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EUROPEAN PATENT APPLICATION

21 Application number: 85830034.6

51 Int. Cl.⁴: **D 02 G 1/02**

22 Date of filing: 14.02.85

30 Priority: 17.02.84 IT 1967684

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43 Date of publication of application: 18.09.85
Bulletin 85/38

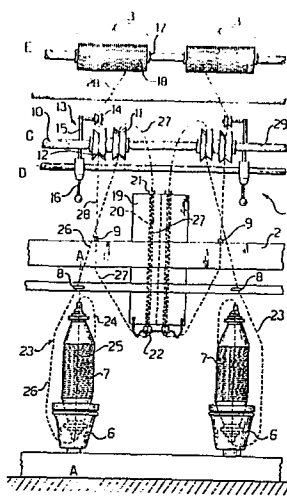
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84 Designated Contracting States: **AT BE CH DE FR GB LI LU NL SE**

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54 **Machine for producing textured crepe yarn.**

57 A machine (1) for producing a textured crêpe yarn comprises, in a frame (2), a plurality of operative units (3) in each of which there is identified a yarn path (23) between a spindle (7) being unwound and a bobbin (18) being wound. Each operative unit (3) includes two feed pulleys (11, 12) keyed onto a feed shaft (10) and acting on the yarn downstream of the spindle (7) and upstream of the bobbin (18) respectively. Each operative unit (3) further includes a heater (19) located on the yarn path between the pulleys (11, 12) and a false-twist spindle (9) located on the yarn path between the heater (19) and the feed pulley (12) upstream of the bobbin (18).



"Machine for producing textured crepe yarn"

The present invention relates to a machine for producing textured crepe yarn.

5 Currently such yarns are made on a twisting frame of the standard type or of the so-called double-twist type.

After being twisted, the yarn is placed in an autoclave, where it undergoes steaming which substantially reduces its tension due to the twisting.

10 Finally the yarn is textured in a so-called false-twist machine in which the yarn passes at high speed through a false-twist spindle rotating at very high speed.

15 This method, while satisfactory from various points of view and substantially serving the purpose, does, however, have the acknowledged disadvantage, to date unresolved, of being lengthy and of requiring complex and hence expensive machinery.

20 The problem at the root of the present invention is that of devising a machine of the type specified which has structural and functional characteristics such as to overcome the disadvantages mentioned above with reference to the prior art.

25 The problem is solved by a machine of the type specified, which is characterised in that it includes, in a support frame, a yarn path extending between a spindle being unwound and a bobbin being wound, a first feed pulley acting on the yarn downstream of the spindle, a second feed pulley acting on the yarn upstream of the bobbin, a heater located

on the yarn path between the pulleys and traversed by the yarn, and a false-twist spindle located on the yarn path between the heater and the second feed pulley and traversed by the yarn.

5 Further characteristics and advantages of the machine according to the present invention will be revealed in the following description of a preferred embodiment, given by way of non-limiting example, with reference to the appended drawings in which:

10 Figure 1 is a schematic elevational view of a machine according to the invention;

Figure 2 is a view of a detail of the machine of Figure 1 taken in the direction of the arrow II, and

15 Figure 3 is a sectional view of the machine of Figure 1 taken on the line III-III.

With reference to the appended drawings, the machine 1 includes a support frame 2, substantially the height of a man, for example 1.80 metres, extending
20 longitudinally as far as necessary.

The machine 1 further includes a plurality of operative units, each indicated 3 which repeat side by side along the frame 2, in two parallel lines of units 3, indicated 4 and 5, on opposite
25 sides of the frame 2.

The units 3 are substantially identical to each other and hence a detailed description of only one of them is given below.

5. The unit 3 includes a spindle-holder 6, rotatably mounted with its axis A-A vertical on the foot of the frame 2. A spindle 7 is mounted in the spindle-holder 6.

Above the spindle 7, the unit 3 includes a coil yarn-guide 8 fixed to the frame 2.

10 Above the spindle 7 and the coil yarn-guide 8, a false-twist spindle 9, having a vertical axis of rotation B-B, is rotatably supported on the frame 2.

15 Above the false-twist spindle 9 the frame 2 rotatably supports a feed shaft 10, having a longitudinally-extending horizontal axis C-C, on which there are keyed a first yarn-feed pulley 11 and a second yarn-feed pulley 12, substantially side-by-side.

20 It should be noted that each feed pulley 11 and 12 has a device 13 for varying the angle α , β respectively at which the yarn passes over the pulley, each device including a small pulley 14 freely-rotatably mounted at the end of an arm 15 which is, in turn, angularly displaceable about an axis
25 D-D parallel to the axis C-C by means of a manually-operable lever hand grip 16.

The pulleys 11 and 12 act on the yarn with a tractive force which is predetermined according to the amplitude of the angle α or β .

5. Above the feed shaft 10, the unit 3 includes a bobbin-carrier rotatably supported substantially at the top of the frame 2 about a longitudinal axis E-E. A bobbin indicated 18 is mounted on the bobbin-carrier 17.

10 The unit 3 further includes a heater 19 supported by the frame 2 and extending vertically through a distance approximately between the yarn-guide 8 and the shaft 10. A passage 20 extends vertically within the heater 19 and has an upper inlet orifice 21 and a lower outlet orifice 22.

15 The unit 3 includes a yarn path, generally indicated 23, between the spindle 7 being unwound and the bobbin 18 being wound, this path comprising successive sections which will be described in detail below.

20 The yarn path 23 includes a first, ascending section 24 in which the yarn, in its initial state, is unwound from the spindle 7 and reaches the upper end of the spindle.

25 There follows a descending section 25 extending through the spindle 7 to the lower end of the spindle itself. In this section the yarn is in a single-twisted state, this twisting having occurred during its passage over the upper end of the spindle.

The section 25 is followed by an ascending section 26 which extends from the lower end of the spindle 7 up to the feed pulley 11. Along this section 26 the yarn passes through the yarn-guide 8, is
5 guided thereby, and is in a double-twisted state having undergone further twisting when passing over the lower end of the spindle.

The section 26 is followed by a section 27 which extends from the pulley 11 to the false-twist spindle 9.
10 In this section 27 the yarn passes through the passage 20 in the heater 19, entering through the orifice 21 and leaving through the orifice 22. The section 27 descends from the pulley 11 to the outlet orifice 22 and then ascends to the false-twist spindle 9.

15 Along the section 27 the yarn is in a double-twisted state to which a further twist, for example S, is added, by the action of the false-twist spindle 9. As a result of the presence of the heater 19, the yarn, while passing therethrough, undergoes
20 fixing of the double twist and of the twist S, thus becoming textured.

The section 27 is followed by a final, substantially-ascending section 28, extending from the false-twist spindle 9 to the bobbin 18. In this section the
25 yarn passes at a pre-established, adjustable angle β over the feed pulley 12. In the section 28 the yarn is subjected, again through the action of the false-twist spindle 9, to a further twist in the opposite sense to the preceding twist, thus,
30 for example, returning to the state of twist achieved in the section 26, and giving rise to a so-called crêpe-twisted textured yarn.

At the end of the section 28, the yarn is wound on the bobbin 18.

5 It should be noted that, to advantage, the feed shafts 10 of the units 3 in the line 4 constitute a single shaft 29 extending along the frame 2, and the feed shafts 10 of the units 3 of the line 5 also constitute another single shaft 30 extending along the frame 2.

10 It should also be noted that the heaters 19 of the units 3 are grouped together in fours, each group being in a single body 31. In particular, each single body 31 groups together the heaters of two units 3 lying side by side in the line 4 and two corresponding units 3 lying side by side in the line
15 5, each body being located centrally of the respective units.

The main advantage of the machine according to the invention lies in the fact that it has enabled a significant energy saving to be achieved. With
20 the machine according to the invention, in fact, the steaming autoclave used hitherto has been entirely eliminated.

The handling and conveyance of bobbins between different machines is also reduced since the textured
25 crêpe yarn is obtained in a single machine.

A further advantage results from the relatively low speed (substantially equal to the normal twisting speed) to which the yarn is subjected in the machine according to the invention. This allows the false-

twist spindle to rotate at a lower speed than hither-
to in false-twist machines and, hence, gives operating
conditions for the false-twist spindle which are
much less critical. It may, in fact, rotate at
5 a relatively low speed, as opposed to the very high
speeds (600,000 revolutions per minute) needed in
prior-art machines to ensure adequate productivity.

It should further be noted that the machine according
to the invention is simple and economical to construct
10 by virtue of the fact that the feed pulleys provided
downstream and upstream of the spindle being unwound
and the bobbin being wound are keyed side by side
on a single shaft.

Another factor that adds to the simple and economical
15 construction of the machine according to the invention
results from the fact that it includes several units
located side by side in two lines, and that the
units in both lines all have their feed pulleys
keyed onto a single shaft.

20 A further advantage, both from the energy-saving point
of view and that of constructional simplicity
of the machine, results from the grouping together
of the heaters in groups of four with an evident
reduction in the heat dissipated to the exterior.

25 Finally, it should be noted that the machine according
to the invention has proved to be reliable in operation
and requires less maintenance and servicing by
virtue of the relatively low speed typical of its
operation.

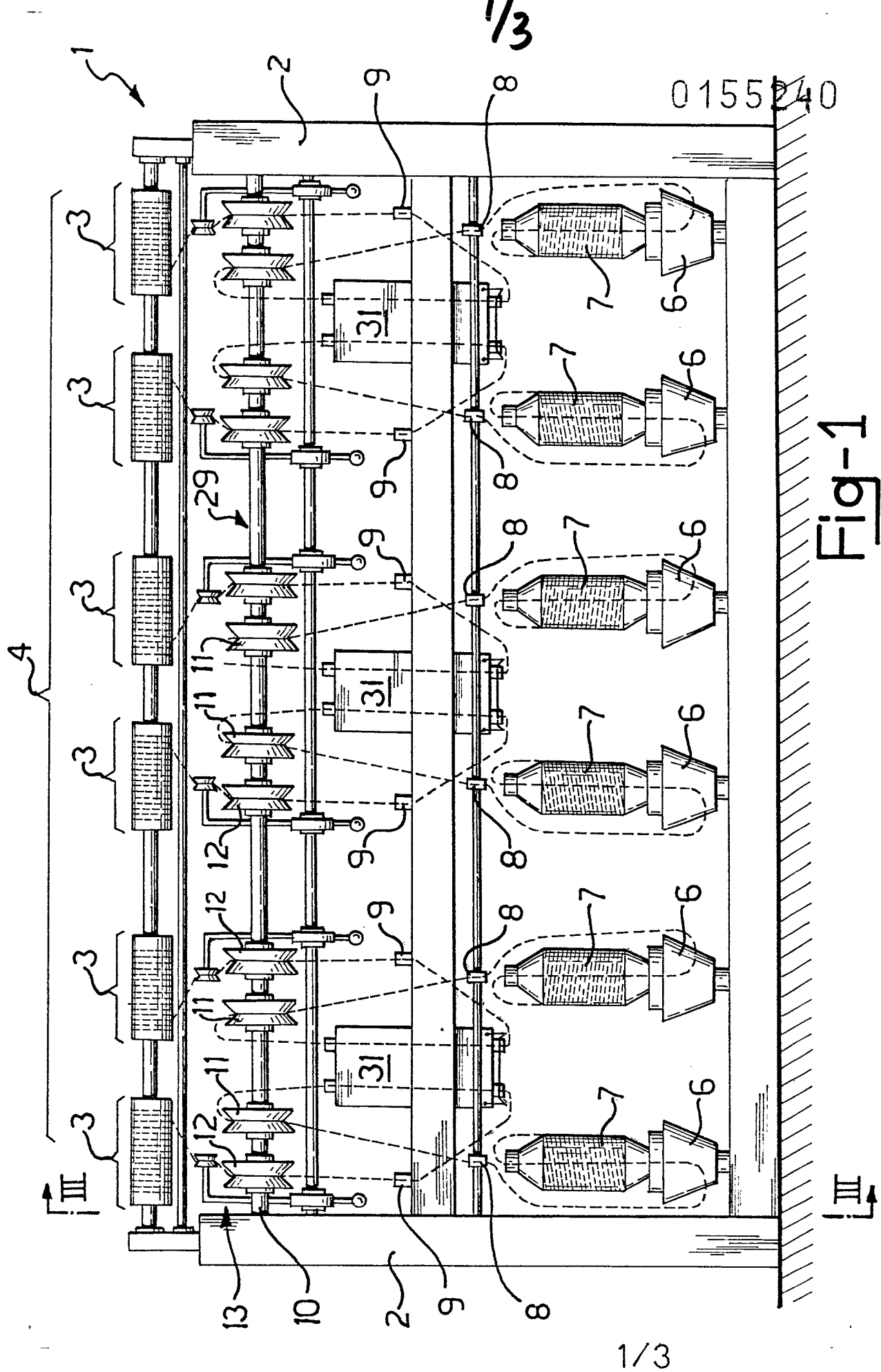
CLAIMS

1. A machine (1) for producing a textured crêpe yarn, characterised in that it includes, in a support frame (2) a yarn path (23) extending between a spindle (7) being unwound and a bobbin (18) being wound, a first feed pulley (11) acting on the yarn downstream of the spindle (7), a second feed pulley (12) acting on the yarn upstream of the bobbin (18), a heater (19) located on the yarn path between the pulleys (11, 12) and traversed by the yarn, and a false-twist spindle (9) located on the yarn path between the heater (19) and the second feed pulley (12) and traversed by the yarn.

2. A machine according to Claim 1, characterised in that the pulleys (11,12) are keyed coaxially on a common shaft (10) rotatably supported by the frame (2).

3. A machine according to Claim 2, characterised in that it (1) includes additional yarn paths (23) side by side in two parallel lines (4,5) and in that the heaters (19) for these yarn paths are grouped in fours, each group being in a single body (31) located centrally of the respective yarn paths.

4. A machine according to Claim 3, characterised in that the common shafts (10) of the feed pulleys (11,12) of all the yarn paths (23) in each line (4 or 5) constitute respective single shafts (29 or 30).



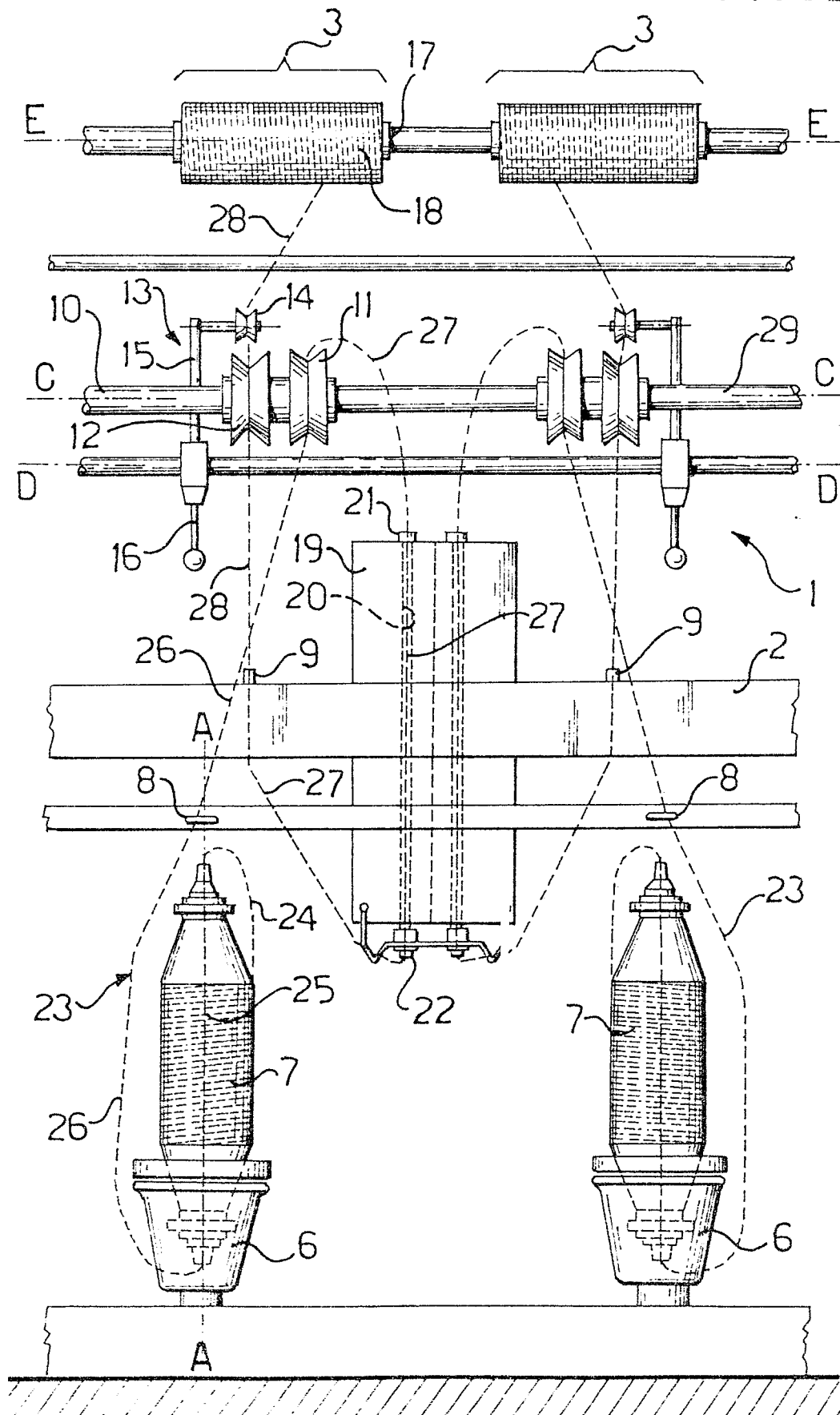


Fig-2

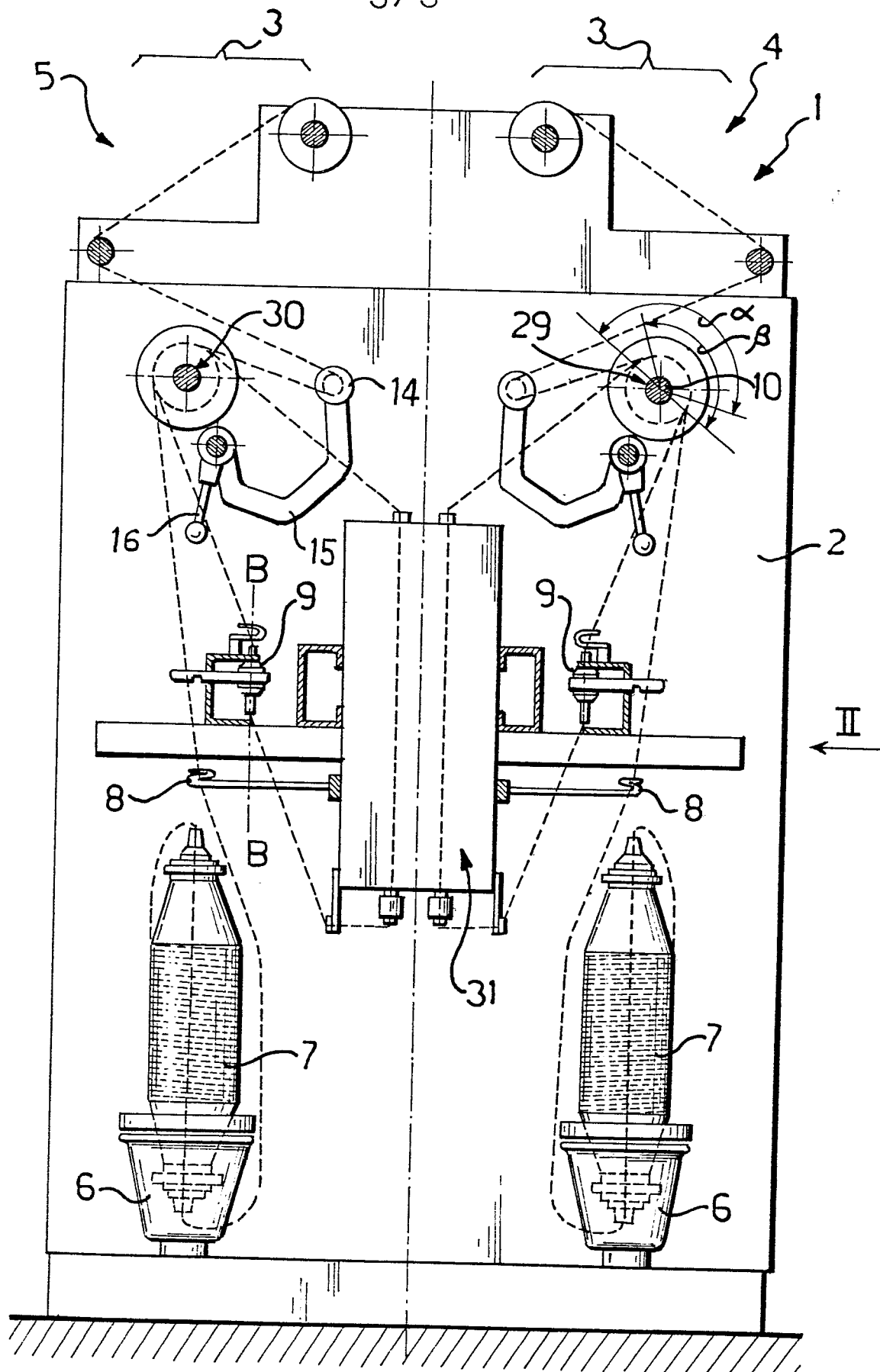


Fig-3