

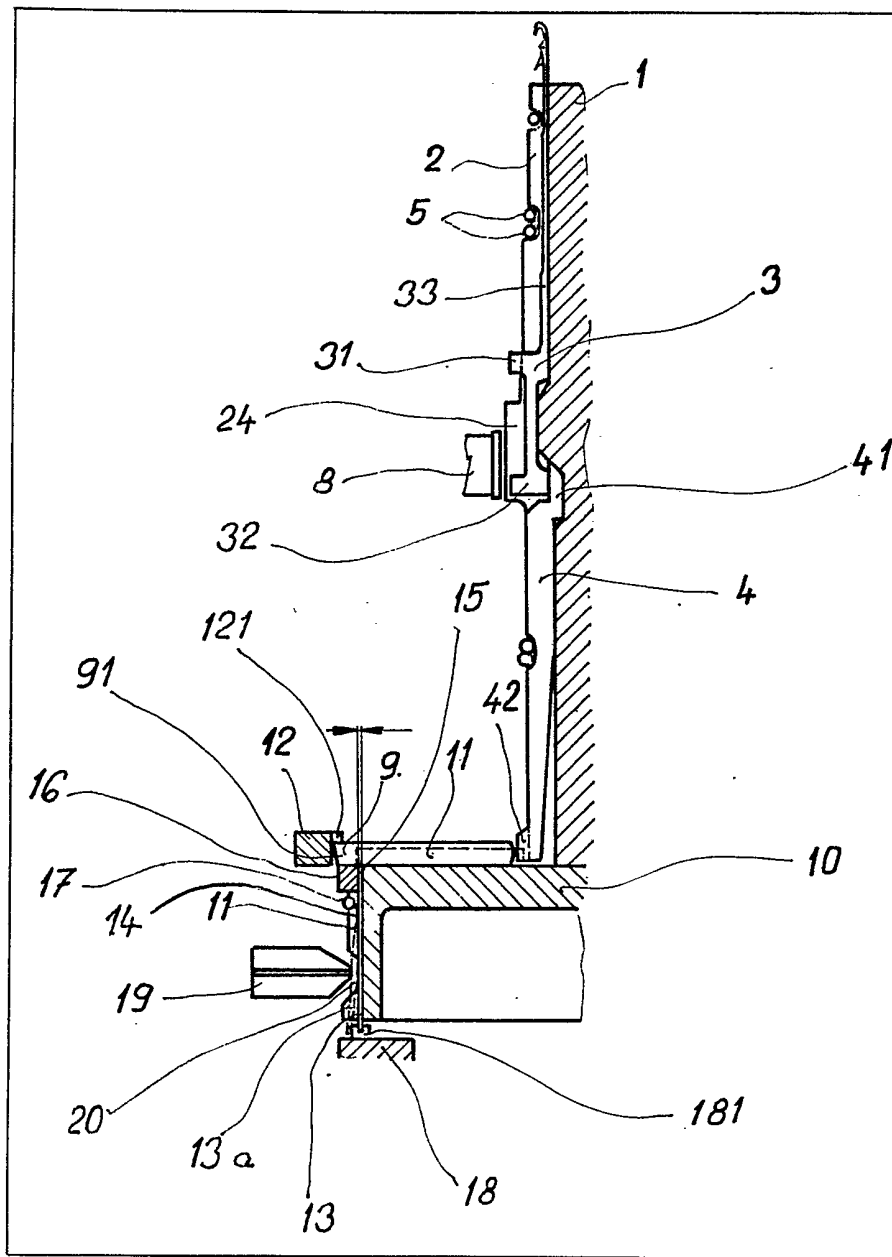
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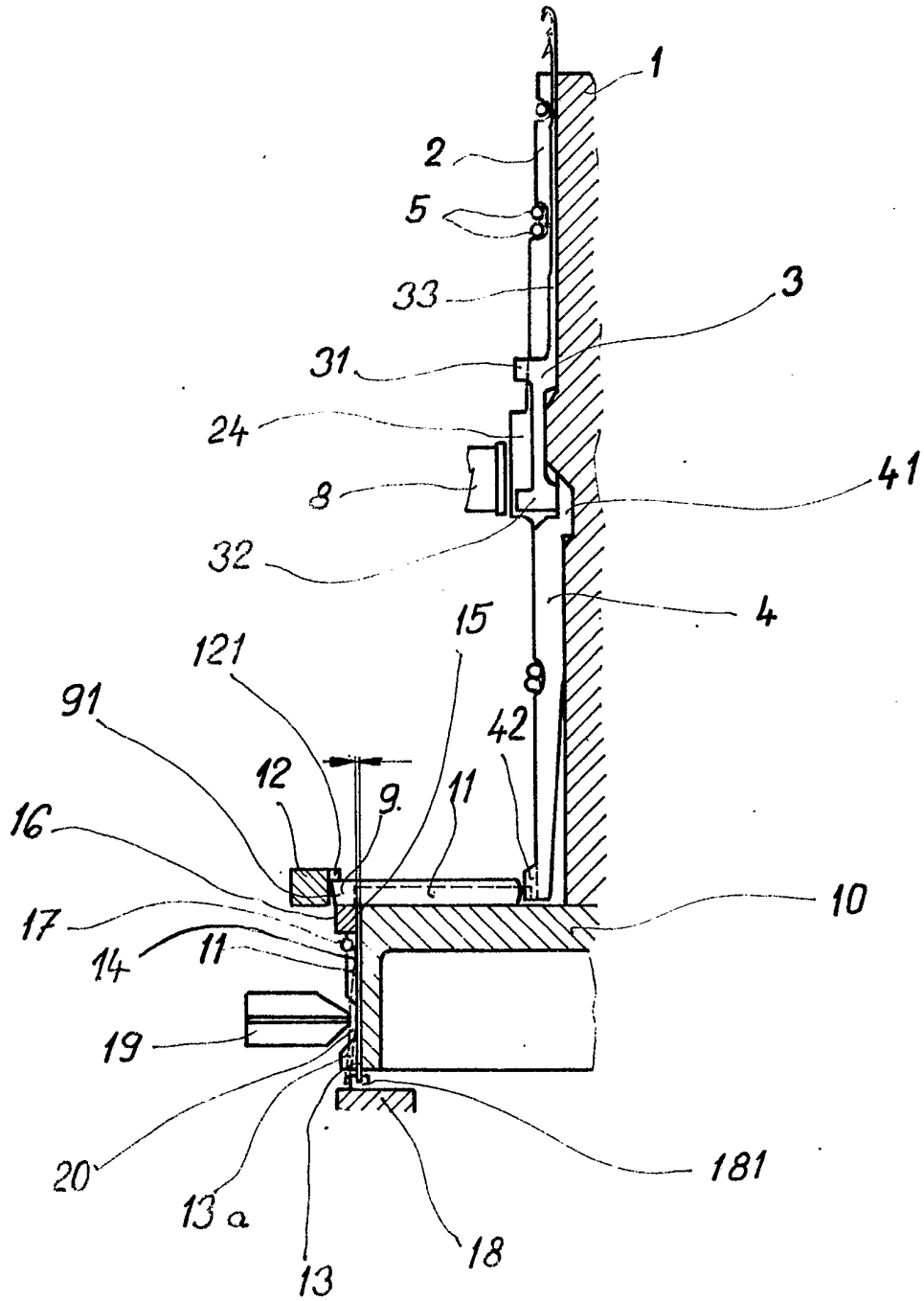
(54) Circular knitting machine

(57) In a circular knitting machine of the small diameter and multifeed type, with means for the individual selection of knitting needles with jacks and intermediate jacks associated therewith, an intermediate jack (9) is mounted displaceably and tiltably

within a trick of a body (10) and can be situated radially, or possibly perpendicular to the axis of rotation of the needle cylinder. With the outer end of the intermediate jack is associated an elastic patterning jack (13), mounted in a trick (14) of the body (10), said trick being parallel to the tricks of the needle cylinder.



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SPECIFICATION

Circular knitting machine

The present invention relates to a circular knitting machine of the small diameter,
5 particularly the multifeed type.

Knitting machines known hitherto form various structures in the knitwork by distributing the needles into several positions. For the purpose of securing needle selection into the separate
10 positions, the knitting machines are provided with various active elements mounted in the needle cylinder grooves below the knitting needles. Those active elements are arranged in the needle
15 cylinder either displaceably and/or rotatably, and are provided with known butts, with which raising cams are associated, which are controlled by a programming mechanism, e.g. a control drum, patterning drums, and similar.

The main disadvantage of a knitting machine
20 arranged in such manner consists in that for the purpose of securing more intricate structures, the number of butts on the control elements becomes considerably increased.

The aim of the present invention consists in
25 mitigating the disadvantages of the arrangement of the knitting machine as known hitherto.

The task of the present invention consists in constituting such arrangement of the knitting machine, which would make it possible to secure
30 the needle selection to the separate positions by means of elements controlled by an electromechanical converter, which itself is controlled by a program.

According to the invention, there is provided a
35 small diameter circular knitting machine, particularly of the multifeed type, provided with means for individual selection of knitting needles, in which each knitting needle is associated with an elastic patterning jack and an intermediate jack,
40 the intermediate jack being mounted displaceably and tiltably inside a body and its outer end being associated with the elastic patterning jack, which is mounted within a trick of the body, parallel to the tricks of the needle cylinder.

The main advantage of a knitting machine of such arrangement consists in that it makes
45 possible an arbitrary change of needle distribution, even at high circumferential speed values of the present knitting machines, and further makes it possible to control the distribution changes of the
50 needles to the necessary positions by means of electronic control. A further advantage consists in that although the bad operation of the patterning device may cause a bad needle distribution, and thus a failure in the knitwork pattern, there is no
55 mechanical failure in the knitting machine itself.

An embodiment of the invention will now be described by way of example, with reference to
60 the accompanying drawing, which represents the active elements of the knitting machine.

A circular knitting machine is provided with a needle cylinder 1, in the tricks 2 of which are mounted knitting needles 3, e.g. double-butt needles and, below said knitting needles 3,

65 swingably mounted jacks 4. The knitting needles 3 are held in the needle cylinder by means of springs 5. At the outer circumference of the needle cylinder 1, within the space of butts 31, 32 of the knitting needles 3, raising cams 8 and, further not
70 represented lowering cams are fixed to the stationary part of the machine. With the swingably mounted jack 4, a displaceably and tiltably mounted jack 9 is associated, which is mounted in a body 10, which is provided with radial tricks. At
75 the outer circumference of jacks 9, cams 12 are fixed to the stationary part of the machine. Each jack 9 has associated therewith an elastic patterning jack 13, which is placed in tricks 14 of the body 10, which are parallel to the tricks 2 of
80 needle cylinder 1. The body 10 is embraced in its upper part 15 by a stationary ring 16, the depth of trick 14 below ring 16 being greater than the thickness of the jack 13. The jacks 13 are embraced below the stationary ring 16 by an
85 elastic ring 17. Below the jack 13 is mounted a raising cam 18. A controlling patterning electromechanical converter 19 co-operates with the jacks 13 within the space of recess 20.

The lower butt 32 of knitting needle 3 is
90 positioned within the area of raising cam 8, and the upper butt 31 within the area of the not represented lowering cam. The swingably mounted jack 4 has a projection 41 at its upper part, which makes it possible to displace the
95 knitting needle 3 into co-operation with raising cam 8. At the lower end jack 4 is provided with a further projection 42, against which bears jack 9, for the displacement of which is intended projection 121 of the cam 12.

The circular knitting machine operates as
100 follows:

The basic position of knitting needle 3 is shown in the drawing, the lower butt 32 of knitting
105 needle 3 being completely between the projections of ribs 24 and the projection 42 of jack 4 projecting from the needle cylinder 1. The distribution of knitting needles is initiated by the electrochemical converter 19, which in its active condition holds the jack 13 in its rest position 13a.

110 When the electrochemical converter 19 is not activated, the projection 181 of raising cam 18 lifts the jack 13 and, together therewith, also the outer end 91 of jack 9, which is thus projected within the range of projection 121 of cam 12.
115 Thus, also jack 9 is displaced and presses against projection 42. In that manner, jack 4 is swung out, and tilts out, by means of its projection 41, the lower butt 32 of knitting needle 3, which is made possible by the elasticity of shank 33 of the
120 knitting needle 3, within the range of raising cam 8.

The radial tricks 11 can be made at different inclination, advantageously also perpendicular to the axis of rotation of needle cylinder 1. From the
125 viewpoint of improving the introduction of the jacks 9 to the cams, the said tricks can be made in such manner, that their longitudinal axis is skewed relative to the axis of rotation of the needle cylinder.

CLAIMS

1. A small diameter circular knitting machine, particularly of the multifeed type, provided with means for individual selection of knitting needles,
- 5 in which each knitting needle is associated with an elastic patterning jack and an intermediate jack, the intermediate jack being mounted displaceably and tiltably inside a body and its outer end being associated with the elastic patterning jack, which
- 10 is mounted within a trick of the body, parallel to the tricks of the needle cylinder.
2. A circular knitting machine as claimed in Claim 1, wherein the body is embraced in its upper part about its outer circumference with a
- 15 stationary ring, and the depth of the trick below the ring is greater than the thickness of the elastic patterning jack.
3. A circular knitting machine as claimed in Claim 2, wherein the elastic patterning jacks are embraced below the stationary ring by an elastic ring.
- 20 4. A circular knitting machine as claimed in any one of Claims 1 to 3, wherein below the elastic patterning jack is mounted a raising cam.
- 25 5. A circular knitting machine as claimed in Claim 4, wherein a controlling electromechanical converter is co-operable within the space of a recess, with the elastic patterning jack.
- 30 6. A small diameter circular knitting machine substantially as hereinbefore described with reference to the accompanying drawing.