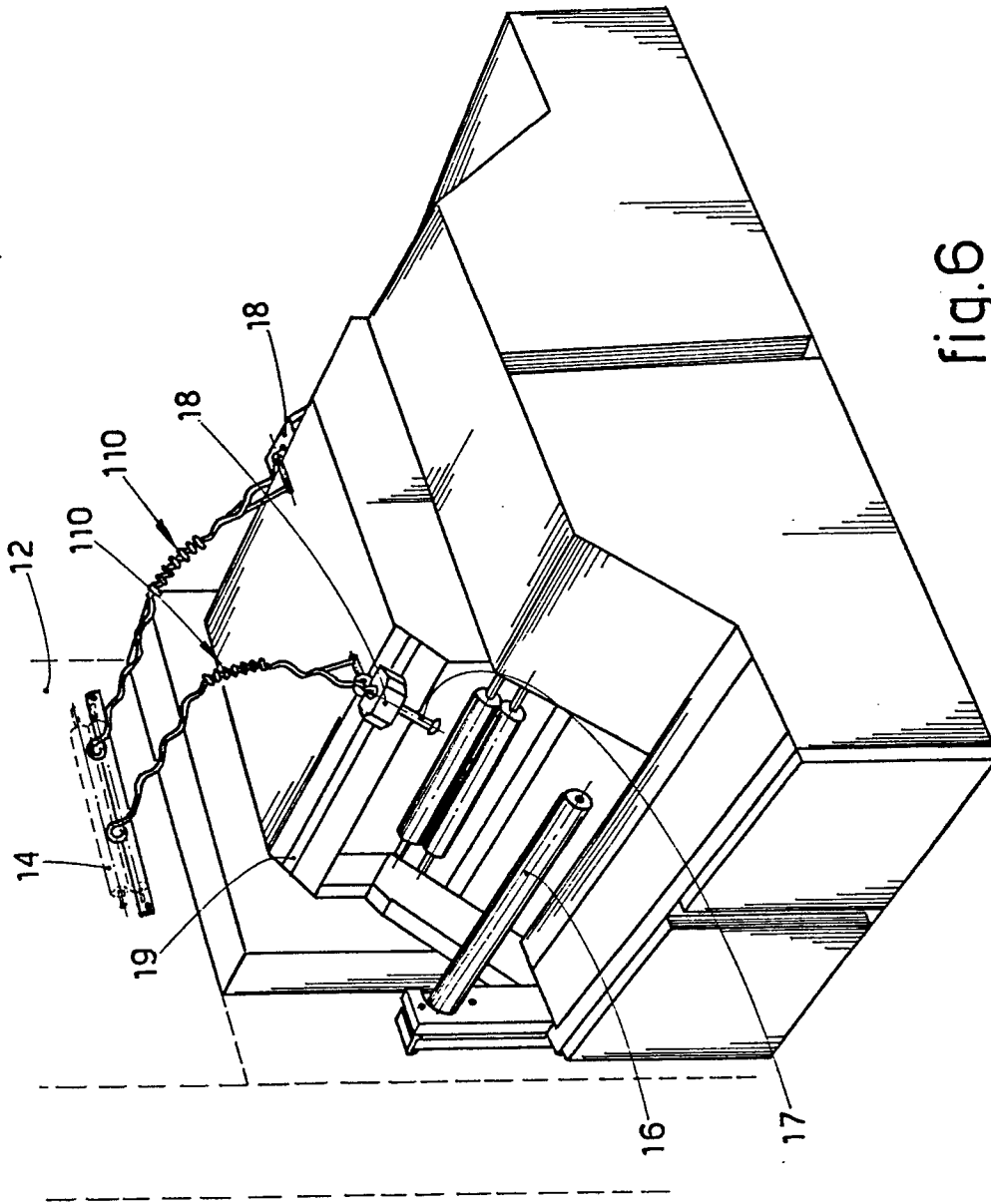


fig.6

A handwritten signature or set of initials, possibly 'A. M.', located at the bottom right of the page.



European Patent
Office

EUROPEAN SEARCH REPORT

Application number

EP 82 83 0206

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. 3)
X	BE-A- 659 089 (J.M.J. SAUVAGE) *Whole document*	1,2,5	B 65 H 59/00 B 65 H 57/12 D 01 H 13/04
X	US-A-3 670 978 (M. DRAGISICH) *Whole document, in particular column 5, lines 20-25*	1,2,3	
X	GB-A-1 063 181 (M. REITER) *Whole document*	1,2,5	
X	US-A-3 518 733 (TECHNISERVICE CORP.) *Whole document*	1,2	
X	GB-A- 883 609 (H. STEINWANDT) *Whole document*	1,2	
X	DE-B-1 059 321 (CHR. MANN) *Whole document*	1,2	
A	GB-A-1 512 373 (R.S. GILCHRIST)		D 01 H B 65 H
A	US-A-2 442 817 (J.B. LYLE)		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22-10-1982	Examiner DEPRUN M.
CATEGORY OF CITED DOCUMENTS		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 L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			