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(54) **LAP-FORMING DEVICE FOR MACHINES MANUFACTURING FIBRE WEBS, SUCH AS A LAP-WINDER**

FÜR VORRICHTUNGEN ZUR HERSTELLUNG VON FASERVLISEN GEDACHTE EINRICHTUNG
ZUR BILDUNG VON WATTEBAHNEN WIE EINE WICKELWALZE

DISPOSITIF ÉTALEUR-NAPPEUR POUR MACHINES DE FABRICATION DE BANDES FIBREUSES,
COMME UN ENROULEUR DE NAPPE

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Description

[0001] The present invention relates to a lap-forming device for machines manufacturing fibre webs, such as a lap winder.

[0002] A fibre manufacturing system foresees processing of the fibre, usually in the form of flock, to obtain a yarn.

[0003] The system is composed of a number of machines; the carding machines in particular make it possible to produce a fibre web.

[0004] In a lap-winder, positioned down line of the carding machines, a number of webs are drawn and joined to each other to form a lap, wound onto a tube to form a lap in a lap-forming device.

[0005] One embodiment of a forming device is described in EP-A1-1464739, in the Applicant's name. Further examples are described in EP 160165 and US 3134553.

[0006] The laps are then sent to the combing machines and the web produced by these starting from the laps is sent to the drawing frames, roving frames, and spinning frames, for the formation of webs, reels of roving and yarn respectively.

[0007] It is of crucial importance to make regular laps without fraying.

[0008] However, the laps are formed in the devices of the known art, remaining in pressurised contact with two calenders rotating at high speed. The lap, formed by winding a soft web, especially near the contact up line of a calender, tends to form a thickening due to the resistance met by the lap as it is wound over the surface of the calender. This phenomenon is known in the trade as "thickening"

[0009] The purpose of the present invention is to produce a lap-forming device, in particular for a lap-winder, able to overcome or contain the problem of thickening formation.

[0010] Such purpose is achieved by a lap-forming device made according to claim 1 below. The dependent claims describe embodiment variations.

[0011] The characteristics and advantages of the forming device according to the present invention will be clear from the description given below, made by way of a non-limiting example, according to the attached figures wherein:

[0012] - figure 1 shows a perspective view of a lap-forming device according to one embodiment of the present invention, in an initial functioning configuration;

[0013] - figure 2 shows a perspective view of the device in figure 1, in an intermediate configuration;

[0014] - figure 3 shows a perspective view of the device in figure 1, in a final configuration;

[0015] - figure 4 shows a schematised view of the forming device according to the present invention, according to a further embodiment;

[0016] - figures 5a to 5h shows a further embodiment of the forming device, in a series of manufacturing phas-

es; and

[0017] - figures 6 to 11 show further embodiment variations of the lap-forming device.

[0018] According to the invention, a machine for manufacturing fibre webs or a lap, such as a lap-winder, comprises a lap-forming device 1.

[0019] The device 1 has an input area 2 for the entrance of a web W, coming from equipment up line of the device 1, such as for example drawing and winding equipment of the lap-winder.

[0020] Preferably, the device 1 comprises an input unit 4 receiving the incoming web W and deviating the direction of advancement, positioned in the input area 2.

[0021] For example, the input unit 4 comprises a motorised input cylinder 6, and a pair of input rollers 8, 10, engaged with the input cylinder to drag the web W.

[0022] In addition, preferably, the input unit 4 comprises an alignment roller 12, which the web W passes over before continuing towards a formation area 20 of a lap L.

[0023] The lap L is formed by the web W wound around a tube T perforated on the surface.

[0024] The device 1 comprises, in addition, a pair of calenders, for example motorised, preferably with a fixed rotation axis, for the formation of the lap L.

[0025] Furthermore, the device 1 comprises at least one belt 30 engaged with at least one of said calenders, called the primary calender 22, facing the other calender, called the secondary calender 24, to accompany the formation of the lap L.

[0026] In particular, the belt 30 is in contact with the primary calender 22 at least in one contact portion, having a circular sector arrangement, situated opposite the area of formation 20, that is opposite the secondary calender 24.

[0027] Preferably, in addition, the device 1 comprises means of adjusting the tension able to regulate the tension of the belt 30 during formation of the lap.

[0028] For example, the means of adjustment comprise a tensioning roller 40, engaged with the belt 30, having a mobile rotation axis to tighten or loosen the belt and thus regulate the tension.

[0029] According to a preferred embodiment, the belt 30 forms a closed circuit which surrounds the primary calender 22. For example, the alignment roller 12 and the tensioning roller 40 are positioned within the circuit formed by the belt.

[0030] Preferably, in addition, the belt 30 passes between the primary calender 22 and the input cylinder 6 and engages at least one of the input rollers 8, 10 before being deviated by the end roller 12 and going towards the formation area of the lap.

[0031] The belt 30 acts as a means of transport of the web for at least part of the circuit.

[0032] In particular, the web W and the belt 30 converge towards the second input roller 10, so that, up line of the second input roller 10, the web W and the belt 30 are separate and converge towards the roller 10, while down line of the input roller 10, the web is supported by

the belt 30 and directed towards the alignment roller 12.

[0033] The device 1 comprises, in addition, a guidance device to guide the lap being formed or the tube.

[0034] For example, said guidance device comprises a carriage 50 comprising a pair of plates 52, distanced along the rotation axis of the calenders 22, 24, so as to delimit an area between them.

[0035] When lap forming is started the tube T, still without a web around it, rests on the two calenders 22, 24 and is positioned between the plates 52 of the guidance device.

[0036] The carriage 50 comprises, in addition, first movement devices, connected to the plates 52, to move these along a formation direction, for example coinciding with the direction tangent to the two calenders 22, 24.

[0037] For example, said movement devices are pneumatic.

[0038] On the side of the primary calender 22, between the tube T and said calender 22, there is a section of the belt 30, which forms a contact portion with the primary calender 22, which, coming from the alignment roller 12, feeds the web W to the tube T.

[0039] During normal functioning of the forming device 1, in an initial formation configuration of the lap (figure 1), the tube T rests on the calenders 22, 24, without a web W.

[0040] The carriage 50 is in a retracted limit position, so that the two plates 52 find themselves at the axial ends of the tube T, containing it.

[0041] The tensioning roller 40 is in a limit tensioning position, in which the belt is at its maximum tension; in other words the tensioning roller 40 is at the maximum distance from the rotation axis of the primary calender 22, so as to tighten the belt 30.

[0042] During normal functioning of the forming device 1, the calenders 22, 24 are placed in rotation and the web W is fed to the input unit 4 and transported by the belt 30 towards the tube T.

[0043] The rotation of the tube T and of the calenders 22, 24, assisted by the negative pressure generated inside the perforated tube T, permit winding of the web W on the tube T.

[0044] In an intermediate formation configuration (figure 2), the lap is pressed by the carriage 50 onto the two calenders 22, 24 in rotation and fed with web W by the belt 30.

[0045] The carriage 50 is in an intermediate position, in which the plates 52 are translated in the formation direction, distanced by the rotation axes of the calenders 22, 24 by a greater distance than in the initial formation configuration.

[0046] The tensioning roller 40 is in an intermediate tensioning position suitable to tension the belt 30 less than in the initial formation configuration. In other words, the tensioning roller 40 is closer to the rotation axis of the primary calender 22 than in the initial formation configuration of the lap.

[0047] This way, since the lap increases in volume and

continues to rest on the calenders and on the section of belt immediately up line of the belt-calender contact portion 22, the belt loosens and adapts to the shape of the lap, for example curving up line of the belt-calender contact portion 22.

[0048] The belt 30 acts as at guide element of the lap in formation and in particular permits elimination of the thickening problem.

[0049] In a final formation configuration (figure 3), the lap has the desired maximum volume, the carriage 50 is in the forward limit position, that is the plates are at the maximum distance from the rotation axes of the calenders, and the tensioning roller is in the minimum tension position, that is at the minimum distance from the rotation axis of the primary calender 22.

[0050] According to a further variation of the forming device (figure 4), the input unit 4 comprises the input cylinder 6, toward which the belt 30 and the web W converge, down line of which the belt 30 transports the web W, and it is fitted with an alignment roller 12 astride which the belt 30 transporting the web W positions itself, subsequently moving towards the formation area 20.

[0051] In addition, in said variation, the input unit comprises a pair of further input rollers 14, 16 which encircle the alignment roller 12.

[0052] The belt 30, down line of the input cylinder 6, passes between the end roller 12 and the first input roller 14 and then between the end roller 12 and the second input roller 16, to then detach itself from the end roller 12 and proceed towards the formation area 20.

[0053] According to yet a further embodiment (figures 5a to 5h), the forming device 1 comprises mobile accompanying devices able to modify their position on command in relation to the alignment roller 12 to engage it in different areas and facilitate, among other things, initialisation of the lap L.

[0054] According to one embodiment, the accompanying devices comprise at least one accompanying roller having a rotation axis essentially parallel to that of the alignment roller 12 with which it is engaged, together with the belt 30, in the accompaniment of the web, and arrangeable upon command relative to this.

[0055] According to a preferred embodiment, the accompanying devices comprise a pair of accompanying rollers 60, 62 and a command flange 64, for example composed of a disc coaxial to the alignment roller, to which the accompanying rollers are joined in rotation.

[0056] Preferably, in addition, the accompanying devices comprise second movement devices bringing the accompanying rollers of the alignment roller closer together or further away upon command.

[0057] For example, the movement devices comprise a first support 66 and a second support 68, each of which supports one of said accompanying rollers 60, 62.

[0058] Preferably, the two supports are counter-shaped to the alignment roller.

[0059] The two supports are hinged to each other and, for example, in the same point, hinged to the command

flange 64.

[0060] This way, for a given angular position of the command flange, rotation of the supports 66, 68 leads to the accompanying rollers 60, 62 being brought closer to or further away from the alignment roller 12.

[0061] Rotation of the command flange rather makes the accompanying rollers rotate around the alignment roller, modifying the regions of engagement between the accompanying rollers and the alignment roller.

[0062] According to a preferred embodiment, the movement devices comprise, in addition, a cylinder-piston unit 70, for example pneumatically driven, joined to the command flange and connected to the supports 66, 68. Activation of the cylinder-piston unit leads to rotation of the supports and therefore to the accompanying rollers being brought closer to or further away from (depending on the direction of translation of the piston) the alignment roller.

[0063] In a first phase (figure 5a) of introduction of the web W (initialisation phase) into the forming device 1 fitted with accompanying devices, the command flange is made to rotate so that the accompanying rollers, and in particular the up line accompanying roller 60, are brought as far as possible up line of the alignment roller in relation to the direction of advancement of the belt.

[0064] The incoming web W, transported by the belt 30, immediately engages with the accompanying roller 60 and the alignment roller 12.

[0065] In a second phase of initialisation (figures 5b and 5c), the web W is accompanied by the belt 30 around the alignment roller and the command flange too is progressively rotated downwards, so that the down line accompanying roller 62 accompanies the web W coming out of the alignment roller 12.

[0066] The advancement of the web W, transported by the belt 30 towards the tube T positioned between the calendars 22, 24 proceeds until it winds around said tube to form the lap L (formation phase; figures 5d to 5f).

[0067] During formation, as described above, the carriage 50 progressively translates and the belt 30 is progressively sprung.

[0068] Once the lap L has been formed, the web W needs to be torn, so as to be able to remove the formed lap L and start forming a new lap.

[0069] The command flange 64 is made to rotate so that the accompanying rollers, and in particular the down line accompanying roller 62, move as far downwards as possible in relation to the alignment roller 12.

[0070] This way, the region in which the web is pinched for tearing is very close to the web wound onto the lap, so that the torn edge is neat and even.

[0071] The movement devices are driven in such a direction as to cause pressure of the accompanying rollers against the alignment roller 12. In the embodiment shown, for example, the piston of the cylinder-piston unit 70 is retracted, causing pressure of the accompanying rollers on the alignment roller.

[0072] Further distancing of the carriage 50 from the

calenders 22, 24 to raise the lap L, is combined with a low speed rotation of the plates 52 to cause rotation of the lap L which, given the pinching caused by the cylinders 62, 12 on the web, causes tearing of the said web.

[0073] To expel the lap L (figure 5h), according to a preferred embodiment, the belt 30 is tightened by the tensioning roller 40; the belt itself acts on the lap 30, making it roll onto the secondary calender 24.

[0074] Alternatively, the dimensions of the calendars and their reciprocal positioning are set so that the centre of gravity of the lap L formed, falls on the descending section of the surface of the secondary calender 24, causing the lap to fall freely once disengaged from the action of the plate 52.

[0075] According to a further embodiment (figure 6) of the lap-forming device 1, the gap 100 between the calendars is an asymmetric area in a common direction tangent to said calendars.

[0076] In particular, the "gap between the calendars", is defined as the area delimited by the two lateral cylindrical surfaces 22a, 24a of the two calendars 22, 24 and by an imaginary tangent plane 102 common to the two surfaces 22a, 24a of the calendars in the formation area 20, where the tube T is positioned in contact with the two calendars.

[0077] In the aforesaid embodiment, the gap 100 is asymmetric in that the diameter of the primary calender 22, inside the circuit of the belt 30, is smaller than the diameter of the secondary calender 24.

[0078] For example, the size ratio between the diameter of the primary calender and the diameter of the secondary calender is between 0.2 and 0.5, preferably between 0.3 and 0.4, and generally speaking 0.27.

[0079] In one embodiment variation, in addition, the lap-forming device 1 fitted with the plates 52 and the tube T form a system in which the belt 30 is not pinched between the tube T and the primary calender 22 (figure 6a); this can be seen by the fact that, along a primary calender plane I, passing through the rotation axis of the primary calender and the axis of the tube T in the initial condition and blocked between the plates 52, the surface of the tube is not in contact with the work surface of the belt, but has an interspace S, of about 0.5 - 1 millimetre.

[0080] According to yet a further embodiment (figure 7), the belt 30 of the forming device 1 has a winding curve 110 on the primary calender 22, from the tangency point 112 of the tube T in the direction opposite to that of advancement of the belt in normal functioning.

[0081] In other words, the tube T, at the beginning of the formation cycle, rests on the two calendars 22, 24; in particular, it is in contact with the belt 30 along the segment 112; the belt 30, up line of the segment 112, is wound around the primary calender 22 in a winding curve 110, before separating from it.

[0082] The winding curve is obtained by virtue of the alignment roller 12 being positioned significantly distant from the formation area and rotated in relation to the vertical.

[0083] Preferably, the embodiment with winding curve 110 also foresees a gap 100 between the asymmetric calenders.

[0084] According to yet a further embodiment, the lap-forming device 1 comprises an auxiliary support roller 150, positioned between the alignment roller 12 and the primary calender 22; a support section 152 of the belt is thus defined between the contact segments of the belt 30 with the primary calender 24 and the support roller 150 (figure 8).

[0085] During formation of the lap L, this ends up resting against the primary calender 22 and the support roller 150, coming into contact with the support section 152 of the belt.

[0086] Preferably, the embodiment with the support roller foresees an asymmetric gap 100 between the calenders and/or a winding curve of the belt on the primary calender.

[0087] According to one embodiment variation, the lap-forming device 1 fitted with the plates 52 and the tube T forms a system in which the belt 30 is not in contact with the tube T, at the beginning of the formation cycle and with the tube blocked between the plates (figure 8a). The surface of the tube has an interspace S, of about 0.2 - 2 millimetres.

[0088] According to a further embodiment (figure 9), the belt 30 is perforated, that is it has a number of holes going through its thickness.

[0089] According to a further embodiment, the belt 30 has a width or dimension in the direction of the rotation axes of the calenders, greater than the axial length of the primary calender and for example, slightly smaller, by about 0.5 millimetres per side, than the axial distance between the plates 52.

[0090] According to yet a further embodiment (figures 10 and 11), the belt 30 has a width, or dimension in the direction of the rotation axes of the calenders, much smaller than the axial distance between the plates. For example, the belt 30 is narrower than the distance between the plates 52 by about 5 millimetres per side.

[0091] Preferably, in said embodiment, the device 1 comprises two lateral flanges 200, positioned at the sides of the primary calender 22 and firmly attached to it; the flanges 200 project radially in relation to the surface of the primary calender 24, preferably at least by the thickness of the belt, so as to form a winding guide for the belt 30 which winds onto the primary calender 22 so as to form a cylindrical surface in contact with the lap being formed.

[0092] According to yet a further embodiment, the device 1 comprises means of centring the tube, for example comprising a pair of inserts 202 of a truncated cone shape, attached centrally to the plates 52, suitable to insert in the tube T, so as to centre its position, at least at the beginning of the lap-forming cycle.

[0093] Innovatively, the forming device according to the present invention makes it possible to eliminate or reduce thickening during formation of the lap.

[0094] Advantageously, in addition, the device makes it possible to use high speeds of rotation to form the lap while maintaining high quality standards.

[0095] According to a further advantageous aspect, the asymmetric gap between the calenders makes it possible to distribute the pressure exerted by the calenders on the lap being formed in an optimal manner, thereby limiting formation of thickening.

[0096] According to yet a further advantageous aspect, the winding angle of the belt on the primary calender makes it possible to leave the lap being formed undisturbed by the turbulence generated by the moving belt.

[0097] In addition, advantageously, the perforated belt makes it possible to limit the effect of the turbulence caused by the moving belt on the lap in formation, in that the currents flow outside the formation area thanks to the passages created by the holes.

[0098] Advantageously, in addition, the reduced width belt makes it possible to limit the possibility of interference with the plate and the pinching of the strips of web, while the flanges of the main calender stably guide the winding belt in any case.

[0099] According to a further advantageous aspect, the insert of the plates makes it possible to position the tube adequately at the beginning of the formation cycle aligned with the plates, to prevent it from then rotating eccentrically with these.

[0100] It is clear that a person skilled in the art, may make modifications to the forming device described above so as to satisfy contingent requirements.

[0101] For example, according to one embodiment variation, the primary calender is perforated on the surface to distance the turbulent currents generated by the movement of the belt.

[0102] According to yet a further embodiment variation, the primary calender is motorised; according to a further variation, the primary calender is not motorised.

[0103] According to yet a further embodiment variation the secondary calender is motorised and independent of the movement of the primary calender, to minimise the thickening.

[0104] These variations too fall within the sphere of protection as defined by the following claims.

Claims

1. Device (1) for a fibre processing machine, for example a lap winder, for the formation of a lap (L), said device being able to pass from an initial configuration of forming such lap to a final configuration of forming said lap, said device comprising:

- a formation area (20) in which the lap is positioned from the initial configuration to the final configuration;
- a primary calender (22) able to rotate so as to

- form the lap around a rotation axis, the calender being able to support the lap being formed from the initial configuration to the final formation configuration;
- a belt (30) forming a circuit close to the formation area (20), in contact with the lap being formed from the initial configuration to the final formation configuration.
2. Device according to claim 1, wherein the belt is movable by running in the direction of formation of the lap.
 3. Device according to claim 1 or 2, wherein the circuit of the belt is closed, the primary calender is inside said circuit and is in contact with the belt, at least in one portion of contact facing the formation area (20).
 4. Device according to any of the previous claims, comprising an alignment roller (12), positioned up line of the formation area (20), engaged with the belt to deviate its path, inside the circuit of the belt.
 5. Device according to any of the previous claims, comprising means of adjusting the tension of the belt.
 6. Device according to any of the previous claims, comprising a secondary calender (24) adjacent to the primary calender, able to rotate so as to form a lap around its rotation axis, the secondary calendar being able to support the lap being formed from the initial configuration to the final formation configuration together with the primary calender.
 7. Device according to any of the previous claims, comprising a guiding devices of the lap being formed able to guide the lap being formed.
 8. Device according to claim 7, wherein the guiding devices comprises a carriage (50) comprising
 - a pair of plates (52), spaced out along the rotation axis of the calender (22), and
 - first movement devices, connected to the plates (52), for the translation of these, synchronised with the formation of the lap.
 9. Device according to any of the previous claims, wherein the gap (100) between the primary calender (22) and the secondary calender (24) is asymmetric.
 10. Device according to any of the previous claims, wherein the diameter of the primary calender is smaller than the diameter of the secondary calender.
 11. Device according to claim 10, wherein the ratio between the diameter of the primary calender and the diameter of the secondary calender is 0.2 to 0.5, preferably 0.3 to 0.4, preferably 0.27.

12. Device according to any of the previous claims, wherein the width of the belt (30) is less than the distance between the plates (52).
13. Device according to any of the previous claims, comprising means of centring the tube (T) supported by the calendars.
14. Device according to any of the previous claims, wherein the secondary calender (24) is driven independently from the primary calender.
15. Lap winder comprising a lap (L) forming device (1) made according to any of the previous claims.

Patentansprüche

1. Vorrichtung (1) für eine Faserverarbeitungsmaschine, beispielsweise eine Wickel-Wickelmaschine bzw. Wattewickelmaschine (L), wobei die Vorrichtung in der Lage ist, aus einer anfänglichen Konfiguration des Bildens eines solchen Wickels in eine endgültige Konfiguration des Bildens des Wickels überzugehen, wobei die Vorrichtung umfasst:
 - einen Bildungsbereich (20), in dem der Wickel aus der anfänglichen Konfiguration in die endgültige Konfiguration positioniert wird;
 - einen primären Kalandrier (22), der in der Lage ist, sich zu drehen, um den Wickel um eine Drehachse herum zu bilden, wobei der Kalandrier in der Lage ist, den Wickel zu stützen bzw. zu tragen, der aus der anfänglichen Konfiguration in die endgültige Konfiguration gebildet wird;
 - einen Gurt bzw. ein Band (30), der bzw. das einen Kreis nahe dem Bildungsbereich (20) bildet, und zwar in Kontakt mit dem Wickel, der aus der anfänglichen Konfiguration in die endgültige Konfiguration gebildet wird;
2. Vorrichtung nach Anspruch 1, wobei das Band durch Laufen in der Richtung des Bildens des Wickels beweglich bzw. bewegbar ist.
3. Vorrichtung nach Anspruch 1 oder 2, wobei der Kreis des Bands geschlossen ist, der primäre Kalandrier im Inneren des Kreises ist und mit dem Band in Kontakt ist, und zwar zumindest in einem Kontaktabschnitt dem Bildungsbereich (20) zugewandt.
4. Vorrichtung nach einem der vorhergehenden Ansprüche, umfassend eine Ausrichtungsrolle (12), positioniert strahlenaufwärts des Bildungsbereichs (20), in Eingriff mit dem Band, um seinen Weg abzulenken, und zwar im Inneren des Kreises des Bands.

5. Vorrichtung nach einem der vorhergehenden Ansprüche, umfassend Mittel zum Einstellen des Zugs des Bands.
6. Vorrichtung nach einem der vorhergehenden Ansprüche, umfassend einen sekundären Kalandrier (24) angrenzend an bzw. benachbart zu dem primären Kalandrier, der in der Lage ist, sich zu drehen, um einen Wickel um seine Drehachse herum zu bilden, wobei der sekundäre Kalandrier in der Lage ist, den Wickel aus der anfänglichen Konfiguration in die endgültige Bildungskonfiguration zusammen mit dem primären Kalandrier zu tragen bzw. zu stützen.
7. Vorrichtung nach einem der vorhergehenden Ansprüche, umfassend eine Führungsvorrichtung des gebildeten Wickels, die in der Lage ist, den gebildeten Wickel zu führen.
8. Vorrichtung nach Anspruch 7, wobei die Führungsvorrichtung einen Wagen bzw. Schlitten (50) umfasst, der umfasst:
 - ein Paar Platten (52), gesperrt bzw. beabstandet entlang der Drehachse des Kalandriers (22), und
 - erste Bewegungsvorrichtungen, verbunden mit den Platten (52), für die Translation derselben, synchronisiert mit der Bildung des Wickels.
9. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der Spalt (100) zwischen dem primären Kalandrier (22) und dem sekundären Kalandrier (24) asymmetrisch ist.
10. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der Durchmesser des primären Kalandriers kleiner ist als der Durchmesser des sekundären Kalandriers.
11. Vorrichtung nach Anspruch 10, wobei das Verhältnis zwischen dem Durchmesser des primären Kalandriers und dem Durchmesser des sekundären Kalandriers 0,2 bis 0,5, vorzugsweise 0,3 bis 0,4, vorzugsweise 0,27 ist.
12. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die Breite des Bands (30) geringer ist als der Abstand zwischen den Platten (52).
13. Vorrichtung nach einem der vorhergehenden Ansprüche, umfassend Mittel zum Zentrieren des Rohrs bzw. Schlauchs (T), der durch die Kalandrier gestützt bzw. getragen wird.
14. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der sekundäre Kalandrier (24) unabhängig von dem primären Kalandrier angetrieben

wird.

15. Wickel-Wickelmaschine bzw. Wattewickelmaschine, umfassend eine Wickel(L)-Bildungsvorrichtung (1) nach einem der vorhergehenden Ansprüche.

Revendications

1. Dispositif (1) destiné à une machine de traitement de fibres, par exemple un enrouleur de nappe, destinée à former une nappe (L), ledit dispositif pouvant passer d'une configuration initiale de formation d'une telle nappe à une configuration finale de formation de ladite nappe ;
ledit dispositif comprenant :
 - une zone de formation (20) dans laquelle la nappe est positionnée à partir de la configuration initiale jusqu'à la configuration finale ;
 - une première calandre (22) pouvant tourner de façon à former la nappe autour d'un axe de rotation, la calandre pouvant supporter la nappe formée à partir de la configuration initiale jusqu'à la configuration finale ;
 - une courroie (30) qui forme un circuit à proximité de la zone de formation (20), en contact avec la nappe formée à partir de la configuration initiale jusqu'à la configuration finale.
2. Dispositif selon la revendication 1, dans lequel la courroie est mobile en se déplaçant dans la direction de formation de la nappe.
3. Dispositif selon la revendication 1 ou la revendication 2, dans lequel le circuit de la courroie est fermé, la calandre primaire se situe à l'intérieur dudit circuit et est en contact avec la courroie, au moins dans une partie de contact qui fait face à la zone de formation (20).
4. Dispositif selon l'une quelconque des revendications précédentes, comprenant un rouleau d'alignement (12), positionné en haut de la zone de formation (20), mis en prise avec la courroie de façon à dévier son chemin, à l'intérieur du circuit de la courroie.
5. Dispositif selon l'une quelconque des revendications précédentes, comprenant des moyens destinés à régler la tension de la courroie.
6. Dispositif selon l'une quelconque des revendications précédentes, comprenant une calandre secondaire (24) adjacente à la calandre primaire, pouvant tourner de façon à former une nappe autour de son axe de rotation, la calandre secondaire pouvant supporter la nappe formée à partir de la configuration initiale jusqu'à la configuration finale avec la calandre pri-

maire.

7. Dispositif selon l'une quelconque des revendications précédentes, comprenant des dispositifs de guidage de la nappe en cours de formation qui peuvent guider la nappe en cours de formation. 5
8. Dispositif selon la revendication 7, dans lequel les dispositifs de guidage comprennent un chariot (50) qui comprend : 10
 - une paire de plaques (52), espacées le long de l'axe de rotation de la calandre (22) ; et
 - des premiers dispositifs de déplacement, connectés aux plaques (52), pour leur translation, synchronisés avec la formation de la nappe. 15
9. Dispositif selon l'une quelconque des revendications précédentes, dans lequel l'espace (100) entre la calandre primaire (22) et la calandre secondaire (24) est asymétrique. 20
10. Dispositif selon l'une quelconque des revendications précédentes, dans lequel le diamètre de la calandre primaire est plus petit que le diamètre de la calandre secondaire. 25
11. Dispositif selon la revendication 10, dans lequel le rapport entre le diamètre de la calandre primaire et le diamètre de la calandre secondaire est compris entre 0,2 et 0,5, de préférence entre 0,3 et 0,4, de préférence égal à 0,27. 30
12. Dispositif selon l'une quelconque des revendications précédentes, dans lequel la largeur de la courroie (30) est inférieure à la distance entre les plaques (52). 35
13. Dispositif selon l'une quelconque des revendications précédentes, comprenant des moyens destinés à centrer le tube (T) supporté par les calandres. 40
14. Dispositif selon l'une quelconque des revendications précédentes, dans lequel la calandre secondaire (24) est entraînée indépendamment de la calandre primaire. 45
15. Enrouleur de nappe comprenant un dispositif (1) de formation de nappe (L) réalisé selon l'une quelconque des revendications précédentes. 50

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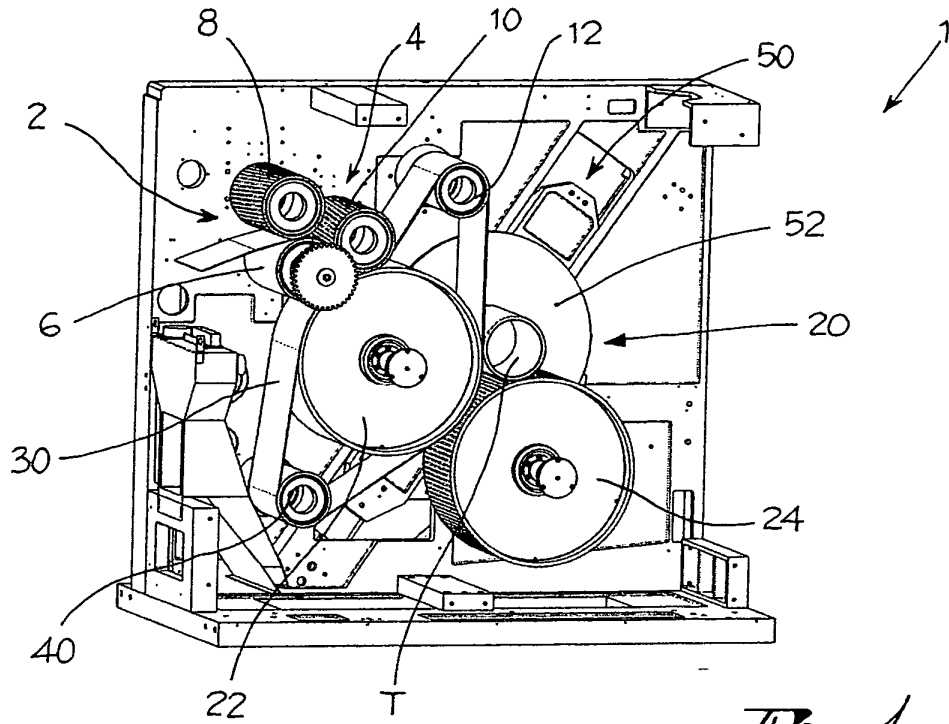


Fig. 1

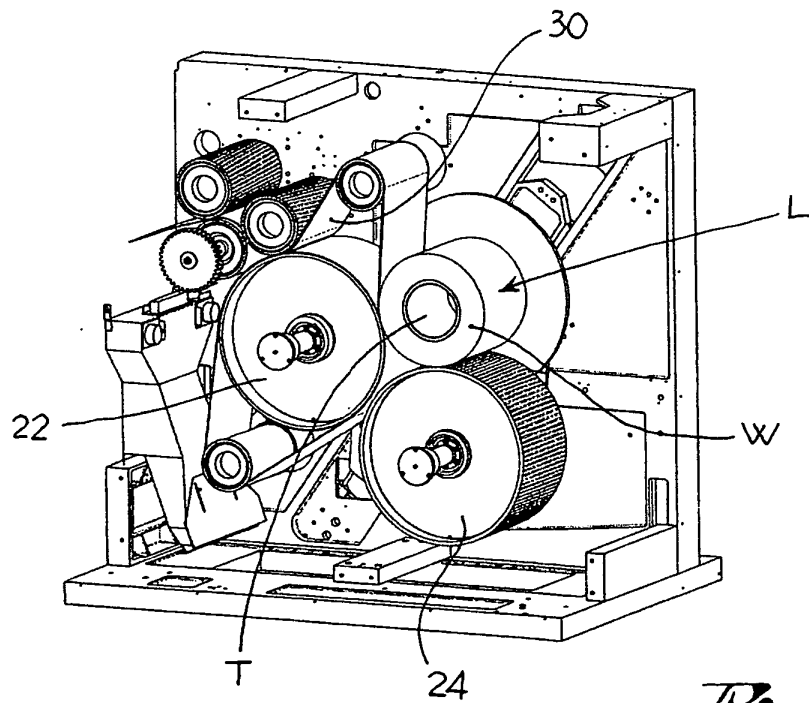


Fig. 2

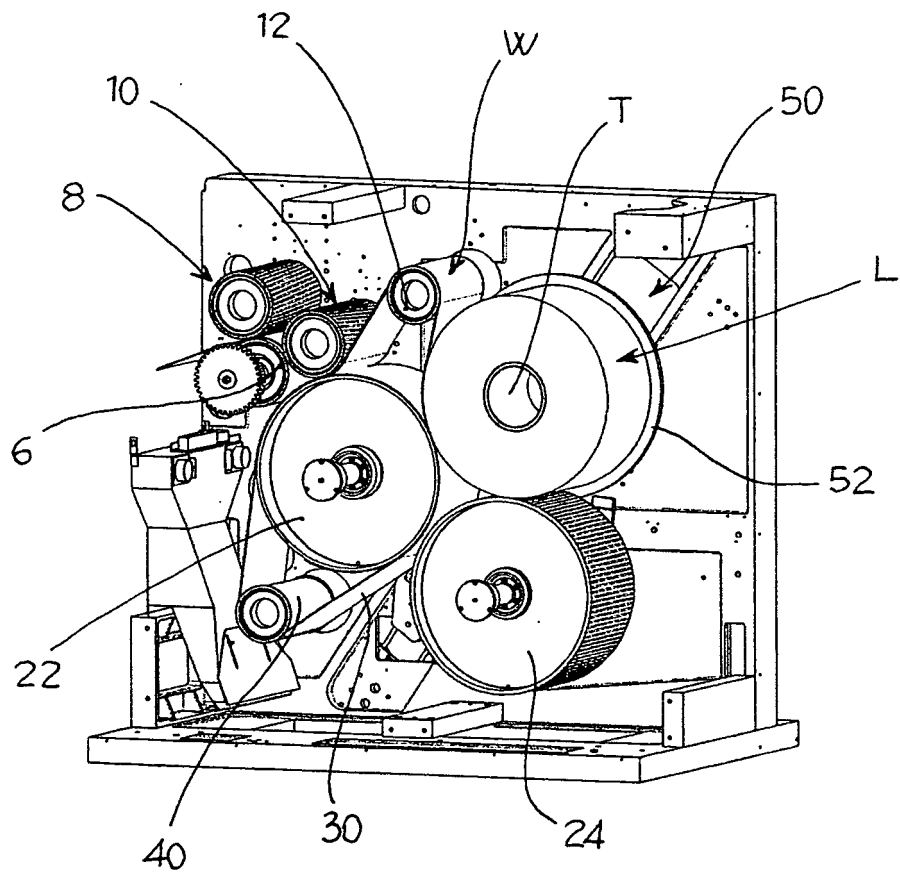


Fig.3

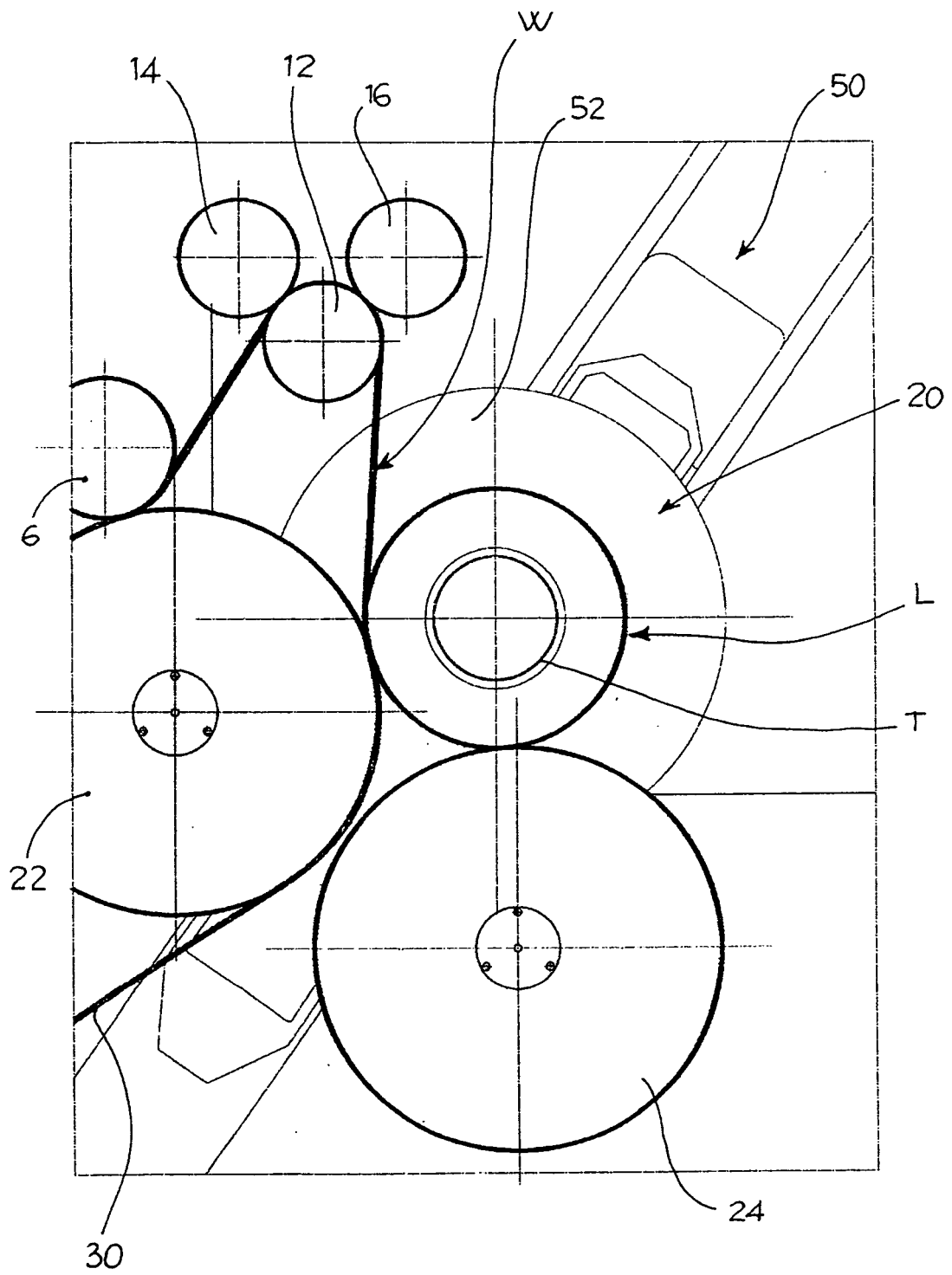


Fig. 4

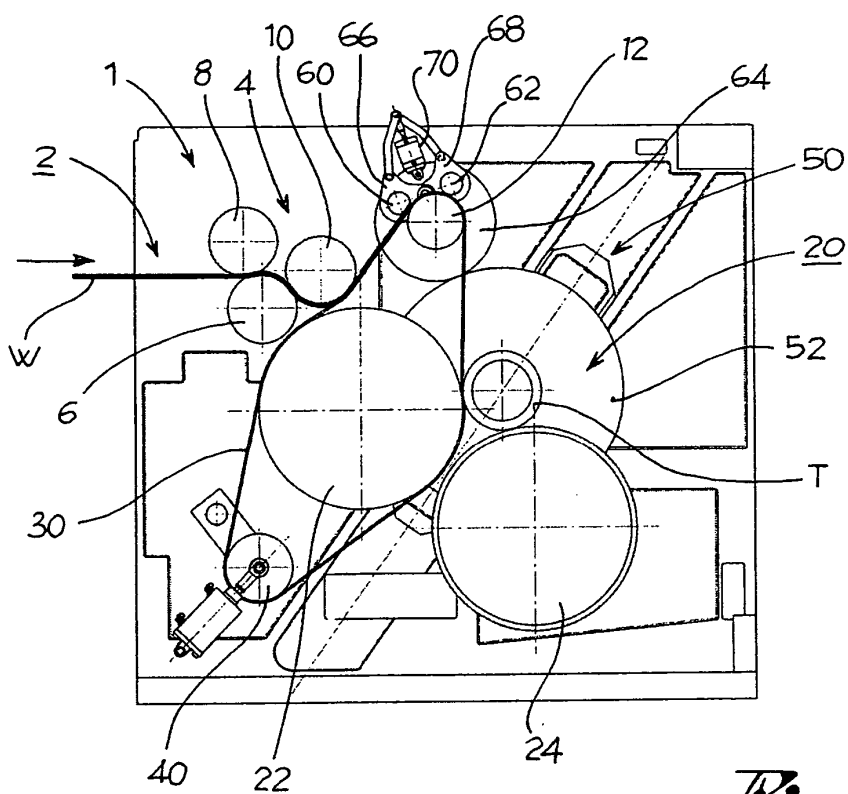


Fig. 5a

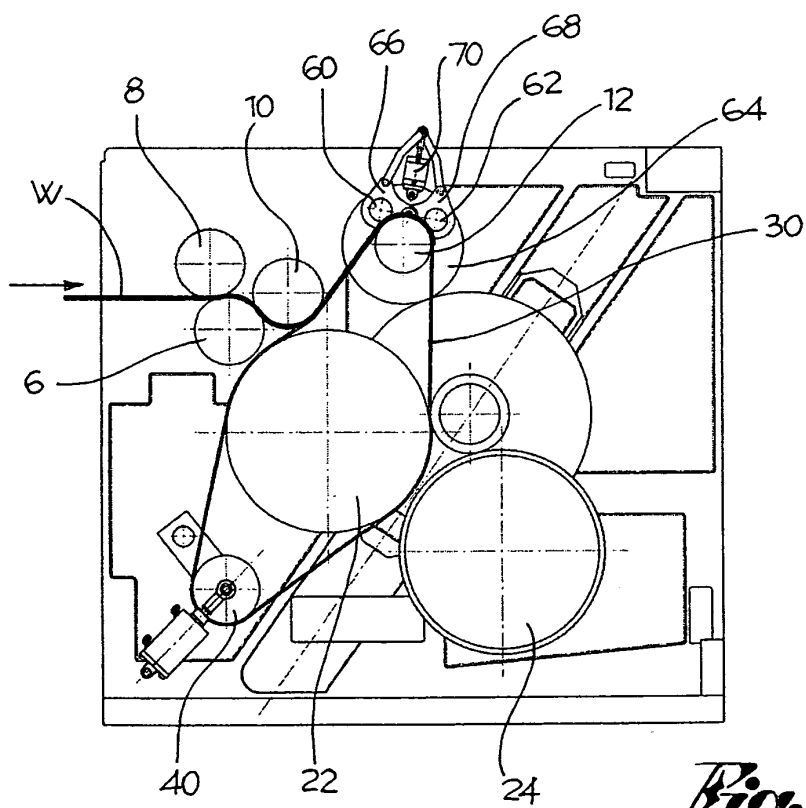


Fig. 5b

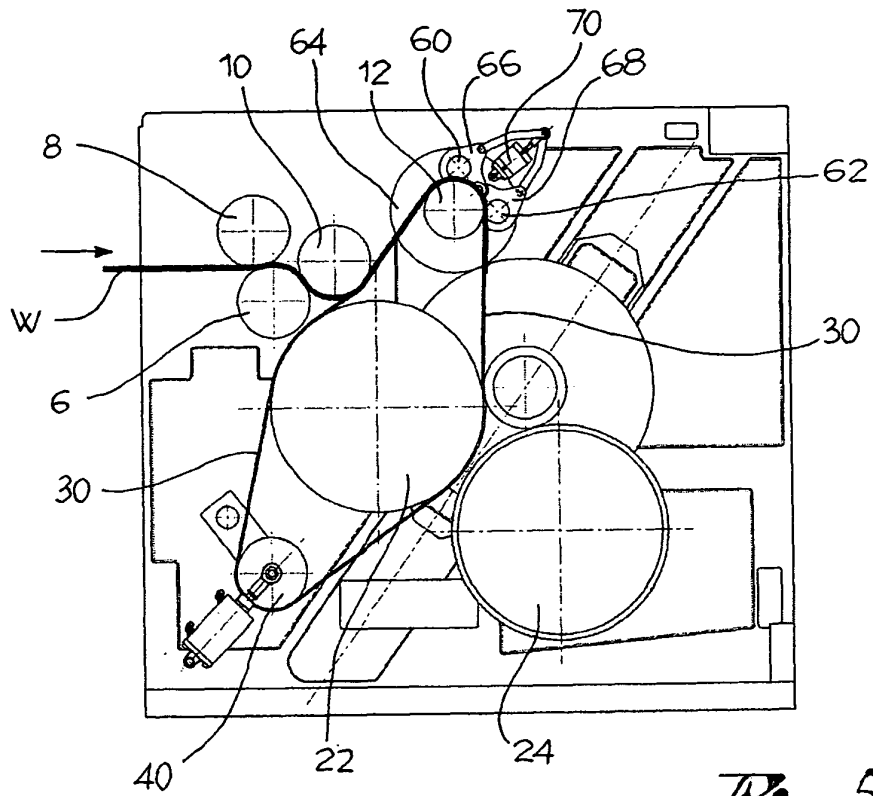


Fig. 5c

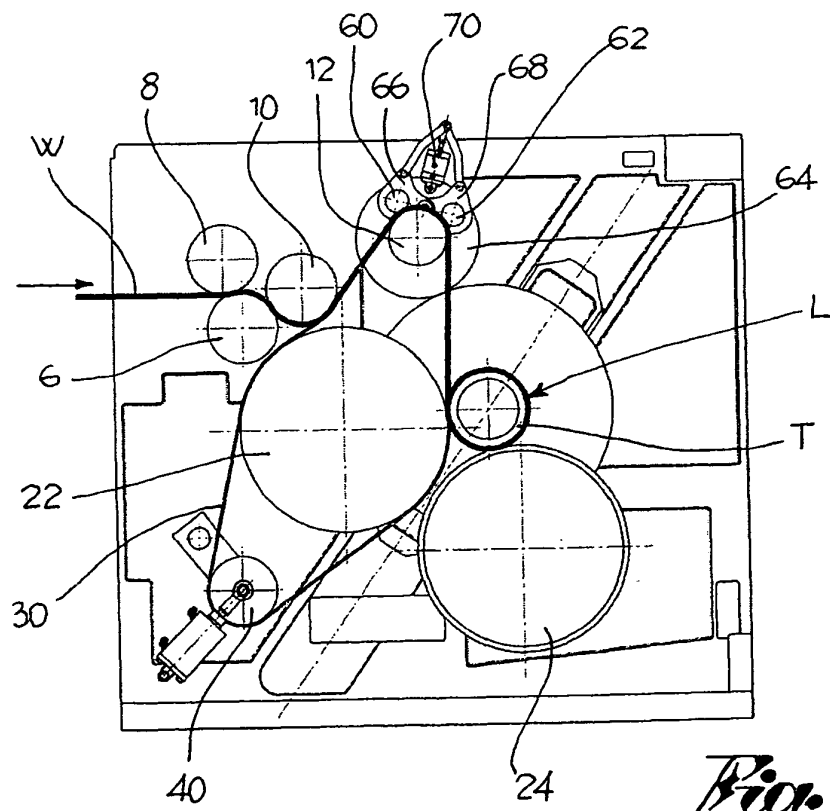


Fig. 5d

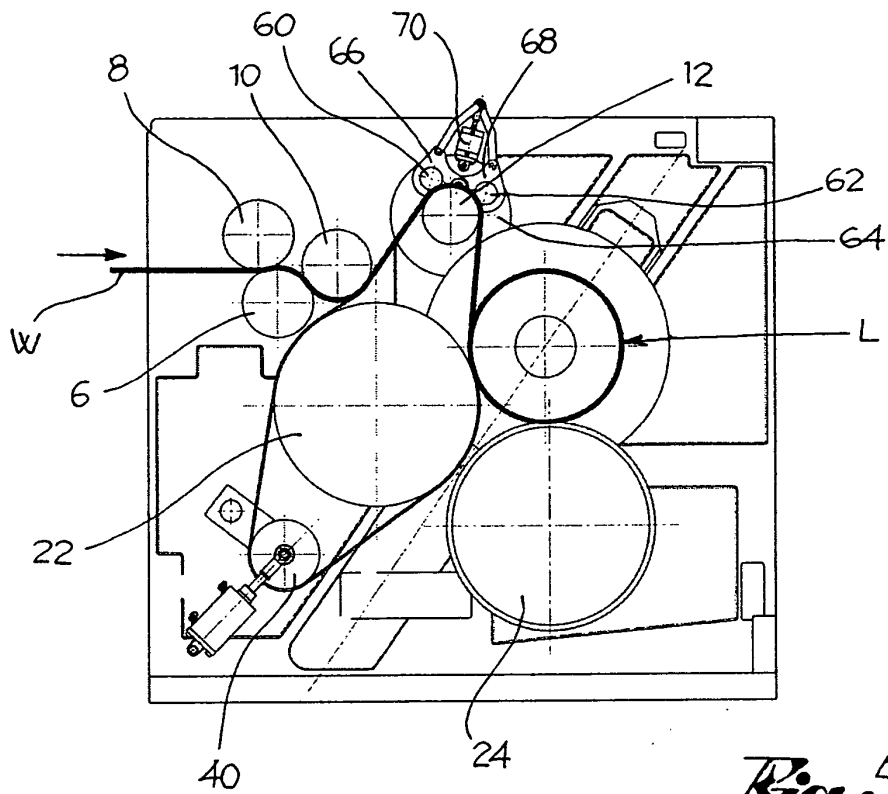


Fig. 5e

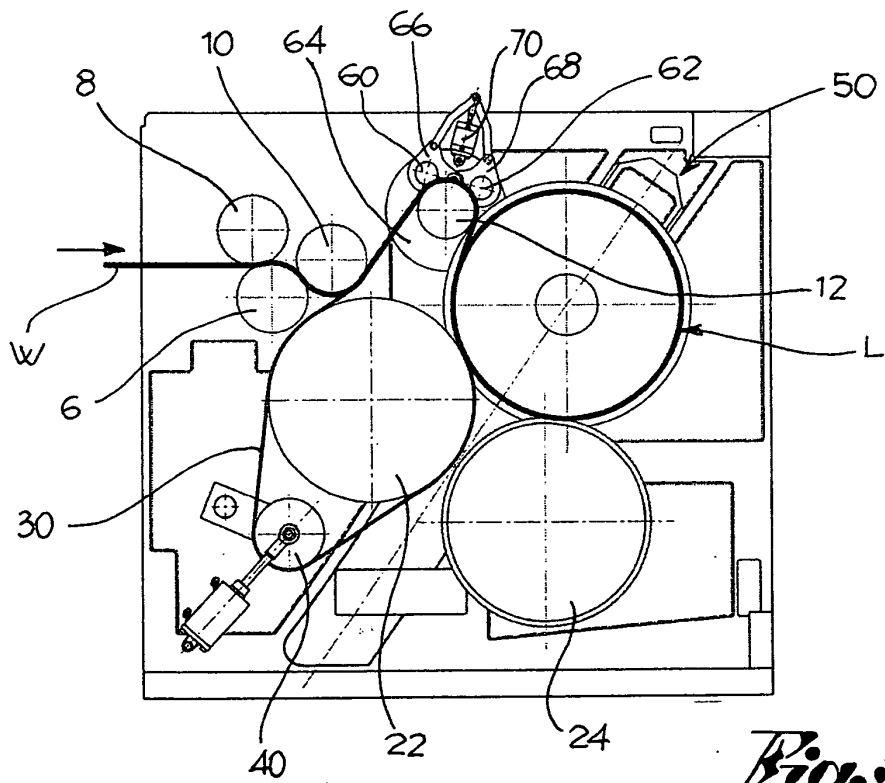


Fig. 5f

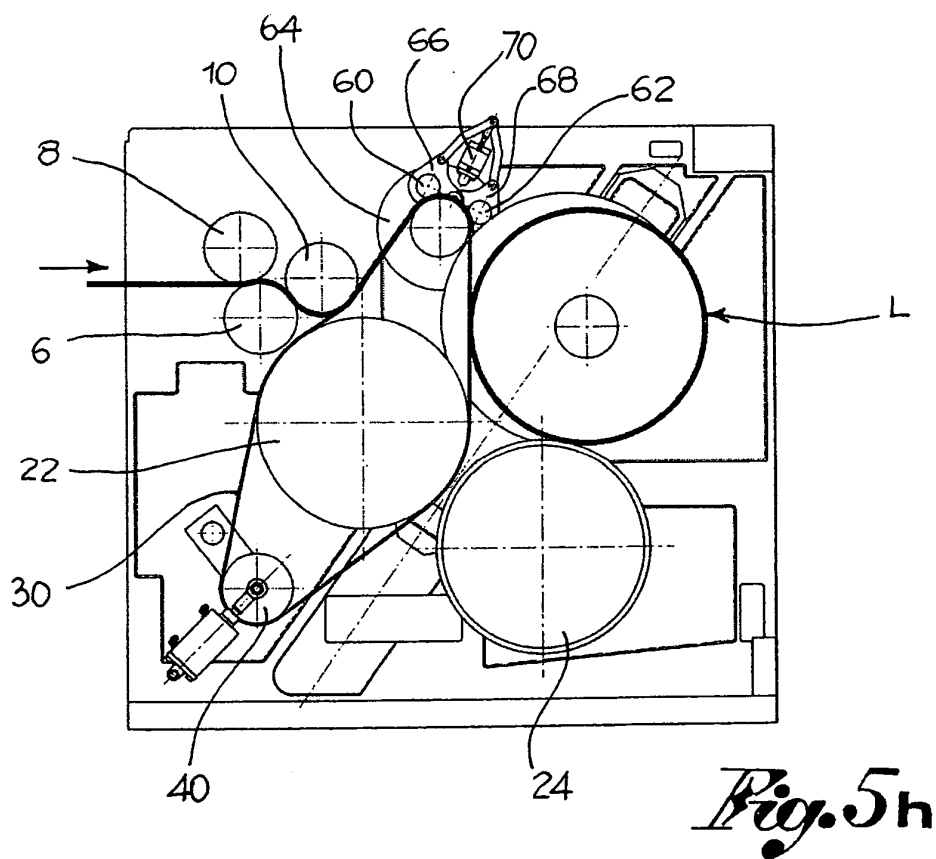
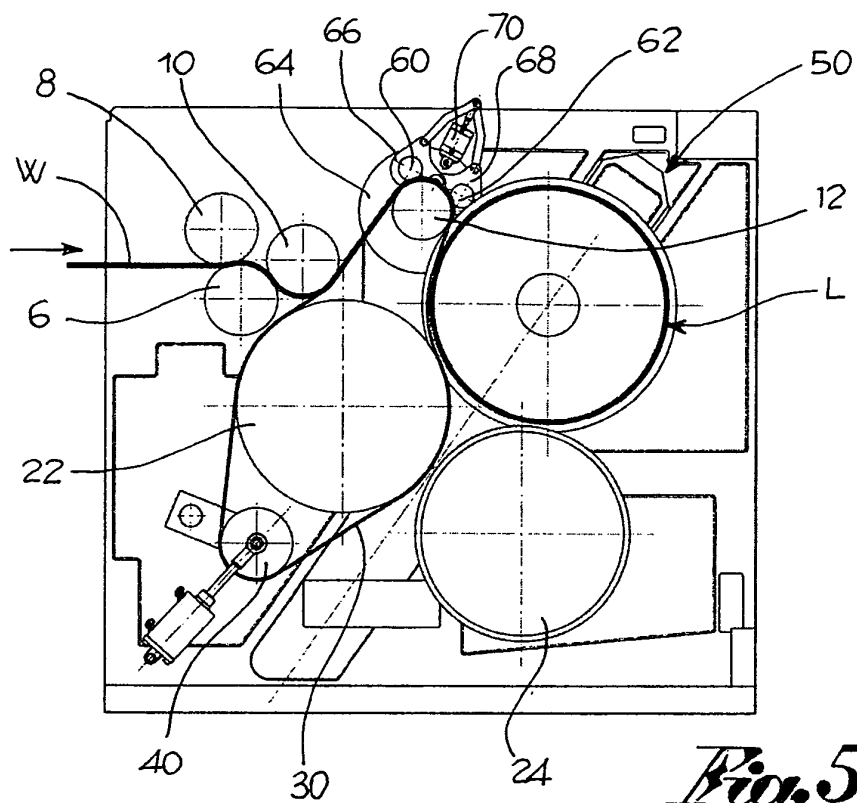
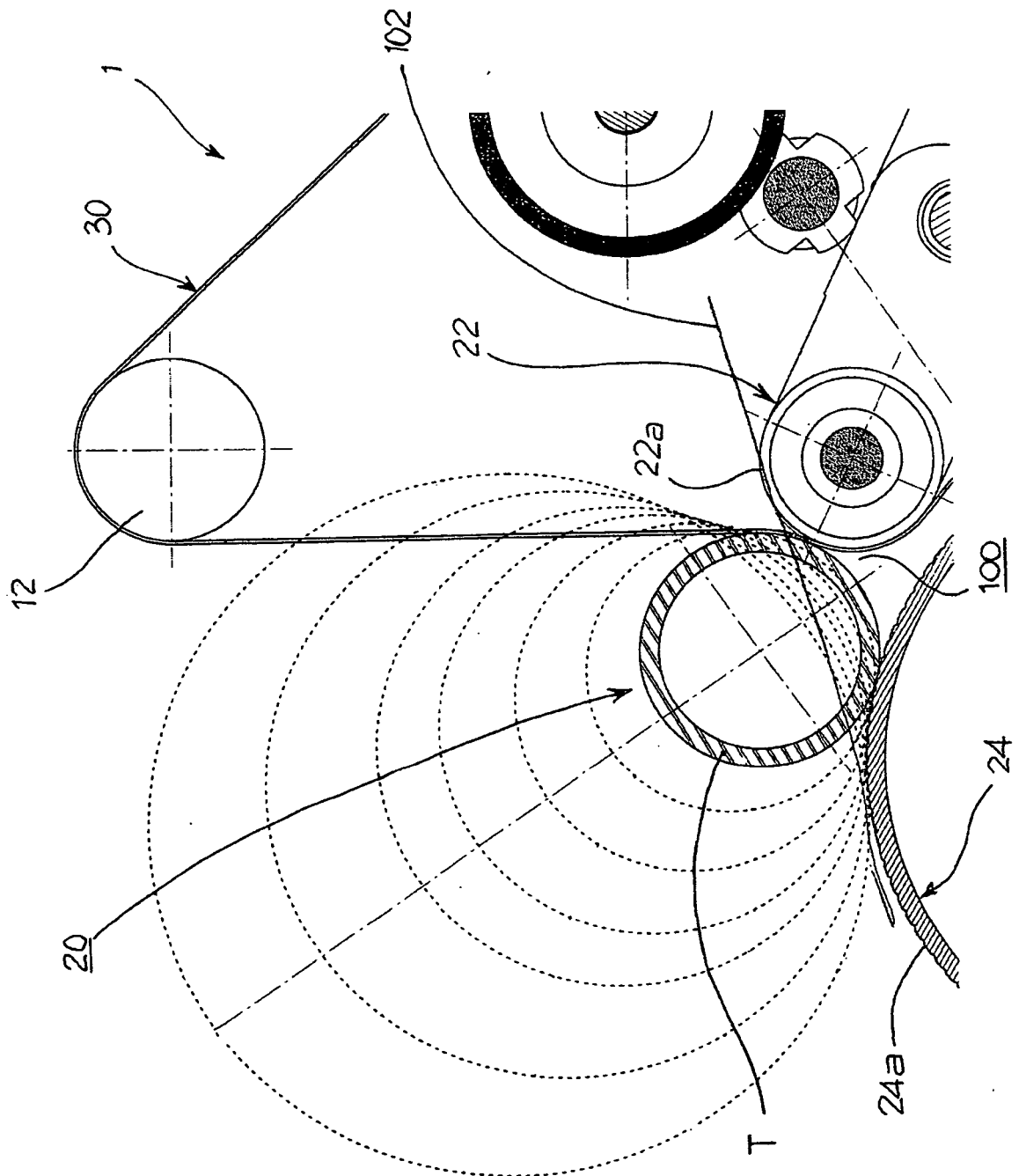
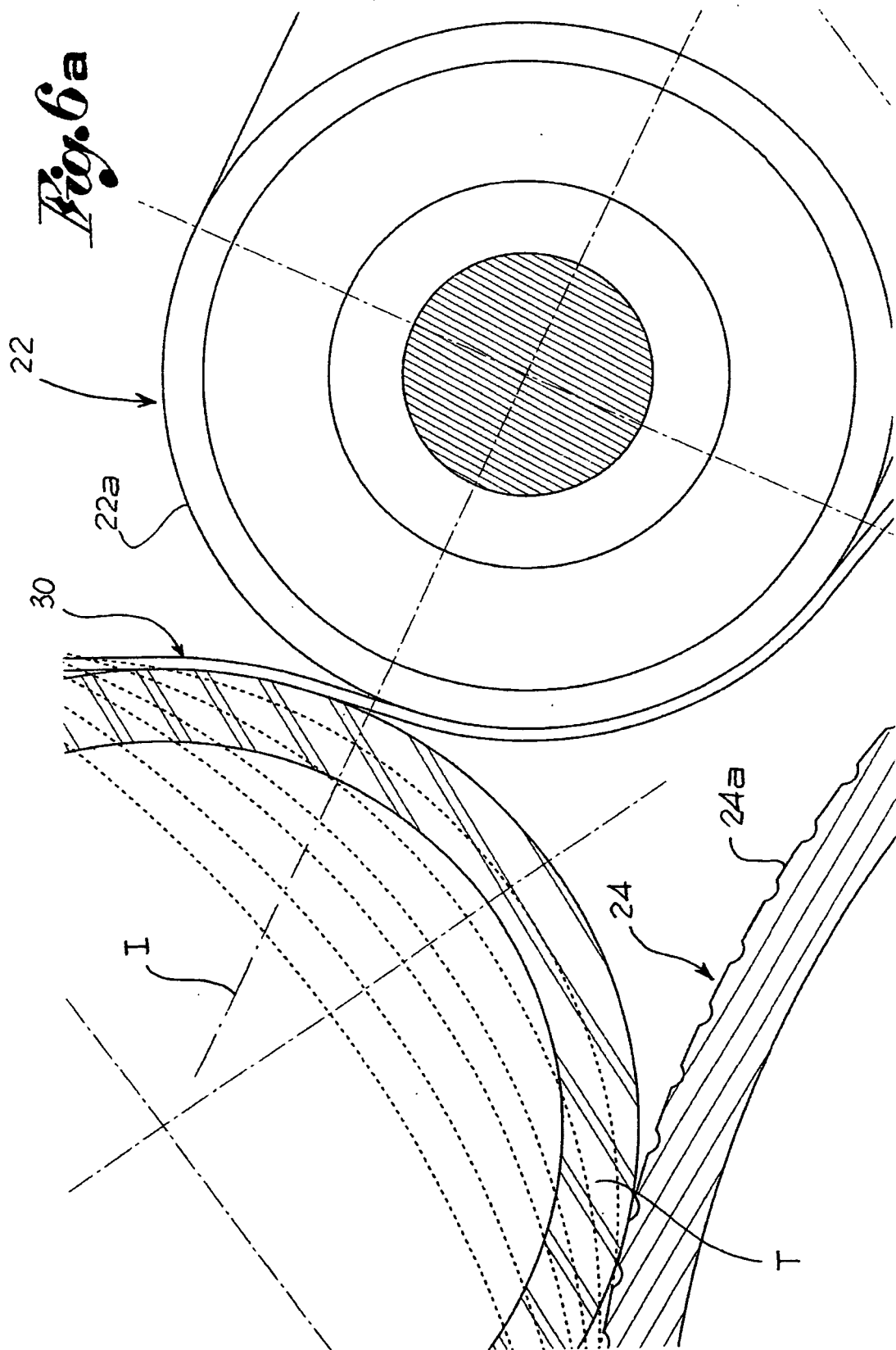
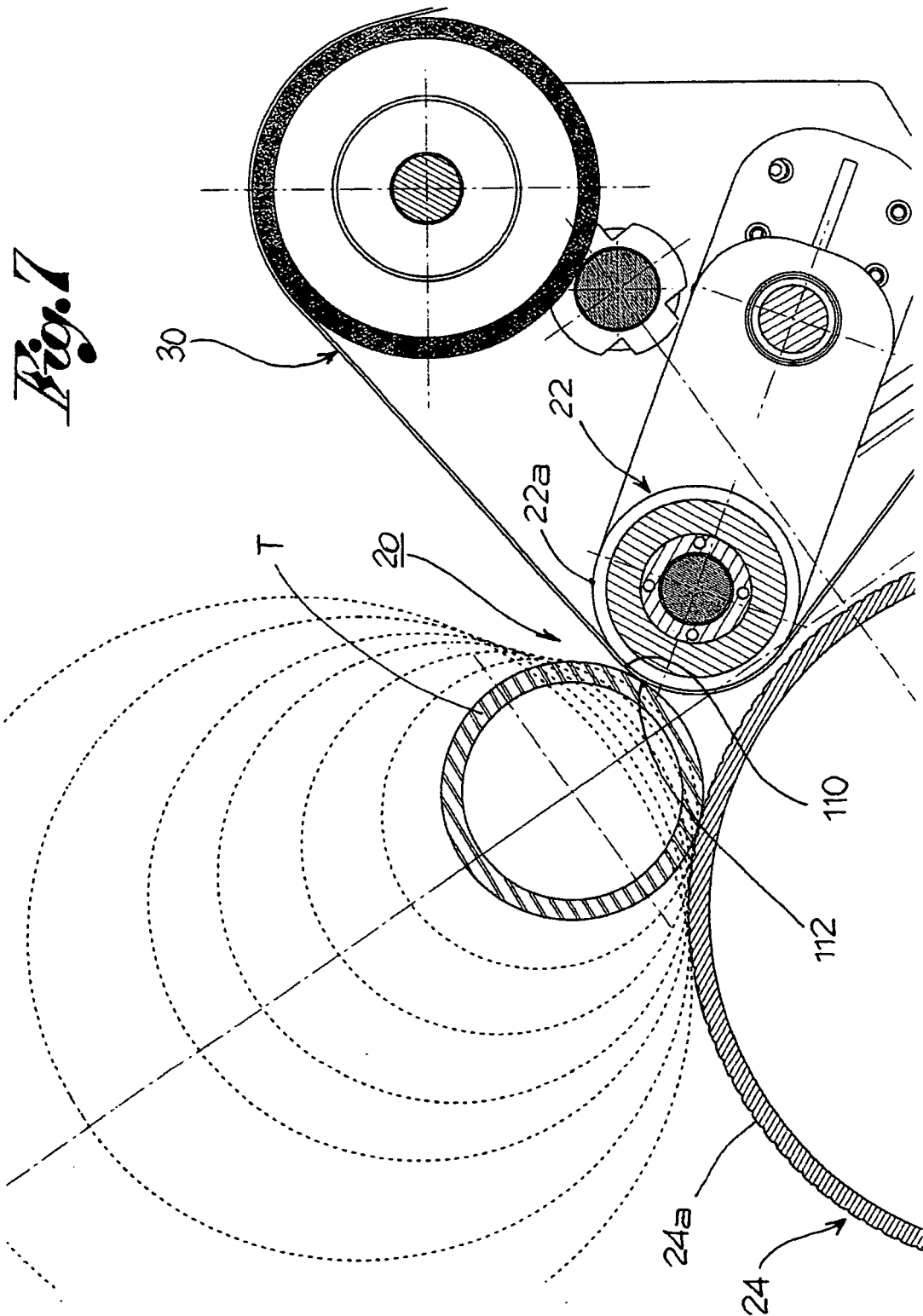
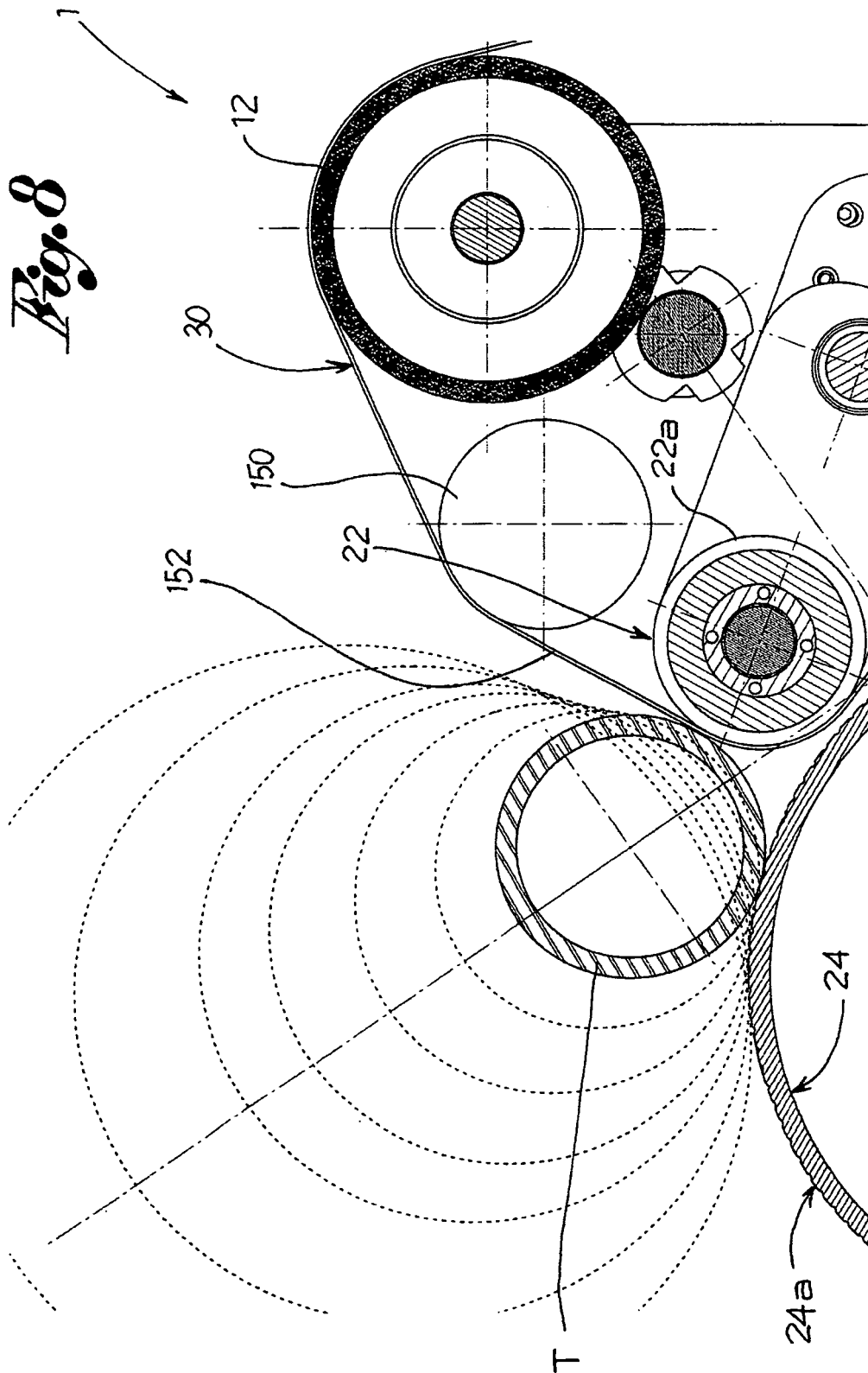


Fig. 6









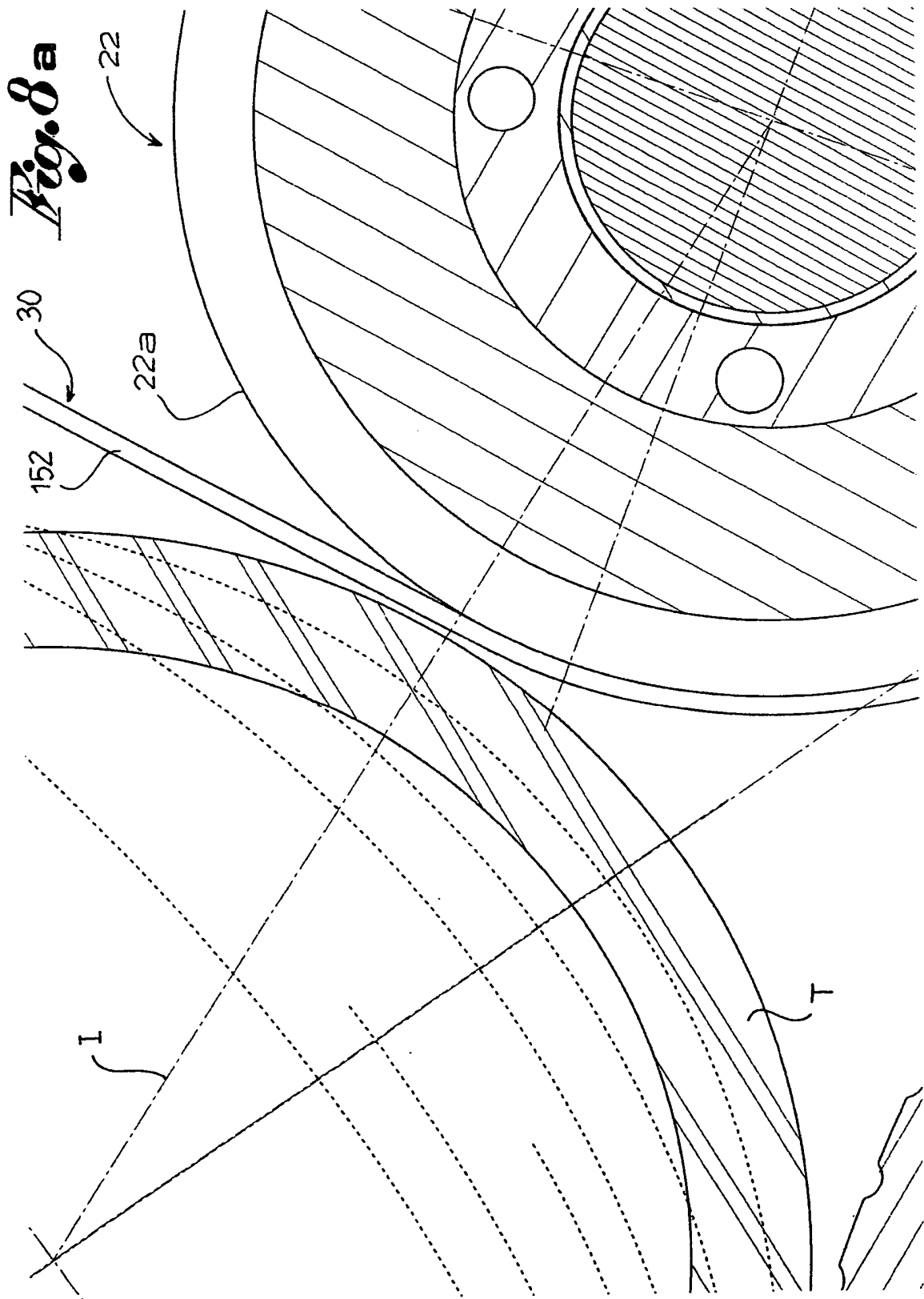


Fig. 9

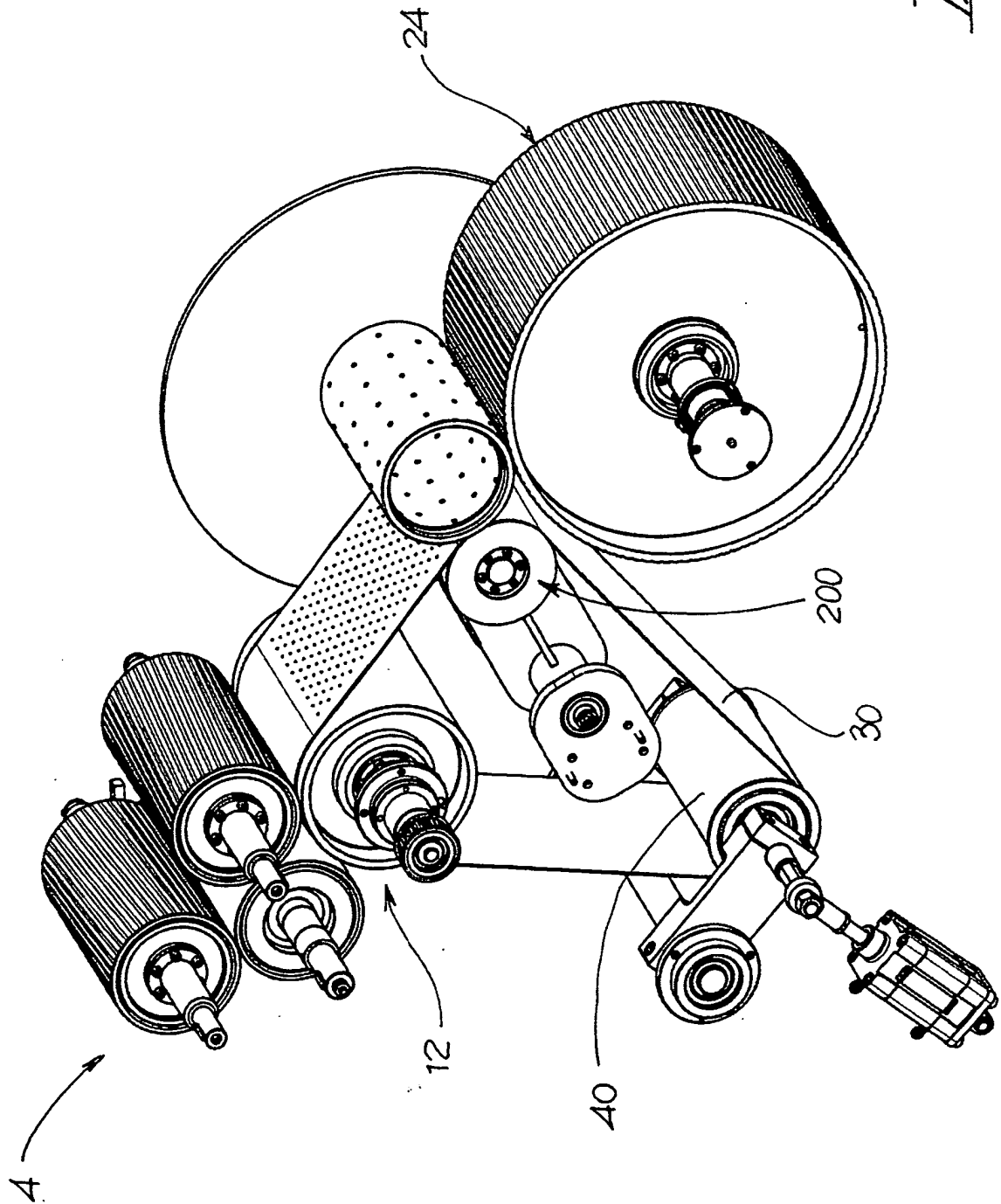
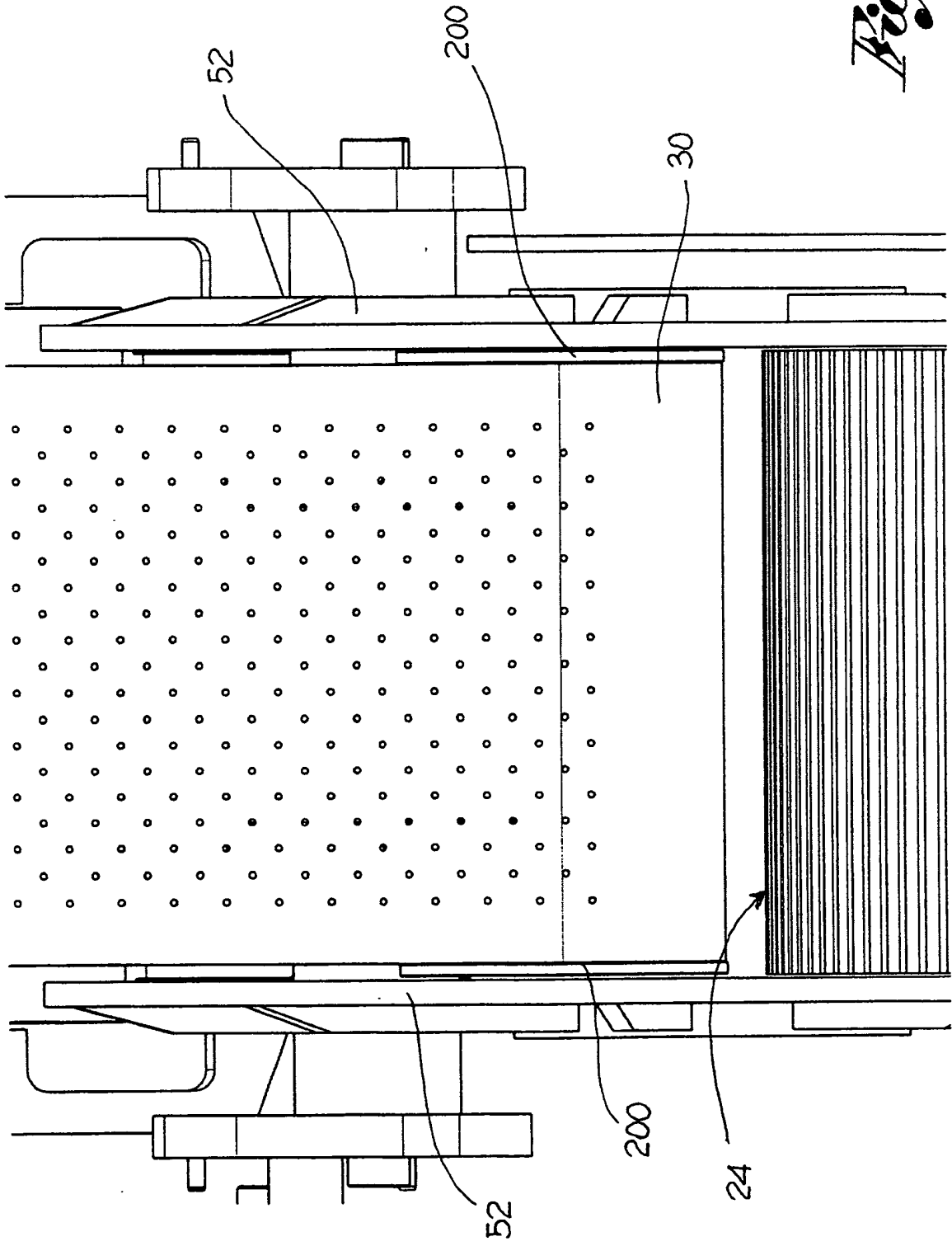


Fig. 10



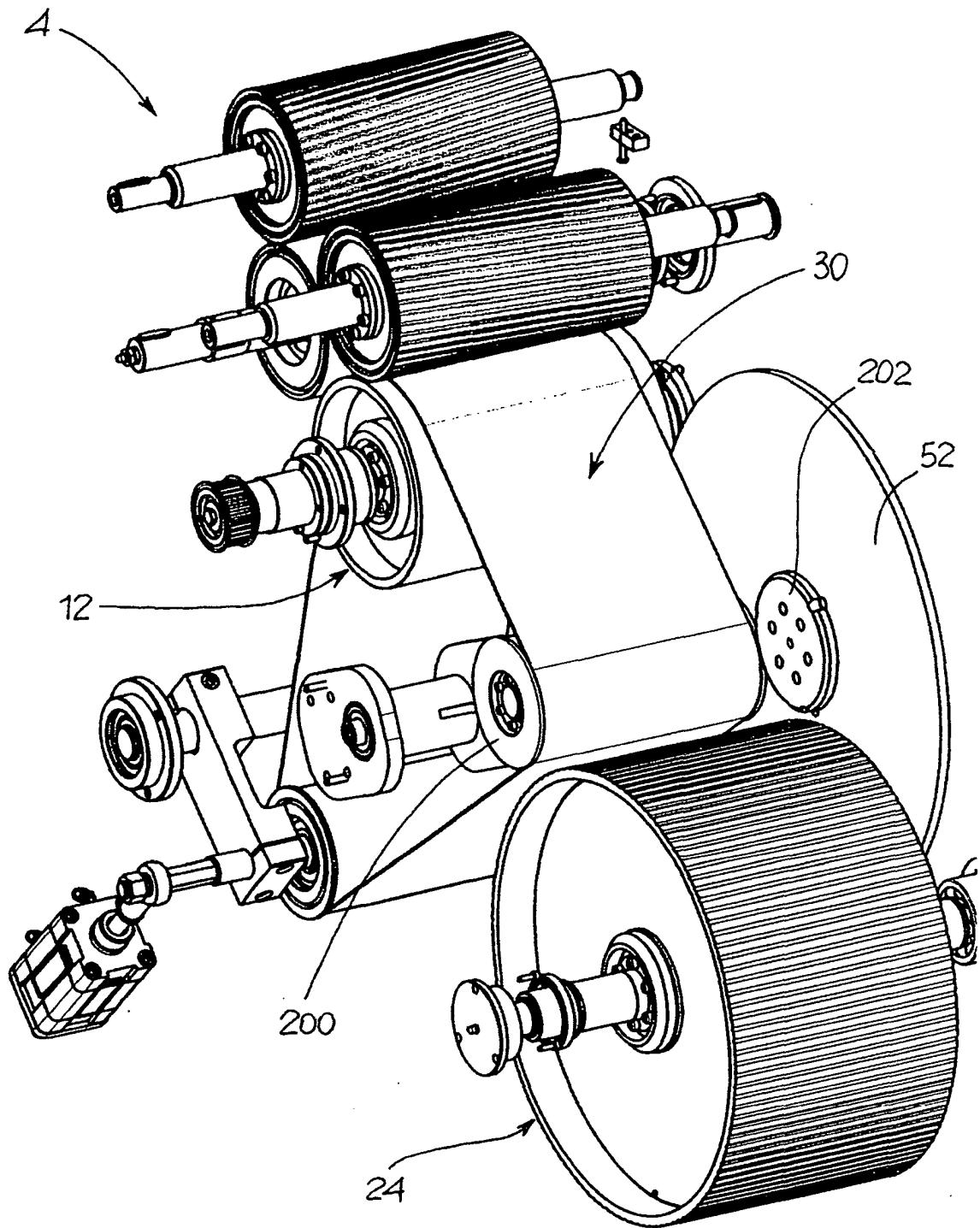


Fig. 11

REFERENCES CITED IN THE DESCRIPTION

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