(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 602 757 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.12.2005 Bulletin 2005/49

(51) Int Cl.[7]: **D01H 9/18**, B65H 67/06

(21) Application number: **04425431.6**

(22) Date of filing: **11.06.2004**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL HR LT LV MK

(30) Priority: **01.06.2004 WOPCT/IT20/04000323**

(71) Applicant: **MARZOLI S.p.A.**
25036 Palazzolo Sull'Oglio, Brescia (IT)

(72) Inventor: **Locatelli, Claudio**
25031 Capriolo (Brescia) (IT)

(74) Representative: **Crippa, Paolo Ernesto et al**
JACOBACCI & PARTNERS S.p.A.
Piazzale Arnaldo, 2
25121 Brescia (IT)

(54) Device for spindle frame comprising a structure for supporting and guiding a spool holder board

(57) A structure (24) for supporting and guiding a spool holder board (22) of a spindle frame (1) comprises a front head column (26) and a front tail column (28) and a plurality of auxiliary columns (32) arranged behind the spindle frame.

Said structure allows freeing at least partly access to the machine body (4) of the spindle frame (1) to make the spindle frame supervision and management staff's operations quicker and easier.

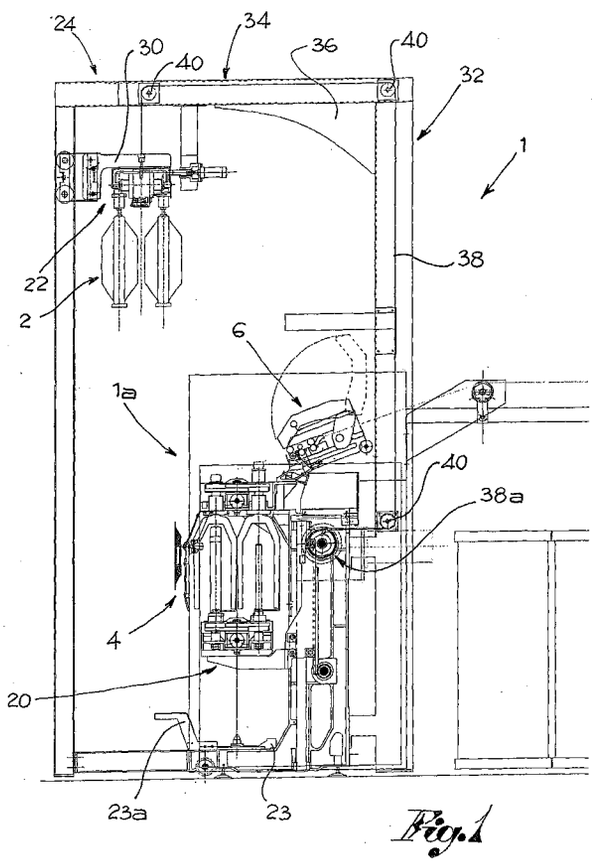

Fig.1

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Description

[0001] The present invention relates to a device for spindle frame comprising a structure for supporting and guiding a spool holder board.

[0002] A line for processing textile fibres comprises, among the others, a spindle frame fed with web produced by carding, combing or drawing operations in general. The spindle frame processes the web to obtain a sliver wound into spools to be forwarded to further processing, such as on a spinning machine.

[0003] The spindle frame, which exhibits a plurality of working points, into which a web is processed to obtain a spool, comprises a body, housing the web processing devices, and a spindle handling carriage, intended to collect the spools and arrange the empty cops to form new spools.

[0004] The spools arranged on the carriage are then collected by a spool holder board and sent, for example, to the spinning machine. In addition, the same spool holder board carries the empty cops to be passed to the spool handling carriage for their arrangement in the correct configuration for the formation of new spools.

[0005] The spool holder board is supported by a support structure.

[0006] It has been noted that said support structure is a considerable hindrance for the spindle frame supervision and proper operation management staff.

[0007] In particular, said support structure makes the operations required to restart processing to obtain new spools difficult to perform, since for each working point these operations require accessing the zone of the machine body where the drawing cylinders are placed, catching the free edge of the sliver and winding it on the cop before restarting the process.

[0008] Object of the present invention is that of realising a structure for supporting and guiding a spool holder board of a spindle frame which should allow a quick and safe consecutive access to all of the spindle frame working points.

[0009] Said object is achieved by a spindle frame realised according to the following claim 1. The depending claims describe embodiment variants.

[0010] Further features and advantages of the present invention will appear more clearly from the following description of a preferred embodiment, made by way of a non limiting example with reference to the annexed figures, wherein:

[0011] - figure 1 shows a scheme of a cross section of an apparatus comprising a spindle frame and a device comprising a structure for supporting and guiding a spool holder board;

[0012] -figure 1a shows an enlarged detail of the apparatus of figure 1;

[0013] -figure 2 shows a scheme of a top plan view of the apparatus of figure 1;

[0014] -figure 2a shows an enlarged detail of the apparatus of figure 2.

[0015] According to the annexed figures, reference numeral 1 denotes a spindle frame apparatus.

[0016] Apparatus 1 comprises a spindle frame 1a, intended to process a web obtained from the processing of textile fibres, and obtain a sliver wound in a spool 2.

[0017] The web, obtained from said textile fibres, is for example subject to a carding or combing processing, or in general to drawing, and them it is subject to processing on said spindle frame 1a.

[0018] The spindle frame 1a comprises a plurality of working points in order to process a plurality of webs simultaneously and obtain a plurality of spools.

[0019] Said working points are arranged in a succession along a longitudinal axis X-X.

[0020] The spindle frame 1a comprises a machine body 4 housing, for each working point, a device 6 for processing the web for obtaining the sliver.

[0021] For example, said processing device comprises means adapted for drawing said web.

[0022] In a preferred embodiment, said drawing means comprise a first pair 8 of cylinders, a second pair 10 of cylinders and a third pair 12 of cylinders, each pair being generally provided with its own peripheral speed, in order to draw the web and obtain the sliver.

[0023] Moreover, said processing device 6 comprises at least one flyer 14, revolving around a vertical axis, for guiding the sliver in winding around a cop 16.

[0024] Said spool 2 is realised by the sliver wound on cop 16.

[0025] Cop 16 is removably inserted on a spool 18 integral with a spindle handling carriage 20.

[0026] In a working configuration, said carriage is arranged at a height suitable for allowing the sliver winding around the cop, in order to realise the spool.

[0027] In other words, in said working configuration the axes of the spools carried by the carriage are substantially coincident with the flyer axes.

[0028] Once the spools have been obtained, for example of the desired weight, carriage 20 is lowered from the working configuration to a lowered retracted configuration in which it cooperates with carriage horizontal movement means.

[0029] Said horizontal movement means comprise a slide 23 which cooperates with motor means for realising said carriage horizontal movement.

[0030] Moreover, the spindle frame 1a comprises a footboard 23a, integral in traverse movement with said slide 23, adapted for allowing an operator to access the machine body 4 of frame 1 to carry out various operations, such as the operations required to restart the spool forming, for example in the event of sliver breakage.

[0031] In a variant of embodiment, said footboard 23a is realised as separate longitudinal portions, for example connected to one another to realise a continuous footpath along the frame longitudinal axis X-X.

[0032] Following the horizontal movement of carriage 20 carried by slide 23, carriage 20 moves to a raised

configuration adapted for allowing the cooperation of said carriage with a spool holder board 22 for raising the spools and/or arranging the cop carriage onto said spools for forming new spools.

[0033] The zone from which said spools can be collected defines a front zone of the spindle frame 1.

[0034] The spool holder board 22 is supported by a supporting and guiding structure 24.

[0035] Said structure 24 comprises at least one front head column 26 and at least one front tail column 28, arranged into said front frame zone.

[0036] In particular, said structure 24 comprises a longitudinal traverse 30 which cooperates with said front columns 26, 28 so as to slide in vertical direction. In other words, said front columns 26, 28 vertically guide the movement of said longitudinal traverse 30.

[0037] Said longitudinal traverse 30 cooperates with board 22 for its support.

[0038] Said board 22, carried by said longitudinal traverse 30, slides between a raised configuration, adapted for transferring the spools to further processing, and a lowered configuration adapted for collecting the spools from the carriage in the raised configuration.

[0039] In a variant of embodiment, said front columns 26, 28 are connected to one another by a fixed traverse, thus realising a portal structure.

[0040] Structure 24 further comprises at least one auxiliary column 32, outside said front frame zone, which cooperates with said front columns 26, 28 for supporting the spool holder board 22, at least partly freeing access to the machine body 4 of the spindle frame 1a.

[0041] In particular, said structure 24 comprises a plurality of auxiliary columns whose support base is external to the front frame zone.

[0042] Said auxiliary columns follow one another, spaced from each other, along said longitudinal axis X-X of the frame.

[0043] The zone opposed relative to the longitudinal axis X-X - opposed to said front zone of frame 1a, realises a rear zone of said frame.

[0044] Preferably, said auxiliary columns 32 are arranged in said rear frame zone. In other words, the support base of said auxiliary columns is arranged in said rear frame zone.

[0045] According to a preferred embodiment, said auxiliary column 32 is connected to a cross arm 34 which, in a preferred embodiment, projects from the respective auxiliary column.

[0046] In a variant of embodiment, said cross arm 34, at the opposed end, is connected to the fixed traverse between the front columns 26, 28.

[0047] Preferably, an angular strengthening element 36 is inserted at the joint between the auxiliary column 32 and the respective cross arm 34.

[0048] The board 22 cooperates with support and handling means adapted for supporting said board and enabling its vertical movements.

[0049] In particular, said support and handling means comprise at least one belt 38, preferably flat, connected to the longitudinal traverse 30 at one end, and wound on a board moving shaft 38a connected to a motor at the opposed end.

[0050] For a first portion, said belt 36 extends along said cross arm 34 of the support structure, and for a second portion, along said auxiliary column 32, bending on return pulleys 40.

[0051] In the normal operation of the spindle frame 1, carriage 20 is in the working condition while slide 23 and board 23a integral to it are in the retracted configuration.

[0052] In said configuration, the slide is adapted for housing the carriage in the lowered retracted configuration, while board 23a can be used by the frame supervision staff for carrying out various operations on the machine body 4.

[0053] In particular, advantageously, an operator is not hindered in performing these activities by any obstacles, such as the presence of further front columns.

[0054] Once the spools have been obtained, carriage 20 moves to the lowered retracted configuration in which it is housed on slide 23.

[0055] Slide 23, along with board 23a, move the carriage to the raised configuration, where it cooperates with the spool holder board.

[0056] It should be noted that no obstacles interfere with the board moving integral with the slide.

[0057] Unusually, the structure for supporting and guiding the spool holder board of the spindle frame according to the present invention allows a quick and safe consecutive access to all of the spindle frame working points.

[0058] For example, the operator can easily move between more working points, that is, he can move longitudinally along the frame, as along a footpath, without having to go up and down from the board, carrying out the operations required quicker and more safely.

[0059] According to a further advantageous aspect, the footboard is integral in traverse movement with the slide and does not perform rotation movements, as it happens in the prior art solutions, to prevent interferences in the forward configuration with further front columns relative to the head and tail ones.

[0060] It is clear that, in order to solve specific problems, a man skilled in the art may make changes and variants to the support structure described above, all falling within the scope of protection as defined by the following claims.

Claims

1. Device for a spindle frame (1a) comprising a structure (24) for supporting a guiding a spool holder board (22), wherein said frame, intended to process a web obtained by processing textile fibres to get a sliver wound in a spool (2), comprises a machine body (4) wherein there is housed at least one device

(6) for processing said web for obtaining said sliver, a front zone of said frame being defined as the zone from which said spools can be collected to be sent to further processes,
said structure comprising at least one front head column (26) and at least one front tail column (28), arranged into said front zone;
said structure (24) being **characterised in that** it further comprises at least one auxiliary column (32), outside said front frame zone, which cooperates with said front columns (26, 28) for supporting said spool holder board (22), at least partly freeing access to said machine body (4) of the spindle frame (1).

2. Device according to claim 1, wherein a rear zone is defined for said spindle frame, opposed to said front zone relative to a longitudinal axis of said frame.

3. Device according to claim 2, wherein said at least one auxiliary column (32) is arranged in said rear frame zone.

4. Device according to any one of the previous claims, wherein said at least one auxiliary column (32) is connected to a cross arm (34) supporting said spool holder board (22).

5. Device according to claim 4, wherein said cross arm (34) projects from the respective auxiliary column (32).

6. Device according to claim 4, wherein said cross arm (34) is connected to a fixed longitudinal traverse which connects said front columns (26, 28).

7. Device according to any one of claims from 4 to 6, wherein an angular strengthening element (36) is arranged between said auxiliary column (32) and the respective cross arm (34).

8. Device according to any one of claims from 4 to 7, wherein said cross arm (34) is astride of the machine body (4) of the spindle frame.

9. Device according to any one of the previous claims, further comprising support and handling means adapted for supporting said board and enabling its vertical movements.

10. Device according to claim 9, wherein said support and handling means comprise at least one belt (38) connected to a board moving shaft (38a) connected to a motor.

11. Device according to claim 9, wherein said belt (38) cooperates with said spool holder board (22) for its vertical movements and it bends on return pulleys (40) between said board and said shaft.

12. Apparatus comprising a spindle frame (1a) and a device realised according to any one of the previous claims.

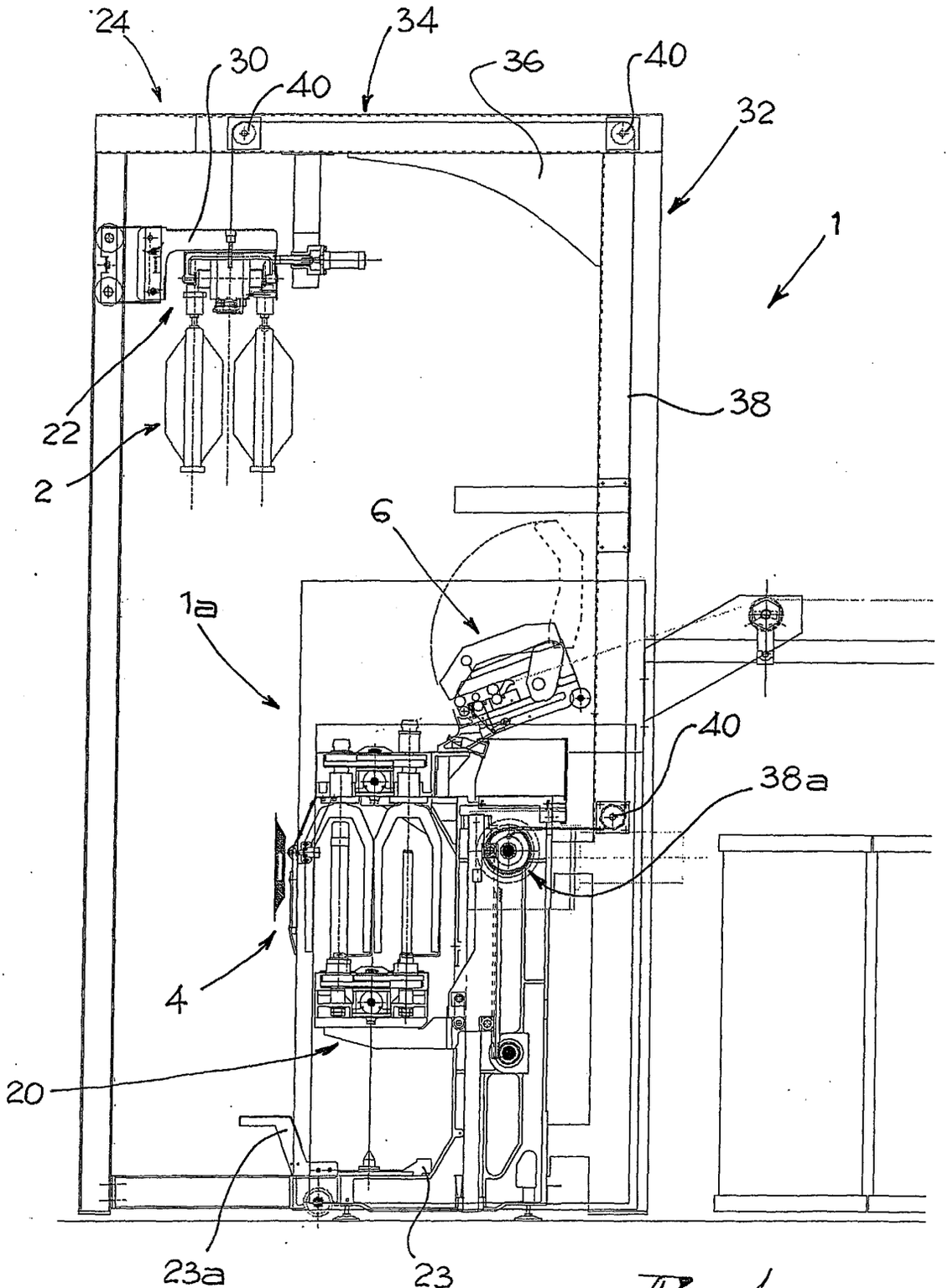

Fig.1

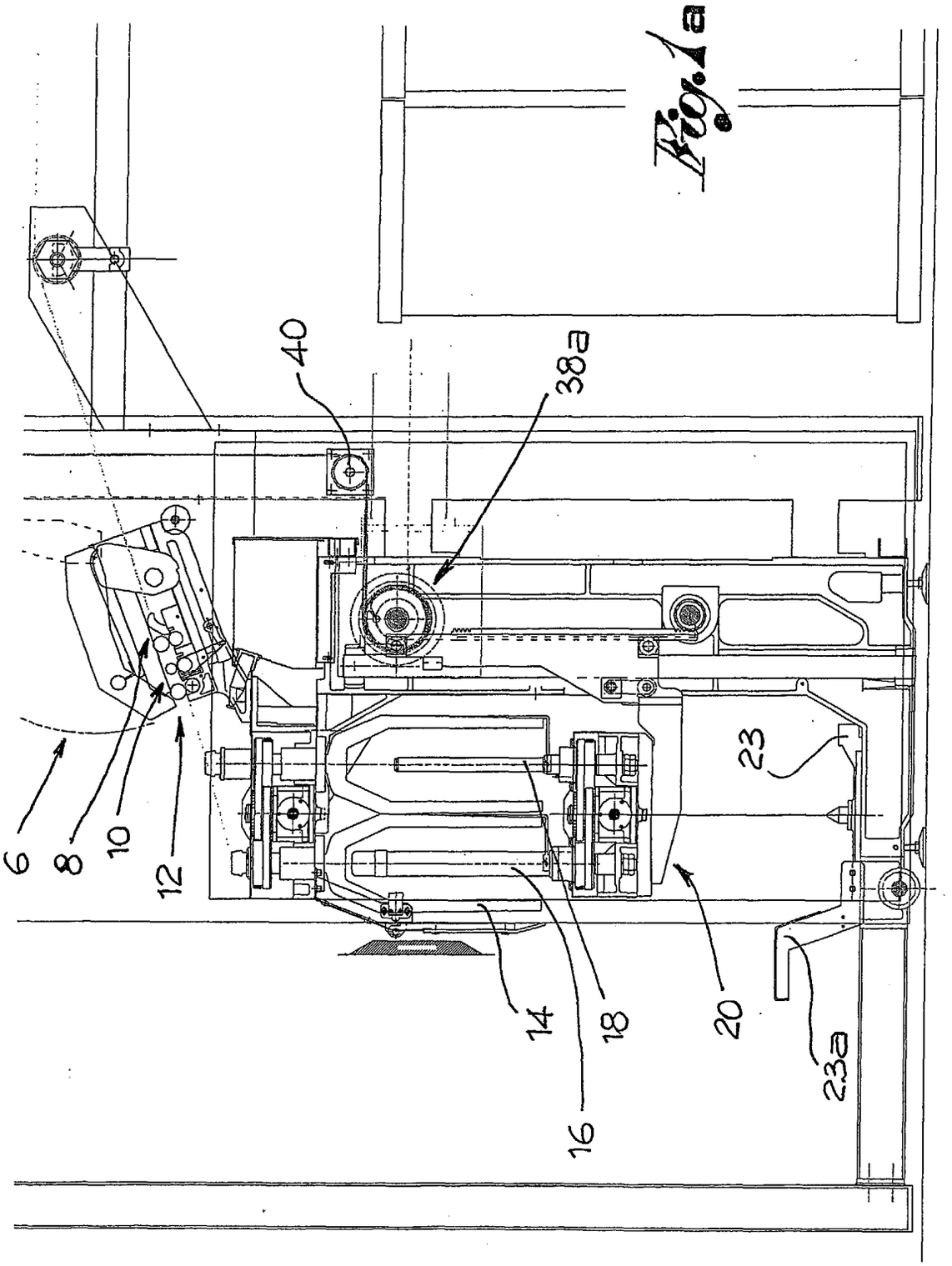
Fig. 1a
40
38a
6
8
10
12
23
14
18
20
16
23a

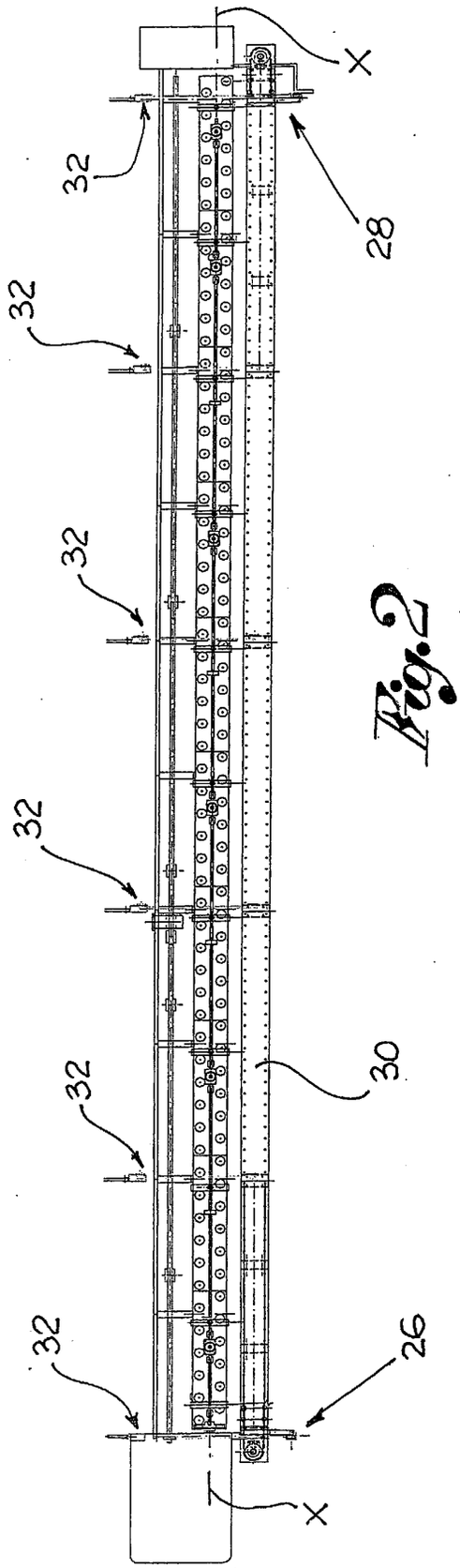

Fig. 2

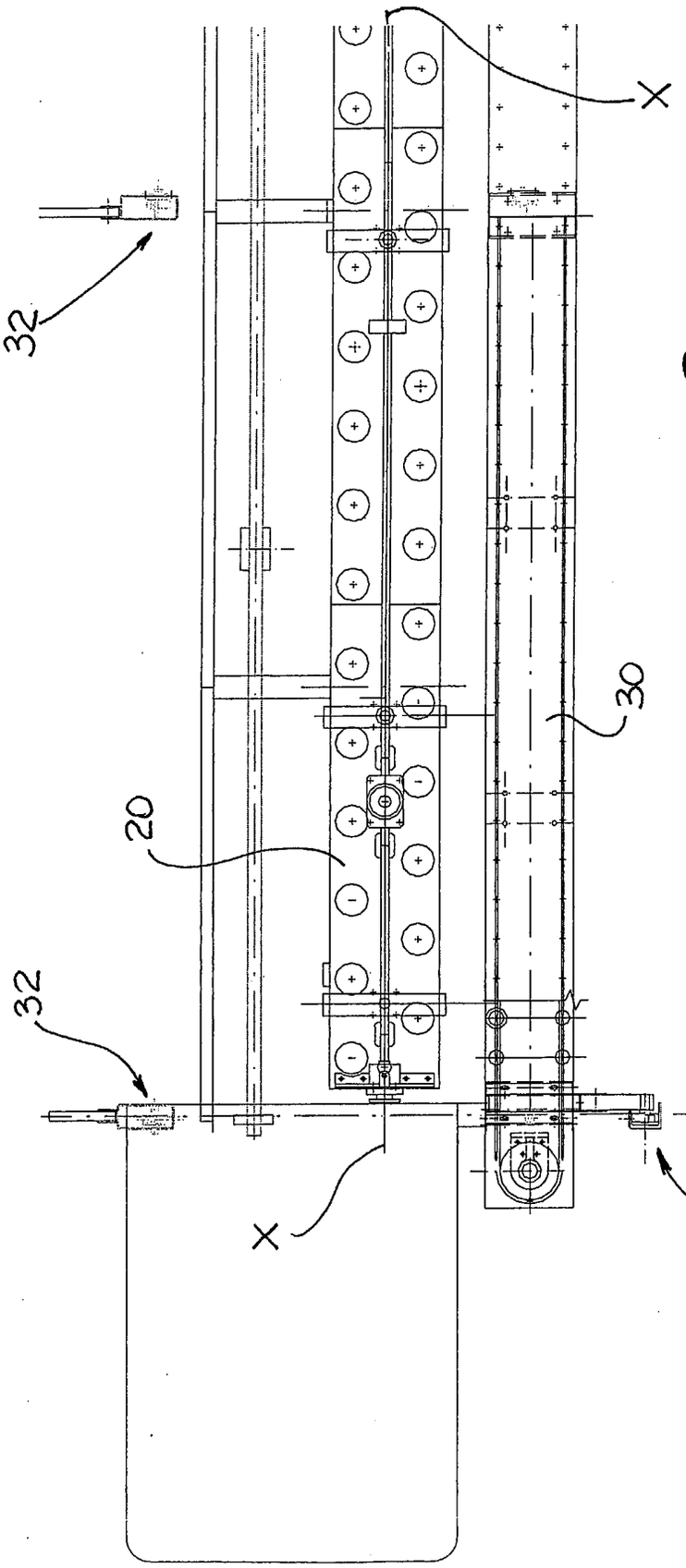

Fig.2a

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EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5431

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

D01H
B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 September 2005	Kising, A

CATEGORY OF CITED DOCUMENTS

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