



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.12.2011 Bulletin 2011/52

(51) Int Cl.:
B08B 1/00 ^(2006.01) **B08B 1/04** ^(2006.01)
B65G 39/02 ^(2006.01) **B65G 45/10** ^(2006.01)
D01H 5/60 ^(2006.01)

(21) Application number: **10167254.1**

(22) Date of filing: **24.06.2010**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
BA ME RS

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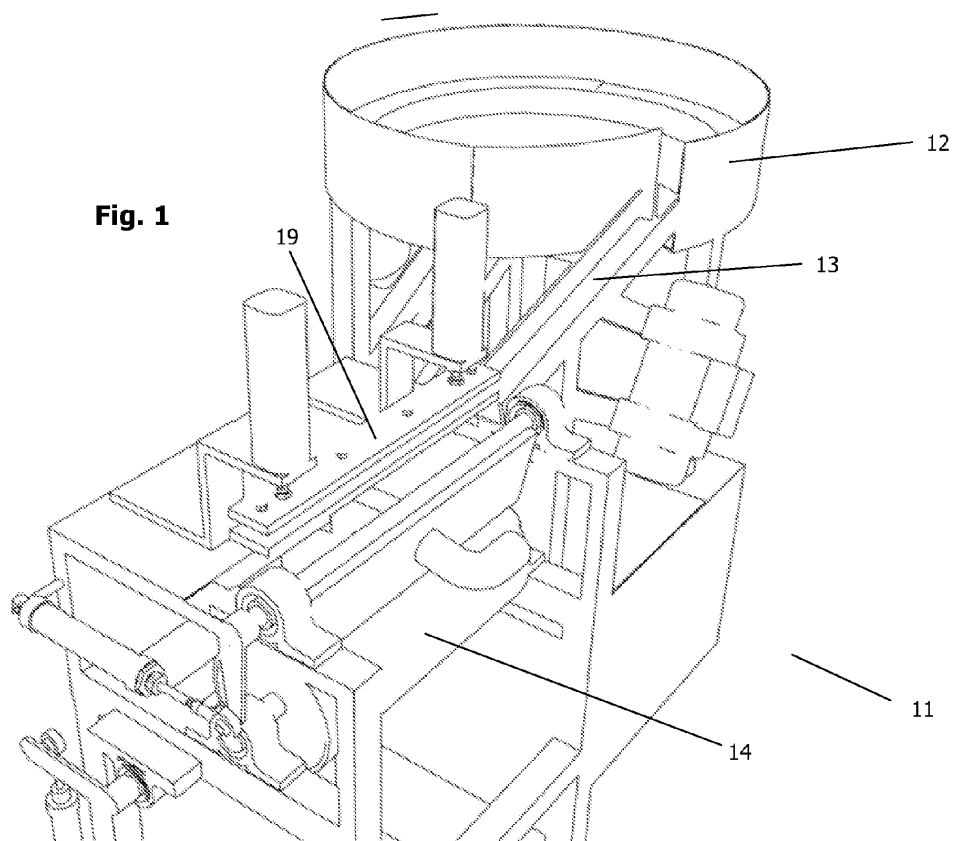
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(54) **Textile machine rollers cleaning apparatus**

(57) The present invention proposes a machine having a vibratory feeding receptacle (12) for receiving a plurality of rollers (20). Said rollers (20) are then advanced in conjunction with said vibratory feeding recep-

tacle (12) to carry out a cleaning process for cleaning fiber fluff around the rollers (20). The present invention therefore substantially shortens maintenance procedure of a ring spinning machine.



Description

Technical Field of the Invention

[0001] The present invention relates to a machine for cleaning rollers of a ring spinning textile machine being separated from air guides in an automated manner.

Background of the Invention

[0002] Various textile machines from a plurality of textile machinery manufacturers are presently operated in the country of the present applicant. It is known that ring spinning machines and in particular compact spinning machines provided substantial improvements in the yarn structure in recent years. DE10040073 discloses a ring spinning machine in which a condensing device is disposed between a drafting arrangement and a spinning device. In compact spinning, the drafting system has an aerodynamic condensing mechanism. The fibers at the delivery roller are additionally captured by means of a vacuum in the nip, and are compacted immediately afterwards. Fibers lie much closer together and parallel with each other. Therefore the spinning triangle is reduced to the compacting width. In order to condense the fibers after the main draft, the bottom delivery roller of the drafting unit has been replaced by a perforated drum. Inside each drum is a stationary insert with a specially shaped suction opening connected to the machine's suction system. The air current created by the vacuum condenses the fibers on their way over the perforated drum. The condensation zone fully controls the fibers all the way from the drafting system to the nipping line. An additional pressure cylinder (nip roller) prevents the twist from being propagated into the condensing zone. Compacting efficiency is enhanced by a specially designed air guide element.

[0003] Textile machines of the above-mentioned type require regular maintenance and rectification of the machine parts such as rollers. The air guide elements that are connected to the nip rollers need to be separated from said rollers for maintenance.

[0004] The present invention proposes an automated process specially adapted for shortening maintenance procedure of a ring spinning machine in which rollers separated from said air guides are cleaned to remove fiber fluff from around the axles of said rollers.

Objects of the Invention

[0005] One of the objects of the present invention is to provide an automated process in which rollers of a spinning machine separated from air guides are cleaned to remove fiber fluff from around their axles.

Summary of the Invention

[0006] The present invention proposes a machine in

which maintenance procedure of a ring spinning machine is substantially shortened by way of a vibratory feeding receptacle receiving a plurality of rollers advanced in conjunction with said vibratory feeding receptacle to carry out a cleaning process for cleaning fiber fluff around the rollers. Each roller is separated from fiber fluff in an automated manner so that production cycle can resume in a shorter time span.

Brief Description of the Figures

[0007] Accompanying drawings are given solely for the purpose of exemplifying a machine for cleaning rollers of a ring spinning textile machine in which:

Fig. 1 demonstrates a general perspective view of the maintenance machine according to the present invention.

Fig. 2 demonstrates another general perspective view of the maintenance machine according to the present invention.

Fig. 3 demonstrates a perspective view of the drum together with rollers to be cleaned according to the present invention.

Fig. 4 demonstrates a perspective side view of the maintenance machine according to the present invention.

Fig. 5 demonstrates a front view of the maintenance machine according to the present invention with the rotary drum and roller position cover.

Fig. 6 demonstrates another perspective side view of the maintenance machine according to the present invention.

Detailed Description of the Invention

[0008] Referring now to the figures outlined above, the present invention proposes a maintenance machine (11) for automated cleaning of rollers (20) of a ring spinning machine separated from the air guides connected to the axles of said rollers (20) in operation. For example compact spinning machines such as K44 and K45 manufactured by the company Rieter comprise such rollers (20) with air guides.

[0009] The maintenance machine (11) according to the present invention comprises a vibratory vessel (12) conventionally advancing a plurality of articles in a pre-determined trajectory. Said trajectory may conventionally have a gradually elevated peripheral base delimited by the outer wall of said vibratory vessel (12), leading to an exit opening.

[0010] The maintenance machine (11) according to the present invention comprises a roller (20) cleaning

device. Fiber fluff accumulated around the rollers (20) is cleaned by means of a cleaning system according to the present invention as explained hereinafter.

[0011] The vibratory vessel (12) comprises a linear continuation part (13) proceeding rollers (20) from said vibratory vessel (12) to the cleaning compartment of the maintenance machine (11). Said cleaning compartment is primarily comprised of a rotary drum (14) along a longitudinal surface line of which rollers (20) are aligned to have a frictional surface communication with said rotating drum (14). Said rollers are consecutively advanced longitudinally on said drum (14) by an air blow nozzle (15).

[0012] Further a guiding wiring (16) wrapped to guide rollers (20) in the direction of the longitudinal displacement of the same while rotating in cooperation with said air blow nozzle (15) ensure that an optimum number of said rollers (20) are maintained on the rotating drum (14) in line a certain period before they are released. Said wiring is embedded on the drum (14) in an inclined manner and stick out therefrom a certain degree to advance said rollers (20). Inclination of the guiding wiring (16) provides the carrying effect as the drum (14) rotates. In other words, said guiding wiring (16) is wrapped in an embedded manner around the longitudinal surface of said drum (14) in an inclined manner with respect to a plane parallel to the base of said drum (16).

[0013] After a line of rollers (20) on said drum (14) are released, a first roller (20) introduced is advanced to the longitudinally distant extremity of the drum (14) relative to said air blow nozzle (15) by said blow nozzle (15) and said guiding wiring (16) as explained.

[0014] Cleaning of the rollers (20) is carried out in cooperation with a roller (20) position maintaining plate (17), also serving to the purpose of drum (14) surface cleaning.

[0015] Said roller (20) position maintaining plate (17) has a planar surface extended to cover the longitudinal drum (14) line along which said rollers (20) are positioned for maintaining them in place during cleaning. While a row of drum as seen in Fig. 3 is cleaned by way of drum (14) rotation, said plate (17) opens outwardly on an axis parallel to longitudinal drum (14) axis to release said drums (20) from said drum (14) surface. After cleaning has taken place, said plate (17) repositions itself to delimit a longitudinal drum (14) surface for allowing introduction of a new row of rollers (20) aligned thereon.

[0016] Said roller (20) position maintaining plate (17) also functions as an air blowing unit for removing fluff accumulated on said drum (14) surface. To this effect, said roller (20) position maintaining plate (17) has an opening (18) extending along the entire longitudinal distance of said drum (14) surface to blow air thereon.

[0017] Further, said rollers (20) are squeezed by an upper support element (19) also ensuring positioning of said rollers (20) on said rotary drum (14) longitudinal surface as delimited by said plate (17). The pressure exerted by said upper support element (19) is adjusted such that rotation of the rollers (20) around their longitudinal axes as placed in between said drum (14), said plate (17) and

said support element (19) is prevented. Therefore, the drum (14) rotating relative to the rollers (20) held stationary by said support element (19) and in place by said plate (17) provides efficient cleaning of roller (22) surfaces.

[0018] Said drum (14) is also cleaned by way of a longitudinal plate (25) bearing against said drum (14) by a piston (23) effecting rotation around an axis (24). Said plate (25) bearing against said drum (14) while said drum (14) still rotating will remove surface fluffs. Said cleaning plate (25) is then held a certain distance away from the drum (14) in normal operation. Rotation of said roller (20) position maintaining plate (17) too is conventionally effected by another piston (21) around a respective rotation axis (22).

[0019] Said upper support element (19) according to the present invention has a continuous lower contact body separated from an upper body by a series of resilient elements (26) against which said lower contact body communicating with said row of rollers in a simultaneous manner presses onto the rollers (20) to stop rotation thereof.

Claims

1. A roller (22) maintenance machine (11) for cleaning rollers (22) of a compact spinning textile machine, comprising a vessel (12) advancing a plurality of articles in a predetermined trajectory, a rotary drum (14) along a longitudinal surface line of which rollers (20) are aligned to have a frictional surface communication with said rotating drum (14), an air blow nozzle (15) by which said rollers are consecutively advanced longitudinally on said drum (14), a guiding wiring (16) to advance the same in cooperation with said air blow nozzle (15), a roller (20) position maintaining plate (17) having a planar surface extended to cover the longitudinal drum (14) line along which said rollers (20) are positioned and an upper support element (19) for squeezing said rollers (20) on said rotary drum (14) longitudinal surface as delimited by said plate (17).
2. A maintenance machine (11) for cleaning rollers (22) of a compact spinning textile machine as set forth in Claim 1 wherein said guiding wiring (16) is wrapped in an embedded manner around the longitudinal surface of said drum (14) in an inclined manner with respect to a plane parallel to the base of said drum (16).
3. A maintenance machine (11) for cleaning rollers (22) of a compact spinning textile machine as set forth in Claim 1 wherein said roller (20) position maintaining plate (17) has an opening (18) extending along the entire longitudinal distance of said drum (14) surface for blowing air onto said drum (14) surface.

4. A maintenance machine (11) for cleaning rollers (22) of a compact spinning textile machine as set forth in Claim 3 wherein said upper support element (19) has a lower contact body separated from an upper body by a series of resilient elements (26) against which said lower contact body in contact with said row of rollers (20) presses onto the rollers (20) in a simultaneous manner to stop rotation thereof.

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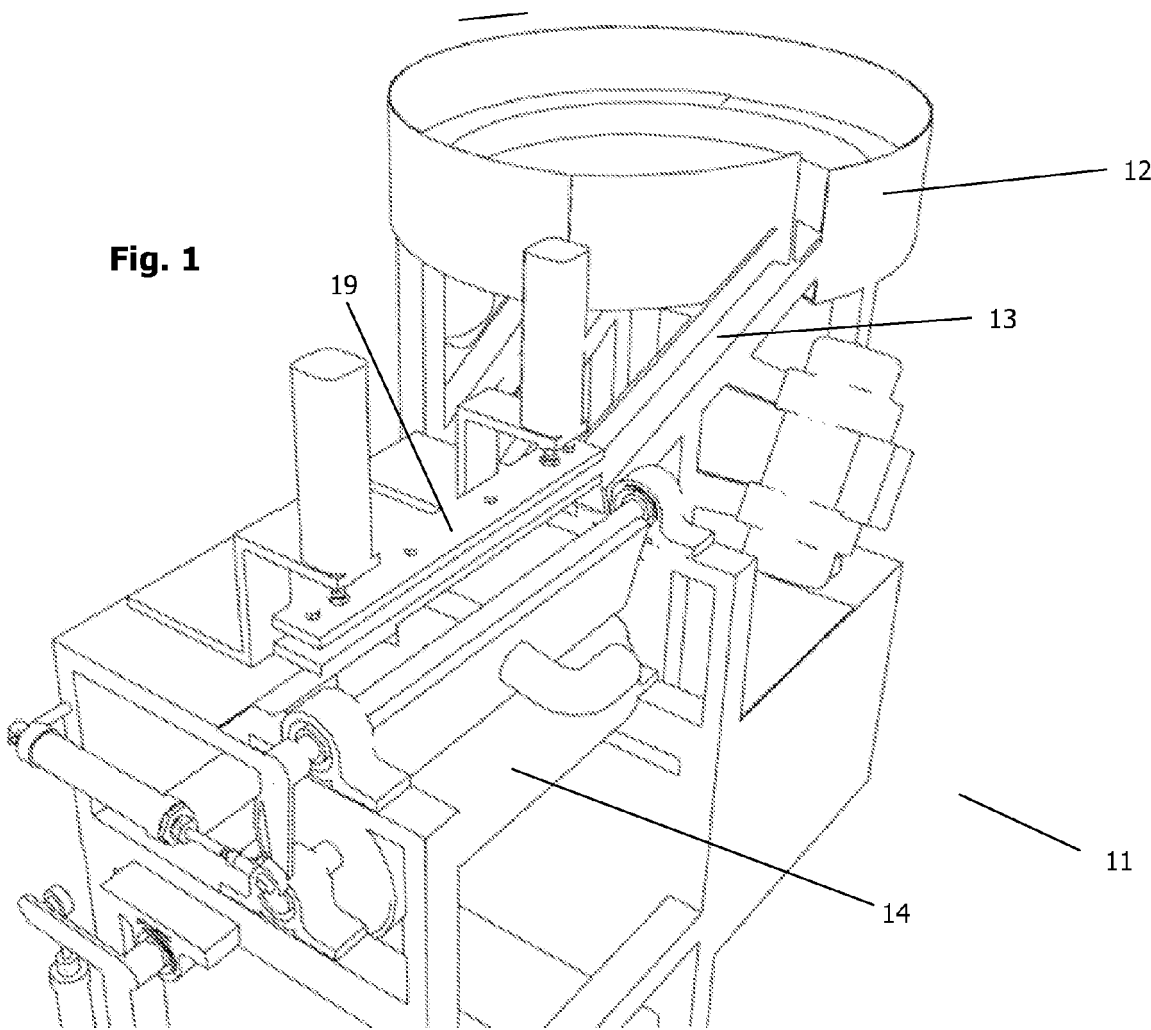
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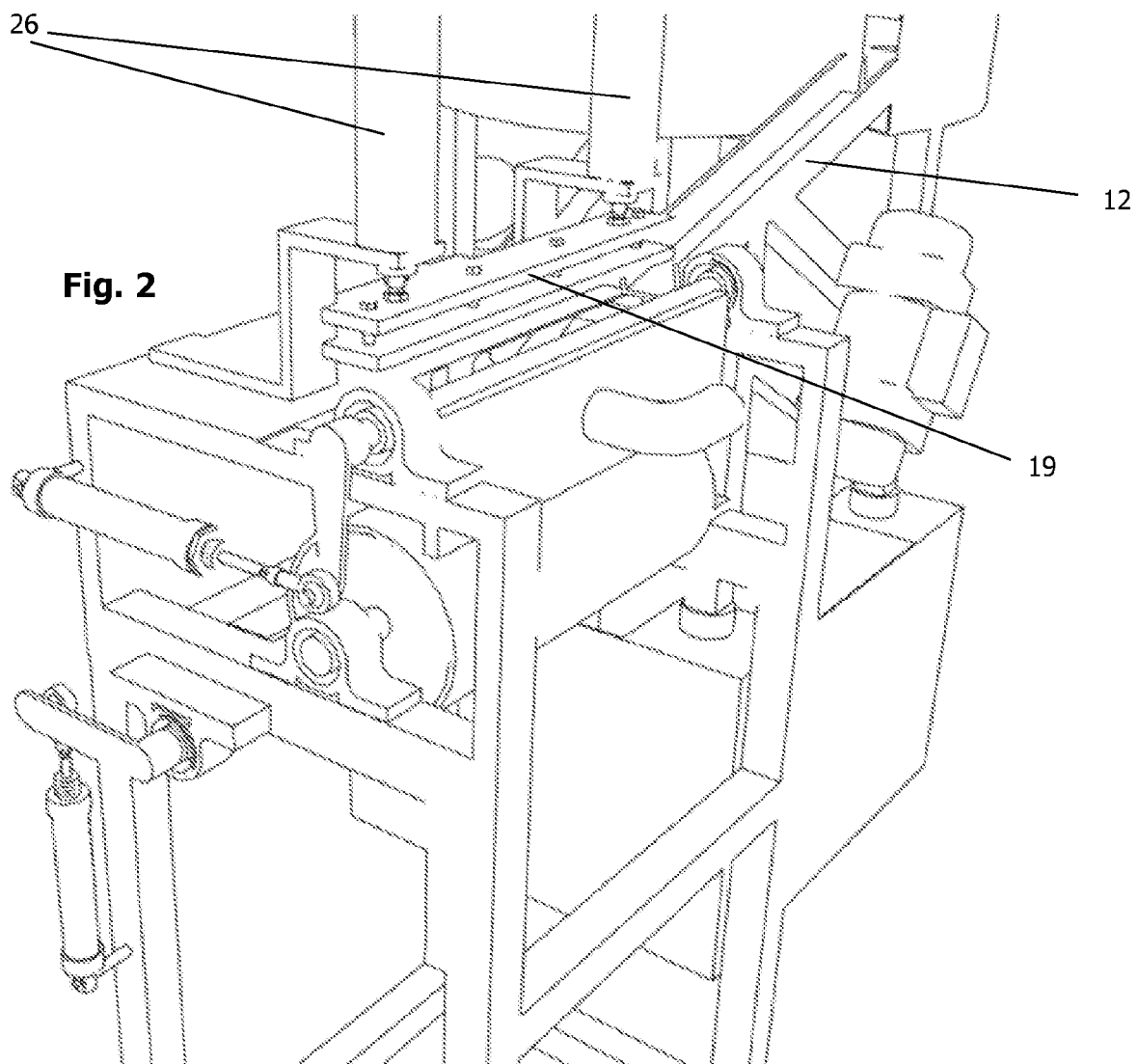
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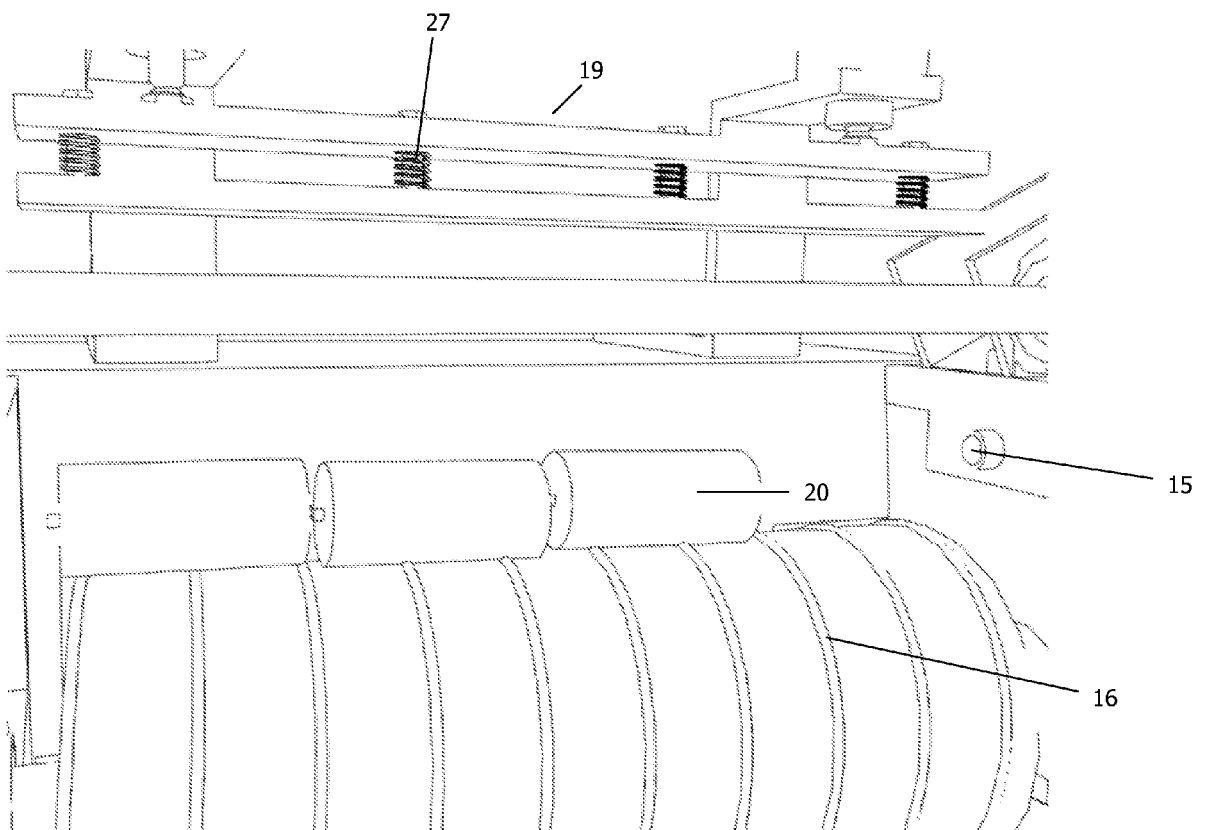
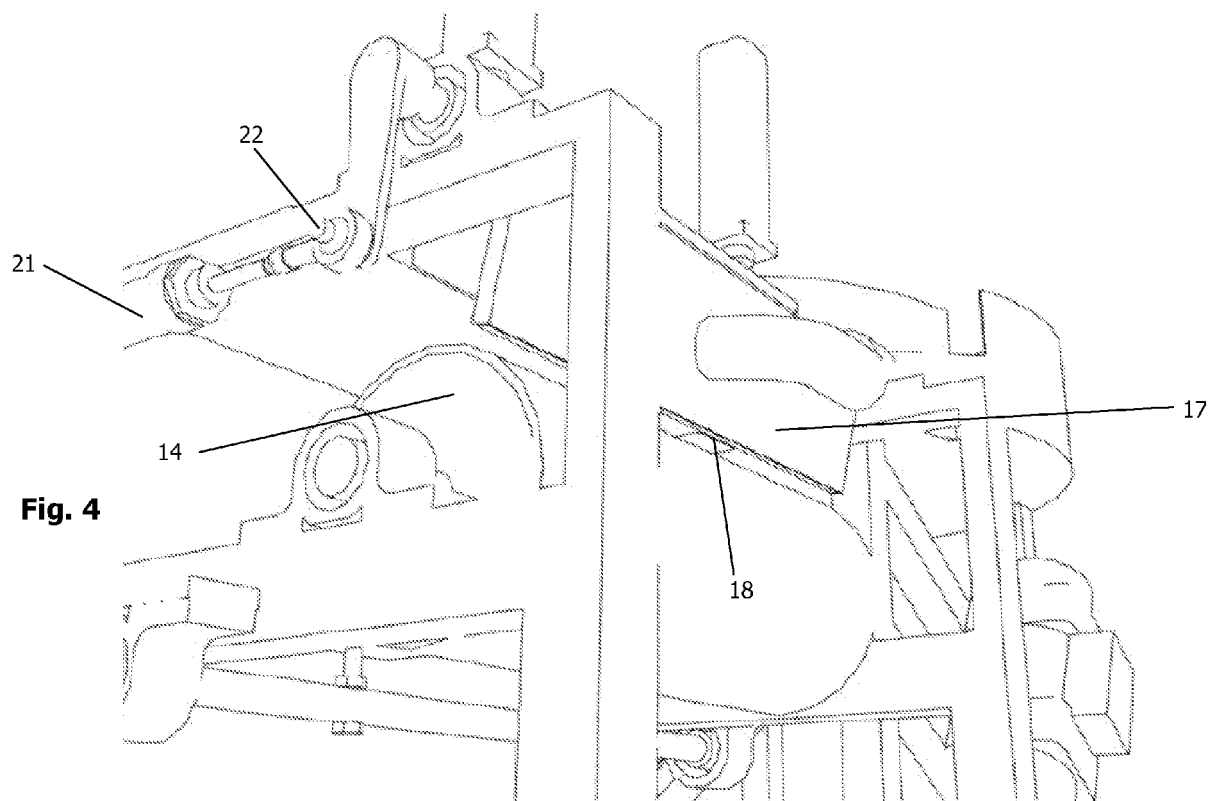
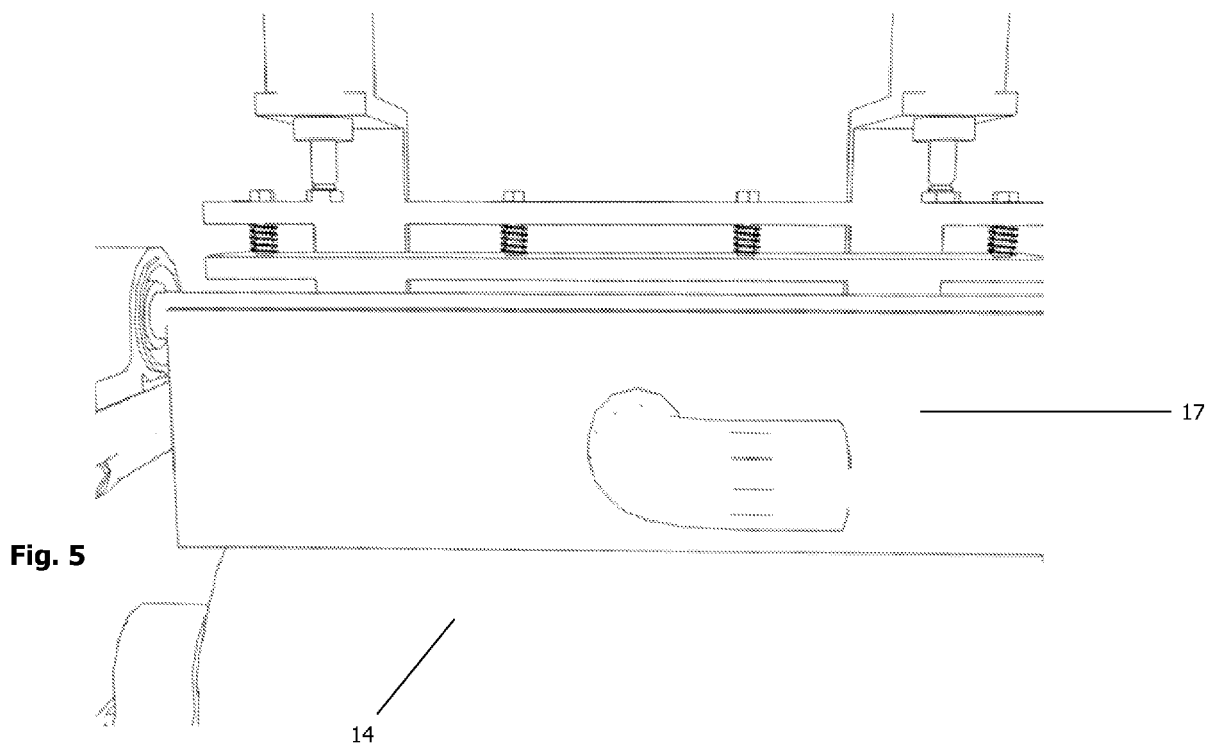
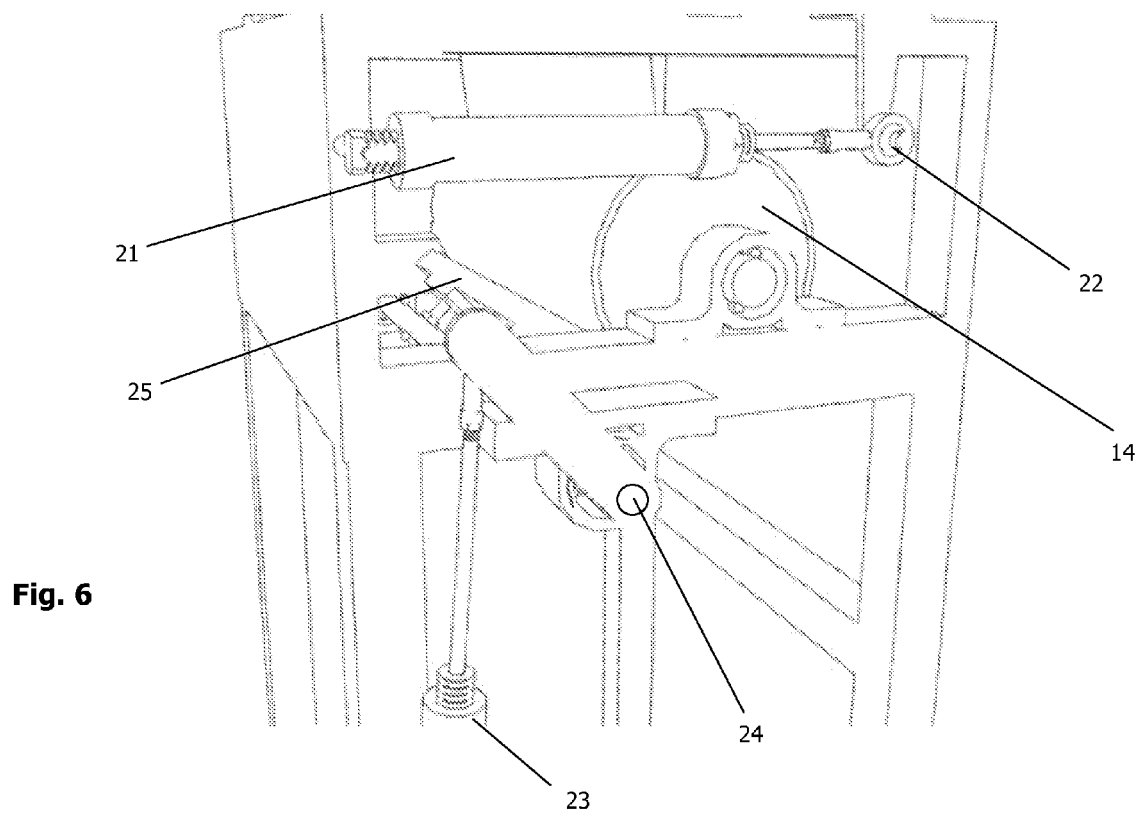


Fig. 3









EUROPEAN SEARCH REPORT

Application Number
EP 10 16 7254

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	DE 100 40 073 A1 (RIETER AG MASCHF [CH]) 28 February 2002 (2002-02-28) * claim 1; figure 1 * -----	1-4	INV. B08B1/00 B08B1/04 B65G39/02 B65G45/10 D01H5/60
			TECHNICAL FIELDS SEARCHED (IPC)
			D01H B08B B65G
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 January 2011	Examiner Dupuis, Jean-Luc
CATEGORY OF CITED DOCUMENTS 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 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			

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EPO FORM 1503 03.82 (P04C01)

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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