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(54) **ARRANGEMENT FOR DAMPENING THE VIBRATION OF AN APPARATUS ASSEMBLY OF A FIBROUS WEB MACHINE AND A METHOD FOR DAMPENING VIBRATION AT AN APPARATUS ASSEMBLY OF A FIBROUS WEB MACHINE**

ANORDNUNG ZUR SCHWINGUNGSDÄMPFUNG EINER VORRICHTUNGSANORDNUNG EINER FASERNETZMASCHINE UND VERFAHREN ZUR SCHWINGUNGSDÄMPFUNG EINER VORRICHTUNGSANORDNUNG EINER FASERNETZMASCHINE

SYSTÈME D'ATTÉNUATION DES VIBRATIONS D'UN DISPOSITIF D'UNE MACHINE À BANDE DE FIBRES ET PROCÉDÉ D'ATTÉNUATION DES VIBRATIONS D'UN DISPOSITIF D'UNE MACHINE À BANDE DE FIBRES

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Description

Arrangement for dampening the vibration of an apparatus assembly of a fibrous web machine and a method for dampening vibration at an apparatus assembly of a fibrous web machine

[0001] The invention relates to an arrangement according to the preamble of claim 1 for dampening the vibration of a roll assembly arranged to be controllably movable on a fibrous web machine.

[0002] The invention relates to a method according to the preamble of claim 9 for dampening the vibration on an apparatus assembly arranged to be controllably movable on a fiber web machine.

[0003] In a material web machine the material web coming from e.g. a paper machine is wound into large machine rolls, possibly even over 10 m wide and over 4 m in diameter, at the reel-up. The web of material is cut into narrower partial webs and wound into smaller so-called customer rolls with a slitter-winder.

[0004] In a slitter-winder known from prior art the machine roll is unwound and the wide web is slit with the slitting part of the slitter-winder into a number of narrower partial webs that are rewound with a winding part over winding spools, such as cores, to form customer rolls. When the customer rolls being simultaneously made from each partial web are ready, the slitter-winder is stopped and the partial web rolls are removed from the machine, i.e. the set change is done. Subsequent to this the process is continued as winding of a new set of rolls. These phases are repeated in sequences until the machine roll runs out of paper, whereby the machine roll is changed and the operation is started again as unwinding another machine roll. The partial web winder can be a king roll type winder in which the partial web rolls are wound carried by king rolls, typically supported by a rider roll.

[0005] In winding, e.g. when winding a paper web with a slitter-winder, large vibrations occur in certain paper types at same roll rotation frequency ranges regardless of the running speed of the slitter. Usually there are about 1 to 3 vibration ranges, i.e. rotation speed ranges of the roll on which there is strong vibration, depending on the final diameter of the roll. This strong vibration causes winding reject, mechanical wear of the apparatuses, even loosening of the roll from the winding apparatus as well as decrease of winding capacity as the running speed has to be lowered during winding.

[0006] FI101283 discloses a method in which the running speed of the winder is controlled based on the rotation frequency of the roll so that as the rotation frequency of the roll approaches the vicinity of the vibration range, i.e. the roll rotation frequency range where there is a strong vibration, the running speed is quickly lowered so that the rotation speed of the roll decreases to below the lower frequency of the vibration range and subsequent to this the running speed is increased so that the rotation

frequency of the roll remains constant until the original running speed of the winder is reached. Due to the change of the running speed this has an effect on the total capacity of the winder.

[0007] As the size of the partial web rolls increases on the king roll winding part, at least the rider roll is moved based on the diameter of the rolls, whereby at least the rider roll arrangement is movably supported by the body structure of the winding part. The consecutive longitudinal cores are locked in their places as a line of cores by means of a core locking device arranged at both ends. The support means contacting the roll (or rolls) to be wound are exposed to the dynamic load caused by the rotating roll. Especially in connection with king roll type of winders there occurs dynamic loads causing vibration especially in the rider roll and supporting rider roll beam of the king roll winder, excited by the partial web rolls to be wound. It is also typical for the process that the diameter of the roll to be wound has an effect on the vibration of the rider roll. Thus the vibration conditions change as the winding proceeds.

[0008] The design aim of the rider roll of a slitter-winder is a stable construction able to withstand dynamic load. A generally used practical solution is one in which rider roll segments are suspended from a relatively rigid rider roll beam. The rider roll beam is moved by means of hydraulic cylinders along guides attached to the body. Both the guides and the cylinders are located near the ends of the beam.

[0009] In addition to slitter-winder, other apparatuses having controllably movably arranged machine parts are used in the production of fibrous web. One such apparatus is the continuously operable reel-up winder and the winding carrier supporting and guiding the roll to be wound. This is also exposed to vibration.

[0010] US 4165843 discloses a king roll winding apparatus wherein the rider roll is suspended by chains and the opposite ends of the rider roll beam are provided with two dampers realized as compressed air-fed cylinder-piston apparatuses that press against the body by means of friction surfaces arranged at the ends of the piston rods. In such a suspension the position of the rider roll beam and the rider roll is very weakly controlled and e.g. the possibilities to adjust the nip force of the rider roll are in practice nearly non-existent.

[0011] FI 20055039 discloses reducing the vibration of the rider roll beam by supporting the beam to the body construction at the portion between the ends in addition to supporting just the ends, whereby the rigidity and vibration dampening of the rider roll beam increases.

[0012] DE 10 2006043629 A1 discloses a two-drum winder in which the web roll is supported by two carrier drums in which each of the may be separately suspended on a rail electromagnetically in order to reduce vibrations.

[0013] US 4 095 755 A discloses a winder in which a rider roll is arranged to a transversal load beam forming roll assembly of the fibrous web machine. The roll assembly is supported by and arranged movably in relation

to the body structure of the fibrous web machine by its support structure, and the roll assembly comprising a positioning apparatus by means of which its position can be changed during the operation and simultaneously the force exerted by the positioning apparatus can be changed.

[0014] DE 10 2006 043628 A1 discloses a rider roll is supported to a cross beam which is pivoted by arms in respect to a body and that the rider roll is pivoted to the cross beam and that there are vibration dampening arrangements at the ends of the beam. The roll assembly acts also as a support member for web rolls and is supported by and arranged movably in relation to the body structure of the fibrous web machine by its support structure, and comprising a positioning means forming a connection between the support member and the body structure as foundations of the fibrous web machine, in which also the force exerted by the positioning means can be changed during the operation, and the roll assembly and/or its support structure being provided with a vibration dampening arrangement, wherein the roll assembly is guided by a guide supported by the body structure in both ends/sides of the fibrous web machine, and the vibration dampening arrangement comprises at least two separate connections at the ends of the roll assembly with dedicated vibration dampening means from the roll assembly or its support structure to the body structure.

[0015] DE 42 01 327 A1 discloses a carrier roll winder, the rider roll of which is loaded by hydraulic or pneumatic work cylinders. The cylinders are provided with hydraulic/pneumatic vibration dampening means.

[0016] DE 10 2007 028789 A1 discloses a reel-up in which the roll is formed on a winding shaft. The winding shaft is supported by rails and pressed by pivotable secondary arms against the reeling cylinder. There is also a frictional vibration dampener in the secondary arms thereof.

[0017] Even though the above solutions are preferable as such, there have recently arisen needs to further increase the vibration properties and operation of the fibrous web machine, specially its machine component and/or apparatus assembly thereof. An especial aim of the invention is to specifically improve the state of the art by disclosing such a fibrous web winding apparatus and a method for winding a fibrous web with a winding apparatus that the improved operation and running capabilities of the winding apparatus can be carried out.

[0018] To clarify the terminology used in this context it should be noted that the fibrous web machine is considered to consist of a number of machine components, whereby apparatus assembly means one functional partial unit of a machine component, i.e. a machine component can be considered to consist of a number of apparatus assemblies.

[0019] The aims of the invention are achieved by an arrangement according to claim 1 and method according to claim 9.

[0020] An arrangement for dampening the vibration of

a movably arranged roll assembly of a fibrous web machine, wherein said roll assembly of the fibrous web machine acts as a support member for web rolls and is supported by and arranged movably in relation to the body structure of the fibrous web machine by its support structure, and the roll assembly comprising a positioning means forming a connection between the support member and the body structure as foundations of the fibrous web machine, by means of which position of the roll assembly, and simultaneously the force exerted by the positioning means, can be changed during the operation, and the roll assembly and/or its support structure being provided with a vibration dampening arrangement, wherein the roll assembly is guided by a guide supported by the body structure in both ends/sides of the fibrous web machine, the vibration dampening arrangement comprises at least two separate connections with dedicated vibration dampening means from the roll assembly or its support structure to the body structure. A characterizing feature of the invention is that the connections comprising means for selectably allowing, limiting or preventing the movement of the connections and a change of the working length (L) of the vibration dampening means.

[0021] With the arrangement according to the invention the vibration dampening arrangement provides a very effective action, especially when the movement to be dampened of the apparatus arrangement is long.

[0022] Advantageously there are at least two separate vibration dampening means arranged between the support structure of the apparatus assembly and the body structure, both of which comprise a connection to the body structure, said at least two vibration dampening means being arranged movably controlled by the connection, said connection comprising means for selectably allowing, limiting or preventing movement of the connection.

[0023] Advantageously there is a guide arranged in connection with a fibrous web machine, said at least two vibration dampening means being arranged to be controlled therewith. According to an embodiment both the apparatus assembly and said at least two vibration dampening means are arranged to be controlled by the same guide.

[0024] Advantageously the vibration dampening means comprises a viscose damper and a spring connected in parallel.

[0025] Advantageously the means for selectably allowing, limiting or preventing the movement of the connection comprise a brake apparatus.

[0026] According to an advantageous embodiment of the invention the apparatus assembly of the fibrous web machine, the vibration of which is effected on by the arrangement according to the invention, is a support member of the partial web winder of a slitter-winder of a fibrous web, such as a rider roll. In this case the partial web winder comprises at least one support member arranged to support the plurality of rolls, the support member being

movably arranged by its support structure in relation to the body structure of the partial web winder and comprising a positioning device connected to operate between the support member and the body structure of the winder part, the support member and/or its support structure being provided with a vibration dampening arrangement.

[0027] Advantageously there are at least two separate vibration dampening means arranged between the support structure of the rider roll and the body structure, both dampening means comprising a connection to the body structure, said at least two vibration dampening means being arranged movable controlled thereby, said connection comprising means for selectably allowing, limiting or preventing movement of the connection.

[0028] Advantageously the partial web winder is a king roll winder.

[0029] According to another preferable embodiment of the invention the apparatus assembly of the fibrous web machine is the core locking device of the partial web winder of the slitter-winder of the fibrous web. Thereby the partial web finder comprises at least one core locking device arranged to support the plurality of rolls by the ends thereof, the core locking device being arranged by its support structure movably in relation to the body structure of the partial web winder and comprising a positioning device connected to act between the core locking device and the body structure, the core locking device and/or its support structure being provided with a vibration dampening arrangement according to the invention.

[0030] According to another embodiment of the invention the apparatus assembly of the fibrous web machine is the reeling carrier of a continuously operating reel-up for fibrous web.

[0031] The aims of the invention are also achieved by means of a method for dampening the vibration with an controllably movably arranged apparatus assembly of a fibrous web machine, wherein during running of the fibrous web machine the position of the apparatus assembly is controllably moved by means of a positioning device and wherein the vibration of the apparatus assembly is dampened by means of a vibration dampening arrangement arranged in connection therewith. A characterizing feature of the invention is that the vibration dampening arrangement comprises at least two separate connections from the apparatus assembly or its support structure to the body construction, the connections being controlled so that the change of the operation length and movement of the connections is selectably allowed, restricted or prevented.

[0032] According to an advantageous embodiment the invention relates to a method of dampening vibration in a partial web winder for a fibrous web, wherein during the winding the formed plurality of partial webs is supported by its surface by means of at least one support means, and wherein the force exerted by the support member to the plurality of partial webs is adjusted by means of a positioning means arranged between the support member and body structure of the winding part, the

support member and/or its support structure being provided with a vibration dampening arrangement by means of which the vibration of the partial web winder is dampened and the vibration dampening arrangement comprises at least two separate connections to the body structure, the connections being controlled so that the movement of the connections is selectably allowed, limited or prevented.

[0033] According to an advantageous embodiment the vibration dampening arrangement comprises at least two separate vibration dampening members, whereby during movement of the apparatus assembly only one of said two separate vibration dampening members is immovably connected at a time to the guide included in the vibration dampening arrangement.

[0034] A advantageously immovably connected vibration dampening means, i.e. being in working state, dampens vibration while its working length decreases as the apparatus assembly moves and simultaneously the connection of the second vibration dampening means is in operation allowing its movement, i.e. being in resting state.

[0035] The vibration dampening means in the resting state is in its essentially full working length or in at least sufficient length, over 50 %, when its state is changed to working state.

[0036] According to one embodiment of the invention, in the method vibration in a partial web winder of a fibrous web is dampened, wherein during the winding operation the plurality of partial webs to be formed is supported by their ends by means of two core locking devices and wherein the core locking device and/or its support structure is provided with a vibration dampening arrangement by means of which the vibration of the partial web winder is dampened.

[0037] According to an embodiment of the invention, in the method vibration is dampened in a continuously running fibrous web reel-up winder, wherein the machine roll to be wound is supported by means of a support member arranged movably in relation to the body structure of the winder and that comprises a positioning device connected to operate between the support member and the body structure of the winding part, the support member and/or its support structure being provided with a vibration dampening means according to the invention.

[0038] The other additional characteristic features of the invention will become apparent from the appended claims and the following description of the embodiments of figures.

[0039] In the following the invention and its operation are described with reference to the appended schematic drawings, in which

figure 1 illustrates an embodiment of the invention and carrying out the method of the embodiment in connection with a partial web winder of the king roll type,

figure 2 illustrates the principle diagram of a vibration

dampening arrangement according to an embodiment,

figure 3 illustrates an embodiment of the invention and carrying out the method of the embodiment in connection with a continuously running reel-up of fibrous web, and

figure 4 illustrates another embodiment in connection with a partial web winder of the king roll type.

[0040] Figure 1 illustrates a partial web winder 10 of a slitter-winder for fibrous web, here a so-called king roll winder. The king roll winder comprises king rolls 12.1 and 12.2, of which the so-called rear roll 12.1 guides the partial webs w' to proceed for winding into partial web rolls 14 carried by king rolls 12.1, 12.2. The king rolls are rotatably supported to the body structure or foundation 18 of the partial web winder by means of bearings 16.1, 16.2

[0041] The partial web winder 10 comprises as one apparatus assembly thereof also a rider roll 20 acting as a support member of the plurality of partial rolls, the rider roll being supported by a support structure arranged for it, a rider roll beam 22. The rider roll beam 22 is arranged to be guided by guide 26 and it also comprises positioning apparatus 28 by means of which the position of the rider roll can be changed during winding and simultaneously the force exerted by the rider roll to the plurality of partial webs can be changed. A hydraulic cylinder, for example, can be used as the positioning apparatus. Thus the positioning apparatuses form a connection between the support member and the body structure or foundation. The rider roll 20 and thus also the rider roll beam 22 are arranged movably in relation to the body structure 18 of the partial web winder 10.

[0042] In order to control the movement of the rider roll 20 the winder part is provided with at least one guide 26 supported by the body structure 18 in both ends/sides of the partial web winder 10. It is to be noted that figure 1 only illustrates one end/side of the partial web winder 10.

[0043] According to first embodiment of the invention the rider roll 20 and especially also the rider roll beam 22 is provided with a vibration dampening arrangement 50 for dampening the vibration of the rider roll and the rider roll beam during running. The vibration dampening arrangement comprises at least two separate connections 52 having dedicated vibration dampening means 56, the connections extending from the rider roll support structure 22 to the body structure 18, the connections comprising means 54 for selectably allowing, limiting or preventing the movement of the connections. According to an embodiment of the invention, as shown in figure 1, at least two, although preferably only two, separate vibration dampening means 56 are provided between the rider roll support structure 22 and the body structure 18. In this embodiment both vibration dampening means 56, generally each vibration dampening means, comprise a connection to the body structure. The vibration dampening means 56 are movably connected through connection 52 to the body structure via guide 19. The vibration damp-

ening means is controlled to take place in the direction or way determined by the guide by means of the connection. Each connection comprises independently controllable means 54 for selectably allowing, limiting or preventing movement of the connection. The construction of the vibration dampening means is such as to allow the working length L in the direction of the apparatus assembly 20 to change as it acts as a vibration dampening means without its properties essentially changing, i.e. the vibration dampening means is a variable working length dampening member.

[0044] When using a partial web winder according to the first embodiment of the invention the plurality of partial webs to be formed during winding is supported by its surface by means of at least one support member 20, advantageously a rider roll. Simultaneously the force exerted by the support member to the plurality of partial web rolls is adjusted by means of an actuator arranged between the support member and the body structure 18 of the winder part. The connections 52 are further controlled by means of members 50 so that the movement of the connections is selectably allowed, limited or prevented alternately.

[0045] Thus, when the rider roll 20 is moved as the size of the plurality of partial web rolls increases in the direction shown by arrow A in figure 1 (the movement direction of the apparatus assembly), only one of said two separate vibration dampening means 56 is immovably connected to the guide 19 at a time. Thereby the immovably connected vibration dampener, i.e. one in working state, dampens vibration while its working length L decreases as the rider roll moves in the direction of the arrow A. Simultaneously the connection of the other vibration dampening means 54 is in operation allowing movement, i.e. being in resting state. Optionally the connection can be on movement restricting operation, whereby the connection 54 moves but does it so that the movement causes resistance. It is essential that the vibration dampening means in resting state be essentially in its full working length or in at least sufficient length, over 50% of the working length, when its state is changed to working state. If the connection has been in movement limiting operation the connection can be released.

[0046] When the working length of the vibration dampening means 56 ends or is about to end, the connection of the vibration dampening means 56 in resting state is changed so as to be immovable in relation to the guide 19 and the connection of the vibration dampening means 56 previously in working state is released to resting state, whereby its working length returns to full or sufficient for use in working state. Even though the drawings do not show it, the construction of the vibration dampening means 56 can be such as to allow the working length L in the direction of the movement of the apparatus assembly 20 to change also based on rotational movement (spiral spring, torsion bar).

[0047] The method and arrangement described above can thus be used in all situations where the rider roll is

moved or it is not specially locked into place.

[0048] When the distance between the connections 52 corresponds with the length of the stroke of the vibration dampening means when the vibration dampening means 56 is in its maximum length, the connections can advantageously be arranged on a common guide 19.

[0049] Instead of separate guides 19 and 26 a common guide (not shown) can be used for both the rider roll and the vibration dampening means. Advantageously the connection 52 comprises a guide carrier movably arranged onto the guide 19. The means 54 for selectably allowing, limiting or preventing the movement of the connection advantageously comprise a brake apparatus arranged in the guide carrier. The vibration dampening arrangement 50 thus comprises a vibration dampening means 56 attached by one end to the rider roll beam and by its other end to the guide carrier.

[0050] Figure 2 illustrates a principle diagram of the vibration dampening arrangement 50. It shows that the vibration dampening means 56 comprises a viscose dampener 56.2. The vibration dampener means 56 further comprises a spring 56.1. Advantageously the viscose dampener and the spring are connected in parallel.

[0051] Figure 3 illustrates a continuously operating reel-up 30 for a fibrous web. The reel-up winder comprises a reeling drum 32 via which the web w is guided to the machine roll 34 to be wound. The machine roll is wound onto a winding shaft 36 supported by a support member 20, such as a reel-up carrier. Here the reel-up carrier is an apparatus assembly of the reel-up. The reel-up carrier 20 is movably arranged by means of the positioning device 28 to the body structure 18 between the initial reeling station 38.1 and the final reeling station 38.2. The reel-up carrier, i.e. support member 20 is provided with a vibration dampening arrangement 50 the operation and structure of which is described above in connection with figures 1 and 2. The reel-up can in other details be known as such and operate as such.

[0052] Figure 4 illustrates a partial web winder 10 of a slitter-winder for a fibrous web similar to the one in Figure 1, with the addition that figure 4 shows a core locking device 60 arranged to support the plurality of the rolls at the ends thereof, the locking device being arranged movably in relation to the body structure 18 of the partial web winder. The core locking device is an apparatus assembly of the partial web winder. Here the core locking device 60 and/or its support structure 60' are provided with a vibration dampening means 50 the operation and structure of which are described above in connection with figure 1 and 2.

[0053] It should be noted that only a few of the most preferable embodiments are disclosed above. Thus, it is obvious that the invention is not limited to the above-mentioned embodiments but it can be applied in many ways within the scope defined by the appended claims. The features disclosed in connection with various embodiments can also be used in connection with other embodiments within the inventive scope and/or different as-

semblies can be combined from the disclosed features, should it be desired and should it be technically feasible.

5 Claims

1. An arrangement for dampening the vibration of a movably arranged roll assembly (20) of a fibrous web machine, wherein said roll assembly (20) of the fibrous web machine acts as a support member for web rolls (14, 34) and is supported by and arranged movably in relation to the body structure (18) of the fibrous web machine (10, 30) by its support structure, and the roll assembly comprising a positioning means (28) forming a connection between the support member and the body structure as foundations of the fibrous web machine, by means of which position of the roll assembly (20), and simultaneously the force exerted by the positioning means (28), can be changed during the operation, and the roll assembly (20) and/or its support structure being provided with a vibration dampening arrangement (50), wherein the roll assembly (20) is guided by a guide (26) supported by the body structure in both ends/sides of the fibrous web machine, the vibration dampening arrangement (50) comprises at least two separate connections (52) with dedicated vibration dampening means (56) from the roll assembly (20) or its support structure to the body structure (18), **characterized in that** the connections comprising means (54) for selectably allowing, limiting or preventing the movement of the connections and a change of the working length (L) of the vibration dampening means.
2. An arrangement according to claim 1, **characterized in that** the vibration dampening arrangement (50) comprises two separate vibration dampening means (56), both of which comprise a connection (52) to the body structure (18), said at least two vibration dampening means are arranged to be moved and controlled by the connection and that said connection comprises means (54) for selectably allowing, limiting or preventing the movement of the connection.
3. An arrangement according to claim 1, **characterized in that** the vibration dampening means (56) is a vibration dampener having a variable working length.
4. An arrangement according to claim 1, **characterized in that** both the roll assembly (20) and said at least two vibration dampening means (56) are arranged to be controlled by the same guide.
5. An arrangement according to claim 1, **characterized in that** the vibration dampening means (56) comprises a viscose dampener and a spring connected in parallel.

6. An arrangement according to any of the previous claims, **characterized in that** the roll assembly of the fibrous web machine is a support member (20) of a partial web winder (10) of a fibrous web slitter-winder, the support member being movably arranged by its support structure to the body structure (18) of the partial web winder, comprising a positioning means (28) connected to operate between the support member and the body structure (18) of the winder part, the support member (20) and/or its support structure (22) being provided with a vibration dampening arrangement (50). 5
7. An arrangement according to any of the previous claims 1 to 5, **characterized in that** the roll assembly of the fibrous web machine is a core locking device (60) of the partial web winder (10) of a fibrous web slitter-winder, the core locking device being movably arranged in relation to the body structure of the partial web winder, the core locking device (60) and/or its being support structure being provided with a vibration dampening arrangement (50). 10
8. An arrangement according to any of claims 1 to 5, **characterized in that** the roll assembly of the fibrous web machine is a reeling carrier (20) of a continuous reel-up (30) of fibrous web, the carrier being arranged to support the machine roll (34) to be wound and the reeling carrier being movably arranged in relation to the body structure (18) of the reel-up by its support structure and comprising a positioning means (28) connected to operate between the support member and the body structure (18) of the reel-up (30), the support member (20) and/or its support structure being provided with a vibration dampening arrangement (50). 15
9. A method of dampening the vibration of a roll assembly (20) of a fibrous web machine acting as support member for web rolls (14, 34) is supported and arranged controllably movable in relation to the body structure of the fibrous web machine (10,30) by a positioning means (28) forming a connection between the support member and the body structure as foundations of the fibrous web machine, wherein during running of the fibrous web machine the position of the roll assembly is controllably moved by means of the positioning means (28) and simultaneously the force exerted by the positioning apparatus (28) can be changed, and wherein the vibration of the roll assembly (20) is dampened by means of a vibration dampening arrangement (50) arranged in connection therewith, wherein the roll assembly (20) is guided by a guide supported by the body structure in both ends/sides of the fibrous web machine, and the vibration dampening arrangement comprises at least two separate connections (52) from the roll assembly (20) or its support structure to the body structure (18), **characterized in that** the connections being controlled so that the change of the working length (L) of the connections is selectably alternately allowed, limited or prevented. 20
10. A method according to claim 9, **characterized in that** the vibration dampening arrangement comprises at least two separate vibration dampening means (56), whereby during moving of the roll assembly (20) only one of said two vibration dampening means (56) is immovably connected (54) to the guide (19) included in the vibration dampening arrangement. 25
11. A method according to claim 10, **characterized in that** the immovably connected vibration dampening means (56), i.e. one in operation state, dampens vibration while its working length is reduced as the roll assembly (20) moves and that the connection (54) of the other vibration dampening means (56) is in state allowing movement, i.e. in resting state. 30
12. A method according to claim 11, **characterized in that** the vibration dampening means (56) being in resting state is essentially in full working length or at least in a sufficient length of over 50 %, when its state is changed to working state. 35
13. A method according to any of claims 9 to 12, **characterized in that** in the method vibration is dampened in a fibrous web partial web winder, wherein during the winding the plurality of partial web rolls is supported on the surface thereof by means of at least one support means (20) and wherein the force exerted by the support means to the plurality of partial web rolls (14) is adjusted by means of a positioning device (28) arranged between the support means and the body structure (18) of the winding part, the support means and/or its support structure (22) being provided with a vibration dampening arrangement (50) by means of which the vibration of the partial web winder is dampened. 40
14. A method according to any of claims 9 to 12, **characterized in that** in the method vibration is dampened in a partial web winder of a fibrous web, wherein during the winding the plurality of partial web rolls to be formed is supported by its ends by means of two core locking devices (60) and wherein the core locking device (60) and/or its support structure (22) is provided with a vibration dampening means (50) by means of which the vibration of the partial web winder is dampened. 45
15. A method according to any of claims 9 to 12, **characterized in that** in the method vibration is dampened in a continuously operated reel-up of fibrous web, wherein the machine roll (34) to be wound is supported by means of a reeling carrier (20) ar- 50

ranged movably in relation to the body structure (18) of the reel-up, the carrier comprising a positioning means (28) arranged to operate between the support member and the body structure (18) of the reel-up, the support member (20) and/or its support structure being provided with a vibration dampening arrangement (50).

Patentansprüche

1. Anordnung zum Dämpfen der Schwingung einer beweglich angeordneten Rollenanordnung (20) einer Faserbahnmaschine, wobei die Rollenanordnung (20) der Faserbahnmaschine als ein Stützelement für Bahnrollen (14, 34) wirkt und durch ihre Stützkonstruktion von der Körperkonstruktion (18) der Faserbahnmaschine (10, 30) gestützt wird und beweglich bezüglich derselben angeordnet ist, und wobei die Rollenanordnung ein Positioniermittel (28) umfasst, das eine Verbindung zwischen dem Stützelement und der Körperkonstruktion als Basis der Faserbahnmaschine bildet, mittels welcher die Position der Rollenanordnung (20) und gleichzeitig die von dem Positioniermittel (28) ausgeübte Kraft während des Betriebs verändert werden können, und wobei die Rollenanordnung (20) und/oder ihre Stützkonstruktion mit einer Schwingungsdämpfungsanordnung (50) versehen ist, wobei die Rollenanordnung (20) von einer Führung (26) geführt wird, die von der Körperkonstruktion an beiden Enden/Seiten der Faserbahnmaschine gestützt wird, wobei die Schwingungsdämpfungsanordnung (50) wenigstens zwei separate Verbindungen (52) mit speziellen Schwingungsdämpfungsmitteln (56) von der Rollenanordnung (20) oder ihrer Stützkonstruktion zu der Körperkonstruktion (18) umfasst, **dadurch gekennzeichnet, dass** die Verbindungen Mittel (54) zum selektiven Ermöglichen, Begrenzen oder Verhindern der Bewegung der Verbindungen und einer Änderung der Arbeitslänge (L) der Schwingungsdämpfungsmittel umfassen.
2. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Schwingungsdämpfungsanordnung (50) zwei separate Schwingungsdämpfungsmittel (56) umfasst, welche beide eine Verbindung (52) zu der Körperkonstruktion (18) umfassen, wobei die wenigstens zwei Schwingungsdämpfungsmittel dafür eingerichtet sind, von der Verbindung bewegt und gesteuert zu werden, und dadurch, dass die Verbindung Mittel (54) zum selektiven Ermöglichen, Begrenzen oder Verhindern der Bewegung der Verbindung umfasst.
3. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Schwingungsdämpfungsmittel (56) ein Schwingungsdämpfer ist, der eine variable

Arbeitslänge aufweist.

4. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** sowohl die Rollenanordnung (20) als auch die wenigstens zwei Schwingungsdämpfungsmittel (56) dafür eingerichtet sind, von derselben Führung gesteuert zu werden.
5. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Schwingungsdämpfungsmittel (56) einen viskosen Dämpfer und eine Feder umfasst, die parallelgeschaltet sind.
6. Anordnung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Rollenanordnung der Faserbahnmaschine ein Stützelement (20) eines Teilbahnwicklers (10) einer Faserbahn-Rollenschneide- und Aufrollmaschine ist, wobei das Stützelement durch seine Stützkonstruktion beweglich zu der Körperkonstruktion (18) des Teilbahnwicklers angeordnet ist und ein Positioniermittel (28) umfasst, das funktionswirksam zwischen dem Stützelement und der Körperkonstruktion (18) des Wicklerteils eingebaut ist, wobei das Stützelement (20) und/oder seine Stützkonstruktion (22) mit einer Schwingungsdämpfungsanordnung (50) versehen ist.
7. Anordnung nach einem der vorhergehenden Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die Rollenanordnung der Faserbahnmaschine eine Kernverriegelungsvorrichtung (60) des Teilbahnwicklers (10) einer Faserbahn-Rollenschneide- und Aufrollmaschine ist, wobei die Kernverriegelungsvorrichtung beweglich bezüglich der Körperkonstruktion des Teilbahnwicklers angeordnet ist, wobei die Kernverriegelungsvorrichtung (60) und/oder ihre Stützkonstruktion mit einer Schwingungsdämpfungsanordnung (50) versehen ist.
8. Anordnung nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die Rollenanordnung der Faserbahnmaschine ein Wickelrollenträger (20) einer Anordnung zum kontinuierlichen Aufwickeln (30) von Faserbahn ist, wobei der Träger dafür eingerichtet ist, die zu wickelnde Maschinenrolle (34) zu stützen, und der Wickelrollenträger durch seine Stützkonstruktion beweglich bezüglich der Körperkonstruktion (18) der Anordnung zum Aufwickeln angeordnet ist und ein Positioniermittel (28) umfasst, das funktionswirksam zwischen dem Stützelement und der Körperkonstruktion (18) der Anordnung zum Aufwickeln (30) eingebaut ist, wobei das Stützelement (20) und/oder seine Stützkonstruktion mit einer Schwingungsdämpfungsanordnung (50) versehen ist.
9. Verfahren zum Dämpfen der Schwingung einer Rol-

- lenanordnung (20) einer Faserbahnmaschine, die als ein Stützelement für Bahnrollen (14, 34) wirkt und von der Körperkonstruktion der Faserbahnmaschine (10, 30) gestützt wird und steuerbar beweglich bezüglich derselben durch ein Positioniermittel (28) angeordnet ist, das eine Verbindung zwischen dem Stützelement und der Körperkonstruktion als Basis der Faserbahnmaschine bildet, wobei während des Betriebs der Faserbahnmaschine die Position der Rollenanordnung mittels des Positioniermittels (28) steuerbar bewegt wird und gleichzeitig die von der Positioniervorrichtung (28) ausgeübte Kraft verändert werden kann, und wobei die Schwingung der Rollenanordnung (20) mittels einer Schwingungsdämpfungsanordnung (50) gedämpft wird, die in Verbindung mit ihr angeordnet ist, wobei die Rollenanordnung (20) von einer Führung geführt wird, die von der Körperkonstruktion an beiden Enden/Seiten der Faserbahnmaschine gestützt wird, und die Schwingungsdämpfungsanordnung wenigstens zwei separate Verbindungen (52) von der Rollenanordnung (20) oder ihrer Stützkonstruktion zu der Körperkonstruktion (18) umfasst, **dadurch gekennzeichnet, dass** die Verbindungen so gesteuert werden, dass die Änderung der Arbeitslänge (L) der Verbindungen wählbar entweder ermöglicht oder begrenzt oder verhindert wird.
10. Verfahren nach Anspruch 9, **dadurch gekennzeichnet, dass** die Schwingungsdämpfungsanordnung wenigstens zwei separate Schwingungsdämpfungsmittel (56) umfasst, wobei während der Bewegung der Rollenanordnung (20) nur eines der zwei Schwingungsdämpfungsmittel (56) unbeweglich mit der Führung (19) verbunden (54) ist, die in der Schwingungsdämpfungsanordnung enthalten ist.
11. Verfahren nach Anspruch 10, **dadurch gekennzeichnet, dass** das unbeweglich verbundene Schwingungsdämpfungsmittel (56), d. h. eines im Betriebszustand, Schwingungen dämpft, während seine Arbeitslänge verringert wird, wenn sich die Rollenanordnung (20) bewegt, und dass die Verbindung (54) des anderen Schwingungsdämpfungsmittels (56) sich in einem Zustand befindet, der eine Bewegung ermöglicht, d. h. im Ruhezustand.
12. Verfahren nach Anspruch 11, **dadurch gekennzeichnet, dass** das Schwingungsdämpfungsmittel (56), das sich im Ruhezustand befindet, im Wesentlichen die volle Arbeitslänge oder wenigstens eine ausreichende Länge von über 50 % aufweist, wenn sein Zustand zum Arbeitszustand geändert wird.
13. Verfahren nach einem der Ansprüche 9 bis 12, **dadurch gekennzeichnet, dass** bei dem Verfahren die Schwingung in einem Faserbahn-Teilbahnwickler gedämpft wird, wobei während des Wickelns die

mehreren Teilbahnrollen an der Oberfläche derselben mittels wenigstens eines Stützmittels (20) abgestützt werden, und wobei die Kraft, die von dem Stützmittel auf die mehreren Teilbahnrollen (14) ausgeübt wird, mittels einer Positioniervorrichtung (28) eingestellt wird, die zwischen dem Stützmittel und der Körperkonstruktion (18) des Wickelteils angeordnet ist, wobei das Stützmittel und/oder seine Stützkonstruktion (22) mit einer Schwingungsdämpfungsanordnung (50) versehen ist, mittels welcher die Schwingung des Teilbahnwicklers gedämpft wird.

14. Verfahren nach einem der Ansprüche 9 bis 12, **dadurch gekennzeichnet, dass** bei dem Verfahren die Schwingung in einem Teilbahnwickler einer Faserbahn gedämpft wird, wobei während des Wickelns die zu bildenden mehreren Teilbahnrollen an ihren Enden mithilfe von zwei Kernverriegelungsvorrichtungen (60) abgestützt werden, und wobei die Kernverriegelungsvorrichtung (60) und/oder ihre Stützkonstruktion (22) mit einem Schwingungsdämpfungsmittel (50) versehen ist, mittels dessen die Schwingung des Teilbahnwicklers gedämpft wird.
15. Verfahren nach einem der Ansprüche 9 bis 12, **dadurch gekennzeichnet, dass** bei dem Verfahren die Schwingung in einer kontinuierlich betriebenen Anordnung zum Aufwickeln von Faserbahn gedämpft wird, wobei die zu wickelnde Maschinenrolle (34) mittels eines Wickelrollenträgers (20) gestützt wird, der beweglich bezüglich der Körperkonstruktion (18) der Anordnung zum Aufwickeln angeordnet ist, wobei der Träger ein Positioniermittel (28) umfasst, das funktionswirksam zwischen dem Stützelement und der Körperkonstruktion (18) der Anordnung zum Aufwickeln angeordnet ist, wobei das Stützelement (20) und/oder seine Stützkonstruktion mit einer Schwingungsdämpfungsanordnung (50) versehen ist.

Revendications

1. Arrangement pour l'amortissement des vibrations d'un ensemble de rouleaux (20) mobile d'une machine à bande fibreuse, dans lequel ledit ensemble de rouleaux (20) de la machine à bande fibreuse agit comme un élément de support pour des rouleaux de bande (14, 34), tout en étant supporté par la structure de corps (18) de la machine à bande fibreuse (10, 30) et disposé de façon à pouvoir être déplacé par rapport à celle-ci par sa structure de support, et l'ensemble de rouleaux comprenant un moyen de positionnement (28) formant une connexion entre l'élément de support et la structure de corps en tant que fondations de la machine à bande fibreuse, moyen-

- nant quoi la position de l'ensemble de rouleaux (20) et simultanément la force exercée par le moyen de positionnement (28) peuvent être réglées pendant le fonctionnement, et l'ensemble de rouleaux (20) et/ou sa structure de support étant pourvus d'un arrangement d'amortissement de vibrations (50), l'ensemble de rouleaux (20) étant guidé par un guide (26) supporté par la structure de corps au niveau des deux extrémités/côtés de la machine à bande fibreuse, l'arrangement d'amortissement de vibrations (50) comprenant au moins deux connexions séparées (52) avec un moyen d'amortissement de vibrations (56) dédié, entre l'ensemble de rouleaux (20) ou de sa structure de support et la structure de corps (18), **caractérisé en ce que** les connexions comprennent un moyen (54) permettant, limitant ou empêchant sélectivement le déplacement des connexions et une modification de la longueur de travail (L) du moyen d'amortissement de vibrations.
2. Arrangement selon la revendication 1, **caractérisé en ce que** l'arrangement d'amortissement de vibrations (50) comprend deux moyens d'amortissement de vibrations (56) séparés, comprenant tous deux une connexion (52) avec la structure de corps (18), lesdits au moins deux moyens d'amortissement de vibrations étant conçus de manière à pouvoir être déplacés et commandés par la connexion, et **en ce que** ladite connexion comprend un moyen (54) permettant, limitant ou empêchant sélectivement le déplacement de la connexion.
 3. Arrangement selon la revendication 1, **caractérisé en ce que** le moyen d'amortissement de vibrations (56) est un amortisseur de vibrations présentant une longueur de travail modifiable.
 4. Arrangement selon la revendication 1, **caractérisé en ce qu'à** la fois l'ensemble de rouleaux (20) et lesdits au moins deux moyens d'amortissement de vibrations (56) sont conçus de manière à pouvoir être commandés par le même guide.
 5. Arrangement selon la revendication 1, **caractérisé en ce que** le moyen d'amortissement de vibrations (56) comprend un amortisseur de viscosité et un ressort relié en parallèle.
 6. Arrangement selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'ensemble de rouleaux de la machine à bande fibreuse est un élément de support (20) d'un enrouleur de bande partiel (10) d'une bobineuse-trancheuse de bande fibreuse, l'élément de support étant disposé de façon déplaçable par sa structure de support par rapport à la structure de corps (18) de l'enrouleur de bande partiel, comprenant un moyen de positionnement (28) relié de manière à fonctionner entre l'élément de support et la structure de support (18) de la partie d'enroulement, l'élément de support (20) et/ou sa structure de support (22) étant pourvus d'un arrangement d'amortissement de vibrations (50).
 7. Arrangement selon l'une quelconque des revendications précédentes 1 à 5, **caractérisé en ce que** l'ensemble de rouleaux de la machine à bande fibreuse est un dispositif de verrouillage central (60) de l'enrouleur de bande partiel (10) d'une bobineuse-trancheuse de bande fibreuse, le dispositif de verrouillage central étant disposé de façon mobile par rapport à la structure de corps de l'enrouleur de bande partiel, le dispositif de verrouillage central (60) et/ou sa structure de support étant pourvus d'un arrangement d'amortissement de vibrations (50).
 8. Arrangement selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** l'ensemble de rouleaux de la machine à toile fibreuse est un support d'enroulement (20) d'un enrouleur continu (30) de bande fibreuse, le support étant conçu pour supporter le rouleau de machine (34) à enrouler, et le support d'enroulement étant disposé de façon mobile par rapport à la structure de corps (18) de l'enrouleur par sa structure de support et comprenant un moyen de positionnement (28) relié de manière à fonctionner entre l'élément de support et la structure de corps (18) de l'enrouleur (30), l'élément de support (20) et/ou sa structure de support étant pourvus d'un arrangement d'amortissement de vibrations (50).
 9. Procédé pour l'amortissement des vibrations d'un ensemble de rouleaux (20) d'une machine à toile fibreuse agissant comme un élément de support pour des rouleaux de bande (14, 34), tout en étant supporté par la structure de corps de la machine à bande fibreuse (10, 30) et disposé de façon à pouvoir être déplacé de manière contrôlée par rapport à celle-ci, à l'aide d'un moyen de positionnement (28) formant une connexion entre l'élément de support et la structure de corps en tant que fondations de la machine à bande fibreuse, dans lequel la position de l'ensemble de rouleaux peut être déplacée de manière contrôlée à l'aide du moyen de positionnement (28) et la force exercée par le dispositif de positionnement (28) peut être modifiée simultanément, pendant le fonctionnement de la machine à toile fibreuse, et dans lequel les vibrations de l'ensemble de rouleaux (20) sont amorties à l'aide d'un arrangement d'amortissement de vibrations (50) disposé en connexion avec celui-ci, l'ensemble de rouleaux (20) étant guidé par un guide supporté par la structure de corps au niveau des deux extrémités/côtés de la machine à bande fibreuse, et l'arrangement d'amortissement de vibrations comprenant au moins deux connexions séparées (52) entre l'ensemble de rouleaux (20) ou de sa structure de support et la

structure de corps (18), **caractérisé en ce que** les connexions sont contrôlées de manière à permettre, limiter ou empêcher sélectivement de façon alternée la modification de la longueur de travail (L) des connexions.

10. Procédé selon la revendication 9, **caractérisé en ce que** l'arrangement d'amortissement de vibrations comprend au moins deux moyens d'amortissement de vibrations (56) séparés, moyennant quoi, pendant le déplacement de l'ensemble de rouleaux (20), seul l'un desdits deux moyens d'amortissement de vibrations (56) est relié (54) de façon immobile au guide (19) inclus dans l'arrangement d'amortissement de vibrations. 10
11. Procédé selon la revendication 10, **caractérisé en ce que** l'arrangement d'amortissement de vibrations (56) relié de façon immobile, c'est-à-dire à l'état de fonctionnement, amortit les vibrations tandis que sa longueur de travail est réduite pendant le déplacement de l'ensemble de rouleaux (20), et **en ce que** la connexion (54) de l'autre moyen d'amortissement de vibrations (56) est dans un état permettant le déplacement, c'est-à-dire à l'état de repos. 20 25
12. Procédé selon la revendication 11, **caractérisé en ce que** l'arrangement d'amortissement de vibrations (56) à l'état de repos présente quasiment sa longueur de travail maximale ou du moins une longueur 30 suffisante de plus de 50%, lorsque son état passe à l'état de fonctionnement.
13. Procédé selon l'une quelconque des revendications 9 à 12, **caractérisé en ce que** dans le procédé, les vibrations sont amorties dans un enrouleur de bande 35 fibreuse partiel, la pluralité de rouleaux de bande partiels étant supportée sur la surface de celui-ci à l'aide d'au moins un élément de support (20) pendant l'enroulement, et dans lequel la force exercée sur la pluralité de rouleaux de bande partiels (14) par l'élément de support est ajustée à l'aide d'un dispositif 40 de positionnement (28) disposé entre l'élément de support et la structure de corps (18) de la partie d'enroulement, l'élément de support et/ou sa structure de support (22) étant pourvu d'un arrangement 45 d'amortissement de vibrations (50) permettant d'amortir les vibrations de l'enrouleur de bande partiel.
14. Procédé selon l'une quelconque des revendications 9 à 12, **caractérisé en ce que** dans le procédé, les vibrations sont amorties dans un enrouleur de bande 50 partiel d'une bande fibreuse, la pluralité de rouleaux de bande partiels à former étant supportée par ses extrémités pendant l'enroulement, à l'aide de deux dispositifs de verrouillage centraux (60), et le dispositif de verrouillage central (60) et/ou sa structure de 55

support (22) étant pourvu d'un moyen d'amortissement de vibrations (50) permettant d'amortir les vibrations de l'enrouleur de bande partiel.

- 5 15. Procédé selon l'une quelconque des revendications 9 à 12, **caractérisé en ce que** dans le procédé, les vibrations sont amorties dans un enrouleur de bande fibreuse fonctionnant en continu, le rouleau de machine (34) à enrouler étant supporté à l'aide d'un support d'enroulement (20) disposé de façon mobile par rapport à la structure de corps (18) de l'enrouleur, le support comprenant un moyen de positionnement 10 (28) disposé pour intervenir entre l'élément de support et la structure de corps (18) de l'enrouleur, l'élément de support (20) et/ou sa structure de support étant pourvu d'un arrangement d'amortissement de vibrations (50). 15 20 25 30 35 40 45 50 55

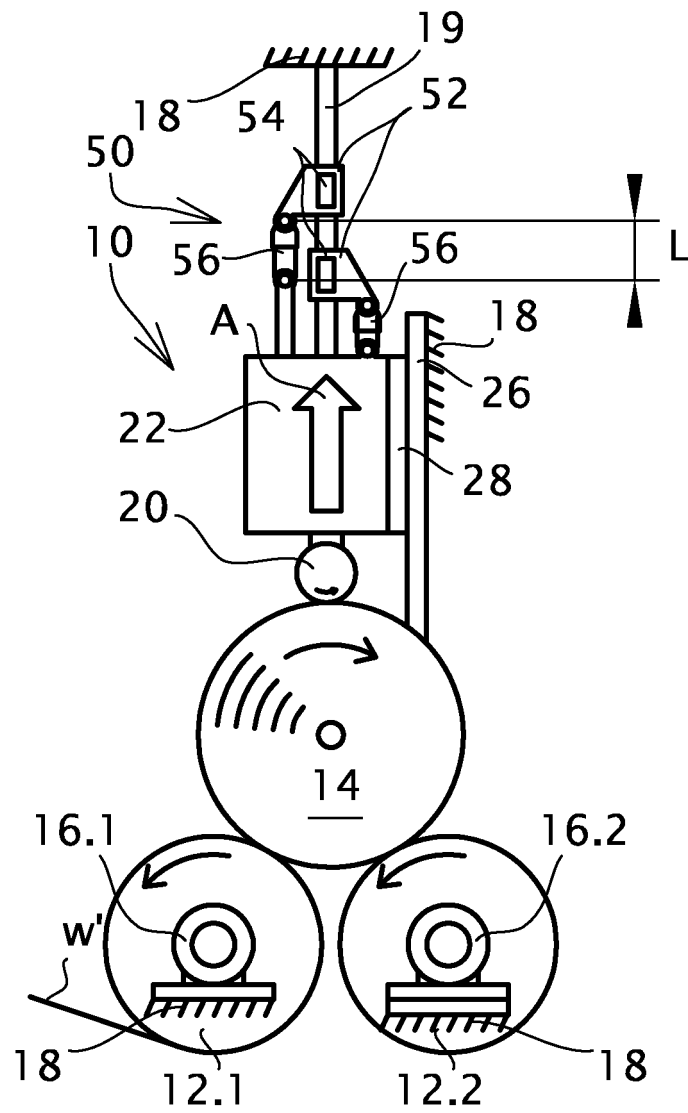


Fig. 1

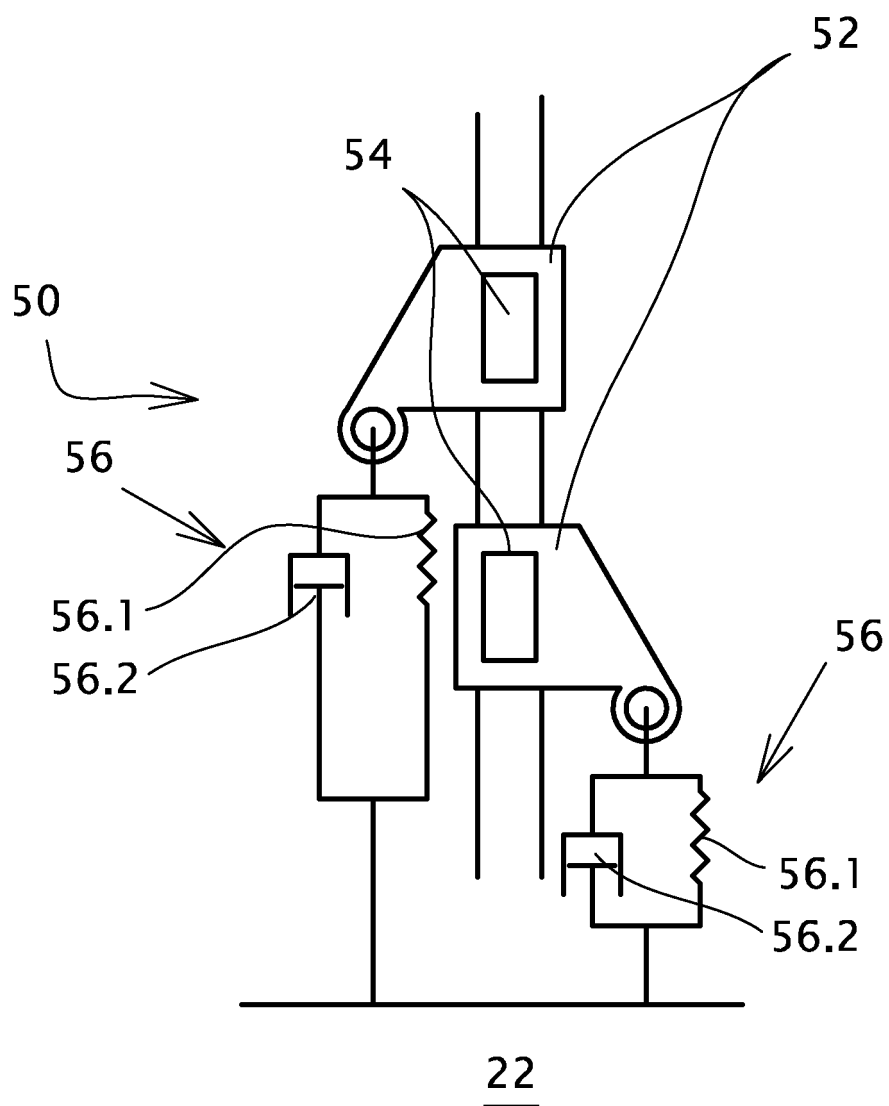


Fig. 2

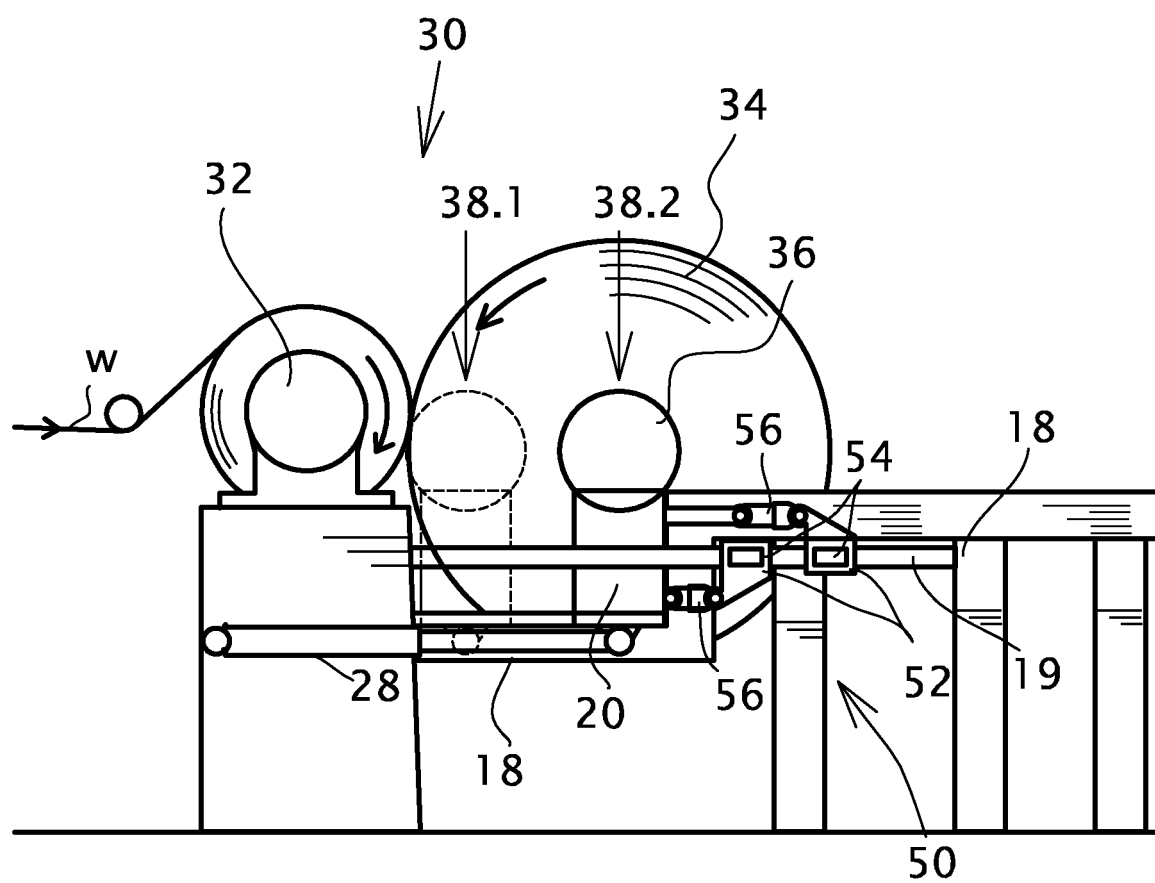


Fig. 3

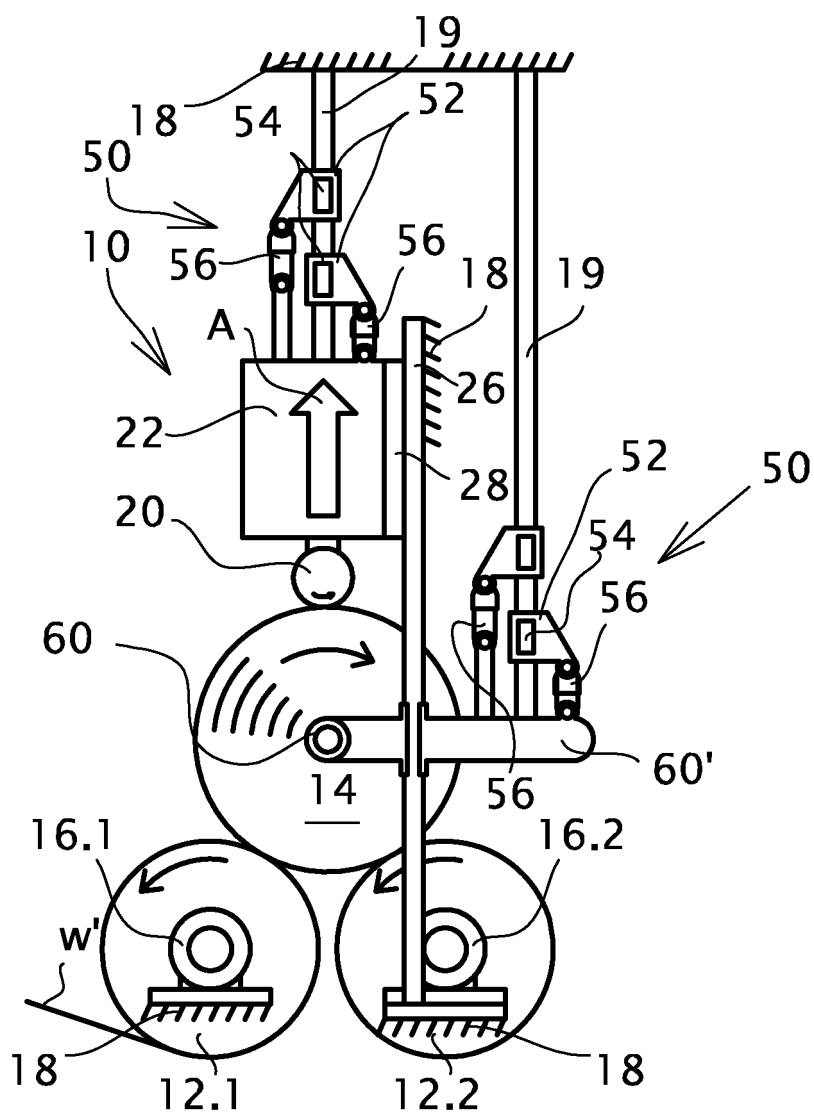


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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