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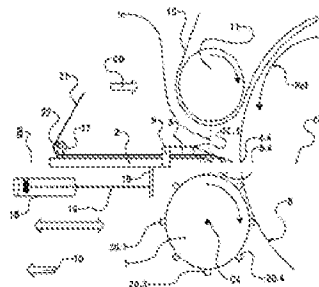
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Apparatus and method for supplying wrapping material to a chamber.

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The invention refers to a wrapping material supplying apparatus and device which supplies a web (21) of wrapping material to a chamber (Ch) which contains an object (B) to be wrapped. The web (21) is clamped between a conveying member (3) and a holding member (2) and is moved towards a wrapping material inlet (In). A pressing element (4.4) is mounted at the front edge (FE.3) of the conveying member (3) and engages into a notch (5.4) which is cut into the front edge of the holding member (2). The pressing element (4.4) presses the web (21) through the notch (5.4).



FIELD OF THE INVENTION

5 The invention refers to an apparatus and to a method for supplying wrapping material to a chamber, in particular to a drum-shaped bale forming chamber of an agricultural round baler. An object to be wrapped into the supplied web, e.g. a round-cylindrical bale, is contained in this chamber.

BACKGROUND OF THE INVENTION

10 The invention can be used on board of a round baler. Such a round baler forms under pressure from loose agricultural material a round-cylindrical bale in a drum-shaped bale forming chamber. The formed bale is ejected out of the bale forming chamber. In order to prevent the ejected bale from falling apart, the circumferential surface – or the entire surface – of the bale is wrapped while the bale is still in the bale
15 forming chamber.

For wrapping the bale surface it is necessary to convey a web of wrapping material from a reservoir outside of the bale forming chamber towards a wrapping material inlet such that the web can be injected through a wrapping material inlet into the bale forming chamber and can be taken by the rotated bale. Several proposals how
20 to do so have been made.

Fig. 1 of US 20090272072 A1 shows a round baler 10 with a bale chamber 16 and a web wrap device 18. The baler 10 forms a round bale in the bale chamber 16 and wraps the bale in the bale chamber 16 into a web 32 of plastic, net, paper, or similar material, cf. par. [0031]. The web 32 is pulled from a supply reel and is
25 conveyed by means of a drive roll 36, cf. Fig. 2. A web carrier 40 can be moved between a rest position (Fig. 1) and a delivery position (Fig. 3). The web carrier 40 is guided by a parallelogram linkage 48 and is moved by an actuator 42, cf. Fig. 2.

A stationary element 56 and a movable element 58 together clamp a front portion of the web 32, cf. Fig. 4 and Fig. 5 of the baler 10 of US 20090272072 A1. The
30 moveable element 58 is positioned above the stationary element 56. The stationary element 56 forms a part of a circle, cf. Fig. 2 and Fig. 3. The stationary element 56 is curved in a vertical direction and comprises a leading edge 86 which is bent in a horizontal direction, cf. Fig. 5. The moveable element 58 can pivot to and away from the bale chamber 16 and moves towards the stationary element 56. The moveable element
35 58 is pivotally mounted at a bearing 52, cf. par. [0037]. Web 32 is located between the

moveable element 58 and the stationary element 56, cf. par. [0037].

The front area of the moveable element 58 of the baler 10 of US 20090272072 A1 has several slots 66 extending along the direction of web movement. Seven fingers 68 are formed, cf. Fig. 4, Fig. 5, and par. [0039]. In one embodiment the fingers 68 are bent downwardly with respect to the remaining part of the moveable element 58 so as to clamp the web 32. A corresponding set of ribs 70 and apertures 72 is provided in the stationary element 56. The comb-like front edge of the moveable element 58 may protrude through the set of ribs 70 and apertures 72 of the stationary element 56. Due to its weight the moveable element 58 moves towards the stationary element 56, cf. par. [0037]. The web 32 which is located between the elements 56 and 58 will securely be clamped and held while being pulled from the supply reel towards the bale chamber 16.

US 7513088 B2 discloses a round baler 10 which wraps a bale in the pressing chamber into wrapping material 30. A feed mechanism 18 pulls the wrapping material 30 from a supply reel 16 and conveys the wrapping material 30 towards a gap between the rollers 12 and 14, cf. Fig. 1 and Fig. 2. A duckbill 22 clamps the web between a fixed plate and the pivoted plate that is biased towards the fixed plate. Fig. 5 shows the improved duckbill 122 of the claimed invention. The sign 122 denotes the fixed plate and 122b the hinged plate below the fixed plate 122a. A baffle plate 124 is attached to the upper fixed plate 122a and projects beyond the fixed plate 122a and the hinged plate 122b, cf. Fig. 5. Fig. 6 shows a top view on the baffle 127. Fingers 124d are mounted at the front end of the baffle plate 124 and are flexible in the direction of the double arrow 128 of Fig. 5.

It may happen that a flap 50 of the web 30 is folded of the leading edge of the duckbill 122, cf. Fig. 7. The crop in the bale will wipe the top surface of the fingers 124b and the flap 50 will be peeled off the fingers and will enter the bale, cf. Fig. 8 and col. 7 / l. 5 – 12 of US 7513088 B2.

Fig. 1 of US 9016032 B2 shows a round baler 10 with a bale chamber 16 and a web wrap apparatus 18 mounted at the front part. A supply reel 50 of wrapping material rests on a motion element 36 comprising a roller 52, cf. Fig. 2. The web 32 can be plastic, net, paper or the like, cf. col.3/l.50-51. The web 32 is injected through a gap 30 between the baling elements (pressing rollers) 24, cf. Fig. 3 and Fig. 7.

The web 32 is conveyed towards the bale chamber 16 of the baler 10 of US 9016032 B2 by means of a feeder 40 in the form of a duckbill. The feeder 40 comprises a strut 72 on each side holding between them a carrier 74 in the form of a

mouthpiece at the lower end and two vertically distant bearings 76, cf. Fig. 3. A driver 78 is positioned between the carrier 74 in the form of a mouthpiece and the lower bearing 76. The carrier 74 comprises two opposite plates wherein one plate is biased onto the other. A piece of the web 32 is clamped between the two plates of the carrier 74. An upper link 82 and a lower link 84 form a part of a parallelogram linkage which guide the carrier 74 and the driver 78 of US 9016032 B2. An idler element 116 further assists and feeds the web in a proper way into the carrier 74. This idler element may be a bar or shaft.

Fig. 7 of US 9016032 B2 shows in a more detailed view the leading part of the feeder 40. The web sheet 32 is injected through a gap between two baling elements 24 into the baling chamber. A web sheet 132 is attached to the upper side of the feeder plate 128. The feeder plate 128 is made of sheet metal and the web sheet 132 of a flexible and elastic material, cf. col. 6/l.17ff. The feeder plate 128 together with the web sheet 132 rests on the carrier 74. The web 32 is clamped between them. A stripper 124 at the underside of the carrier 74 is formed as a thin and flat piece of plastic, rubber, sheet metal or wood and is fastened to the carrier 74, cf. Fig. 7 and Fig. 8. In addition a web sheet 126 is mounted at the bottom side of the carrier 74. The stripper 124 and the web sheet 126 extend in different directions, cf. Fig. 8.

In the embodiment of Fig. 11 to Fig. 13 of US 9016032 B2 a guard 134 is attached to the sidewalls 48 of the web wrap apparatus by means of a front lever 136 and a rear lever 138. The guard 134 is formed of sheet metal. This guard 134 prevents debris from building up on the feeder 40 and on the cutting edge 96.

Fig. 1 of US 5036642 shows a round baler 10 with a bale wrapping apparatus 64. A dispensing mechanism 66 of the bale wrapping apparatus 64 comprises a pair of levers 70 which are attached to a cross tube 72. Clamping members 80, 82 extend transversely of the baler 10 and are mounted at the levers 70. These clamping members 80, 82 dispense a wrapping material S such as net or plastic film from a supply reel R, cf. Fig. 3. The clamping members 80 and 82 of the dispensing mechanism 66 include an upper plate 126 and a lower plate 128, resp. The web of wrapping material S is fed between these plates 126 and 128. The upper plate 126 has a leading edge 126a. Several semicircular notches 127 are formed in this leading edge 126, cf. Fig. 5. The lower plate 128 has a leading edge 128a with a plurality of serrated teeth 129, cf. Fig. 6.

For conveying the web, the dispensing mechanism of the baler 10 of US 5036642 is moved from a retracted position (solid lines in Fig. 2) to a dispensing position (dotted

lines). In the retracted position a tail T of the wrapping material S is gripped by the clamping members. In the dispensing position the tail T is inserted into the bale forming chamber. Wrapping material S is dispensed from the supply reel R. The notches 127 in the leading edge 126a of the upper plate 126 prevents an undesired back feeding of the sheet material and ensure proper dispensing of the sheet material S from the supply reel R into the bale forming chamber. The serrated teeth 120 in the leading edge 128a of the lower plate 128 allow the sheet material S to spread to its nominal width. This effect is achieved due to a outwardly slanted orientation of the serrated teeth 129, cf. Fig. 6.

Fig. 1 of US 5557906 shows a round baler 10 with a baling chamber 12 and a wrapping arrangement 14. The baler 10 forms a round bale 16 in the baling chamber 12 and wraps the bale in the baling chamber 12 into wrapping material 18. The wrapping material 18 may be plastic sheet or netting, fabric, paper or the like, cf. col. 2/l.29-32.

The wrapping arrangement 14 of the baler 10 of US 5557906 is mounted at the rear of the baler 12. Wrapped material 18 is conveyed along a feed path F towards a slot or gap between two adjacent rollers 20. The wrapped material 18 is pulled from a supply reel 31 and is conveyed by a pair of feed rolls 24 and a wrapped material guide assembly 28 which comprises a guide pan 29, cf. Fig. 1. The feed path F from the feed rollers 24 to the inlet extends above a planar rear section 23 of the guide pan 29 and along a curved forward section 33 of the guide pan 29. A cutter arrangement 26 comprises a knife 34 which is mounted on parallel arms 35 and severs the web.

The wrapped material guide assembly comprises a planar section 32 and a curved forward section 33. The planar section 32 is formed of a plate defining a planar guide surface. Edges 38 of the plate bend downward. In a rear region of the edges 38 an elongated hole 40 is cut. Several pins 42 project through the hole 40. Thereby the guide pan 29 can pivot, cf. the continuous and the dotted lines in Fig. 1. A spring 46 establishes a link between the cutter arrangement 26 and the guide pan 29. The continuous lines show the guide pan in the operative position and the dotted lines in the inoperative position.

Fig. 2 of US 5557906 shows a slightly modified guide pan 29'. The front of this guide pan 29' comprises series of V-shaped or U-shaped notches 54 and 56, resp. Through these notches crop material or dirt can escape.

SUMMARY OF THE INVENTION

A problem solved by the invention is to provide a wrapping material supplying apparatus with the features of the preamble of claim 1 and a wrapping material supplying method with the features of the preamble of claim **Error! Reference source not found.** wherein the risk is reduced that the web is not properly injected into the chamber even if the web wraps around the conveying member or around the holding member.

This problem is solved by a wrapping material supplying apparatus with the features of claim 1 and by a wrapping material supplying method with the features of claim **Error! Reference source not found.** Preferred embodiments are specified in the depending claims.

The wrapping material supplying apparatus according to the invention comprises

- a holding member,
- a moveable conveying member,
- at least one pressing element, and
- a drive for moving the conveying member.

The conveying member is positioned above or below the holding member. The or every pressing element is mounted at a front edge of the conveying member. At least one notch is cut into a front edge of the holding member and is positioned vertically below or above the or one pressing element. The or every pressing element engages from above or from below into the or into one notch which is positioned vertically below or above this pressing element.

A web of wrapping material can be positioned between the holding member with the notches and the conveying member. The or at least one pressing element can press a part of the web through the notch vertically below or above this pressing element. Thereby the web is clamped between the holding member and the or at least one engaging pressing element.

The supplying apparatus according to the invention is arranged for supplying the clamped web of wrapping material to a chamber. An object to be wrapped is contained in the chamber. A wrapping material inlet guides into this chamber. The front edge of the holding member and the front edge of the conveying member and the or every pressing element mounted at the conveying member front edge point towards this wrapping material inlet.

The width of the or every pressing element at the front edge of the conveying member is smaller than the width of the notch vertically below or above this pressing element. Therefore the pressing element can engage into the notch. The respective width of the or every notch is smaller than the respective width of the holding member.

The supplying apparatus operates as follows and the supplying method comprises the following steps:

- In the case that the conveying member is positioned above the holding member, a web of wrapping material is placed or kept on the holding member. The web is positioned below the conveying member and below the or every pressing element. The web is positioned above the holding member.

- In the case that the holding member is positioned above the conveying member, the web is placed on the conveying member and is positioned above the or every pressing element and below the holding member.

- The web is clamped between the holding member on the one side and the or at least one pressing element at the conveying member on the other side.

- The or at least one pressing element presses a part of the web positioned between the holding member and the conveying member through the notch positioned vertically below or above this pressing element, thereby improving the clamping effect.

- The drive moves the conveying member with respect to the wrapping material inlet from a remote position in a conveying direction towards the wrapping material inlet. Thereby the drive moves the conveying member into an adjacent position with respect to the wrapping material inlet. By being moved in the conveying direction, the conveying member is moved towards the object contained in the chamber.

- The clamped web is moved towards the wrapping material inlet. Thereby the clamped web is moved towards the object contained in the chamber.

- The moved web is injected through the wrapping material inlet into the chamber.

ADVANTAGES

According to the invention the web is clamped between the holding member on the one side and the or every pressing element at the front edge of the conveying member on the other side. The web is clamped at least while being moved towards the wrapping material inlet. Thereby the risk of the undesired event is reduced that the web is moved from the holding member or from the conveying member and cannot properly be moved towards the wrapping material inlet. This undesired event

may in particular occur if the supplying apparatus is mounted on board of a vehicle which is moved over ground and which operates in a hilly environment with significant or changing inclination values or if the supplying apparatus is subjected to wind or rain.

According to the invention the or at least one pressing element engages
5 from above or from below through the or one notch. The or at least one pressing element above or below this notch presses a part of the web positioned between the holding member and the conveying member through the notch. This effect causes a front section of the web to be wrinkled. Wrinkling the web improve the clamping effect. It is possible but thanks to the pressing elements and the notches not necessary to clamp
10 the web just by sandwiching the web between the holding member and the conveying member.

The wrapping material inlet is delimited from below and/or from above by a part adjacent to the chamber, in general by a roller or at least one belt guided around a roller wherein the roller or belt touches the object to be wrapped in the chamber. The or
15 at least one pressing element presses the web part onto the circumferential surface of the roller – or onto the outer surface of at least one belt guided around the roller. If the roller or belt is driven, it takes and conveys the web which is pressed against the roller or belt. This desired effect contributes to injecting the web into the chamber.

Thanks to the invention it is possible to arrange the supplying apparatus
20 as follows: The front edge of the or at least one pressing element projects beyond the roller rotating axis into the wrapping material inlet and therefore towards the chamber and towards an object to be wrapped in the chamber. Thereby the distance between the front edge of the pressing element and the object in the chamber is smaller than the distance between the roller rotating axis and the object while the conveying member is
25 in the adjacent position and the roller touches the object. Thanks to this feature the pressing element presses the web from above or from below against an area of the roller or belt surface which points towards the chamber and thereby towards the object in the chamber. This feature increases the reliability of the supplying apparatus as the risk is decreased that the web is not properly taken.

According to the invention the web is not pressed over its entire width
30 against the holding member and therefore against the roller or belt. In contrast the web is pressed through the notches only in an area which is defined by the position of the notch and the width of the pressing element. This area is smaller than the width of the holding member and the width of the conveying member and in general smaller than the
35 width of the web. Therefore the web is punctually pressed and somehow wrinkled or

folded. This feature reduces the risk that the web is not properly taken by the roller or belt - even if the web has a wrapped around the holding member.

PREFERRED EMBODIMENTS

5 In one embodiment only the force of gravity biases the conveying member and therefor the pressing elements downwards towards the holding member. Or the force of gravity biases the holding member downwards towards the conveying member.

10 In a further embodiment the supplying apparatus further comprises a biasing device. This biasing device biases the conveying member towards the holding member positioned below or above the conveying member. Or the biasing device biases the holding member towards the conveying member. In one implementation the web is not only clamped in a front section but is further clamped between the conveying member and the holding member. These parts contact the web from two opposing sides.

15 In yet a further embodiment a distance between the conveying member and the holding member remains while the conveying member and the web are moved in the conveying direction. The web is clamped by the or one pressing element and the holding member with the serrated front face. The web rests on the holding member and the conveying member is positioned above the holding member and remains in a distance to the web. Or the web rests on the conveying member and the holding member is positioned above the conveying member and remains in a distance to the web. This embodiment reduces the risk that the web is damaged by being clamped in a large area.

25 In one embodiment a roller is positioned below or above the wrapping material inlet. This roller can rotate around a roller rotating axis. The conveying member can be moved with respect to the roller between the remote position and the adjacent position. Preferably the roller – or at least one belt deflected by this roller – touches the object in the chamber. The conveying member is moved very close to the wrapping material inlet and therefore very close to the roller when being moved into the adjacent position. The term “very close” means: The movement is performed such that the front edge of the or of at least one pressing element projects and protrudes beyond this roller rotating axis towards the object when the conveying member is in the adjacent position. The distance between this front edge and an object to be wrapped in the chamber is smaller than the distance between the object and the roller rotating axis. Thereby the clamped web is moved close to the object to be wrapped, namely - seen in the conveying direction – beyond the roller rotating axis. The rotated roller helps to inject

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the web into the chamber, e.g. by touching and moving the web or by guiding and deflecting at least one pressing belt which touches and moves the web.

In an alternative embodiment a web feeding roller conveys the web towards the wrapping material inlet. The web being clamped between the or at least one pressing element and the holding member is moved to the web feeding roller. The front edge of the pressing element projects beyond the rotating axis of the web feeding roller. Afterwards the web feeding roller transports the web further towards the wrapping material inlet.

In one embodiment the drive moves the holding member together with the conveying member. Preferably the conveying member is not moved with respect to the holding member while the drive moves then in the conveying direction into the adjacent position, i.e. the conveying member keeps its relative position with respect to the holding member.

Preferably the or at least one pressing element engages through the or one notch and projects beyond that surface of the holding member which is opposite to the holding member surface pointing to the conveying member. This embodiment improves the achieved clamping effect.

In one embodiment every pressing element extends at least temporarily straight along a line which is parallel to the plane in which the holding member extends. As an alternative it is possible that at least one pressing element is mounted and permanently positioned angularly at the conveying member such that this pressing element engages into a notch. In a further embodiment at least one pressing element is bent or curved into the notch and towards the holding member.

In one implementation at least two pressing elements are mounted at the front edge of the conveying member. At least one pressing element is curved towards the holding member. At least one further pressing element is in flush with the conveying member and parallel to the holding member.

The embodiments with the angularly mounted pressing element and that with the curved pressing element help to press a front part of the web through the or through one notch. The embodiment with several pressing elements in different angular positions with respect to the conveying member or improves the clamping effect.

In one embodiment every pressing element has the same width. In a further embodiment one pressing element has a greater width than a further pressing element.

In one embodiment at least one pressing element is made of a resilient material, e.g. implemented as a spring steel or a spring made of plastic. Preferably the resilient pressing element is curved or bent towards the holding member. The resilient pressing element itself tends to bias the web through the or one notch towards the holding member. The pressing element can therefore temporarily touch the object in the chamber or roller or belt adjacent to the wrapping material inlet without the risk of a damage. This embodiment further reduces the risk that the web is not properly injected.

In one embodiment the number of pressing elements is equal to the number of notches. In a further embodiment at least two pressing elements project through the same notch. The web is further wrinkled when being pressed through the notch.

The wrapping material can be a plastic film or a net, e.g.

The invention can be used on board of an agricultural vehicle which is moved over ground and which forms and wraps a bale in a bale forming chamber. The bale serves as the object to be wrapped in a chamber.

The invention can also be used on a wrapping apparatus with a chamber wherein the object to be wrapped is formed outside of the chamber and is inserted or otherwise moved into the chamber.

Preferably the web is injected through the wrapping material inlet into a space between the object and a conveying member which belongs to a border of the chamber. The conveying member can comprise a roller or a conveyor belt. The web is clamped between the object and the conveying member and is pulled.

These and other aspects of the invention and of the preferred embodiment will be even more apparent from the detailed embodiment as described below and will be elucidated in detail there.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows the wrapping material supplying apparatus with the conveying member positioned above the guiding plate in a side view, i.e. in a viewing direction perpendicular to the travelling direction and parallel to the roller rotating axis;

Fig. 2 shows the wrapping material supplying apparatus of Fig. 1 in a top view, i.e. in a viewing direction perpendicular to the plane in which the guiding plate extends, with the conveying member being in the remote position;

Fig. 3 shows the wrapping material supplying apparatus from below, i.e. in a viewing direction opposite to that of Fig. 2;

Fig. 4 shows the wrapping material supplying apparatus in the top view of Fig. 2 with the conveying member being in the adjacent position;

Fig. 5 shows a variation of the embodiment of Fig. 1 to Fig. 4 in the viewing direction of Fig. 3 with a broad central notch 5.C;

5 Fig. 6 shows an alternative second embodiment with the guiding plate positioned above the conveying member.

DETAILED DESCRIPTION OF EMBODIMENT

The following description refers to two alternative embodiments of the invention. In both embodiments the invention is used on board of a vehicle in the form of a round baler. A bale forming means of the baler comprises several driven pressing rollers and optionally at least one pressing belt. This bale forming means provides and partially surrounds a drum-shaped bale forming chamber. A casing comprising a stationary front housing and a pivotal discharge gate (tailgate) surrounds the bale forming means and thereby the provided bale forming chamber.

This round baler is moved over ground in a travelling direction TD. The round baler operates as follows:

- A pick-up unit picks up loose crop material (hay, straw, silage) from the ground.
- A conveying rotor with a sequence of rigid conveying tines conveys the picked-up loose material through a feeding channel towards the drum-shaped bale forming chamber.
- Optionally a cutting assembly cooperates with the conveying rotor and cuts the conveyed loose material while the material is conveyed through the feeding channel.
- The conveyed crop material is injected through a crop material inlet into the bale forming chamber.
- The bale forming means forms under pressure from the injected loose material a round-cylindrical bale and rotates the bale in the bale forming chamber. As further loose material is injected into the bale forming chamber, the rotated bale increases. The bale serves as the object contained in the chamber.
- After the bale has reached a required diameter, the circumferential surface of the bale in the bale forming chamber is wrapped. In the embodiments a web of impermeable plastic sheet is used as the wrapping material. The invention can also be used for further kinds of wrapping material.
- A required number of layers of plastic film are placed around the bale's circumferential surface.

- After the required layer number is placed around the bale, the web is severed at a severing position outside of the bale forming chamber.

- The tailgate is opened. The wrapped bale is ejected out of the bale forming chamber. The tailgate is closed again.

5 – The round baler can form a further bale.

The web of plastic film is taken from a reservoir in the form of a supply reel. An unrolling station rotatably holds the supply reel and is mounted at the stationary front housing above the crop material inlet. The invention can also be used when the reservoir is kept by an unrolling station mounted at the discharge gate.

10 The web is conveyed towards a wrapping material inlet which guides into the bale forming chamber and is positioned above the crop material inlet. The web is injected through this wrapping material inlet into the bale forming chamber. The injected web is clamped between the rotated bale and the bale forming means. After the web is injected into the bale forming chamber and is clamped, the rotated bale and the bale
15 forming means together pull the web and therefore further wrapping material from the supply reel. Preferably the supply reel is decelerated such that the injected web is tensioned.

The wrapping material supplying apparatus according to the embodiments of the invention is positioned outside of the casing and is used for conveying the web
20 towards the wrapping material inlet and for supporting the step of injecting the web into the bale forming chamber. The wrapping material supplying apparatus and the unrolling station for the supply reel are mounted at the stationary front housing.

Fig. 1 to Fig. 4 show a first embodiment of the wrapping material supplying apparatus. Fig. 1 shows the supplying apparatus in a side view, Fig. 2 and Fig. 4 in a
25 top view. Fig. 3 shows the supplying apparatus from below, i.e. in a viewing direction opposite to that of Fig. 2 and Fig. 4. The terms “side view” and “top view” refer to the travelling direction TD of the round baler which is from right to left in Fig. 1 and from top to bottom in Fig. 2 to Fig. 4. In Fig. 2 to Fig. 4 the web of wrapping material is omitted.

A driven pressing roller 1 rotates around the roller rotating axis (center axis) CA which is perpendicular to the drawing plane of Fig. 1 and is in the drawing
30 planes of Fig. 2 to Fig. 4. Preferably several longitudinal ribs are mounted on the shell of the pressing roller 1 and extend parallel to the roller rotating axis CA. In Fig. 3 the roller 1 is omitted for sake of clarity. The crop material inlet (not shown) is below the driven roller 1.

At least one pressing belt 10 is guided around an idler deflecting roller 11 positioned above the driven roller 1 (only shown in Fig. 1). Fig. 1 further shows the respective rotating directions of the rollers 1 and 11. The pressing roller 1 and the or every pressing belt 10 touch the circumferential surface of a round-cylindrical bale B in the bale forming chamber Ch. In the situation shown in Fig. 1 this bale B has reached the required diameter and is to be wrapped. The or every pressing belt 10, the roller 1, and further rollers (not shown) rotate the round-cylindrical bale B in the direction Rot while the bale B is in the drum-shaped bale forming chamber Ch.

A wrapping material inlet In is delimited from below by the pressing roller 1 and from above by a segment of the or every pressing belt 10 guided around the roller 11. A web 21 of wrapping material can be injected through this wrapping material inlet In into the bale forming chamber Ch.

The wrapping material supplying apparatus of the first embodiment (Fig. 1 to Fig. 4) comprises the following parts:

- a guiding plate 2 serving as the holding member with a front edge FE.2,
- a conveying member 3 in the form of a traversal bar with a front edge FE.3,
- a sequence of elongate pressing elements 4.1, 4.2, ... which extends perpendicular to the travelling direction TD and which have front edges FE.4.1, FE.4.2, FE.4.3,
- a sequence of trapezoidal notches 5.1, 5.2, ... which extends perpendicular to the travelling direction TD,
- a deflecting roller 17,
- optionally a biasing device 9, and
- a drive 8 for the guiding plate 2 and the conveying member 3.

The terms “front edge” and “rear edge” refer to the wrapping material inlet In, i.e. the front edge of a part is that edge which points to the wrapping material inlet In.

According to the first embodiment the conveying member 3 and the pressing elements 4.1, 4.2, ... are positioned above the guiding plate 2. The pressing elements 4.1, 4.2, ... are mounted at the front edge FE.3 of the conveying member 3. Every pressing element 4.1, 4.2, ... is positioned vertically above a notch 5.1, 5.2, ... and engages into the notch 5.1, 5.2, ... Preferably every pressing element 4.1, 4.2, ... projects through a notch 5.1, 5.2, ... downwards beyond the lower surface of the guiding plate 2. Fig. 3 shows the width W.2 of the guiding plate 2, the length L.3 and the width W3 of the conveying member 3, the front edge FE.2 of the guiding plate 2, and the respective width W.4.1, W.4.2, ... of the pressing elements 4.1, 4.2, ...

In one embodiment every pressing element 4.1, 4.2, 4.3 is rigidly connected with the conveying member 3. In an alternative embodiment at least one pressing element, preferably every pressing element 4.1, 4.2, 4.3, is rotatably mounted at the conveying member 3. It is possible that a biasing element or an actuator (not shown) can move the pressing elements 4.1, 4.2, ... with respect to the conveying member 3 towards the guiding plate 2.

In one implementation every pressing element 4.1, 4.2, 4.3 extends in a plane perpendicular to the drawing plane of Fig.1 and angular to the drawing planes of Fig. 2 to Fig. 4. In an alternative implementation at least one, preferably every pressing element 4.1, 4.2, ..., is arcuate or curved downwards, i.e. towards the guiding plate 2 and the pressing roller 1. It is possible that a curved pressing element 4.1, 4.2, ... projects through the notch 5.1, 5.2, ... below this pressing element 4.1, 4.2, ... The curved pressing elements 4.1, 4.2, ... and the notches 5.1, 5.2, ... provide a combat-like clamp for the web 21.

It is also possible that at least one pressing element, e.g. the outer pressing elements 4.1 and 4.4., extend in a straight line parallel or angular to the guiding plate 2 and that at least one further pressing element, e.g. the central pressing elements 4.2 and 4.3, is bent or curved towards the guiding plate 2.

Preferably a rubber layer covers the lower surface of every pressing element 4.1, 4.2, ... serving as the contact surface. This rubber layer contacts the web 21 such that a high friction force between the pressing elements 4.1, 4.2, ... and the web 21 occurs. It is possible that the lower surface of the conveying member 3 and/or the upper surface of the guiding plate 2 are also covered by a rubber surface.

The notches 5.1, 5.2, ... below the pressing elements 4.1, 4.2, ... are cut into the front edge FE.2 of the guiding plate 2. Therefore the guiding plate 2 has a serrated front face. In the embodiment every notch 5.1, 5.2 has the shape of a trapeze with the longest edge aligned the front edge FE.2 of the guiding plate 2, i.e. every notch 5.1, 5.2, ... tapers. Fig. 3 shows the respective width W.5.1, W.5.2, ... of the rear edge RE.5.1, RE.5.2, ... of a notch 5.1, 5.2, ...

According to the first embodiment the deflecting roller 17 is mechanically connected at the guiding plate 2 by means of a mechanical link 22. In one implementation the guiding plate 2 extends over the entire length from the notches 5.1, 5.2,... to the deflecting roller 17, i.e. the rear end of the guiding plate 2 is below the deflecting roller 17. In this implementation the mounting position of the link 22 is near the rear edge of the guiding plate 2. In a further implementation two rods 23.1, 23.2 are

mounted at the rear end RE.2 of the guiding plate 2 and extend from the rear end RE.2 to the mechanical link 22, cf. Fig. 5. In this further implementation the link 22 connects the deflecting roller 17 with these rods 23.1, 23.2.

In a preferred implementation of the first embodiment the biasing device 9 biases, e.g. presses, the conveying member 3 and thereby the pressing elements 4.1, 4.2, ... downwards and towards the guiding plate 2. In one implementation the biasing device 9 applies a constant biasing force onto the conveying member 3. In an alternative implementation the applied biasing force varies over time, e.g. in a controlled manner and depending on control inputs from a control unit on board of the baler or by the construction of the biasing device 9.

The biasing device 9 can comprise a pushing spring, a pulling spring, a pneumatic or hydraulic accumulator, or at least one piston-cylinder unit, e.g. At least if the pressing elements 4.1, 4.2, ... are rigidly mounted at the conveying member 3, the pressing elements 4.1, 4.2, ... are also biased downwards.

It is also possible that only the force of gravity biases the conveying member 3 against the guiding plate 2, i.e. no biasing device is provided. It is further possible that a distance between the conveying member 3 and the guiding plate 2 permanently occurs. The web 21 is touched from above and kept on the guiding plate 2 only by the pressing elements 4.1, 4.2, ...but not by the conveying member 3.

According to the first embodiment the conveying member 3 and the guiding plate 2 can together be moved with respect to the wrapping material inlet In between a remote position and an adjacent position. Fig. 1 shows a double arrow which indicates the possible movements. The distance between the wrapping material inlet In and the conveying member 3 being in the remote position is larger than the distance with the conveying member 3 being in the adjacent position.

The pressing elements 4.1, 4.2, ... are moved together with the conveying member 3 between the remote position and the adjacent position. When being moved from the remote position into the adjacent position, the conveying member 3 with the pressing elements 4.1, 4.2, ... and the guiding plate 2 are moved in a conveying direction CD which is horizontal or sloping downwards and which is opposite to the travelling direction TD of the round baler. Fig. 2 shows the conveying member 3 and the pressing elements 4.1, 4.2, ... in the remote position and Fig. 4 in the adjacent position. Fig. 1 shows an intermediate position. The terms "length" and "width" denote a dimension parallel and perpendicular to this conveying direction CD, resp.

In one implementation (third embodiment) the guiding plate 2 is a stationary plate. In a preferred implementation used in the first embodiment, however, the guiding plate 2 is also moveable from a remote position in the conveying direction CD into the adjacent position. The drive 8 is connected with the guiding plate 2 and
 5 moves the guiding plate 2 together with the conveying member 3 and the pressing elements 4.1, 4.2, ... Preferably two guiding rails or further guiding members guide the guiding plate 2. Preferably the conveying member 3 is not moved with respect to the guiding plate 2 while the parts 2, 3, 4.1, 4.2, ... are moved in the conveying direction CD. The web deflecting roller 17 is moved together with the guiding plate 2 from the
 10 remote position to the adjacent position.

In an implementation used in the first embodiment the drive 8 comprises a hydraulic piston-cylinder unit 18 with a piston 16 and a mechanical link 19. The link 19 connects the piston 16 with the guiding plate 2. In the embodiment the piston-cylinder unit 18 and the link 19 are positioned below the guiding plate 2 such that the guiding
 15 plate 2 protects the piston-cylinder unit 18 from debris and rain dropping from above.

In one implementation the piston-cylinder unit 18 is a double-acting actuator, i.e. can move the guiding plate 2 and thereby the conveying member 3 in both directions. In a further implementation a spring (not shown) can move the guiding plate 2 away from the wrapping material inlet In. The piston-cylinder unit 18 can move the
 20 guiding plate 2 against the biasing force of the spring in the conveying direction CD. It is also possible that the drive 8 comprises a shaft and a sprocket wheel or is implemented as an electrical motor.

As can be seen in Fig. 1 the pressing elements 4.1, 4.2, ... engage entirely through the notches 5.1, 5.2, ... The front edges FE.4.1, FE.4.2, ... of the
 25 pressing elements 4.1, 4.2, ... are situated below the notches 5.1, 5.2, ... The web 21 resting on the guiding plate 2 is therefore pressed through the notches 5.1, 5.2, ... downwards. A front portion of the web 21 is wrinkled and is therefore better clamped between the pressing elements 4.1, 4.2, ... and the guiding plate 2. In addition the web 21 is guided around the web deflecting roller 17.

In the first embodiment the web 21 of wrapping material is permanently clamped between the conveying member 3 and the pressing elements 4.1, 4.2, ... on the one side and the guiding plate 2 on the other side, in particular when the web 21 is moved, after the web 21 is injected into the chamber Ch, and after the web 21 is severed. The severing location for the web 21 is positioned between the wrapping
 35 material inlet In on the one side and the conveying member 3 and the guiding plate 2 on

the other side. Preferably the web 21 is severed when the conveying member 3 and the guiding plate 2 are in the remote position. The deflecting roller 17 contributes to tension the web 21 to be severed. The web 21 is permanently clamped and thereby kept between the guiding plate 2 and the conveying member 3. The biased conveying member 3 and/or the arcuate pressing elements 4.1, 4.2, ... press the web 21 from above onto the guiding plate 2 and prevent a significant movement of the web 21 with respect to the guiding plate 2 until the guiding plate 2 and the conveying member 3 reach the adjacent position.

In one implementation the biasing force applied onto the conveying member 3 decreases while the conveying member 3 is moved in the conveying direction CD. This implementation increases the reliability that the rotated bale B and the bale forming means 1, 10 together can grasp the injected web 21 and can pull it against the clamping force of the parts 2, 3, 4.1, 4.2,

While or after the previous bale is wrapped, the guiding plate 2 and the conveying member 3 are moved opposite to the conveying direction CD back into the remote position. While the current bale B increases in the bale forming chamber Ch, the guiding plate 2 and the conveying member 3 are kept in the remote position. They clamp a leading edge of the web 21 between them without moving it. Preferably that portion of the web 21 remains slack which extends from the supply reel – or from the web deflecting roller 17 – to the clamped leading segment. In one implementation this portion remains slack until the web 21 is injected into the chamber Ch.

The event that the bale B in the bale forming chamber Ch reaches the required final diameter or a given smaller diameter threshold triggers the step that the wrapping procedure commences. Preferably a control unit mounted on board of the baler processes signals from a diameter sensor and triggers the drive 8. The triggered drive 8 moves the guiding plate 2 and the conveying member 3 in the conveying direction CD from the remote position (Fig. 2) into the adjacent position (Fig. 4). Thereby the clamped web 21 is conveyed towards the wrapping material inlet In.

In the first embodiment every pressing element 4.1, 4.2, ... engages from above into the corresponding notch 5.1, 5.2, ... The respective width W.4.1, W.4.2, ... of a pressing element 4.1, 4.2, ... is smaller than the respective width W.5.1, W.5.2, ... of the notch 5.1, 5.2, ... below this pressing element 4.1, 4.2, ... Thereby the pressing elements 4.1, 4.2, ... can pass through the notches 5.1, 5.2, ... and press the front portion of the web 21 from above through the notches 5.1, 5.2, ... towards the rotated roller 1. This features increases the clamping effect which is in particular of advantage

in the case that the clamped web 21 has a quite high stiffness value, e.g. is a plastic film, and while the web 21 is moved in the conveying direction CD.

In the first embodiment the pressing elements 4.1, 4.2, ... permanently protrude beyond the guiding plate 2 towards the wrapping material inlet In. Seen in the conveying direction CD the conveying member 3 is behind the front edge FE.2 of the guiding plate 2, cf. in particular Fig. 3.

After the conveying member 3 and the guiding plate 2 together with the clamped web 21 have been moved into the adjacent position, the pressing elements 4.1, 4.2, ... and in one implementation also the guiding plate 2 engage into the wrapping material inlet In. Only a small gap between the front edges FE.4.1, FE.4.2, ... of the pressing elements 4.1, 4.2, ... and the circumferential surface of the bale B occurs. As can be seen in the top view of Fig. 4 the following geometrical relationships occur according to the first embodiment when the conveying member 3 is in the adjacent position:

- The pressing elements 4.1, 4.2, ... project and protrude beyond the roller rotating axis CA into the wrapping material inlet In, i.e. the distance between the pressing elements 4.1, 4.2, ... and the bale B is smaller than the distance between the roller rotating axis CA and the bale B.
- The rear edges RE.5.1, RE.5.2, ... of the notches 5.1, 5.2, ... are behind the roller rotating axis CA, i.e. the distance between the rear edges RE.5.1, RE.5.2 and the bale B is larger than the distance between the roller rotating axis CA and the bale B.
- In the first embodiment the front edge FE.2 of the guiding plate 2 also protrudes beyond the roller rotating axis CA into the wrapping material inlet In.

The pressing elements 4.1, 4.2, ... press the leading segment of the web 21 through the notches 4.1, 4.2, ... onto the circumferential surface of the roller 1. The rotated roller 1 moves a leading portion of the web 21 into the space between the bale B and the bale forming means.

In the first embodiment the number of notches 5.1, 5.2, ... is equal to the number of pressing elements 4.1, 4.2, ..., cf. Fig. 2 to Fig. 4. Fig. 5 shows a variation of the first embodiment in the viewing direction of Fig. 2. In place of two central notches 5.2, 5.3 a broader central notch 5.C is provided. This central notch 5.C has the width W.5.C. Both pressing elements 4.2 and 4.3 above the central notch 5.C engage from above into and through this central notch 5.C.

In the first embodiment according to Fig. 1 to Fig. 4 as well as in the variation of Fig. 5 the guiding plate 2 is positioned below the conveying member 3. The

pressing elements 4.1, 4.2, ... press the web 21 downwards through the notches 5.1, 5.2, ... Fig. 6 shows an alternative second embodiment in which the guiding plate 2 is positioned above the conveying member 3. Therefore the pressing elements 4.1, 4.2, ... engage from below into the notches 5.1, 5.2, ... Only the differences to the first embodiment are described.

According to the shown implementation of the second embodiment the guiding plate 2 only extends from the notches 5.1, 5.2, ... to the biasing device 9. Two parallel rods 23.1, 23.2 connect the guiding plate 2 with the link 22 for the deflecting roller 17. This implementation with a shorter guiding plate 2 can also be used in the first embodiment.

This second embodiment has the advantage that no debris can be collected on the guiding plate 2 and can cause a jam or a further malfunction. Debris drops through the rods 23.1, 23.2. In addition the second embodiment more often yields the desired situation that the web 21 touches the bale B after the conveying member 3 is moved in the adjacent position. The rotated bale B injects the web 21 in the space between the bale B and the roller 1.

In a third embodiment the guiding plate 2 is stationary. The drive 8 only moves the conveying member 3 with the pressing elements 4.1, 4.2, ... Also in the third embodiment the conveying member 3 can be positioned above or below the guiding plate 2. Preferably a distance between the guiding plate 2 and the conveying member 3 occurs. Every or at least one pressing element 4.1, 4.2, ... touches the guiding plate 2 and presses the front portion of the web 21 against the guiding plate 2 while the conveying member 3 is in the remote position. The web 21 is moved with respect to the guiding plate 2 while the drive 8 moves the conveying member 3 with respect to the stationary guiding plate 2 in the conveying direction CD. The pressing elements 4.1, 4.2, ... shift the web 21 over the guiding plate 2. Shortly before the conveying member 3 reaches the adjacent position, the pressing elements 4.1, 4.2, ... press the front portion of the web 21 through the notches 5.1, 5.2, ...

Reference signs used in the claims will not limit the scope of the claimed invention. The term "comprises" does not exclude other elements or steps. The articles "a", "an", and "one" do not exclude a plurality of elements. Features specified in several depending claims may be combined in an advantageous manner.

LIST OF REFERENCE SIGNS

1	driven pressing roller below the wrapping material inlet In, has ribs, can rotate around the axis CA
2	guiding plate with the front edge FE.2, has the width W.2 and the rear edge RE.2, serves as the holding member
3	conveying member with the front edge FE.3, has the width W.3 and the length L.3
4.1, 4.2, ...	pressing elements mounted at the front edge FE.3 of the conveying member 3
5.1, 5.2, ...	notches cut in the guiding plate 2, have the width W.5.1, W.5.2, ... and the rear edges RE.5.1, RE.5.2, ...
5.C	broad central notch through which the pressing elements 4.2, 4.3 engage
8	drive for moving the guiding plate 2 and the conveying member 3 in the conveying direction CD, comprises the piston-cylinder unit 18 and the mechanical link 19
9	biasing device for biasing the conveying member 3 against the guiding plate 2, positioned between the guiding plate 2 and the conveying member 3
10	pressing belts guided around the deflecting roller 11, delimit the wrapping material inlet In from above
11	deflecting roller for the belts 10, positioned above the wrapping material inlet In
16	piston of the piston-cylinder unit 18
17	deflecting roller for the web 21, connected with the guiding plate 2 by means of the link 22
18	piston-cylinder unit for moving the guiding plate 2 and the conveying member 3, belongs to the drive 8
19	mechanical link between the piston-cylinder unit 18 and the guiding plate 2, belongs to the drive 8
20.1, 20.2, ...	longitudinal ribs on the shell of the pressing roller 1
21	web in the form of a plastic film, to be injected into the chamber Ch
22	mechanical link, mounts the deflecting roller 17 at the guiding plate 2 or at the rods 23.1, 23.2
23.1, 23.2	parallel rods, extends from the rear end RE.2 of the guiding plate 2 towards the deflecting roller 17
B	bale in the bale forming chamber Ch, rotated in the direction Rot, serves as the object to be wrapped
CA	center axis and rotating axis of the pressing roller 1
CD	conveying direction in which the guiding plate 2 and the conveying member 3 convey the web 21 from the remote position towards the wrapping material inlet In
Ch	bale forming chamber in which the bale B is wrapped

FE.2	front edge of the guiding plate 2
FE.3	front edge of the conveying member 3
FE.4.1, FE.4.2, ...	front edges of the pressing elements 4.1, 4.2, ...
In	wrapping material inlet between the belts 10 and the roller 1
L.3	length of the conveying member 3
RE.2	rear edge of the guiding plate 2
RE.5.1, RE.5.2	rear edges of the notches 5.1, 5.2, ... which are cut in the guiding plate 2
Rot	rotating direction of the bale B
TD	travelling direction of the round baler
W.2	width of the guiding plate 2
W.4.1, W.4.2, ...	width of the pressing elements 4.1, 4.2, ...
W.5.1, W.5.2, ...	width of the notches 5.1, 5.2, ...

CONCLUSIES

1. Inrichting voor het toevoeren van een web (21) van wikkelmateriaal naar een kamer (Ch),
- 5 waarbij de kamer (Ch) is ingericht om een object (B) te bevatten dat gewikkeld moet worden in het toegevoerde web (21),
 waarbij een wikkelmateriaal-invoerkanaal (In) naar de kamer (Ch) leidt,
 waarbij de toevoerinrichting voor wikkelmateriaal
 - een houder (2) met een voorrand (FE.2) wijzend in de richting van het
 - 10 wikkelmateriaal-invoerkanaal (In),
 - een transporteur (3) met een voorrand (FE.3) wijzend in de richting van het wikkelmateriaal-invoerkanaal (In), en
 - een aandrijving (8) om de transporteur (3) te verplaatsen,
 waarbij de transporteur (3)
 - 15 – is gepositioneerd boven of beneden de houder (2) en
 - beweegbaar is ten opzichte van het wikkelmateriaal-invoerkanaal (In) tussen een afgelegen positie en een naburige positie omvat,
 waarbij de aandrijving (8) is ingericht om de transporteur (3) te verplaatsen in een transportrichting (CD) naar de naburige positie, en
 - 20 waarbij de toevoerinrichting voor wikkelmateriaal is ingericht
 - om een web (21) van wikkelmateriaal gepositioneerd tussen de houder (2) en de transporteur (3) vast te klemmen,
 - om het vastgeklemd web (21) te verplaatsen in de richting van het wikkelmateriaal-invoerkanaal (In), en
 - 25 – om het verplaatste web (21) door het wikkelmateriaal-invoerkanaal (In) in te voeren in de kamer (Ch),**met het kenmerk, dat**
 de toevoerinrichting voor wikkelmateriaal verder tenminste omvat één aandrukelement (4.1, 4.2, ...) welke
 - 30 – is gemonteerd op de voorrand (FE.3) van de transporteur (3) en
 - omvat een voorrand (FE.4.1, FE.4.2, ...) wijzend in de richting van het wikkelmateriaal-invoerkanaal (In)
 waarbij tenminste één inkeping (5.1, 5.2, ...)
 - is uitgesneden in de voorrand (FE.2) van de houder (2) en
 - 35 – is gepositioneerd verticaal onder of boven het of één aandrukelement (4.1,

4.2, ...),

waarbij

– de breedte (W.4.1, W.4.2, ...) van het of elk aandrukelement (4.1,4.2, ...) kleiner is dan de breedte (W.5.1, W.5.2, ...) van de inkeping (5.1, 5.2, ...) verticaal onder of

5 boven dit aandrukelement (4.1, 4.2, ...) en

– de breedte (W.5.1, W.5.2, ...) van de of elke inkeping (5.1, 5.2, ...) kleiner is dan de breedte (W.2) van de houder (2),

waarbij de breedte de grootste dimensie in een richting haaks op de transportrichting (CD) is, en

10 waarbij het of tenminste één aandrukelement (4.1,4.2, ...) ingrijpt in de inkeping (5.1, 5.2, ...) gepositioneerd verticaal onder of boven dit aandrukelement (4.1, 4.2, ...) tenminste wanneer de transporteur (3) in de naburige positie is,

daardoor wordt een deel van een web (21) dat gepositioneerd is tussen de houder (2) en de transporteur (3) door de inkeping (5.1, 5.2, ...) gedrukt en

15 wordt het web (21) vastgeklemd tussen de houder (2) en het of tenminste één aandrukelement (4.1, 4.2, ...).

2. Inrichting volgens conclusie 1,

met het kenmerk, dat

een rol (1)

20 – is gepositioneerd onder of boven het wikkelmateriaal-invoerkanaal (In) en

– draaibaar is rond een rolrotatie-as (CA),

waarbij de voorrand (FE.4.1, FE.4.2, ...) van het of tenminste één aandrukelement (4.1,4.2, ...) uitsteekt voorbij de rolrotatie-as (CA) in het wikkelmateriaal-invoerkanaal (In) in de richting van de kamer (Ch)

25 als de transporteur (3) in de naburige positie is.

3. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

de voorrand (FE.4.1, FE.4.2, ...) van het of tenminste één aandrukelement (4.1,4.2, ...) uitsteekt voorbij de voorrand (FE.2) van de houder (2) in de richting van de kamer (Ch).

30 4. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

de of elke inkeping (5.1, 5.2, ...) een achterrand (RE.5.1, RE.5.2, ...) omvat welke van het wikkelmateriaal-invoerkanaal (In) af gericht is,

waarbij

– de afstand tussen de achterrاند (RE.5.1, RE.5.2, ...) van de inkeping (5.1, 5.2, ...)

en het wikkelmateriaal-invoerkanal (In) groter is dan

– de afstand tussen de voorrand (FE.3) van de transporteur (3) en het wikkelmateriaal-invoerkanal (In).

5. Inrichting volgens conclusie 4,

met het kenmerk, dat

een rol (1)

– is gepositioneerd onder of boven het wikkelmateriaal-invoerkanal (In) en

– draaibaar is rond een rolrotatie-as (CA),

waarbij

– de transporteur (3) beweegbaar is ten opzichte van de rol (1),

– de afstand tussen de achterrاند (RE.5.1, RE.5.2, ...) van de inkeping (5.1, 5.2, ...) en het wikkelmateriaal-invoerkanal (In) groter is dan

– de afstand tussen de rolrotatie-as (CA) en het wikkelmateriaal-invoerkanal (In) tenminste wanneer de transporteur (3) in de naburige positie is.

6. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

bezien in de transportrichting (CD) het of tenminste één aandrukelement (4.1,4.2, ...)

schuin naar boven of beneden loopt ten opzichte van de transporteur (3) in de richting van de houder (2).

7. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

het of tenminste één aandrukelement (4.1, 4.2, ...) gekromd is in de richting van de houder (2).

8. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

de breedte (W.3) van de transporteur (3) groter is dan de lengte (L.3) van de transporteur (3),

waarbij de lengte de dimensie is in de transportrichting (CD).

9. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

het of tenminste één aandrukelement (4.1,4.2, ...) een contactoppervlak omvat dat in de richting van de houder (2) gericht is,

waarbij het contactoppervlak tenminste gedeeltelijk bedekt is met een laag gemaakt van rubber en

waarbij de rubberen laag is ingericht om contact te maken met een web (21) van wikkelmateriaal.

- 5 10. Inrichting volgens één van de voorgaande conclusies,
met het kenmerk, dat
 het of tenminste één aandrukelement (4.1,4.2, ...) star gemonteerd is op de transporteur (3).

- 10 11. Inrichting volgens één van de voorgaande conclusies,
met het kenmerk, dat
 het of tenminste één aandrukelement (4.1, 4.2, ...) zwenkbaar is ten opzichte van de transporteur (3),
 waarbij een voorspanelement het zwenkbare aandrukelement (4.1, 4.2, ...) in de richting van de houder (2) neigt voor te spannen.

- 15 12. Inrichting volgens één van de voorgaande conclusies,
met het kenmerk, dat
 het of tenminste één aandrukelement (4.1,4.2, ...) gemaakt is van een veerkrachtig materiaal.

- 20 13. Inrichting volgens één van de voorgaande conclusies,
met het kenmerk, dat
 tenminste twee aandrukelementen (4.1,4.2, ...) zijn gemonteerd op de voorrand (FE.3) van de transporteur (3),
 waarbij de aandrukelementen (4.1,4.2, ...) zijn ingericht in een reeks aandrukkers haaks op de transportrichting (CD) en
 25 waarbij elk aandrukelement (4.1,4.2, ...) ingrijpt van boven of beneden in de of één inkeping (5.1, 5.2, ...) gepositioneerd verticaal onder of boven dit aandrukelement (4.1, 4.2, ...)

tenminste wanneer de transporteur (3) in de naburige positie is,

14. Inrichting volgens conclusie 13,
 30 **met het kenmerk**, dat
 tenminste twee inkepingen (5.1, 5.2, ...) uitgesneden zijn in de voorrand (FE.2) van de houder (2),
 waarbij de inkepingen (5.1, 5.2, ...) zijn ingericht in een reeks inkepingen haaks op de transportrichting (CD) en

waarbij de aandrukelementen (4.1, 4.2, ...) zijn ingericht om een deel van het web (21) door tenminste twee inkepingen (5.1, 5.2, ...) heen te drukken.

15. Inrichting volgens conclusie 13 of conclusie 14,

met het kenmerk, dat

- 5 tenminste twee aandrukelementen (4.2, 4.3) ingrijpen van boven of beneden in de zelfde inkeping (5.C) uitgesneden in de voorrand (FE.2) van de houder (2), waarbij de som van de breedtes (W.4.2, W.4.3) van deze aandrukelementen (4.2, 4.3) kleiner is dan de breedte (W.5.C) van deze inkeping (5.C).

16. Inrichting volgens één van de voorgaande conclusies,

10 **met het kenmerk**, dat

de aandrijving (8) is ingericht om de houder (2) gezamenlijk met de transporteur (3) van de afgelegen positie naar de naburige positie te verplaatsen.

17. Inrichting volgens conclusie 16,

met het kenmerk, dat

- 15 de toevoerinrichting voor wikkelmateriaal is ingericht zodat de houder (2) zijn positie behoudt ten opzichte van de transporteur (3) terwijl de aandrijving (8) de houder (2) en de transporteur (3) naar de naburige positie verplaatst.

18. Inrichting volgens één van de voorgaande conclusies,

20 **met het kenmerk**, dat

de toevoerinrichting voor wikkelmateriaal een ombuiger (17) omvat welke mechanisch verbonden is met de houder (2) en/of met de transporteur (3), waarbij de ombuiger (17) beweegbaar is tezamen met de transporteur (3) tussen de afgelegen positie en de naburige positie en

- 25 waarbij de ombuiger (17) is ingericht om een web (21) van wikkelmateriaal om te buigen welke wordt vastgeklemd tussen de houder (2) en de transporteur (3).

19. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

de houder (2) een stilstaande plaat is en

- 30 de aandrijving (8) is ingericht om de transporteur (3) te verplaatsen ten opzichte van de houder (2) naar de naburige positie.

20. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

de toevoerinrichting verder een voorspaninrichting (9) omvat voor het voorspannen van
35 de transporteur (3) tegen de houder (2).

21. Inrichting volgens conclusie 20,

met het kenmerk, dat

de voorspaninrichting (9) is ingericht om een variabele voorspankracht uit te oefenen op de transporteur (3),

5 waarbij

– de voorspankracht uitgeoefend op de transporteur (3) groter is terwijl deze in de afgelegen positie is dan

– de voorspankracht uitgeoefend op de transporteur (3) terwijl deze in de naburige positie is.

10 22. Inrichting volgens één van de voorgaande conclusies,

met het kenmerk, dat

de transporteur (3) is aangebracht met een afstand tot de houder (2),

waarbij de afstand groter is dan de dikte van het web (21) van wikkelmateriaal.

23. Vorm- en wikkelinrichting voor een object omvattende

15 een objectvormingsmiddel welk een kamer (Ch) voorziet naar welke een wikkelmateriaal-invoerkanaal (In) leidt en

een toevoerinrichting voor wikkelmateriaal volgens één van de voorgaande conclusies, waarbij het objectvormingsmiddel is ingericht om een object (B) te vormen in de kamer (Ch),

20 waarbij de toevoerinrichting voor wikkelmateriaal is ingericht om een web (21) van wikkelmateriaal in te voeren door het wikkelmateriaal-invoerkanaal (In) de kamer (Ch) in, en

waarbij de object vorm- en wikkelinrichting is ingericht om tenminste één oppervlak van het object (B) te wikkelen in het ingevoerde web (21) terwijl het object (B) in de kamer (Ch) is.

24. Voertuig aangepast om te bewegen over de grond en omvattend een vorm- en wikkelinrichting voor een object volgens conclusie 23.

25. Methode voor het toevoeren van wikkelmateriaal naar een kamer (Ch),

waarbij een object (B) dat gewikkeld moet worden in het toegevoerde web (21) in de kamer (Ch) wordt gehouden,

30 waarbij een wikkelmateriaal-invoerkanaal (In) de kamer (Ch) in leidt,

waarbij de methode wordt uitgevoerd met behulp van een toevoerinrichting voor wikkelmateriaal omvattende

– een houder (2) met een voorrand (FE.2) wijzend in de richting van het wikkelmateriaal-invoerkanaal (In),

35

- een transporteur (3) met een voorrand (FE.3) wijzend in de richting van het wikkelmateriaal-invoerkanaal (In), en

- een aandrijving (8) van de transporteur (3),

waarbij de transporteur (3)

5 – is gepositioneerd boven of beneden de houder (2) en

- beweegbaar is ten opzichte van het wikkelmateriaal-invoerkanaal (In) tussen een afgelegen positie en een naburige positie,

waarbij de methode de stappen omvat dat

10 – een web (21) van wikkelmateriaal is gepositioneerd tussen de houder (2) en de transporteur (3) en wordt vastgeklemd,

- de aandrijving (8) verplaatst de transporteur (3) ten opzichte van het wikkelmateriaal-invoerkanaal (In) van een afgelegen positie in een transportrichting (CD) naar de naburige positie,

15 – het vastgeklemd web (21) wordt verplaatst in de richting van het wikkelmateriaal-invoerkanaal (In), en

- het verplaatste web (21) wordt ingevoerd door het wikkelmateriaal-invoerkanaal (In) in de kamer (Ch),

met het kenmerk, dat

20 de toevoerinrichting voor wikkelmateriaal verder tenminste één aandrukelement (4.1,4.2, ...) omvat welke

- is gemonteerd op de voorrand (FE.3) van de transporteur (3) en

- omvat een voorrand (FE.4.1, FE.4.2, ...) wijzend in de richting van het wikkelmateriaal-invoerkanaal (In) en

tenminste één inkeping (5.1, 5.2, ...)

25 – is uitgesneden in de voorrand (FE.2) van de houder (2) en

- is gepositioneerd verticaal onder of boven de of één aandrukelement (4.1, 4.2, ...),

waarbij de methode omvat de verdere stap dat

het of tenminste één aandrukelement (4.1,4.2, ...) ingrijpt in de inkeping (5.1, 5.2, ...)

30 gepositioneerd verticaal onder of boven dit aandrukelement (4.1, 4.2, ...) tenminste nadat de transporteur (3) is verplaatst naar de naburige positie

zodanig dat een deel van het web (21) door het of tenminste één aandrukelement (4.1, 4.2, ...) door de inkeping (5.1, 5.2, ...) heen wordt gedrukt,

daardoor zorgdragend dat het web (21) vastgeklemd is tussen de houder (2) en het of

35 tenminste één aandrukelement (4.1, 4.2, ...).

26. Methode volgens conclusie 25,

met het kenmerk, dat

een rol (1)

- is gepositioneerd onder of boven het wikkelmateriaal-invoerkanaal (In) en

5 – draaibaar is rond een rolrotatie-as (CA),

waarbij de stap dat de aandrijving (8) de transporteur verplaatst (3) naar de naburige positie veroorzaakt dat

- de transporteur (3) is verplaatst ten opzichte van de rol (1) en

- de voorrand (FE.4.1, FE.4.2, ...) van het of tenminste één aandrukelement

10 (4.1,4.2, ...) uitsteekt voorbij de rolrotatie-as (CA) in het wikkelmateriaal-invoerkanaal (In) en in de richting van de kamer (Ch).

27. Methode volgens conclusie 25 of conclusie 26,

met het kenmerk, dat

de toevoerinrichting verder een voorspaninrichting (9) omvat,

15 waarbij de stap dat het web (21) is geklemd tussen de houder (2) en de transporteur (3) de stap omvat dat

de voorspaninrichting (9) de transporteur (3) voorspant in de richting van de houder (2) zodanig dat het web (21) tenminste tijdelijk gesandwiched is tussen de houder (2) en de transporteur (3) en

20 waarbij de stap dat de aandrijving (8) de transporteur (3) verplaatst de stap omvat dat de voorspankracht die de voorspaninrichting (9) uitoefent op de transporteur (3) vermindert wanneer de transporteur (3) wordt verplaatst in de transportrichting (CD).

28. Methode om een object (B) te vormen en te wikkelen

door gebruik te maken van een objectvormingsmiddel welk een een kamer (Ch) voorziet

25 waar een wikkelmateriaal-invoerkanaal (In) in leidt,

waarbij de methode de stappen omvat dat

- het objectvormingsmiddel het object (B) vormt in de voorziene kamer (Ch),

- een web (21) van wikkelmateriaal wordt toegevoerd naar de kamer (Ch) door gebruik te maken van een methode volgens één van de conclusies 11 tot en met 27, en

30 – tenminste één oppervlak van het object (B) in de kamer (Ch) wordt gewikkeld in het web (21) dat ingevoerd wordt in de kamer (Ch) terwijl het object (B) in de kamer (Ch) is.

FIG. 1

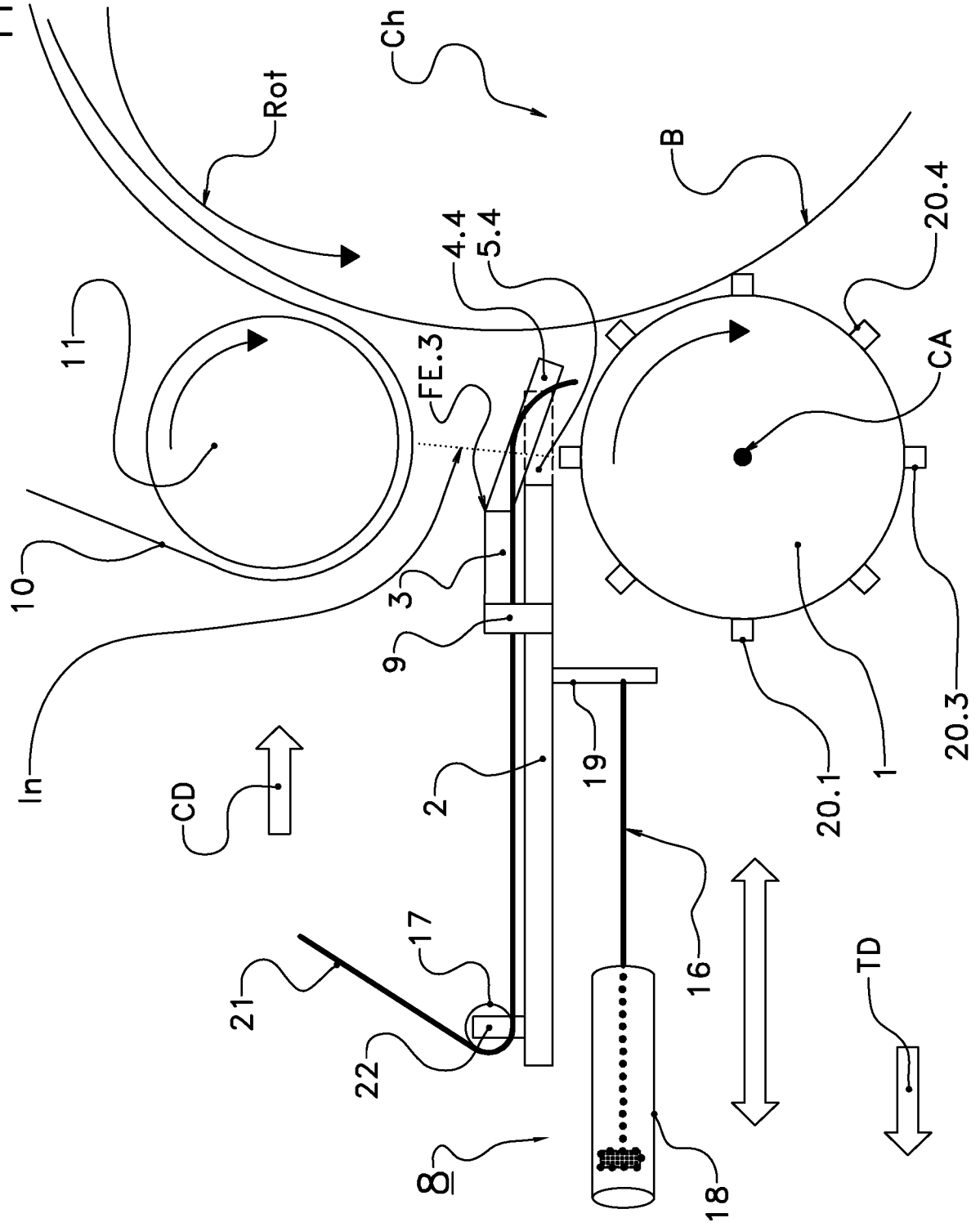


FIG. 2

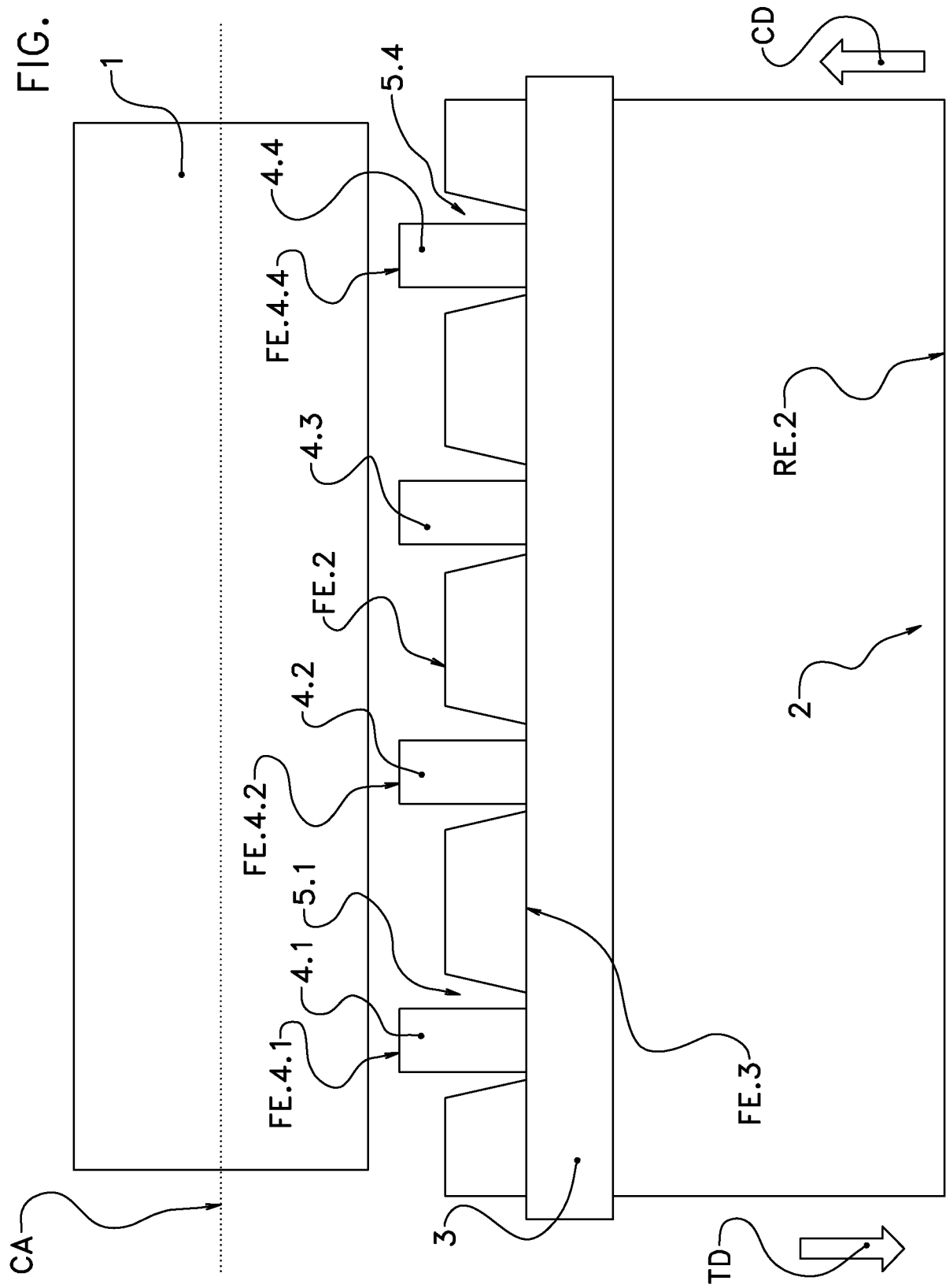


FIG. 3

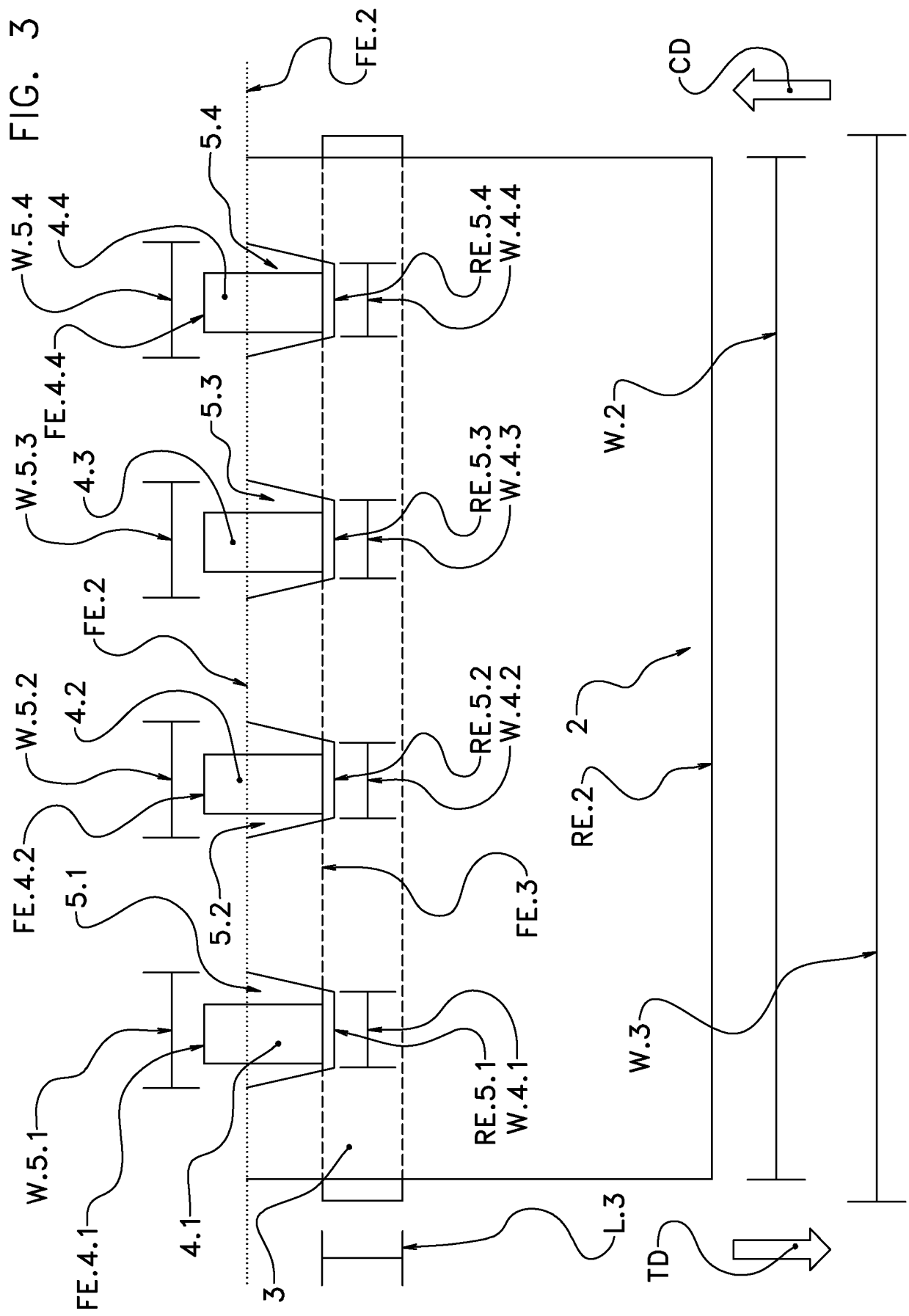


FIG. 4

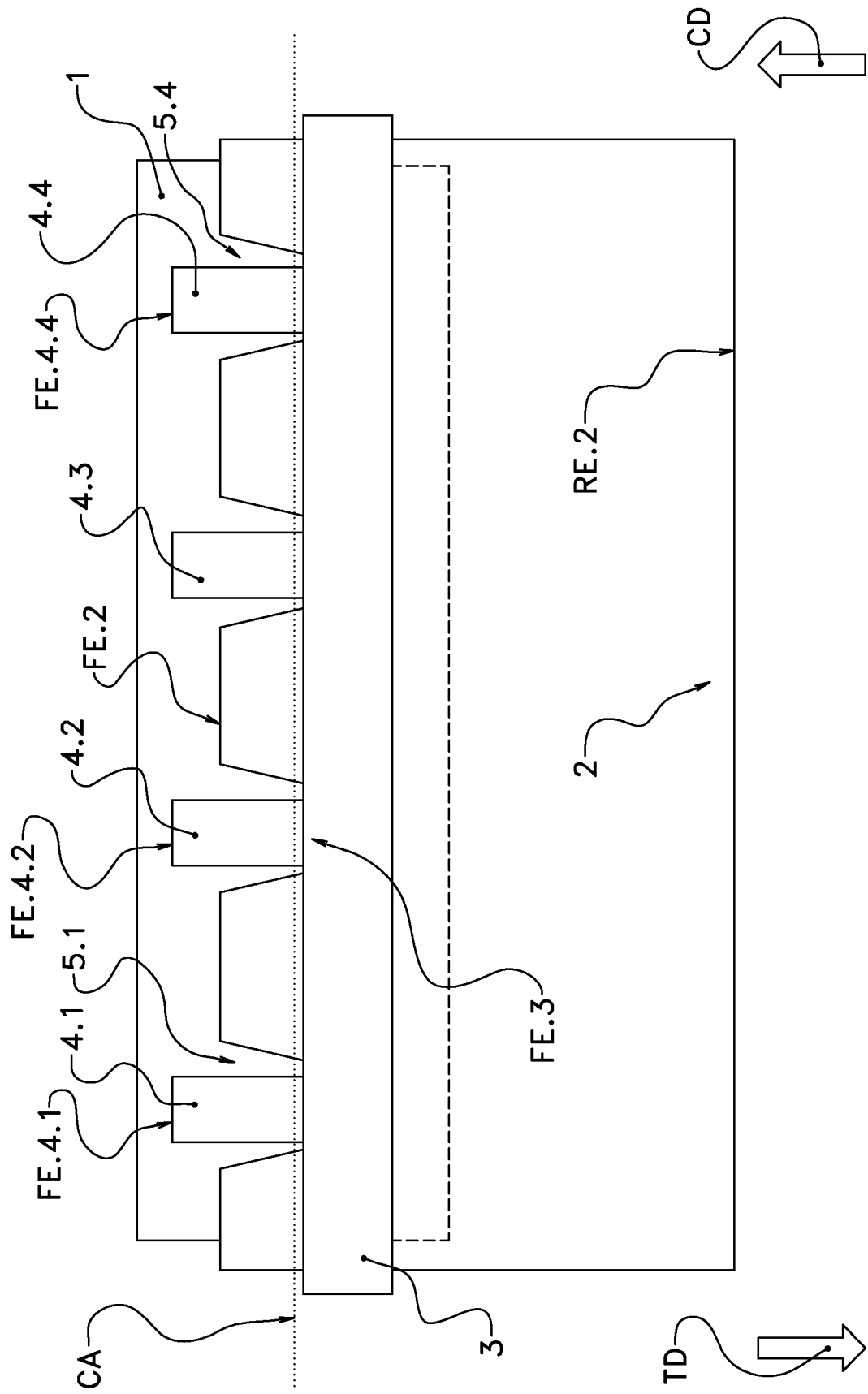
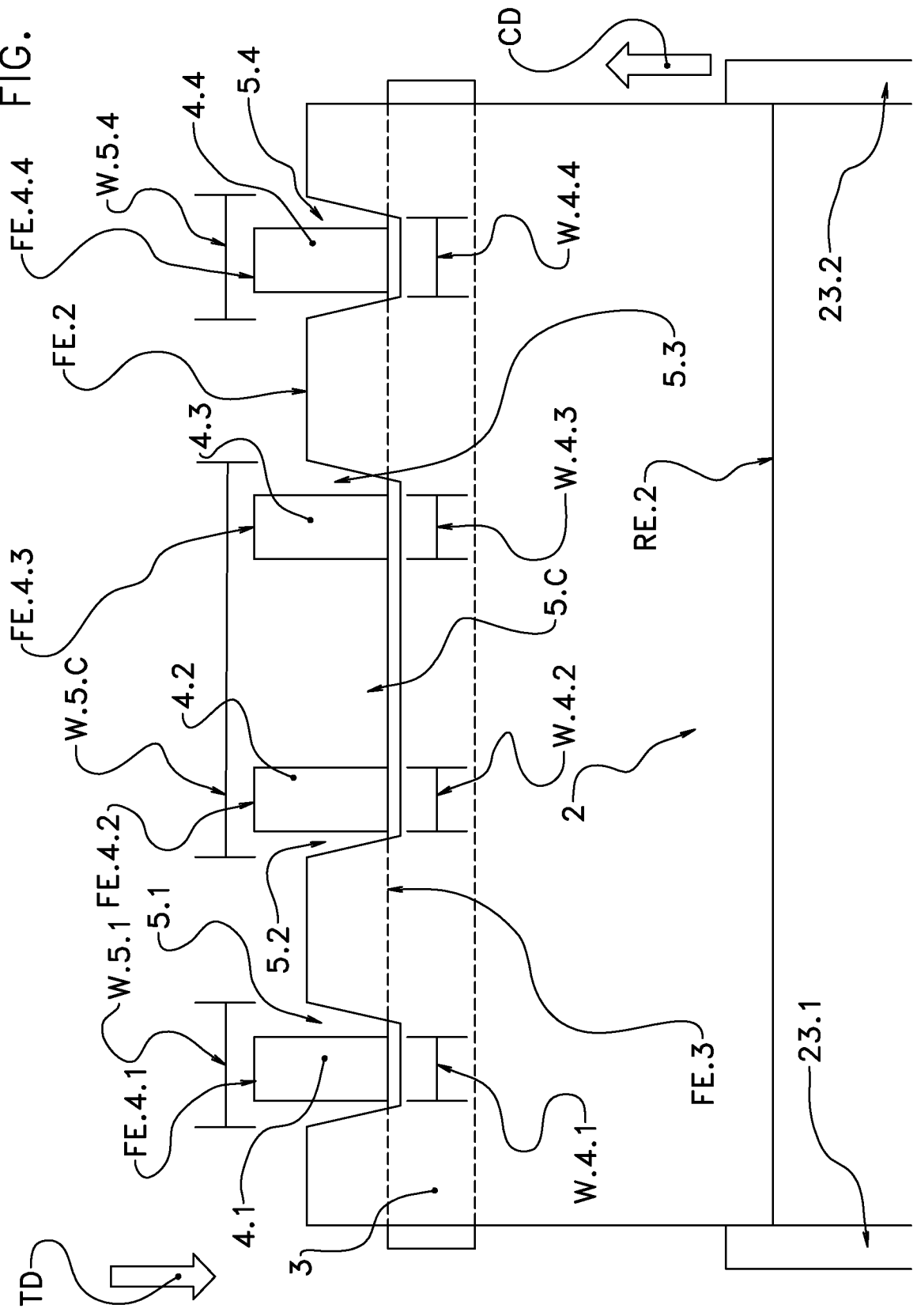


FIG. 5



ABSTRACT

The invention refers to a wrapping material supplying apparatus and device which supplies a web (21) of wrapping material to a chamber (Ch) which contains an object (B) to be wrapped. The web (21) is clamped between a conveying member (3) and a holding member (2) and is moved towards a wrapping material inlet (In). A pressing element (4.4) is mounted at the front edge (FE.3) of the conveying member (3) and engages into a notch (5.4) which is cut into the front edge of the holding member (2). The pressing element (4.4) presses the web (21) through the notch (5.4).

(Fig. 1)

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE		KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE	
		D4911/NLP	
Nederlands aanvraag nr.		Indieningsdatum	
2016624		18-04-2016	
		Ingeroepen voorrangsdatum	
Aanvrager (Naam)			
Forage Innovations B.V.			
Datum van het verzoek voor een onderzoek van internationaal type		Door de instantie voor internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr.	
17-09-2016		SN67303	
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)			
Volgens de internationale classificatie (IPC)			
A01F15/07			
II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK			
Onderzochte minimumdocumentatie			
Classificatiesysteem		Classificatiesymbolen	
IPC		A01F	
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen			
III.	☐	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)	
IV.	☐	GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)	

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2016624

A. CLASSIFICATIE VAN HET ONDERWERP
INV. A01F15/07
ADD.

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHETE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)

A01F

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)

EPO-Internal, WPI Data

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie	Geïsoleerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
A	EP 2 769 616 A2 (FORAGE INNOVATIONS BV [NL]) 27 augustus 2014 (2014-08-27) * alinea's [0084] - [0125]; figuren 1-5 *	1-28
A,D	US 2009/272072 A1 (PAILLET FREDERIC [FR] ET AL) 5 november 2009 (2009-11-05) in de aanvraag genoemd * alinea's [0027] - [0043]; figuren 1-7 *	1-28
A,D	US 7 513 088 B2 (VANDE RYSE JOHAN A E [BE]) 7 april 2009 (2009-04-07) in de aanvraag genoemd * kolom 5, regel 7 - kolom 7, regel 38; figuren 1-8 *	1-28



Verdere documenten worden vermeld in het vervolg van vak C.



Leden van dezelfde octrooifamilie zijn vermeld in een bijlage

* Speciale categorieën van aangehaalde documenten

"A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

"D" in de octrooiaanvraag vermeld

"E" eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

"L" om andere redenen vermelde literatuur

"O" niet-schriftelijke stand van de techniek

"P" tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur

"T" na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

"X" de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

"Y" de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geïsoleerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

"Z" lid van dezelfde octrooifamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

23 november 2016

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Naam en adres van de instantie

European Patent Office, P.B. 5818 Patentlaan 2
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Fax: (+31-70) 340-3016

De bevoegde ambtenaar

Herijgers, Jan

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2016624

C. (Vervolg). VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
A,D	US 5 036 642 A (UNDERHILL KENNETH R [US]) 6 augustus 1991 (1991-08-06) in de aanvraag genoemd * het gehele document *	1-28
A	DE 10 2004 023701 A1 (KRONE BERNHARD GMBH MASCHF [DE]) 15 december 2005 (2005-12-15) * het gehele document *	1-28
A	DE 36 17 155 A1 (ZWEEGERS & ZONEN P J [NL]) 26 november 1987 (1987-11-26) * het gehele document *	1-28

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2016624

In het rapport genoemd octrooigescrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie	
EP 2769616	A2	27-08-2014	EP 2769616 A2	27-08-2014
		NL 2010351 C	25-08-2014	
US 2009272072	A1	05-11-2009	AT 521226 T	15-09-2011
			EP 2113165 A1	04-11-2009
			US 2009272072 A1	05-11-2009
US 7513088	B2	07-04-2009	EP 1716745 A1	02-11-2006
			GB 2425526 A	01-11-2006
			US 2006242931 A1	02-11-2006
			US 2008092756 A1	24-04-2008
US 5036642	A	06-08-1991	CA 2028022 A1	12-06-1991
			US 5036642 A	06-08-1991
DE 102004023701	A1	15-12-2005	GEEN	
DE 3617155	A1	26-11-1987	GEEN	

WRITTEN OPINION

File No. SN67303	Filing date (day/month/year) 18.04.2016	Priority date (day/month/year)	Application No. NL2016624
International Patent Classification (IPC) INV. A01F15/07			
Applicant Forage Innovations B.V.			

This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the application
- ☐ Box No. VIII Certain observations on the application

	Examiner Herijgers, Jan
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WRITTEN OPINION

Application number

NL2016624

Box No. I Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☐ contained in the application as filed.
 - ☐ filed together with the application in electronic form.
 - ☐ furnished subsequently for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	1-28
	No: Claims	
Inventive step	Yes: Claims	1-28
	No: Claims	
Industrial applicability	Yes: Claims	1-28
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document:

D1 EP 2 769 616 A2 (FORAGE INNOVATIONS BV [NL]) 27 augustus 2014
(2014-08-27)

D1 is regarded as being the prior art closest to the subject-matter of claim 1, and discloses (references apply to this document):

Inrichting voor het toevoeren van een web van wikkelmateriaal naar een kamer, waarbij de kamer is ingericht om een object (B) te bevatten dat gewikkeld moet worden in het toegevoerde web, waarbij een wikkelmateriaal-invoerkanaal (N1) naar de kamer leidt, waarbij de toevoerinrichting voor wikkelmateriaal

- een houder (plate PI.CU) met een voorrand (CLE) wijzend in de richting van het wikkelmateriaal-invoerkanaal,
- een transporteur (plate PU) met een voorrand (PLE) wijzend in de richting van het wikkelmateriaal-invoerkanaal, en
- een aandrijving (Dr.PU) om de transporteur te verplaatsen, waarbij de transporteur
- is gepositioneerd boven of beneden de houder en
- beweegbaar is ten opzichte van het wikkelmateriaal-invoerkanaal tussen een afgelegen positie (Fig.1) en een naburige positie (Fig.5) omvat, waarbij de aandrijving is ingericht om de transporteur te verplaatsen in een transportrichting naar de naburige positie, en waarbij de toevoerinrichting voor wikkelmateriaal is ingericht
- om een web van wikkelmateriaal gepositioneerd tussen de houder en de transporteur vast te klemmen (see § 93),
- om het vastgeklemd web te verplaatsen in de richting van het wikkelmateriaal-invoerkanaal, en
- om het verplaatste web door het wikkelmateriaal-invoerkanaal in te voeren in de kamer.

The subject-matter of claim 1 therefore differs from this known device in that :

dat de toevoerinrichting voor wikkelmateriaal verder tenminste omvat één aandrukelement welke

- is gemonteerd op de voorrand (FE.3) van de transporteur en
- omvat een voorrand (FE.4.1, FE.4.2, ...) wijzend in de richting van het wikkelmateriaal-invoerkanaal (In) waarbij tenminste één inkeping
- is uitgesneden in de voorrand (FE.2) van de houder en
- is gepositioneerd verticaal onder of boven het of één aandrukelement (4.1,

,...), waarbij

- de breedte (W.4.1, W.4.2, ...) van het of elk aandrukelement kleiner is dan de breedte (W.5.1, W.5.2, ...) van de inkeping verticaal onder of boven dit aandrukelement en
- de breedte (W.5.1, W.5.2, ...) van de of elke inkeping kleiner is dan de breedte (W.2) van de houder, waarbij de breedte de grootste dimensie in een richting haaks op de transportrichting (CD) is, en waarbij het of tenminste één aandrukelement ingrijpt in de inkeping gepositioneerd verticaal onder of boven dit aandrukelement tenminste wanneer de transporteur in de naburige positie is, daardoor wordt een deel van een web dat gepositioneerd is tussen de houder en de transporteur door de inkeping gedrukt en wordt het web vastgeklemd tussen de houder en het of tenminste één aandrukelement,

and is therefore new.

The problem to be solved by the present invention may be regarded as to assure a proper injection of the web into the chamber.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step for the following reasons: none of the cited documents discloses or hints at a clamping element at the front edge of the transporter provided with pressing elements engaging through wider notches in the holding element thereby wrinkling the web and improving the clamping.

The same reasoning applies mutatis mutandis to method claim 25, which is therefore also new and inventive.

Claims 2-24 are dependent on claim 1, claims 26-28 are dependent on claim 25 and as such also meet the requirements of novelty and inventive step.