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(54) METHOD AND APPARATUS FOR FEEDING CORES TO SLITTER-WINDER

VERFAHREN UND VORRICHTUNG ZUM ZUFÜHREN VON KERNEN ZU EINEM ROLLENSCHNEIDER

PROCÉDÉ ET APPAREIL POUR ALIMENTER DES NOYAUX DANS UNE COUPEUSE-BOBINEUSE

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Description

[0001] The invention relates to a method and an apparatus for feeding cores, which function as winding cores of a paper or board roll, to a multistation winder i. e. a slitter-winder, where customer rolls are wound on an outer side and on an inner side of the slitter-winder, and each core is kept in place at both ends with their own core spindles against one winding roll. The invention introduces an arrangement for conveying cores automatically from the vicinity of the slitter-winder to core magazines of the slitter-winder.

[0002] When slitting a fibre-web roll, the parent roll is unwound, and the wide web is slit into smaller webs using several knife pairs for the slitting. The smaller webs are wound up into customer rolls around cores operating as winding cores on the winding section. When they are completed, the slitter-winder is stopped, and the rolls are removed from the winders. Support arms pick up new cores from the core magazines or conveyers, after which the web will be again wound around them. On the outer side of the winders, there is a safety gate. During winding, the safety gate is lowered down i.e. into a safety position. Then, the operator can fill the core magazines fastened to the safety gate from the front of the gate. Before the rolls are removed from the slitter-winder, the safety gates are lifted up, whereby the rolling path of the rolls becomes free. The most common method of feeding cores to slitter-winders is to convey the cores by carts to the front of the slitter-winder. From the cart, the cores are lifted by hand to the core magazines. A common known way is also to convey the cores automatically from the sawing station to a core table located beside the slitter-winder by a conveyer system consisting of lifts and belt conveyers. From the core table, the cores are conveyed by hand to the core magazines. An advantage of using the carts is flexibility. At a large mill, one core sawing apparatus can service up to five slitter-winders. However, an increase in the width of rolls has caused an ergonomic problem. The core of a jumbo roll weighs 20 - 25 kg. To lift it by hand to the inlet of the core magazine located quite high is a heavy work stage.

[0003] Arrangements for the automatic conveying of cores to slitter-winders are known of specifications US 2013/008996, US4749140, US4909454, US4508283 and EP0324709.

[0004] Specification EP2669224 also describes the properties of the above-mentioned arrangements. In the arrangement of EP2669224, the cores are conveyed to the point of support arms on top of a feeding beam. In the arrangement of specification EP2669223, two pushers next to each other push the cores to the pick-up positions of the supports arms. In all of the above arrangements, the cores are conveyed on a line located in the middle of the slitter-winder. These arrangements are only suitable for use in new slitter-winders. It is difficult to locate a long core loading station on the side of a slitter-winder having the trim width of 7 - 10 m otherwise than at new mills.

[0005] On one side of the slitter-winder in relation to the web direction, drive motors are located. On the opposite side, a control room is often located. A very common layout is that of two slitter-winders positioned next to each other as mirror images. The control room is situated in the intermediate space between the slitter-winders. The drive motors are located on the outermost sides. The travel of rolls from the back of the slitter-winder to its front or vice versa takes place at least past the drive motors of one side. Thus, the slitter-winders are quite extensively surrounded by obstacles on all sides, and finding a path to apply the prior-art arrangements is very difficult. The mills have in their use at least hundreds of slitter-winders in good conditions which are modernized by providing them with new automation and new functions. Within such slitter-winders, it is difficult to locate an apparatus of the types described above. Also in malfunction situations, the access to apparatuses in the middle of the slitter-winder is poor.

[0006] Except for roll conveyers, there is usually adequately free space on the outer side of the slitter-winder. However, the space is very tight on the inner side of the slitter-winder. The fibre-web coming from the parent roll forms a top and for its part closes the available space. The removal of rolls from the inner side of the slitter-winder substantially decreases the space where core conveying apparatuses could be located permanently. To be economically viable, the automatic feeding of cores must be done to all magazines of the slitter-winder, both on the outer side as well as on the inner side of the slitter-winder.

[0007] The object of the invention is to introduce an arrangement for the automatic feeding of cores which is technically simple and easily applicable particularly when modernizing existing slitter-winders. The invention is characterized by what is stated in the characterizing parts of the independent claims.

[0008] The method according to the invention relates to a slitter-winder comprising a driving side from which cores are conveyed to the slitter-winder; an inner side and an outer side where a web which has been slit is wound on the cores as customer rolls; on the inner side a vertically moveable safety gate having a lower position which forms a safety position and an upper position which allows movement in the area; and a core magazine supported on the safety gate; and in which slitter-winder each core is kept in place at both ends by their own core spindles against one winding roll. In the method according to the invention, to convey the cores automatically to the slitter-winder, the cores are conveyed in a direction along the core axis, outside the safety gate, from the driving side of the slitter-winder in a horizontal plane above the safety gate which is located in the safety position to the point of, i.e. to the front of, the safety gate. Then the cores are conveyed further to the core magazines by a motion performed in a substantially transverse direction in relation to the core axis.

[0009] In one embodiment the cores are conveyed to the inner side and to the outer side of the slitter-winder in a transverse direction in relation to the core axis by a transverse conveyer located on the driving side of the slitter-winder. Advantageously, conveying by the transverse conveyer is performed substantially above the safety gate in a horizontal plane.

[0010] In one embodiment the cores are conveyed for two slitter-winders next to each other via the same transverse conveyer. The cores are conveyed from the inner side to the outer side of the slitter-winder or vice versa by the transverse conveyer located on the driving side of the slitter-winder. For the slitter-winders located next to each other, the core is conveyed from the driving side of the first slitter-winder to the inner side of the first and the second slitter-winder by an inner feeding conveyer located above the paper webs.

[0011] The paper rolls are usually conveyed from one side of the slitter-winder to the other side of the slitter-winder at the side of the slitter-winder. This is also an advantageous location for the transverse conveyance of the cores which takes place above the roll ramp / roll conveying line. The transverse conveyer can be implemented as low-structured. Its conveying element is suitably a trough to which the power transmission is implemented by chains, cogged belts or equivalent elements.

[0012] The apparatus according to the invention is designed for conveying cores to a slitter-winder. The slitter-winder comprises a driving side from which the cores are conveyed to the slitter-winder; an inner side and an outer side where a web which has been slit is wound on the cores as customer rolls; on the inner side a vertically moveable safety gate having a lower position which forms a safety position and an upper position which allows movement in the area; and a core magazine supported on the safety gate. According to the invention the apparatus comprises a longitudinal conveying device which is located in a plane higher than the safety gate located in the safety position, i.e. the lower position, and also outside the safety gate. Further, the apparatus comprises elements for conveying the cores in a direction along the core axis, i.e. in the longitudinal direction of the core, from the driving side of the slitter-winder to the front of the safety gate, and an element for conveying the core further to the core magazines by a motion performed in a substantially transverse direction in relation to the core axis.

[0013] The driving side of the slitter-winder is advantageously provided with a transverse conveyer for conveying the cores in a transverse direction in relation to the core axis to the inner side and to the outer side of the slitter-winder. The transverse conveyer is advantageously located at a substantially same height as the longitudinal conveying device, i.e. in a plane above the safety gate located in the safety position, in practice for example at a height of about three meters. An advantageous location for it is above the roll ramp used for transverse conveyance of the rolls.

[0014] In one embodiment of the invention, when using two slitter-winders located next to each other, the apparatus comprises, in a plane higher than the safety gate located in the safety position and outside the safety gate, an inner feeding conveyer and an outer feeding conveyer by means of which the cores can be conveyed on the slitter-winders located next to each other from the driving side of the first slitter-winder to the inner side and to the outer side of both slitter-winders.

[0015] The method and the corresponding apparatus according to the invention have considerable advantages over the prior art. The invention allows existing and operational slitter-winders to be automatized in terms of the feeding of cores. In other words, the invention introduces an arrangement by virtue of which the cores conveyed to the slitter-winder after being sawn to a predefined size for customer rolls can be loaded without manual work stages. Thus, due to the invention the heavy cores no more have to be lifted manually to the core magazines. In addition to the ease of work, the invention improves work safety in the area surrounding the slitter-winder, as it also significantly reduces the need to spend time in the immediate vicinity of the slitter-winder.

[0016] The invention will now be described in detail with reference to the accompanying drawings.

Fig. 1 shows a layout according to one embodiment of the invention which depicts the logistic conveying chain of a core from a core sawing section to two slitter-winders.

Fig. 2 shows a top view of an arrangement according to another embodiment of the invention.

Fig. 3 shows a side view of the above embodiment, seen from the direction of the driving side.

Fig. 4 shows an enlargement of the above figure at the point of a safety gate.

[0017] A core sawing centre 1 servicing several slitter-winders at a mill is usually located separately from the slitter-winders. The same paper machine is often serviced by two slitter-winders 11 and 12 which are usually located next to each other as mirror images. Such an embodiment is shown in Fig. 1. From a saw 2, a core is conveyed via a vertical conveyer 3 to a conveyer line 4. From the conveyer line, the core is conveyed to a conveying element 6, most advantageously a trough, of a transverse conveyer 5. The transverse conveyer is located on a driving side of the slitter-winder at a height of about three metres. An advantageous location is above a transverse roll conveyer, such as a roll ramp. The transverse conveyer 5 takes the core either to an inner feeding conveyer 7' going to an inner side of the slitter-winders or to an outer feeding conveyer 7" going to an outer side of the slitter-winders. After the inner feeding conveyer 7' has conveyed the core to the point of a receiving station of the slitter-winder 11, a pusher 8' throws the core to an inclined vertical conveyer 9' which takes the core to the receiving station 10'. A longitudinal conveying device 13'

takes the core to a core magazine 14' which is bearing-mounted on the guides of a safety-gate 15'.

[0018] Equivalently after the inner feeding conveyer 7' has conveyed the core to the point of a receiving station of the slitter-winder 12, a pusher 16' throws the core to an inclined vertical conveyer 17' which takes the core to the receiving station 18'. A longitudinal conveying device 19' takes the core to a core magazine 20' which is bearing-mounted on the guides of a safety gate 21'. Further equivalently after the outer feeding conveyer 7" has conveyed the core to the point of a receiving station of the slitter-winder 11 a pusher 8" throws the core to an inclined vertical conveyer 9" which takes the core to the receiving station 10". A longitudinal conveying device 13" takes the core to a core magazine 14" which is bearing-mounted on the guides of a safety gate 15". Further equivalently after the outer feeding conveyer 7" has conveyed the core to the point of a receiving station of the slitter-winder 12, a pusher 16" throws the core to an inclined vertical conveyer 17" which takes the core to the receiving station 18". A longitudinal conveying device 19" takes the core to a core magazine 20" which is bearing-mounted on the guides of a safety gate 21".

[0019] The receiving station 10' is located on the same line with the inlet of the core magazine 14'. Equivalently, the receiving station 18' is located on the same line with the inlet of the core magazine 20'. The receiving station 10" is located on the same line with the inlet of the core magazine 14". Equivalently, the receiving station 18" is located on the same line with the inlet of the core magazine 20".

[0020] In the embodiment shown in Figs. 2 and 3, the cores are conveyed to the slitter-winder 12 by a cart 22 which is docked to a batching tower 23. The cart is advantageously multi-level, and the cores of at least one set are located on one level. The operator opens latches 24, whereby the cores are able to roll into batchers. Beside the batching tower, there is a vertical conveyer 25 which takes the core from the batcher to the conveying element 6 of the transverse conveyer 5. The transverse conveyer takes the core to the point of an inner side vertical conveyer 26', and a pusher 27' pushes the core to the vertical conveyer. The vertical conveyer lowers the core down until the core is located on the same line with the inlet of the core magazine 20'. The longitudinal conveying device 19' takes the core to the core magazine 20' which is bearing-mounted on the guides of the safety gate 21'.

[0021] The transverse conveyer 5 also takes the core to the point of an outer side vertical conveyer 26", and a pusher 27" pushes the core to the vertical conveyer.

[0022] The vertical conveyer lowers the core down until the core is located on the same line with the inlet of the core magazine 20". The longitudinal conveying device 19" takes the core to the core magazine 20" which is bearing-mounted on the guides of the safety gate 21".

[0023] When viewing the inner side safety gate 21' from the driving side, the longitudinal conveying device 19' is located in the sector of 9 - 12 o'clock, and a longitudinal guide of the longitudinal conveying device 19' is fastened to a body 28' of the slitter-winder 12.

[0024] Equivalently when viewing the outer side safety gate 21" from the driving side, the longitudinal conveying device 19" is located in the sector of 12 - 15 o'clock, and a longitudinal guide of the longitudinal conveying device is fastened to a body 28" of the slitter-winder 12. The longitudinal conveying device includes bearing units 32 which move directed by the guide. The power unit of the longitudinal motion is advantageously a servo motor.

[0025] The transverse motion of the longitudinal conveying device is most advantageously performed by a suitable lever structure, such as a parallelogram mechanism 29', 29". The power unit of the transverse motion is advantageously a gear motor, but an implementation by a pneumatic actuator is also possible. Gripping is advantageously provided by a row of suction pads 30'.

[0026] The invention can also be realized by other embodiments within the scope of the appended claims.

Claims

1. A method for conveying cores automatically to a slitter-winder (11, 12) comprising a driving side (A) from which the cores are conveyed to the slitter-winder; an inner side (B) and an outer side (C) where a web which has been slit is wound on the cores as customer rolls; on the inner side (B) a vertically moveable safety gate (15', 15", 21', 21") having a lower position which forms a safety position and an upper position which allows movement in the area; and a core magazine (14', 14", 20', 20") supported on the safety gate; and in which slitter-winder each core is kept in place at both ends by their own core spindles against one winding roll, wherein the cores are conveyed in a direction along the core axis, outside the safety gate, from the driving side (A) of the slitter-winder in a horizontal plane above the safety gate (15', 15", 21', 21") which is located in the safety position to the point of, i.e. to the front of, the safety gate, and the cores are conveyed further to the core magazines (14', 14", 20', 20") by a motion performed in a substantially transverse direction in relation to the core axis.

2. A method according to claim 1, **characterized in that** the cores are conveyed to the slitter-winder (11, 12) from its side on the driving side (A).

3. A method according to any one of previous claims, **characterized in that** the cores are conveyed to the inner side (B) and to the outer side (C) of the slitter-winder (11, 12) in a transverse direction in relation to the core axis by a transverse conveyer (5) located on the driving side (A) of the slitter-winder.

4. A method according to claim 3, **characterized in that** conveying by the transverse conveyer (5) is performed substantially above the safety gate (15', 15", 21', 21") in a horizontal plane.

5. A method according to any one of previous claims, **characterized in that** the cores are conveyed for two slitter-winders (11, 12) next to each other via the same transverse conveyer (5).

6. A method according to any one of previous claims, **characterized in that** for two slitter-winders located next to each other, the core is conveyed from the driving side (A) of the first slitter-winder (11) to the inner side (B) of the first (11) and the second slitter-winder (12) by an inner feeding conveyer (7') in a horizontal plane above the safety gate (15', 15", 21', 21") located in the safety position.

7. A method according to any one of previous claims, **characterized in that** conveyance which is transverse in relation to the core axis to the inner side (B) or to the outer side (C) is performed above a roll conveyance line used when removing the customer rolls.

8. An apparatus for conveying cores to a slitter-winder (11, 12) comprising a driving side (A) from which the cores are conveyed to the slitter-winder; an inner side (B) and an outer side (C) where a web which has been slit is wound on the cores as customer rolls; on the inner side (B) a vertically moveable safety gate (15', 15", 21', 21") having a lower position which forms a safety position and an upper position which allows movement in the area; and a core magazine (14',14", 20',20") supported on the safety gate; wherein the apparatus comprises a longitudinal conveying device (13', 13", 19', 19") which is located in a plane higher than the safety gate (15', 15", 21', 21") located in the safety position and outside the safety gate and which comprises elements (31', 32') for conveying the cores in a direction along the core axis from the driving side (A) of the slitter-winder (11, 12) to the front of the safety gate (15', 15", 21', 21"), and an element (29') for conveying the core further to the core magazines (14',14'', 20',20'') by a motion performed in a substantially transverse direction in relation to the core axis.

9. An apparatus according to claim 8, **characterized in that** the driving side (A) of the slitter-winder is provided with a transverse conveyer (5) for conveying the cores in a transverse direction in relation to the core axis to the inner side (B) and to the outer side (C) of the slitter-winder.

10. An apparatus according to claim 8 or 9, **characterized in that** the apparatus comprises, in a plane higher than the safety gate (15', 15", 21', 21") located in the safety position and outside the safety gate, an inner feeding conveyer (7') and an outer feeding conveyer (7") for conveying the cores on the slitter-winders located next to each other from the driving side (A) of the first slitter-winder to the inner side and to the outer side of the slitter-winders.

11. An apparatus according to claim 10, **characterized in that** the slitter-winder comprises a receiving station (10',10",18',18") for receiving the core conveyed by the inner feeding conveyer (7') and by the outer feeding conveyer (7") and from which the longitudinal conveying device (13', 13", 19', 19") is arranged to convey the core to the core magazines (14',14", 20',20").

12. An apparatus according to any one of previous claims, **characterized in that** longitudinal guides (31') of the longitudinal conveying device (13', 13", 19', 19") are fastened to a frame beam (28') of the slitter-winder (12).

13. An apparatus according to any one of previous claims, **characterized in that** the element that performs the transverse motion of the core to the core magazines (14', 14", 20', 20") is implemented by a linked lever structure, such as a parallelogram mechanism (29').

14. An apparatus according to any one of previous claims, **characterized in that** a conveying element (6) of the transverse conveyer (5) is a trough in which power transmission is implemented by chains, cogged belts or equivalent elements.

Patentansprüche

1. Verfahren zum automatischen Transportieren von Kernen zu einem Rollenschneider (11, 12), umfassend eine Antriebsseite (A), von der aus die Kerne zum Rollenschneider transportiert werden; eine Innenseite (B) und eine Außenseite (C), auf der eine geschlitzte Bahn als Kundenrollen auf die Kerne aufgewickelt wird; auf der Innenseite (B) ein vertikal bewegliches Sicherheitstor (15', 15", 21', 21") mit einer unteren Position, die eine Sicherheitsposition bildet, und einer oberen Position, die eine Bewegung in dem Bereich ermöglicht; und ein auf dem Sicherheitstor abgestütztes Kernmagazin (14', 14", 20', 20"); und wobei in dem Rollenschneider jeder Kern an beiden Enden durch eigene Kernspindeln gegen eine Wickelwalze an seinem Platz gehalten wird, wobei die Kerne in einer Richtung entlang der Kernachse außerhalb des Sicherheitstors von der Antriebsseite (A) des Rollenschneiders in einer horizontalen Ebene über dem Sicherheitstor (15', 15", 21', 21"),

das sich in der Sicherheitsposition befindet, bis zum Punkt, d.h. an der Vorderseite des Sicherheitstors, transportiert werden und die Kerne durch eine Bewegung, die in einer im Wesentlichen Querrichtung in Bezug auf die Kernachse ausgeführt wird, weiter zu den Kernmagazinen (14', 14", 20', 20") transportiert werden.

2. Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** die Kerne zu dem Rollenschneider (11, 12) von seiner Seite auf der Antriebsseite (A) transportiert werden.

3. Verfahren nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Kerne zur Innenseite (B) und zur Außenseite (C) des Rollenschneiders (11, 12) in Querrichtung in Bezug auf die Kernachse durch einen Quertransportierer (5) transportiert werden, der sich auf der Antriebsseite (A) des Rollenschneiders befindet.

4. Verfahren nach Anspruch 3, **dadurch gekennzeichnet, dass** der Transport durch den Quertransportierer (5) im Wesentlichen oberhalb des Sicherheitstors (15', 15", 21', 21") in einer horizontalen Ebene durchgeführt wird.

5. Verfahren nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Kerne für zwei Rollenschneider (11, 12) nebeneinander über denselben Quertransportierer (5) transportiert werden.

6. Verfahren nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** für zwei nebeneinander angeordnete Rollenschneider der Kern von der Antriebsseite (A) des ersten Rollenschneiders (11) zur Innenseite (B) des ersten (11) und des zweiten Rollenschneiders (12) durch einen inneren Zuführtransportierer (7') in horizontaler Ebene über dem in der Sicherheitsposition befindlichen Sicherheitstor (15', 15", 21', 21") transportiert wird.

7. Verfahren nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** der Transport, der quer in Bezug auf die Kernachse zur Innenseite (B) oder zur Außenseite (C) erfolgt, oberhalb einer Rollentransportstrecke durchgeführt wird, die zum Entfernen der Kundenrollen verwendet wird.

8. Vorrichtung zum Transportieren von Kernen zu einem Rollenschneider (11, 12), umfassend eine Antriebsseite (A), von der aus die Kerne zum Rollenschneider transportiert werden; eine Innenseite (B) und eine Außenseite (C), wobei eine geschlitzte Bahn als Kundenrollen auf die Kerne gewickelt wird; auf der Innenseite (B) ein vertikal bewegliches Sicherheitstor (15', 15", 21', 21") mit einer unteren Position, die eine Sicherheitsposition bildet, und einer oberen Position, die eine Bewegung in dem Bereich ermöglicht; und ein Kernmagazin (14', 14", 20', 20"), das an dem Sicherheitstor abgestützt ist; wobei die Vorrichtung eine Längstransportvorrichtung (13', 13", 19', 19") umfasst, die sich in einer Ebene befindet, die höher als das Sicherheitstor (15', 15", 21', 21") liegt, die sich in der Sicherheitsposition und außerhalb des Sicherheitstors befindet und die Elemente (31', 32') zum Transportieren der Kerne in einer Richtung entlang der Kernachse von der Antriebsseite (A) des Rollenschneiders (11, 12) zur Vorderseite des Sicherheitstors (15', 15", 21', 21") und ein Element (29') zum Weitertransportieren des Kerns zu den Kernmagazinen (14', 14", 20', 20'') durch eine Bewegung, die im Wesentlichen in Querrichtung in Bezug auf die Kernachse ausgeführt wird, umfasst.

9. Vorrichtung nach Anspruch 8, **dadurch gekennzeichnet, dass** die Antriebsseite (A) des Rollenschneiders mit einem Quertransportierer (5) zum Transportieren der Kerne in Querrichtung in Bezug auf die Kernachse zur Innenseite (B) und zur Außenseite (C) des Rollenschneiders versehen ist.

10. Vorrichtung nach Anspruch 8 oder 9, **dadurch gekennzeichnet, dass** die Vorrichtung in einer Ebene höher als das in der Sicherheitsposition und außerhalb des Sicherheitstors angeordnete Sicherheitstor (15', 15", 21', 21") einen inneren Zuführtransportierer (7') und einen äußeren Zuführtransportierer (7") zum Transportieren der Kerne auf den nebeneinander angeordneten Rollenschneidern von der Antriebsseite (A) des ersten Rollenschneiders zur Innenseite und zur Außenseite des Rollenschneiders umfasst.

11. Vorrichtung nach Anspruch 10, **dadurch gekennzeichnet, dass** der Rollenschneider eine Aufnahmestation (10', 10", 18', 18") zur Aufnahme des vom inneren Zuführtransportierer (7') und vom äußeren Zuführtransportierer (7") transportierten Kerns umfasst, und von der aus die Längstransportvorrichtung (13', 13", 19', 19") angeordnet ist, um den Kern zu den Kernmagazinen (14', 14", 20', 20") zu transportieren.

12. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** Längsführungen (31') der Längstransportvorrichtung (13', 13", 19', 19") an einem Rahmenträger (28') des Rollenschneiders (12) befestigt sind.

13. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** das Element, das die Querbewegung des Kerns zu den Kernmagazinen (14', 14", 20', 20'') ausführt, durch

eine verbundene Hebelstruktur, wie beispielsweise einen Parallelogrammmechanismus (29'), ausgeführt ist.

14. Vorrichtung nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** ein Transportelement (6) des Quertransportierers (5) eine Wanne ist, in der die Kraftübertragung durch Ketten, Zahnriemen oder gleichwertige Elemente erfolgt.

Revendications

1. Procédé pour transporter des noyaux automatiquement vers une coupeuse-bobineuse (11, 12) comprenant un côté entraînement (A) duquel les noyaux sont transportés vers la coupeuse-bobineuse ; un côté intérieur (B) et un côté extérieur (C) où une bande qui a été fendue est enroulée sur les noyaux en tant que rouleaux clients ; sur le côté intérieur (B), une porte de sécurité mobile verticalement (15', 15", 21', 21") ayant une position inférieure qui forme une position de sécurité et une position supérieure qui permet un mouvement dans la zone ; et un magasin de noyaux (14', 14", 20', 20') supporté sur la porte de sécurité ; et dans laquelle coupeuse-bobineuse, chaque noyau est maintenu en place aux deux extrémités par leurs propres broches de noyau contre un rouleau d'enroulement, dans lequel les noyaux sont transportés dans une direction le long de l'axe de noyau, à l'extérieur de la porte de sécurité, du côté entraînement (A) de la coupeuse-bobineuse dans un plan horizontal au-dessus de la porte de sécurité (15', 15", 21', 21") qui est située dans la position de sécurité vers le point de, c'est-à-dire vers l'avant de, la porte de sécurité, et les noyaux sont transportés en outre vers les magasins de noyaux (14', 14", 20', 20") par un mouvement réalisé dans une direction sensiblement transversale par rapport à l'axe de noyau.

2. Procédé selon la revendication 1, **caractérisé en ce que** les noyaux sont transportés vers la coupeuse-bobineuse (11, 12) de son côté sur le côté entraînement (A).

3. Procédé selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les noyaux sont transportés vers le côté intérieur (B) et vers le côté extérieur (C) de la coupeuse-bobineuse (11, 12) dans une direction transversale par rapport à l'axe de noyau par un convoyeur transversal (5) situé sur le côté d'entrainement (A) de la coupeuse-bobineuse.

4. Procédé selon la revendication 3, **caractérisé en ce que** le transport par le convoyeur transversal (5) est réalisé sensiblement au-dessus de la porte de sécurité (15', 15", 21', 21") dans un plan horizontal.

5. Procédé selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les noyaux sont transportés pour deux coupeuses-bobineuses (11, 12) l'une à côté de l'autre via le même convoyeur transversal (5).

6. Procédé selon l'une quelconque des revendications précédentes, **caractérisé en ce que** pour deux coupeuses-bobineuses situées l'une à côté de l'autre, le noyau est transporté du côté d'entraînement (A) de la première coupeuse-bobineuse (11) vers le côté intérieur (B) de la première (11) et de la deuxième coupeuse-bobineuse (12) par un convoyeur d'alimentation intérieur (7') dans un plan horizontal au-dessus de la porte de sécurité (15', 15", 21', 21") située dans la position de sécurité.

7. Procédé selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le transport qui est transversal par rapport à l'axe de noyau vers le côté intérieur (B) ou vers le côté extérieur (C) est réalisé au-dessus d'une ligne de transport à rouleaux utilisée lors du retrait des rouleaux clients.

8. Appareil pour transporter des noyaux vers une coupeuse-bobineuse (11, 12) comprenant un côté entraînement (A) duquel les noyaux sont transportés vers la coupeuse-bobineuse ; un côté intérieur (B) et un côté extérieur (C) où une bande qui a été fendue est enroulée sur les noyaux en tant que rouleaux clients ; sur le côté intérieur (B), une porte de sécurité mobile verticalement (15', 15", 21', 21") ayant une position inférieure qui forme une position de sécurité et une position supérieure qui permet un mouvement dans la zone ; et un magasin de noyaux (14', 14", 20', 20") supporté sur la porte de sécurité ; et dans lequel l'appareil comprend un dispositif de transport longitudinal (13', 13", 19', 19") qui est situé dans un plan plus haut que la porte de sécurité (15', 15", 21', 21") située dans la position de sécurité et à l'extérieur de la porte de sécurité et qui comprend des éléments (31', 32") pour le transport des noyaux dans une direction le long de l'axe de noyau du côté entraînement (A) de la coupeuse-bobineuse (11, 12) vers l'avant de la porte de sécurité (15', 15", 21', 21"), et un élément (29') pour transporter le noyau davantage vers les magasins de noyaux (14', 14", 20', 20") par un mouvement réalisé dans une direction sensiblement transversale par rapport à l'axe de noyau.

9. Appareil selon la revendication 8, **caractérisé en ce que** le côté entraînement (A) de la coupeuse-bobineuse est doté d'un convoyeur transversal (5) pour le transport des noyaux dans une direction transversale par rapport à l'axe de noyau vers le côté intérieur

(B) et vers le côté extérieur (C) de la coupeuse-bobineuse.

10. Appareil selon la revendication 8 ou 9, **caractérisé en ce que** l'appareil comprend, dans un plan plus haut que la porte de sécurité (15', 15", 21', 21") située dans la position de sécurité et à l'extérieur de la porte de sécurité, un convoyeur d'alimentation intérieur (7') et un convoyeur d'alimentation extérieur (7") pour le transport des noyaux sur les coupeuses-bobineuses situées l'une à côté de l'autre du côté d'entraînement (A) de la première coupeuse-bobineuse vers le côté intérieur et vers le côté extérieur des coupeuses-bobineuses.

11. Appareil selon la revendication 10, **caractérisé en ce que** la coupeuse-bobineuse comprend une station de réception (10', 10", 18', 18") pour la réception du noyau transporté par le convoyeur d'alimentation intérieur (7') et par le convoyeur d'alimentation extérieur (7") et depuis laquelle le dispositif de transport longitudinal (13', 13", 19', 19") est agencé pour transporter le noyau vers les magasins de noyaux (14', 14", 20', 20").

12. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** des guides longitudinaux (31') du dispositif de transport longitudinal (13', 13", 19', 19") sont fixés à une poutre de cadre (28') de la coupeuse-bobineuse (12).

13. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'élément qui réalise le mouvement transversal du noyau vers les magasins de noyaux (14', 14", 20', 20") est mis en oeuvre par une structure de levier tel qu'un mécanisme à parallélogramme (29').

14. Appareil selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**un élément de transport (6) du convoyeur transversal (5) est une auge dans laquelle la transmission de puissance est mise en oeuvre par des chaînes, des courroies dentées ou éléments équivalents.

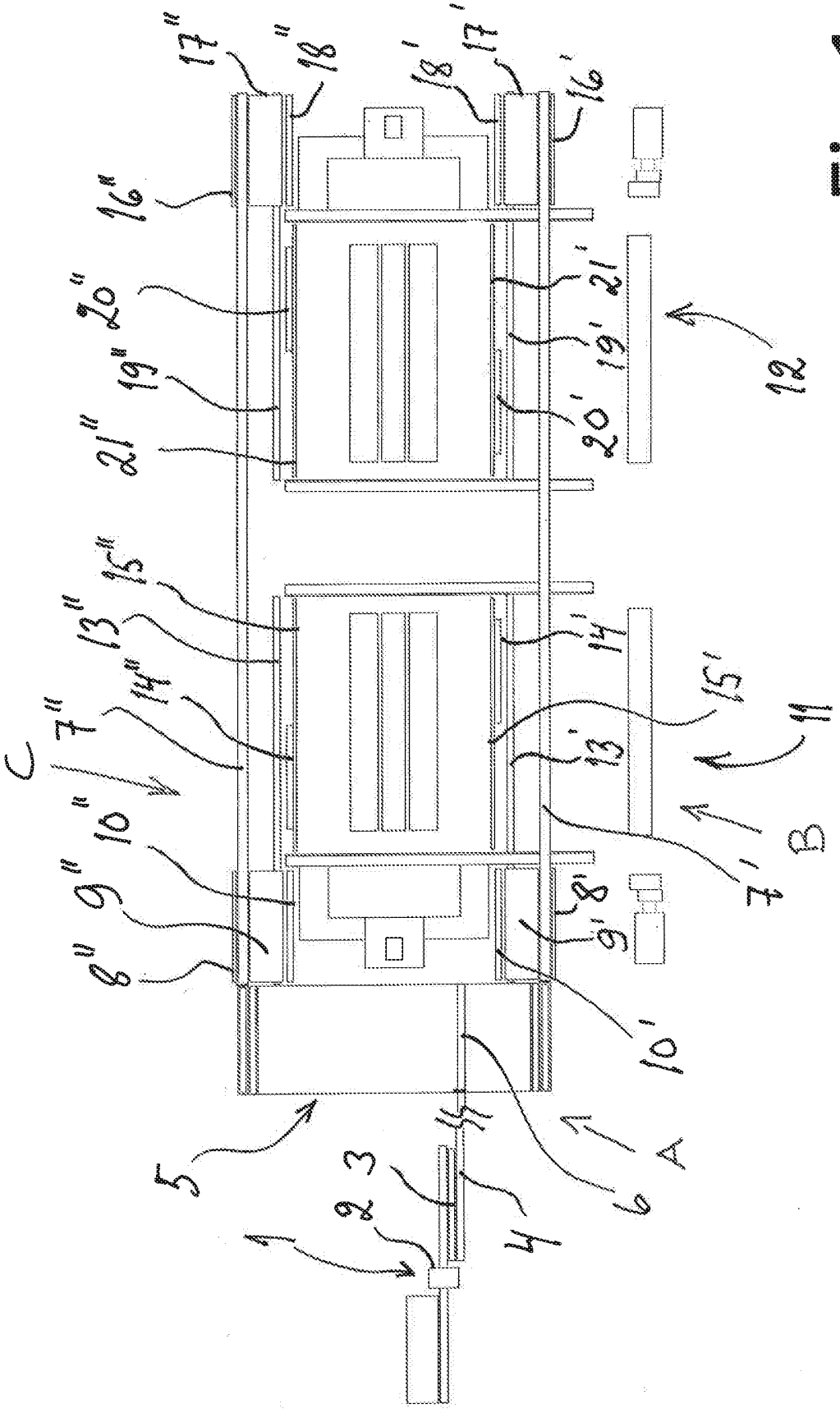
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Fig 1

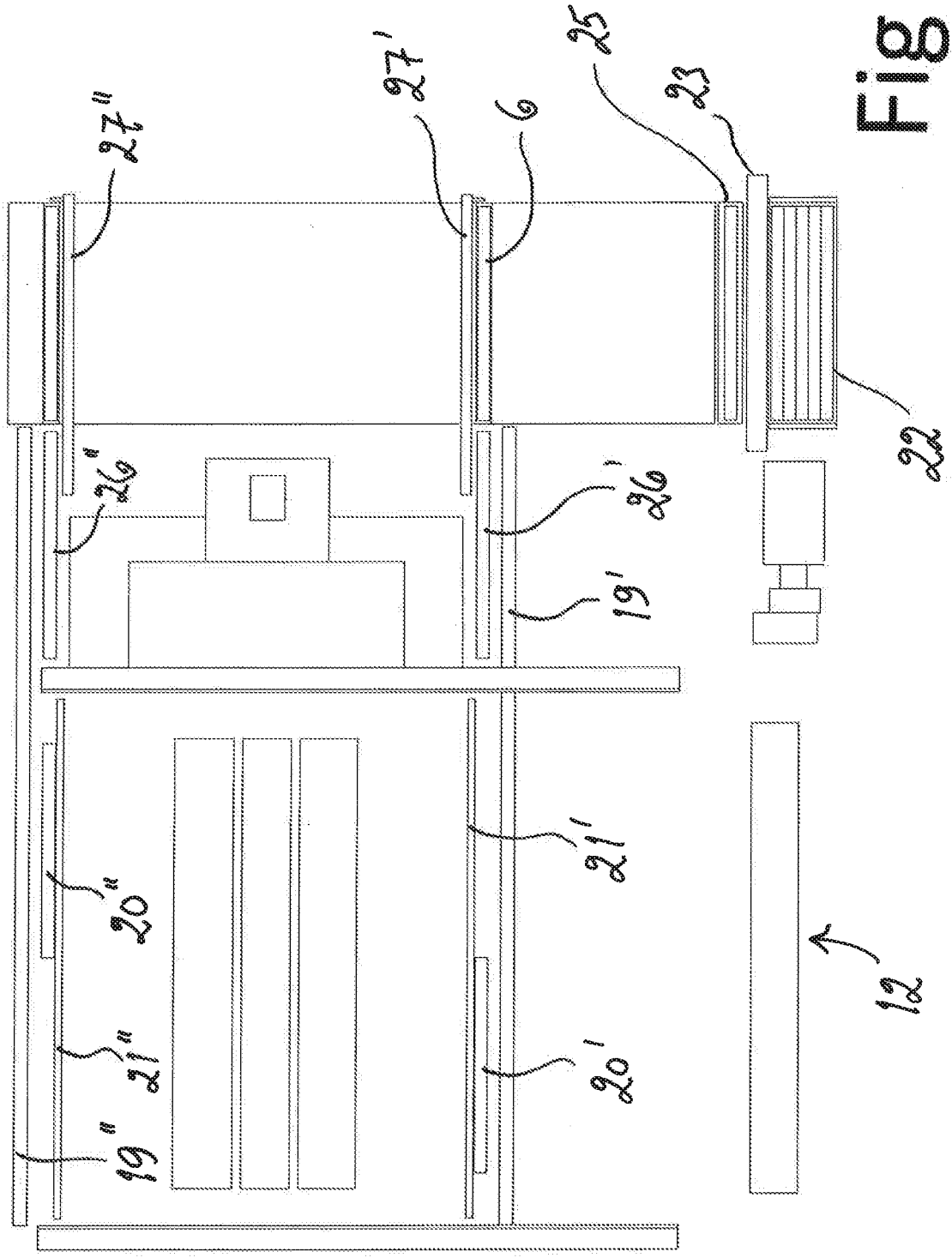

Fig 2

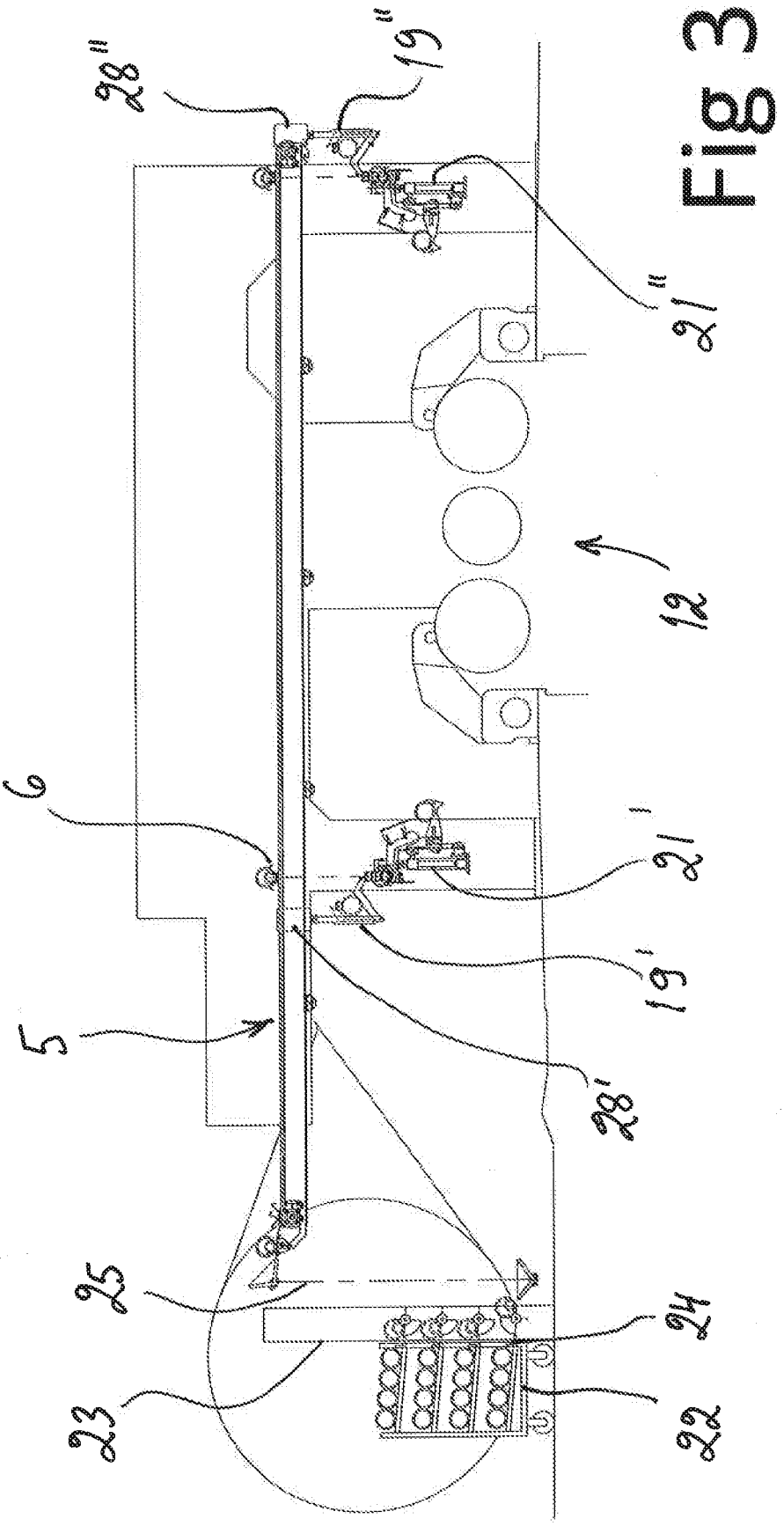

Fig 3

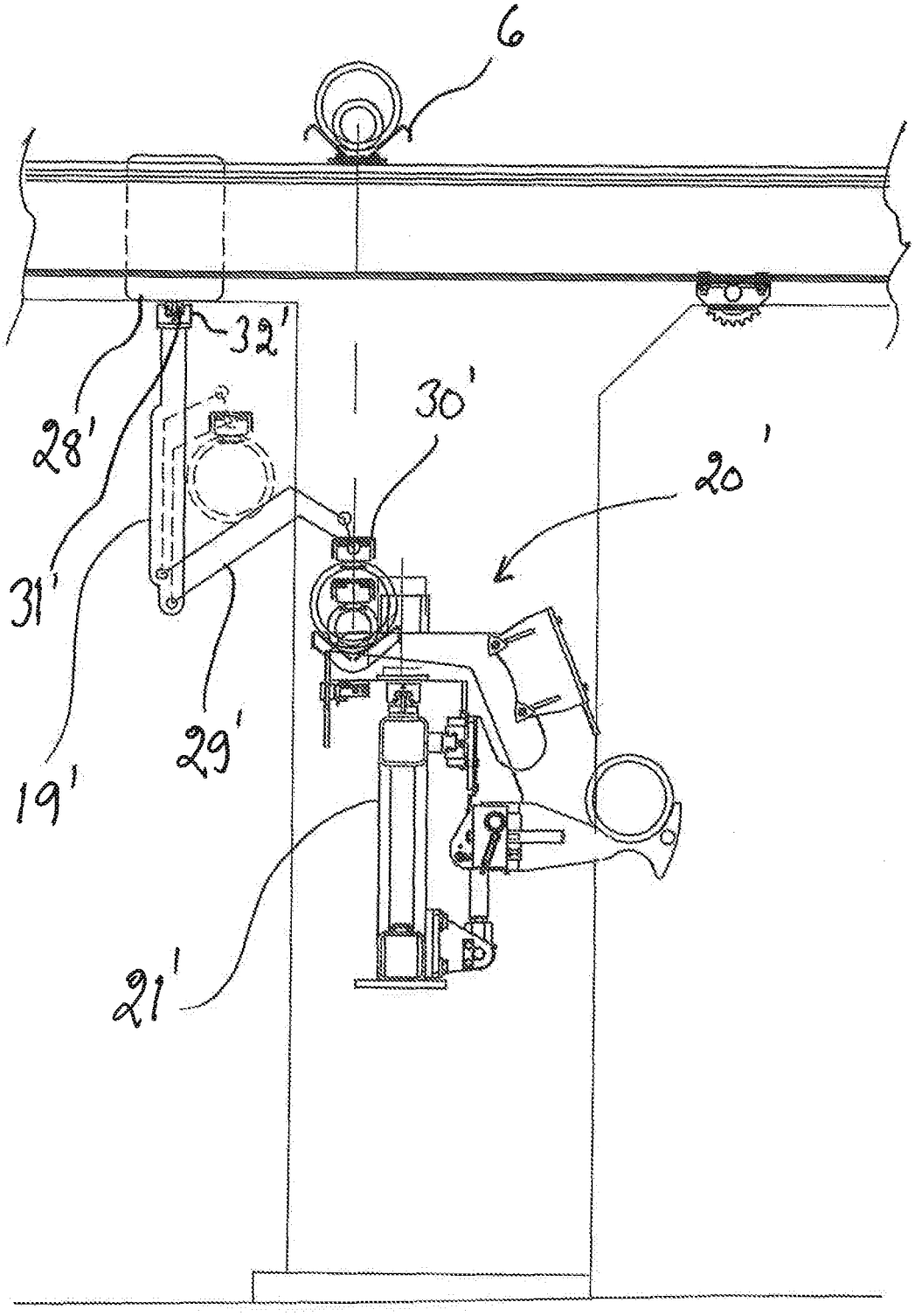

Fig 4

REFERENCES CITED IN THE DESCRIPTION

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