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(54) **COUPRING CONSTRUCTION AND METHOD FOR JOINING AND LOCKING THE ROLLS OF
EXTENDED-NIP PRESS**

KUPPLUNGSKONSTRUKTION UND VERFAHREN ZUR VERBINDUNG UND VERRIEGELUNG DER
WALZEN EINER PRESSE MIT VERLÄNGERTER PRESSZONE

CONSTRUCTION DE COUPLAGE ET PROCÉDE DE COUPLAGE ET DE VERROUILLAGE DE
ROULEAUX D'UNE PRESSE A ESPACEMENT ETENDU

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Description

[0001] The present invention relates to an assembly and a method in accordance with the preambles of appended base claims for connecting and securing the rolls of an extended-nip press to each other.

[0002] Generally the press zone, or nip, in an extended-nip press is formed by two substantially parallel to each other aligned rolls that in the present case are a shoe roll and a backing roll. The shoe roll comprises a rotating endless-loop blanket of a flexible, liquid-imperious material, a rigid roll support beam mounted in a stationary fashion so as to extend axially through the interior of the endless blanket, at least one loading shoe supported by the support beam and having a concave top face, and loading means for pressing the concave top face of the loading shoe against the flexible endless blanket so that the endless blanket forms a press nip zone in cooperation with the backing roll. Both the shoe roll and the backing roll are rotatably mounted by their both ends in bearing blocks.

[0003] An extended-nip press is characterized by a high line load in the nip. At its maximum, the line load may be as high as 2000 kN/m. Hence, a conventional screw-loaded connection between the rolls is not generally practicable. Therefore, it is known in the art to adapt the bearing blocks of one roll in a close vicinity of the bearing blocks of the opposed roll so that the rolls may be connected and secured to each other by means of connecting members linking the bearing blocks to each other.

[0004] E.g., patent publication FI 101633 discloses a yoke assembly and method for connecting the rolls of an extended nip press to each other. In the arrangement of cited patent publication, the bearing blocks of the extended-nip press rolls are joined to each other by connecting members. The connecting member described in the publication is adapted to rotate relative to the bearing block so that the end of the connecting member is locked in a wedged fashion to the other bearing block. The displacement, or outdistancing, of the connecting member from the bearing block, whereto the connecting member is joined, is effected by means of a hydraulic cylinder. In the construction according to cited publication, both roll ends are provided with two connecting members that are lockable to either side of the bearing block relative to the cross-machine center axis of the press rolls. Both ends of the connecting member are provided with a pivot point allowing the connecting member to rotate pivotally in either one of the bearing blocks, whereby it is possible to select the upper or, alternatively, the lower bearing block to act as the pivot point. This construction suffers from several shortcomings including a need for wide elbowroom and incompatibility with the renovation requirements of existing machines.

[0005] Also patent publication US 5,547,547 discloses an interconnection assembly for the rolls of an extended-nip press based on connecting members that are clam-

pable to the bearing blocks. The roll interconnection arrangement described in cited publication comprises U-shaped connecting members that engage with the mating surfaces of the bearing blocks of the rolls. Additionally, each one of the connecting members is provided with pivot points about which the connecting member can be rotated to disengage from and engage with a mating surface provided on the bearing block. As described in cited publication, at both ends of the connecting members of the assembly is also adapted a hydraulic actuator having the end portions of the connecting members coupled to its ends, whereby the hydraulic actuator facilitates the rotation of the connecting members about their pivot points. Inasmuch the arrangement of cited publication employs separate pivot points for implementing the rotation of the connecting members, the construction suffers from the need for wide elbowroom when the assembly is being disengaged. Furthermore, this embodiment is very critical as to its manufacturing tolerances in regard to trouble-free operation. Moreover, the roll nip must be initially driven quite wide to allow unrestricted opening of the press.

[0006] In patent publication FI 97484 is disclosed further another embodiment. In the construction according to cited publication, the roll shaft 13 is adapted to extend entirely through the center of the backing roll bearing block. This arrangement is feasible only in situations where the upper roll is a so-called crown compensated roll having a spherical bearing in which the diameter is sufficiently large to facilitate this kind of construction. However, when the upper roll is a conventional uncrowned rigid roll, such a construction is not possible inasmuch the outer diameter of the main bearing in a shoe press becomes so large that only stub shafts in lieu of a full-length shaft may be used on both sides of the upper roll bearing housing. Therefore, the overall concept illustrated in FIGS. 2-6 of cited publication cannot provide uniform tightening of the bearing blocks to each other inasmuch the oblique surfaces of the connecting members assume different depths during their tightening depending on the care taken by operating personnel. Furthermore, it is obvious to a craftsman skilled in the art that the connecting member is not loaded by a pure tensile stress alone, but instead, the entire construction is subjected to a combination stress of bending and tension during connection as well as operation, since the point of support is offset from the neutral axis of the connecting member. To be functional, the construction disclosed in cited publication always requires that for both rolls 10a₁ and 10a₂ there is used a conical mating surface that is oriented upward from the center of either bearing block or, alternatively, that one of the rolls has a cylindrical mating surface provided on the bearing blocks.

[0007] It is an object of the connecting assembly and method according to the present invention for connecting and securing the rolls of an extended-nip press to each other to eliminate or at least reduce the problems related to the prior art described above.

[0008] It is a further object of the present invention to provide a connecting assembly and method for connecting the rolls of an extended-nip press to each other, whereby an uncomplicated and functionally reliable construction is featured with a minimal elbowroom requirement for disengaging and/or engaging the connecting assembly.

[0009] To accomplish this goal and others, a roll connecting assembly and method according to the invention are characterized by what is stated in the appended base claims.

[0010] A roll connecting assembly according to the present invention as defined in claim 1 is characterized in that the connecting member is pivotally coupled to a first bearing block by means of a pivot pin equipped with an oblique key surface mating with a first clamping surface of the connecting member. The inclination angle of the pivot pin key surface is selected such that the construction is self-locking under all circumstances and thus prevents any uncontrolled movements of the assembly.

[0011] Inasmuch the securing according to the invention of the connecting member by means of a pivot pin equipped with a key surface facilitates the rotation of the connecting member without the need for a separate pivotal joint, the present roll connecting assembly is simple and highly functional. Moreover, the elbowroom required for disengaging the connecting member is substantially reduced in regard to prior arrangements. Furthermore, the bearing blocks of the backing roll need no discrete shoulders in the present roll connecting construction.

[0012] In a preferred embodiment of the connecting assembly according to the invention, the connecting member includes an aperture that penetrates through the body of the connecting member and allows the pivot pin to be insertable therethrough for locking the connecting member to the first bearing block, whereby at least a portion of the inner wall of the aperture has an inclined or the like shape such that serves as the first clamping surface of the connecting member. In this context, the term "aperture in the connecting member" refers to a keyhole or slot with an at least partially inclined inner wall made in the body of the connecting member. Then, the inclined portion of the inner wall of the keyhole and the clamping surface in cooperation provide, not only the tightening of the connecting member, but during the tightening operation also the movement of the connecting member that secures the connecting member to the second bearing block. The disengaging/engaging movement always takes place in the vertical direction.

[0013] The pivot pin is secured and locked to the first bearing block advantageously using anchoring element adapted insertable through the bore of the pivot pin and the connecting member. In this context, the term "anchoring element" refers to the piston rod of a pressurized-medium-driven actuator or the like locking means.

[0014] In another preferred embodiment of the connecting assembly according to the invention, the inner wall of the aperture is provided with a recess into which

a locking pin is insertable for preventing inadvertent rotation and radial movement of the connecting member relative to the pivot pin. In this context, the term "recess on the inner wall of an aperture" refers to a notch, keyway or the like recess. Then, a locking pin inserted in such a recess can keep the connecting member and the pivot pin rigidly united with each other when the connecting member is being rotated. Inasmuch this keeps the pivot pin key surface and the connecting member clamping surface locked in a substantially solid position relative to each other during the rotation of the connecting member, the relocation of the connecting member becomes easier. Simultaneously, the machine-direction movement of the connecting member during service operations is prevented through having the locking pin thus secured, whereby the roll shaft and the connecting member are forced into cooperation with each other.

[0015] Generally in a connecting assembly according to the invention, the end of the connecting member coupled to the second bearing block includes a projection with a second clamping surface of the connecting member. Advantageously, the second clamping surface has a curved contour shaped so as to cooperate with a mating surface made on the second bearing block. In this context, the term "cooperation of surfaces" refers to an ability of the opposed surfaces to mate at least partially with each other at areas over which the mating surfaces are at least partially parallel to each other. For this purpose, the mating surfaces of the second bearing block comprise on the opposite sides of the bearing block such mating surfaces whose contour advantageously is curvedly semiplanar. Optionally, both the clamping surface and its mating surface may have a conical shape, whereby the construction becomes self-locking. In this case, the conical surface is adapted to taper toward the center of the bearing block.

[0016] In a particularly advantageous embodiment of the connecting assembly according to the invention, the connecting member is coupled with the bearing blocks so that the radius of the rotating movement of the connecting member is aligned perpendicular to the machine direction. By virtue of this arrangement, the rotation of the connecting member that is pivotally coupled to the first bearing block by means of a pivot pin apart from the second bearing block forces the connecting member to rotate in a direction substantially parallel to the longitudinal axis of the roll, that is, in the cross-machine direction. In this context, the term "rotation of the connecting member" is used when reference is made to an automatically or manually performed operation causing a change in the position of the connecting member relative to the bearing block.

[0017] The method according to the present invention as defined in claim 8 is characterized in that the connecting member is coupled to the first bearing block by means of a pivot pin and to the second bearing block by means of a second clamping surface of the connecting member adapted compatible with the mating surface of the sec-

ond bearing block and that the pivot pin is equipped with an oblique key surface adapted mating with the first clamping surface of the connecting member so that, during the tightening engagement of the connecting member with the first bearing block by means of the pivot pin, the key surface of the pivot pin moves the connecting member so as to move the second clamping surface of the connecting member toward its respective mating surface provided on the second bearing block. Advantageously, the pivot pin is secured to the first bearing block by an anchoring element adapted insertable through the bore of the pivot pin.

[0018] In the method according to the present invention, the interconnection of the bearing blocks by means of the connecting member is disengaged by releasing the locking of the pivot pin and moving the pivot pin slightly in the first bearing block in order to disengage the second clamping surface of the connecting member from the second bearing block, whereupon the connecting member is released rotatably supported by the pivot pin. Advantageously, the releasing movement of the pivot pin is accomplished with the help of pressurized medium introduced into the bore of the pivot pin.

[0019] One of greatest benefits of the connecting assembly and method according to the present invention is the structurally and functionally simple arrangement used in the invention. The construction according to the invention offers safe and reliable locking. Furthermore, the elbowroom requirements in the disengagement and engagement of the connecting assembly are minimal. Still further, the assembly according to the invention is cost-effective to manufacture. The disengagement and engagement of the assembly can be performed without using any specially designed tools of a massive weight.

[0020] In the following, the invention is described in more detail by making reference to the appended drawings in which

FIG. 1 is a schematic elevational side view of the rolls of an extended-nip press interconnected using the connecting assembly according to the invention;

FIG. 2 is a schematic view of an embodiment of a connecting assembly according to the invention as seen in the machine direction;

FIG. 3 is a schematic view of a connecting member used in the connecting assembly;

FIG. 4 is a schematic enlarged and cross-sectional view of a portion of the connecting assembly according to the invention;

FIG. 5 is a schematic cross-sectional view of the disengagement of a connecting assembly according to the invention; and

FIG. 6 is a schematic view of an embodiment of a

connecting assembly according to the invention in its disengaged position as seen in the machine direction.

[0021] In FIG. 1 is schematically shown an exemplary embodiment of the construction of an extended-nip press used in a papermaking machine as seen from the operating side of the machine, wherein a web W is passed into a nip N between a lower shoe roll 1 and a backing roll 2 placed thereabove. The backing roll may be a heated roll or a nonheated roll. The shoe roll 1 includes loading means (not shown in the diagrams) and an endless-loop blanket 4 a flexible, liquid-imperious material. The loading means comprise at least a loading shoe and actuators for loading the endless blanket by means of the press shoe against the backing roll so as to form the above-mentioned nip N and to remove water from the web W passed into the nip. In this context, the web W is a paper or paperboard web. The extended-nip press also includes other parts and elements omitted from the diagram for greater clarity. These kinds of accessories are, e.g., lift machinery for elevating the upper roll, means for feeding coolant and lubricant press to the sliding face of the shoe, etc. Further, an extended-nip press may be implemented in an inverted fashion whereby the shoe roll is located above the backing roll instead of being located below the backing roll.

[0022] FIG. 2 shows the ends of rolls 1 and 2 of FIG. 1 viewed in the machine direction. As illustrated in FIGS. 1 and 2, the rolls are connected to each other by the connecting assembly according to the present invention. In the connecting assembly, a first bearing block 5 (upper bearing block in the diagram) and a second bearing block 6 (lower bearing block in the diagram) are connected to each other by connecting members 7 and 8, thus establishing a connection between the upper roll and the lower roll of the press. The bearing blocks at either end of the rolls are connected to each other by similar connecting members.

[0023] The end of connecting members 7 and 8 mating with the first bearing block 5 is coupled to the first bearing block 5 by pivot pins 9 that also supportingly serve as pivot points for the connecting members. The other end of connecting members 7 and 8 mating with the second bearing block 6 is provided with a projection 10 that cooperates with mating surfaces 11 and 12 made on the second bearing block 6. The connecting members are secured to the bearing blocks by screws 13.

[0024] As shown in the diagrams, between the first bearing block 5 and the connecting members 7 and 8 are adapted cylinders 14 serving to help the rotation of the connecting members supported by the pivot pins 9. Additionally, the connecting members 7 and 8 are provided with a locking means 15 for locking the connecting member in its disengaged position.

[0025] The surface of projection 10 facing the mating surface has a curved contour with a radius of curvature advantageously equal to the distance of the surface of

the projection from the center point of the pivot pin. In a respective fashion, the mating surfaces 11 and 12 of the second bearing block have a mirrored curved contour with a radius of curvature advantageously equal to the distance of the mating surface from the center point of the pivot pin connected to the first bearing block. Alternatively, the backing surfaces 11 and 12 on projection 10 may be shaped conical. In this case, conical mating surfaces are adapted to taper toward the center of the bearing block, whereby the assembly is self-locking thus needing no separate locking means.

[0026] FIG. 3 shows an enlarged view of the technique used for securing connecting member 7 by pivot pin 9 to the first bearing block 5. With the help of the anchoring element 21 inserted through aperture 16 of connecting member 7 and of the pivot pin with a locking nut tightened thereon, the pivot pin and thereby the connecting member supported by the same are tightened against the bearing block by way of being secured in a bore 23 made on the bearing block. Herein, the connecting member is secured in aperture 16 so that the first clamping surface 17 of the connecting member rests against the oblique key surface 24 of the pivot pin that during the tightening operation has forced the connecting member to move upward. The end of the pivot pin inserted in the bore made on the bearing block is provided with a cylinder bore space 25 wherein the anchoring element with annular collars 26 made thereon is inserted. The inclination angle of the mating surfaces 17 and 24 is selected such that under all circumstances the connecting assembly is self-locking thus preventing the occurrence of any uncontrolled movements.

[0027] FIG. 4 shows schematically a side elevational view and a cross-sectional view of the forged-steel connecting member 7 and 8. The connecting member includes an aperture 16 extending through the entire thickness of the connecting member. A portion of the inner wall of the aperture is made inclined whereby it forms the first clamping surface 17 of the connecting member. Additionally, the aperture 16 is provided with a recess 18 located on the opposite side of the aperture inner wall relative to the inclined damping surface, whereby a locking means may be inserted in the recess in order to prevent the connecting member from rotating and/or moving relative to the pivot pin inserted therethrough when the connecting member is being rotated.

[0028] As mentioned above, the connecting member further includes a projection 10 having a curved or cylindrical contour shaped so as to act as the second clamping surface 19. The connecting member is provided with recesses 20 adapted to accommodate screws serving to secure the connecting member to the bearing blocks.

[0029] FIG. 5 shows a schematic view of the disengagement of a connecting assembly according to the invention. The screws used for securing the connecting member 7 to the bearing blocks 5 and 6 are herein shown unscrewed from bearing block 6 and slightly loosened from bearing block 5, and further, locking nut 22 securing

pivot pin 9 has been unscrewed up to its limit stop. To pivot pin 9 is connected a manually-operated hydraulic pump 28 by means of which a medium at an elevated pressure has been pumped into the cylinder bore displacement space of the pivot pin illustrated in FIG. 4, wherein the collars of the anchoring element delineate the displacement space acting in the same fashion as piston rings thus forcing the pivot pin to move outwardly from the first bearing block 5 and the bore made thereto. Owing to the cooperation of the oblique key surface 24 of pivot pin 9 with the inclined clamping surface 17 of the connecting member, the connecting member 7 (or 8) has been able to sink downward, whereby the projection 10 of the connecting member has been disengaged from the respective mating surface 11 (or 12) of the second bearing block. Further respectively, the movement of the connecting member has opened access to recess 18 made on the inner wall of aperture 16 in the connecting member, whereby the recess is capable of adapting the insertion therethrough of locking pin 27 passed via a hole made in the stem portion of the pivot pin in such a fashion that the locking pin prevents the disengagement of connecting member 7 from the pivot pin 9 when the connecting member is being rotated. After the connecting member projection 10 and the second clamping surface 19 thereof are disengaged from the respective mating surface 11 of the second bearing block and the securing screws are finally unscrewed apart from bearing block 5, the connecting member may be rotated aside into its disengaged position by the cylinder illustrated in FIGS. 1 and 2.

[0030] FIG. 6 shows the connecting assembly in its disengaged position as seen in the machine direction. Herein, the connecting member 8 is secured aside into its disengaged position by locking means 15. After the connecting assembly has been secured into its disengaged position, the upper and lower rolls of the nip may be elevated apart from each other, e.g., in order to replace the endless blanket of the shoe press. The rolls are thereupon secured to each other by performing the above-described steps in a reverse order.

[0031] It must be borne in mind that the invention is by no way limited to the exemplary embodiment described above, but rather may be modified as required without departing from the scope of the appended claims.

Claims

1. An assembly for connecting and securing to each other rolls (1, 2) forming a nip in an extended nip press, whereby at least one of the rolls (1) of the extended-nip press includes loading means, advantageously at least one loading shoe for loading the endless-loop blanket (4) of one roll (1) against the other one (2) of the extended-nip press rolls so as to establish a nip (N), wherein the lower roll (1) and the upper roll (2) are dismountably connected to

each other and the assembly connecting the rolls (1, 2) of the extended-nip press to each other includes rotatable connecting members (7, 8) by means of which the extended-nip press rolls (1, 2) are detachably connected to each other by their bearing blocks (5, 6), **characterized in that** each of the connecting members (7, 8) is pivotally coupled to the first bearing block (5) by means of a pivot pin (9) equipped with an oblique key surface (24) mating with a first clamping surface (17) of the respective connecting member (7, 8).

2. The connecting assembly of claim 1, **characterized in that** each of the connecting members (7, 8) includes an aperture (16) penetrating through the body of the connecting member (7, 8) and allowing the respective pivot pin (9) to be insertable therethrough for locking the connecting member (7, 8) to the first bearing block (5), at least a portion of the inner wall of said aperture (16) having an inclined or the like shape such that serves as said first clamping surface (17) of said connecting member (7, 8).
3. The connecting assembly of claim 1 or 2, **characterized in that** each of the pivot pins (9) is secured and locked to the first bearing block (5) using anchoring means (21) insertable through a bore of the pivot pin (9) and the respective connecting member (7, 8).
4. The connecting assembly of any one of the claims 2 or 3, **characterized in that** on the inner wall of each aperture (16) is provided a recess (18) into which a locking pin (27) is insertable for preventing inadvertent rotation and radial movement of the connecting member (7, 8) relative to the pivot pin (9).
5. The connecting assembly of any one of foregoing claims, **characterized in that** the end of each connecting member (7, 8) coupled to the second bearing block (6) includes a projection (10) providing a second clamping surface (19) of the connecting member (7, 8) with a curved or conical contour shape so as to cooperate with a respective mating surface (11, 12) made on the second bearing block (6).
6. The connecting assembly of claim 5, **characterized in that** the mating surfaces (11, 12) of the second bearing block (6) comprise on the opposite sides of the bearing block such mating surfaces whose contour is curvedly semiplanar or, alternatively, conical.
7. The connecting assembly of any one of foregoing claims, **characterized in that** the radius of the rotating movement of the connecting members (7, 8) is aligned perpendicular to the machine direction.
8. A method for connecting and securing to each other

rolls (1, 2) forming a nip in an extended nip press, in which method bearing blocks (5, 6) of the rolls (1, 2) establishing the nip are connected to each other by connecting members (7, 8) such that the connecting members (7, 8) are movable between a disengaged position and an engaged position, **characterized in that** each of the connecting members (7, 8) is connected to the first bearing block (5) by means of a pivot pin (9) and to the second bearing block by means of a second clamping surface (19) of the respective connecting member (7, 8) compatible with a respective mating surface (11, 12) of the second bearing block, and that the pivot pin (9) comprises a key surface (24) of an oblique contour adapted to face the first clamping surface (17) of the respective connecting member (7, 8) so that, during the tightening engagement of each of the connecting members (7, 8) with the first bearing block by means of the respective pivot pin (9), said key surface (24) of said pivot pin (9) moves the respective connecting member (6, 7) so as to move said second clamping surface (19) of the connecting member (7, 8) toward its respective mating surface (11, 12) provided on the second bearing block (6).

9. The method of claim 8, **characterized in that** each pivot pin (9) is secured to the first bearing block (5) by an anchoring means (21) insertable through a bore of the pivot pin (9).
10. The method of claim 8 or 9, **characterized in that** the interconnection of the bearing blocks (5, 6) by means of the connecting members (7, 8) is disengaged by releasing the locking of the respective pivot pin (9) and moving the pivot pin (9) partially out of the first bearing block (5) in order to disengage the second clamping surface (19) of the respective connecting member (7, 8) from the second bearing block (6), whereupon the released connecting members (7, 8) are rotatably supported by the pivot pin (9).
11. The method of claim 10, **characterized in that** the releasing movement of the pivot pin (9) is accomplished with the help of pressurized medium introduced into the bore of the pivot pin (9).

Patentansprüche

1. Anordnung zum miteinander Verbinden und aneinander Sichern von Walzen (1, 2), die einen Walzenspalt in einer Presse mit verlängerter Presszone bilden, wobei mindestens eine der Walzen (1) der Presse mit verlängerter Presszone ein Belastungsmittel, vorteilhafterweise mindestens einen Belastungsschuh zum Drücken des Endlosschleifen-Walzenbezugs (4) einer Walze (1) gegen die andere (2) der Walzen der Presse mit verlängerter Presszone auf-

- weist, um so einen Walzenspalt (N) zu bilden, wobei die untere Walze (1) und die obere Walze (2) lösbar miteinander verbunden sind, und die die Walzen (1, 2) der Presse mit verlängerter Presszone miteinander verbindende Anordnung drehbare Verbindungselemente (7, 8) aufweist, durch welche die Walzen (1, 2) der Presse mit verlängerter Presszone über ihre Lagerungsblöcke (5, 6) lösbar miteinander verbunden sind, **dadurch gekennzeichnet, dass** jedes der Verbindungselemente (7, 8) mit dem ersten Lagerungsblock (5) mittels eines Schwenkstifts (9) schwenkbar verbunden ist, der mit einer schrägen Keiffläche (24) ausgerüstet ist, die mit einer ersten Klemmfläche (17) des entsprechenden Verbindungselements (7, 8) zusammenpasst.
2. Verbindungsanordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** jedes der Verbindungselemente (7, 8) eine Öffnung (16) aufweist, die durch den Körper des Verbindungselements (7, 8) hindurchgeht und es dem entsprechenden Schwenkstift (9) ermöglicht, durch dieses hindurchgeführt zu werden, um das Verbindungselement (7, 8) auf dem ersten Lagerungsblock (5) zu verriegeln, wobei mindestens ein Teil der Innenwand der Öffnung (16) eine geneigte Form oder dergleichen aufweist, die dann als die erste Klemmfläche (17) des Verbindungselements (7, 8) dient.
3. Verbindungsanordnung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** jeder der Schwenkstifte (9) unter der Verwendung von Verankerungsmitteln (21), die durch eine Bohrung des Schwenkstifts (9) und das entsprechende Verbindungselement (7, 8) einführbar sind, am ersten Lagerungsblock (5) verriegelt und gesichert ist.
4. Verbindungsanordnung nach einem der Ansprüche 2 oder 3, **dadurch gekennzeichnet, dass** auf der Innenwand einer jeden Öffnung (16) eine Ausnehmung (18) vorgesehen ist, in die ein Verriegelungstift (27) einführbar ist, um eine unbeabsichtigte Drehung und Radialbewegung des Verbindungselements (7, 8) relativ zum Schwenkstift (9) zu verhindern.
5. Verbindungsanordnung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Ende eines jeden Verbindungselements (7, 8), das mit dem zweiten Lagerungsblock (6) gekoppelt ist, einen Fortsatz (10) aufweist, der eine zweite Klemmfläche (19) des Verbindungselements (7, 8) mit einem gekrümmten oder sich verjüngenden Profil bildet, um so mit einer entsprechenden damit zusammenpassenden Oberfläche (11, 12), die auf dem zweiten Lagerungsblock (6) ausgebildet ist, zusammenzuwirken.
6. Verbindungsanordnung nach Anspruch 5, **dadurch gekennzeichnet, dass** die zusammenpassenden Oberflächen (11, 12) des zweiten Lagerungsblocks (6) auf den entgegengesetzten Seiten des Lagerungsblocks zusammenpassende Oberflächen aufweist, deren Profil gekrümmt semiplanar oder alternativ dazu konisch ist.
7. Verbindungsanordnung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Radius der Drehbewegung der Verbindungselemente (7, 8) senkrecht zur Maschinenrichtung ausgerichtet ist.
8. Verfahren zum miteinander Verbinden und aneinander Sichern von Walzen (1, 2), die einen Walzenspalt in einer Presse mit verlängerter Presszone bilden, wobei in diesem Verfahren Lagerungsblöcke (5, 6) der den Walzenspalt bildenden Walzen (1, 2) durch Verbindungselemente (7, 8) so miteinander verbunden sind, dass die Verbindungselemente (7, 8) zwischen einer gelösten Position und einer Eingriffsposition beweglich sind, **dadurch gekennzeichnet, dass** jedes der Verbindungselemente (7, 8) mittels eines Schwenkstifts (9) am ersten Lagerungsblock (5) befestigt ist und mittels einer zweiten Klemmfläche (19) des entsprechenden Verbindungselements (7, 8), die mit einer entsprechenden zusammenpassenden Oberfläche (11, 12) des zweiten Lagerungsblocks kompatibel ist, am zweiten Lagerungsblock befestigt ist, und dass der Schwenkstift (9) eine Keiffläche (24) eines schrägen Profils aufweist, die dazu angepasst ist, dass sie der ersten Klemmfläche (17) des entsprechenden Verbindungselements (7, 8) gegenüberliegt, so dass während eines enger werdenden Eingriffs der jeweiligen Verbindungselemente (7, 8) mit dem ersten Lagerungsblock mittels des entsprechenden Schwenkstifts (9) die Keiffläche (24) des Schwenkstifts (9) das entsprechende Verbindungselement (6, 7) so bewegt, dass die zweite Klemmfläche (19) des Verbindungselements (7, 8) in Richtung auf die entsprechende zusammenpassende Oberfläche (11, 12) zu bewegt wird, die auf dem zweiten Lagerungsblock (6) vorgesehen ist.
9. Verfahren nach Anspruch 8, **dadurch gekennzeichnet, dass** jeder Schwenkstift (9) durch ein Verankerungsmittel (21), das durch eine Bohrung des Schwenkstifts (9) einführbar ist, am ersten Lagerungsblock (5) gesichert wird.
10. Verfahren nach Anspruch 8 oder 9, **dadurch gekennzeichnet, dass** die Verbindung der Lagerungsblöcke (5, 6) mittels der Verbindungselemente (7, 8) durch Lösen der Verriegelung des entsprechenden Schwenkstifts (9) und Bewegen des Schwenkstifts (9) teilweise aus dem ersten Lagerungsblock (5) heraus gelöst wird, um die zweite

Klemmfläche (19) des entsprechenden Verbindungselements (7, 8) vom zweiten Lagerungsblock (6) zu lösen, wonach die gelösten Verbindungselemente (7, 8) drehbar vom Schwenkstift (9) gelagert werden.

11. Verfahren nach Anspruch 10, **dadurch gekennzeichnet, dass** die Lösungsbewegung des Schwenkstifts (9) mit Hilfe eines Druckmittels bewerkstelligt wird, das in die Bohrung des Schwenkstifts (9) eingeleitet wird.

Revendications

1. Ensemble pour connecter et fixer l'un à l'autre des rouleaux (1, 2) formant un espacement dans une presse à espacement étendu, grâce à quoi au moins l'un des rouleaux (1) de la presse à espacement étendu comprend des moyens de chargement, avantageusement au moins une plaque de remplissage pour remplir le blanchet à boucle sans fin (4) d'un rouleau (1) par rapport à l'autre (2) des rouleaux de la presse à espacement étendu afin d'établir un espacement (N), dans lequel le rouleau inférieur (1) et le rouleau supérieur (2) sont reliés de façon démontable l'un à l'autre et l'ensemble connectant les rouleaux (1, 2) de la presse à espacement étendu l'un à l'autre comprend des moyens de connexion rotatifs (7, 8) au moyen desquels les rouleaux de la presse à espacement étendu (1, 2) sont connectés de façon amovible l'un à l'autre par leurs blocs d'appui (5, 6), **caractérisé en ce que** chacun des éléments de connexion (7, 8) est couplé de façon pivotante au premier bloc d'appui (5) au moyen d'une broche pivotante (9) équipée d'une surface à clavette oblique (24) en contact avec une première surface de serrage (17) de l'élément de connexion respectif (7, 8).
2. Ensemble de connexion selon la revendication 1, **caractérisé en ce que** chacun des éléments de connexion (7, 8) comprend une ouverture (16) pénétrant à travers le corps de l'élément de connexion (7, 8) et permettant à la broche pivotante respective (9) de pouvoir être insérée au travers pour verrouiller l'élément de connexion (7, 8) au premier bloc de support (5), au moins une partie de la paroi intérieure de ladite ouverture (16) ayant une forme inclinée ou similaire de sorte qu'elle sert de ladite première surface de serrage (17) dudit élément de connexion (7, 8).
3. Ensemble de connexion selon la revendication 1 ou 2, **caractérisé en ce que** chacune des broches pivotantes (9) est fixée et verrouillée au premier bloc de support (5) en utilisant des moyens d'ancrage (21) insérables à travers un alésage de la broche

pivotante (9) et l'élément de connexion (7, 8) respectif.

4. Ensemble de connexion selon l'une quelconque des revendications 2 ou 3, **caractérisé en ce que** la paroi interne de chaque ouverture (16) est pourvue d'un retrait (18) dans lequel une broche de verrouillage (27) peut être insérée pour empêcher la rotation par inadvertance et le mouvement radial de l'élément de connexion (7, 8) par rapport à la broche pivotante (9).
5. Ensemble de connexion selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'extrémité de chaque élément de connexion (7, 8) couplé au second bloc de support (6) comprend une saillie (10) fournissant une seconde surface de serrage (19) de l'élément de connexion (7, 8) avec une forme de contour courbe ou conique afin de coopérer avec une surface de contact (11, 12) respective faite sur le second bloc de support (6).
6. Ensemble de connexion selon la revendication 5, **caractérisé en ce que** les surfaces de contact (11, 12) du second bloc de support (6) comprennent sur les côtés opposés du bloc de support des surfaces de contact dont le contour est angulairement semi planaire ou, en variante, conique.
7. Ensemble de connexion selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le rayon de l'élément rotatif des éléments de connexion (7, 8) est aligné perpendiculairement à la direction de la machine.
8. Procédé pour connecter et fixer l'un à l'autre des rouleaux (1, 2) en formant un espacement dans une presse à espacement étendu, procédé dans lequel les blocs de support (5, 6) des rouleaux (1, 2) établissant l'espacement sont connectés l'un à l'autre par des éléments de connexion (7, 8) de sorte que les éléments de connexion (7, 8) sont mobiles entre une position désengagée et une position engagée, **caractérisé en ce que** chaque élément de connexion (7, 8) est connecté au premier bloc de support (5) au moyen d'une broche pivotante (9) et au second bloc de support au moyen d'une seconde surface de serrage (19) de l'élément de connexion (7, 8) respectif compatible avec une surface de contact (11, 12) respective du second bloc de support, et **en ce que** la broche pivotante (9) comprend une surface à clavette (24) d'un contour oblique adapté pour faire face à la première surface de serrage (17) de l'élément de connexion (7, 8) respectif afin que, pendant la mise en prise de serrage de chacun des éléments de connexion (7, 8) avec le premier bloc de support au moyen de la broche pivotante (9) respective, ladite surface à clavette (24) de ladite broche pivotante (9) déplace l'élément de connexion (7, 8) respectif

afin de déplacer ladite seconde surface de serrage (19) de l'élément de connexion (7, 8) vers sa surface de contact (11, 12) respective prévue sur le second bloc de support (6).

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9. Procédé selon la revendication 8, **caractérisé en ce que** chaque broche pivotante (9) est fixée au premier bloc de support (5) par des moyens d'ancrage (21) pouvant être insérés à travers un alésage de la broche pivotante (9).

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10. Procédé selon la revendication 8 ou 9, **caractérisé en ce que** l'interconnexion des blocs de support (5, 6) au moyen des éléments de connexion (7, 8) est désengagée en relâchant le verrouillage de la broche pivotante (9) respective et en déplaçant la broche pivotante (9) partiellement hors du premier bloc de support (5) afin de désengager la seconde surface de serrage (19) de l'élément de connexion (7, 8) respectif du second bloc de support (6), moyennant quoi les éléments de connexion (7, 8) relâchés sont supportés de façon rotative par la broche pivotante (9).

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11. Procédé selon la revendication 10, **caractérisé en ce que** le mouvement de relâchement de la broche pivotante (9) est réalisé avec l'aide d'un milieu pressurisé introduit dans l'alésage de la broche pivotante (9).

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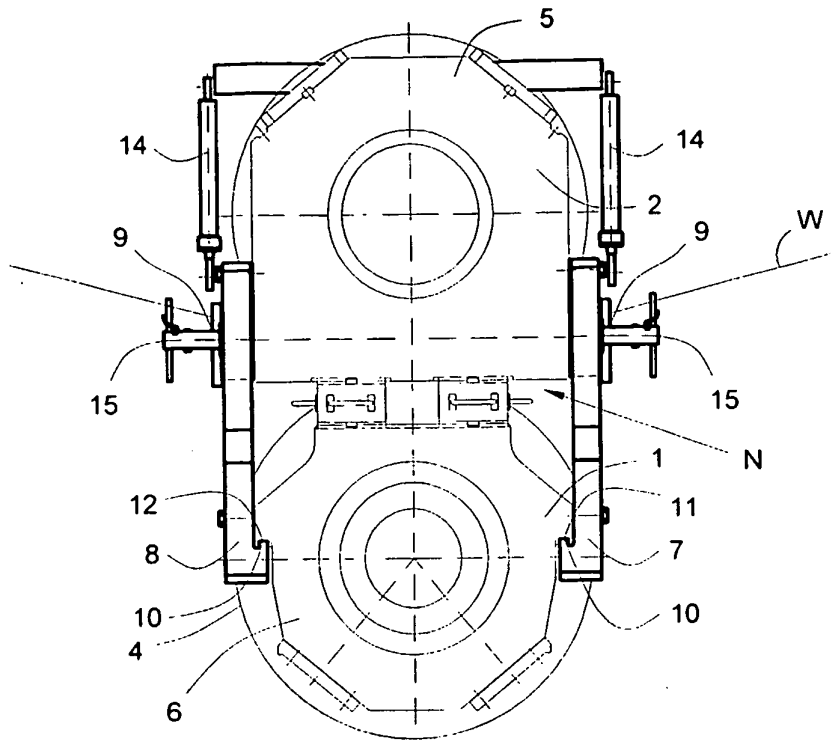


FIG 1

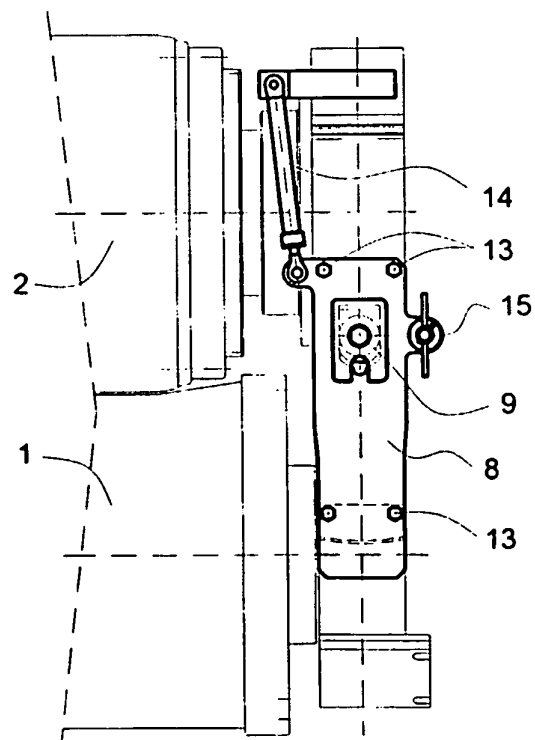


FIG 2

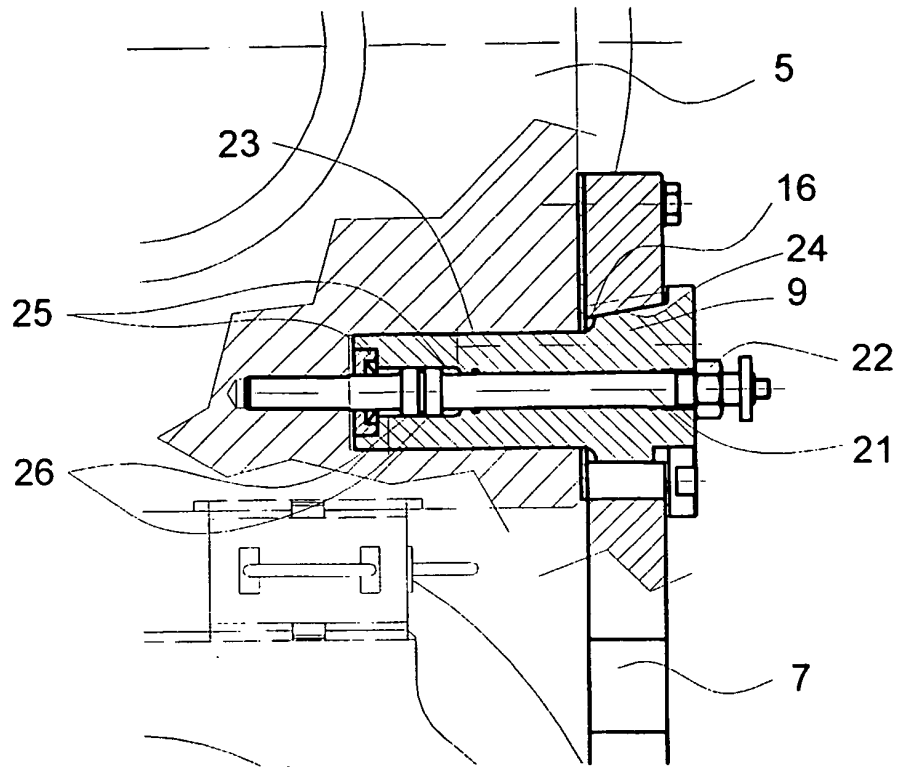


FIG 3

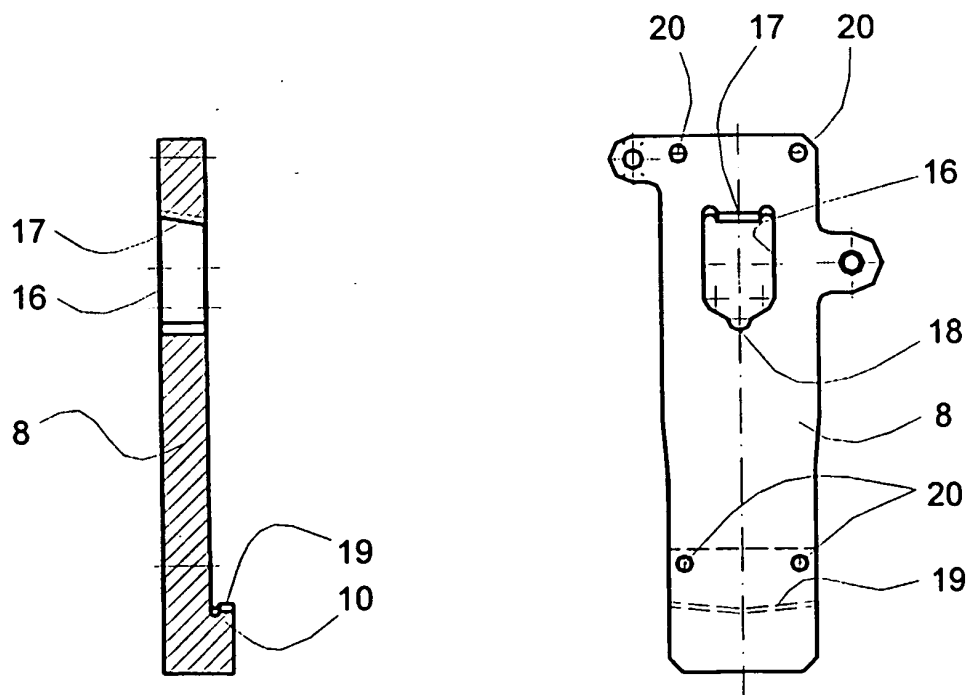


FIG 4

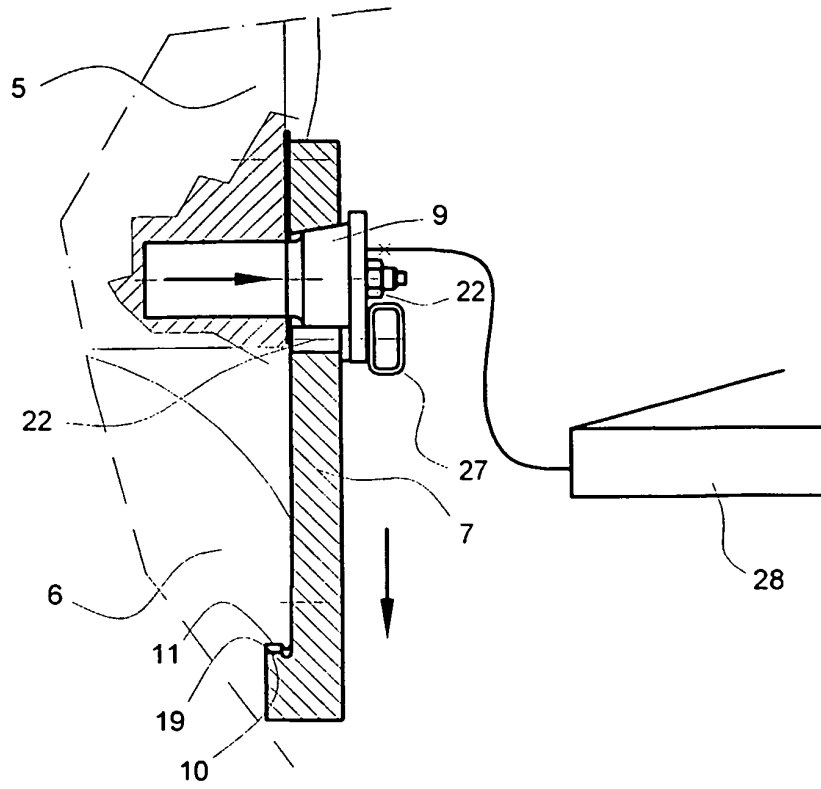


FIG 5

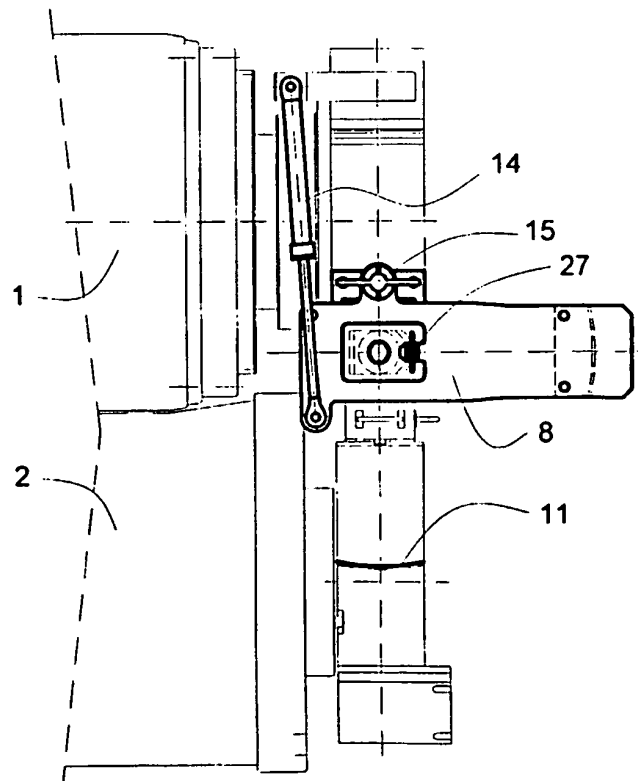


FIG 6