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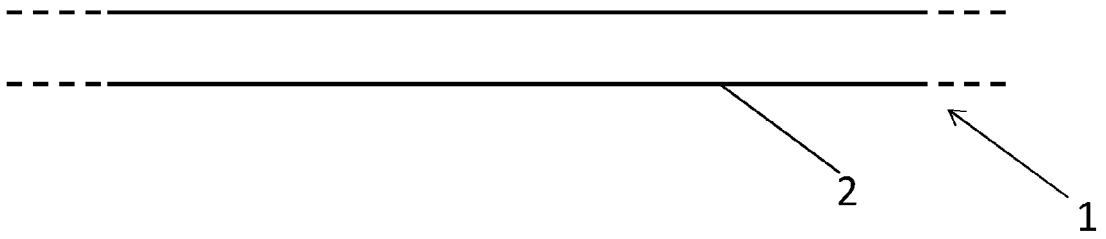
(54) METHOD AND MACHINE FOR MAKING A PRODUCT OF THE TOBACCO INDUSTRY

(57) A method and a machine (100) for making a product (1) of the tobacco industry. The method comprises the steps of:
- forming a product (1) of the tobacco industry by wrapping a wrapper (2) around a tubular element (3) of the tobacco industry;
- dispensing an adhesive fluid on the wrapper (2) and/or on the tubular element (3);
- detecting the viscosity of the fluid before dispensing said fluid on the wrapper (2) and/or on the tubular element (3);
- comparing the detected viscosity of the fluid with a reference value;
- emitting an alarm signal if the detected viscosity of the fluid is different from the reference value.

Fig. 1



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Description

[0001] This invention relates to a method for making a product of the tobacco industry and to the related machine.

[0002] In particular, the product of the tobacco industry which this invention relates to may be a rod that comprises a core of material of the tobacco industry and a tubular wrapper wrapped around the core or it may be a multicomponent rod-shaped article.

[0003] Known in the prior art is a machine for forming a rod that comprises a core of material of the tobacco industry and a tubular wrapper wrapped around the core, (this type of machine being known as "maker" in the jargon of the trade). The machine comprises: feeding means for feeding a band of wrapping material intended to form the tubular wrapper of the rod; a forming station for forming the core of material of the tobacco industry; a wrapping station in which the band of wrapping material is wrapped around the core to form the rod; a glue dispensing station in which the glue is dispensed on the wrapper.

[0004] Similarly, also known in the prior art is a machine for forming a multicomponent rod-shaped article (this type of machine being known as "filter tip attachment machine" or "combiner"). The machine comprises: a first feeding station for feeding a first segment having a longitudinal axis of extension and configured to feed the first segment in an advancing direction which is transverse to the axis of extension; a second feeding station for feeding a second segment having a longitudinal axis of extension and configured to feed the first segment in an advancing direction which is transverse to the axis of extension; a combining station in which the first segment and the second segment are placed side by side and axially aligned with each other; an applicator station for applying to the first segment and to the second segment a connecting strip of wrapping material intended to form the tubular wrapper of the rod-shaped article; a wrapping station in which the connecting strip is wrapped around the first segment and the second segment by rolling to form the rod-shaped article; a glue dispensing station in which the glue is dispensed on the connecting strip. All the types of machines described above involve the dispensing of glue. The glue used in "maker" machines is different from the glue used in "filter tip attachment machines" or "combiners": in effect, the band used in "maker" machines is made from a paper material different from the paper material used for the connecting strip in "filter tip attachment machines" or "combiners". In particular, the glues differ in viscosity and adhesive properties.

[0005] For this reason, it is very important to feed the right type of glue to the right machine; this operation is carried out manually by operators working in the tobacco factory.

[0006] As is known, machines of all the types described above are present in tobacco factories. For example, at least the following are present: a "maker" for forming tobacco segments; a "maker" for forming filter segments; a "filter tip attachment machine" which receives the tobacco and filter segments for forming the multicomponent product.

[0007] In many cases, the inexperience or inattentiveness of the tobacco factory operator responsible for supplying the machines with glue leads to confusing glue for the "maker" with the glue for the "filter tip attachment machine" or "combiner" and vice versa. This mistake is not evident immediately after starting the machine (since the glues look the same); the mistake does, however, result in unsatisfactory product quality causing a large number of products to be rejected.

[0008] Furthermore, it may happen that the glue containers are stored in the wrong conditions and/or without due regard for expiry dates. Glues that have been incorrectly stored and/or are expired will lead to the machines making products of unsatisfactory quality; this results in high rejection rates.

[0009] The aim of this invention is therefore to provide a method and a machine for making a product of the tobacco industry to overcome the above mentioned problems.

[0010] In particular, the method proposed and the related machine allow alerting the tobacco factory operator if the glue fed to the machine is the wrong glue for that specific type of machine.

[0011] This aim is achieved by a method and a machine for making a product of the tobacco industry according to the appended claims.

[0012] The method comprises the following steps: forming a product of the tobacco industry by at least partially wrapping a wrapper around a tubular element of the tobacco industry; dispensing an adhesive fluid on the wrapper and/or on the tubular element; detecting the viscosity of the fluid before dispensing said fluid on the wrapper and/or on the tubular element; comparing the detected viscosity of the fluid with a reference value; emitting an alarm signal if the detected viscosity of the fluid is different from the reference value.

[0013] Advantageously, the proposed method allows issuing an alert if the fluid fed to the machine does not have the expected viscosity: if the viscosity is not the expected viscosity, it means the adhesive fluid is of a kind unsuitable for that machine and/or has not been stored correctly and/or has expired. Similarly, the proposed machine comprises: a forming unit for forming a product of the tobacco industry in which a wrapper is at least partially wrapped around a tubular element of the tobacco industry; an adhesive fluid dispensing station where the adhesive fluid is dispensed on the wrapper and/or on the tubular element; sensor means configured to detect the viscosity of the fluid; a control unit which is connected to the sensor means and which receives the data detected by said sensor means, in which the control unit is configured to compare the detected viscosity of the fluid with a reference value; alarm means which are controlled by the control unit and which emit an alarm

signal if the detected viscosity of the fluid is different from the reference value.

[0014] Advantageously, the proposed machine allows issuing an alert through the alarm means if the fluid fed to the machine does not have the expected viscosity: if the viscosity is not the expected viscosity, it means the adhesive fluid is of a kind unsuitable for that machine and/or has not been stored correctly and/or has expired.

[0015] The invention is described below with reference to the accompanying drawings, which illustrate a non-limiting embodiment of it, in which:

- Figure 1 shows a side view of a product made using a first embodiment of the machine and method of this invention;
- Figure 2 is a cross sectional view of Figure 1 along the line I-I;
- Figure 3 shows a schematic side view of a product made using a second embodiment of the machine and method of this invention;
- Figure 4 shows a schematic side view of the first embodiment of the machine of this invention;
- Figure 5 shows a schematic side view of the dispensing station of the machine of Figure 4;
- Figure 6 shows a cross section of the product while it is being formed by the machine of Figure 4;
- Figure 7 shows a schematic side view of the second embodiment of the machine of this invention;
- Figure 8 shows the product flow in the machine of Figure 7.

[0016] With reference to Figures 4 and 7, the reference numeral 100 denotes a machine for making a product 1 of the tobacco industry according to this invention.

[0017] Described below with reference to Figures 4-6 is a first embodiment of the machine 100 of this invention.

[0018] The product 1 of the tobacco industry made by the machine 100 is illustrated schematically in Figures 1 and 2.

[0019] The product 1 comprises a wrapper 2 wrapped around a tubular element 3 of the tobacco industry. By "tubular element" is meant an item having a substantially circular cross section and extending longitudinally. The tubular element may be solid or hollow.

[0020] In detail, the product 1 is a rod comprising a core 3a of a material of the tobacco industry and a tubular wrapper 2 wrapped around the core 3a.

[0021] The machine 100 illustrated in Figure 1 is intended to form segments of tobacco (the machine 100 is thus a "maker"). The rod (that is, the product 1) made by the machine 100 comprises a core 3a of tobacco and a wrapper 2 obtained from a band 2a of paper. After forming the rod, the machine 100 cuts the rod transversely to obtain tobacco segments.

[0022] It is understood that the proposed solution can also be advantageously applied to other types of machines of the tobacco industry.

[0023] For example, the proposed solution can be advantageously applied to machines for forming filter segments, where the core 3a is filter material (for example, cellulose acetate) and the wrapper 2 is obtained from a band 2a of paper.

[0024] In another embodiment, the proposed solution can be advantageously applied to machines for forming rod-shaped articles of the tobacco industry made up of multiple segments. In this case, the core 3a is a sequence of cylindrical segments and the wrapper 2 is obtained from a band 2a of paper. In other words, the core 3a may be formed from tobacco (shredded, powder, sheet, plain or crimped cast-leaf), filter material (for example, paper or cellulose acetate) or sequences of tubular segments of different kinds. The tubular wrapper 2 is preferably obtained from a band 2a (unwound from a roll) of paper; alternatively, the wrapper 2 may obtained from a band 2a of tobacco or other material.

[0025] The machine 100 comprises: a forming unit 4 for forming the product 1 in which the wrapper 2 is wrapped around the tubular element 3; an adhesive fluid dispensing station 5 configured to dispense the adhesive fluid on the wrapper 2 and/or on the tubular element 3; sensor means 6 configured to detect the viscosity of the fluid; a control unit 7 which is connected to the sensor means 6 and which receives the data detected by said sensor means 6.

[0026] The control unit 7 is configured for comparing the detected viscosity of the fluid with a reference value. The adhesive fluid is, for example, hot melt or PVA glue.

[0027] The machine 100 also comprises alarm means 8 which are controlled by the control unit 7 and which emit an alarm signal (visual or acoustic) if the detected viscosity of the fluid is different from the reference value.

[0028] Advantageously, the proposed machine 100 allows the operator to be alerted if the adhesive fluid being fed is unsuitable for the type of machine 100.

[0029] Again with reference to Figure 4, the forming unit 4 comprises: feeding means 4a for feeding a band 2a of wrapping material intended to form the tubular wrapper 2 of the rod; a forming station 4b for forming the core 3a of material of the tobacco industry; a wrapping station 4c in which the band 2a of wrapping material is wrapped around the core 3a to form the rod (that is, the product 1).

[0030] Again with reference to Figure 4, the band 2a is unwound from a roll and, through suitable transfer and/or tensioning and/or entrainment rollers 9, is fed to the wrapping station 4c where the band 2a is wrapped around the core 3a.

[0031] In the machine 100 illustrated in Figure 4, the forming station 4b that forms the core 3a comprises: a chimney 10 from which the tobacco is fed; a suction conveyor belt 11 which receives the tobacco from the chimney 10 that forms the core of tobacco 3a and feeds the core of tobacco 3a to the wrapping station 4c; a levelling device 12 located downstream of the chimney 10 and having the function of adjusting the level of tobacco in the core 3a being formed.

[0032] The dispensing station 5 comprises: a tank 5a

which contains the adhesive fluid; a nozzle 5b for dispensing the fluid; a conduit 5c which connects the tank 5a to the nozzle 5b.

[0033] With reference to Figure 5, the sensor means 6 are located at the conduit 5c of the dispensing station 5. Alternatively, the sensor means 6 may be located at the tank 5a.

[0034] It is specified that the tank 5a may be an integral part of the machine 100 or removably connectable to the machine 100.

[0035] Preferably, the sensor means 6 comprise a rotational viscometer or a vibrational viscometer or an oscillating piston viscometer. It is understood that, alternatively or in addition to these viscometers, the sensor means 6 may comprise any instrument suitable for measuring the viscosity of the adhesive fluid.

[0036] The tank 5a may be a gravity or pressure feed tank, that is to say, the adhesive fluid may flow from the tank 5a to the conduit 5c by gravity alone or it may be forced out by pressure applied to it.

[0037] The fluid dispensing nozzle 5b may be a spreader or spray type nozzle. Further, the nozzle 5b may apply one or more strips of fluid or it may cover the whole or part of a certain area of the wrapper 2.

[0038] With reference to the machine of Figure 4, the nozzle 5b applies at least one strip of fluid in a single longitudinal line or it may apply multiple, preferably parallel longitudinal lines of fluid (which may be obtained, for example, using a suitable template fitted to the dispensing nozzle 5b). Preferably, the dispensing station 5 is located at the wrapping station 4c. In particular, a strip of adhesive fluid is delivered to the band 2a of wrapping material. With reference to Figure 6, the strip of adhesive fluid is applied to one end of the band 2a of wrapping material so as to glue the two ends of the wrapping band 2a to each other to form the tubular wrapper 2.

[0039] In an alternative embodiment (not illustrated), the dispensing station 5 might be located upstream of the wrapping station 4c; in this case, the strip of adhesive fluid would be delivered to the band 2a of wrapping material as it advances towards the wrapping station 4c.

[0040] It is understood that the machine 100 may comprise two or more dispensing stations 5, which may dispense respective adhesive fluids. For example, one of the dispensing stations 5 might dispense hot melt glue and another dispensing station 5 might dispense PVA (vinyl) glue. In this case, the sensor means 6 may comprise two or more sensors to detect the viscosity of the respective fluids. In this case, the control unit 7 receives the detected data from both sensor means 6, compares them with the respective reference values and activates the alarm means 8 if the viscosity of the fluid detected by at least one of the sensors is different from the respective reference value.

[0041] In another embodiment not illustrated, the machine 100 may be a machine for making two rods of the tobacco industry. In this case, in the machine 100, the forming unit 4 for forming the product 1 comprises: feeding means 4a for feeding two bands 2a of wrapping material, each intended to form the tubular wrapper 2 of the respective rod; a forming station 4b for forming cores 3a of material of the tobacco industry; a wrapping station 4c in which the bands 2a of wrapping material are wrapped around the respective cores 3a to form the rods. In particular, in this embodiment, the machine 100 comprises at least two dispensing stations 5, one for each rod, and sensor means 6 configured to detect the viscosity of the fluid delivered by each dispensing station 5.

[0042] This invention also has for an object the method, described below, for making a product 1 of the tobacco industry using the machine 100 described above.

[0043] The method of this invention comprises the following steps:

- forming a product 1 of the tobacco industry by at least partially wrapping a wrapper 2 around a tubular element 3 of the tobacco industry;
- dispensing an adhesive fluid on the wrapper 2 and/or on the tubular element 3;
- detecting the viscosity of the fluid before dispensing said fluid on the wrapper 2 and/or on the tubular element 3;
- comparing the detected viscosity of the fluid with a reference value;
- emitting an alarm signal (for example, visual or acoustic) if the detected viscosity of the fluid is different from the reference value.

[0044] Advantageously, the proposed method allows issuing an alert if the fluid fed to the machine 100 does not have the expected viscosity: if the viscosity is not the expected viscosity, it means the adhesive fluid is of a kind unsuitable for that machine 100 and/or has not been stored correctly and/or has expired.

[0045] Looking in more detail, considering that the product 1 of the tobacco industry is a rod comprising a core 3a of a material of the tobacco industry and a tubular wrapper 2 wrapped around the core 3a, the step of forming the product 1 comprises the following steps:

- feeding a band 2a of wrapping material intended to form the tubular wrapper 2 of the rod;
- forming a core 3a of a material of the tobacco industry;
- wrapping the band 2a of wrapping material around the core 3a to form the rod.

[0046] Preferably, the step of detecting the viscosity of the fluid is executed before starting the machine 100 of the tobacco industry.

[0047] Advantageously, if the viscosity of the adhesive fluid is different from the expected viscosity, the machine 100 is not started, thereby avoiding the need to reject defective products 1 due to use of unsuitable adhesive fluid. Alternatively, the step of detecting the viscosity of the fluid is executed during operation of the machine 100

of the tobacco industry and, if the detected viscosity of the fluid is different from the reference value, the method comprises the steps of:

- stopping the machine 100 of the tobacco industry;
- replacing the adhesive fluid;
- restarting the machine 100 of the tobacco industry.

[0048] In this embodiment, the machine 100 is stopped in a controlled manner, the adhesive fluid is replaced and the machine 100 is then restarted (manually or automatically). It is understood, as is known to an expert in the trade, that restarting a machine 100 following a controlled stop is easier and less time consuming than restarting the machine 100 following an unwanted stop. Described below with reference to Figures 7 and 8 is a second embodiment of the machine 100 of this invention. The machine 100 is a "filter tip attachment" machine and couples tobacco segments with filter segments. It should be noted that what is described above with reference to the first embodiment (Figures 4-6) is also applicable to this second embodiment for all those aspects that are not expressly specified.

[0049] The product 1 of the tobacco industry made by this machine 100 is a multicomponent rod-shaped article (Figure 3).

[0050] The term "rod-shaped article" is used to denote a tubular item extending longitudinally along a respective axis extension.

[0051] With reference to Figure 3, the multicomponent rod-shaped article made by the machine 100 illustrated in Figure 7 comprises a first, tobacco segment 3b, a second, filter segment 3c and a third, tobacco segment 3d. This article comprises, for its tubular wrapper 2, a connecting strip 2b of wrapping material which is wrapped around the second, filter segment 3c and part of the first, tobacco segment 3b and of the third, tobacco segment 3d to join the segments to each other to form the multicomponent rod-shaped article. Preferably, the connecting strip 2b of wrapping material is obtained from a band of wrapping material (for example, a paper band).

[0052] It is understood that the proposed solution can also be advantageously applied to other types of machines of the tobacco industry.

[0053] For example, the proposed solution can be advantageously applied to machines for forming multicomponent articles made up of segments that are different from those described above. For example, the segments may be tobacco segments, filter segments, paper segments, hollow filter segments, crimped tobacco segments. tobacco strip segments, segments of cooling material.

[0054] Similarly, the connecting strip 2b is preferably obtained from a band (unwound from a roll) of paper; alternatively, the connecting strip 2b may be obtained from a band of tobacco or other material.

[0055] With reference to Figures 7 and 8, the machine 100 comprises: a forming unit 4 for forming the product 1, in particular, the multicomponent article, in which the wrapper 2 is wrapped around a tubular element 3; an adhesive fluid dispensing station 5 configured to dispense the adhesive fluid on the wrapper 2; sensor means 6 configured to detect the viscosity of the fluid; a control unit 7 which is connected to the sensor means 6 and which receives the data detected by said sensor means 6, in which the control unit 7 is configured to compare the detected viscosity of the fluid with a reference value; alarm means 8 which are controlled by the control unit 7 and which emit an alarm signal if the detected viscosity of the fluid is different from the reference value.

[0056] Similarly to what is described with reference to the machine 100 of Figure 1, the dispensing station 5 comprises a tank 5a which contains the adhesive fluid, a fluid dispensing nozzle 5b and a conduit 5c connecting the tank 5a and the nozzle 5b. In this embodiment, a roller for spreading the adhesive fluid is considered as the nozzle 5b.

[0057] The sensor means 6 are located preferably at the tank 5a.

[0058] With reference to Figure 4, the forming unit 4 comprises: a first feeding station 4d to feed a first segment 3b having a longitudinal axis of extension in an advancing direction which is transverse to the axis of extension; a second feeding station 4e to feed a second segment 3c having a longitudinal axis of extension in an advancing direction which is transverse to the axis of extension.

[0059] The first feeding station 4d also feeds a third segment 3d (that is the same as the first segment 3b). It is understood that the third segment 3d is optional. This first feeding station 4d preferably receives the first segment 3b and the third segment 3d from a "maker" machine similar to the one illustrated in Figure 4 (but which makes two rods).

[0060] The machine 100 also comprises a combining station 4f in which the first segment 3b and the second segment 3c are placed side by side and axially aligned with each other.

[0061] In detail, the machine 100 comprises a hopper 13 containing a mass of second, filter segments 3c. The hopper 13 is associated with a group of drums 14 which are disposed in series and which have the function of picking up the second, filter segments 3c from the hopper 13 and feeding them to the combining station 4f, which comprises a combining drum 15 where the first, tobacco segment 3b, the second, filter segment 3c and the third, tobacco segment 3d are coupled to each other.

[0062] In a manner in itself known, the hopper 13 is divided into compartments and may be configured to feed filter segments of different types simultaneously. For example, such a hopper 13 may be configured to feed at least three different types of filter segments to make HNB (heat-not-burn) cigarettes. The segment 3b and the third segment 3d are fed to the machine 100 by a transfer device 16, which picks up the first segment 3b and the third segment 3d made by a "maker" machine similar to

the one described with reference to Figure 4.

[0063] Upstream of the combining drum 15, the machine 100 comprises a drum 17 that receives the first segment 3b and the third segment 3d from the transfer device 16 and feeds them to the combining drum 15. The drum 17 performs the function of adapting the feed spacing of the first segment 3b and of the third segment 3d to suit the spacing required on the combining drum 15. The machine 100 also comprises an applicator station 4g for applying to the first segment 3b, to the second segment 3c and to the third segment 3d the connecting strip 2b of wrapping material intended to form the tubular wrapper 2 of the multicomponent rod-shaped article. The machine 100 also comprises feeding means for feeding a band of wrapping material intended to form the connecting strips 2b. In particular, the machine 100 comprises a cutting station for cutting the band into connecting strips 2b, downstream of the adhesive fluid dispensing station 5. Alternatively, the dispensing station 5 might be located downstream of the cutting station for cutting the band into connecting strips 2b.

[0064] The applicator station 4g comprises an applicator drum where the connecting strip 2b is applied in flag-like manner to the first segment 3b, to the second segment 3c and to the third segment 3d, which are aligned with each other.

[0065] Downstream of the applicator station 4g, the machine 100 comprises a wrapping station 4c, where the connecting strip 2b is wrapped around the first segment 3b, the second segment 3c and the third segment 3d to form the multicomponent rod-shaped article. Wrapping the connecting strip 2b around the first segment 3b, the second segment 3c and the third segment 3d is carried out, for example, by rolling.

[0066] After that, the machine 100 may comprise a cutting station 4h for cutting the multicomponent rod-shaped article to obtain two rows of articles, and, if necessary, a turnaround station to turn one of the rows of articles by 180° downstream of the cutting station 4h.

[0067] The dispensing station 5 is located upstream of the wrapping station 4c. Described below is the method, which is also an object of this invention, for making a product 1 of the tobacco industry using the machine 100 described above (Figures 7-8).

[0068] The method of this invention comprises the following steps:

- forming the product 1 by at least partially wrapping a wrapper 2 around a tubular element 3 of the tobacco industry;
- dispensing an adhesive fluid on the wrapper 2;
- detecting the viscosity of the fluid before dispensing said fluid on the wrapper 2;
- comparing the detected viscosity of the fluid with a reference value;
- emitting an alarm signal if the detected viscosity of the fluid is different from the reference value.

[0069] The step of forming the product 1 comprises the steps of:

- feeding a first segment 3b and a third segment 3d, each having a longitudinal axis of extension, in an advancing direction which is transverse to the axis of extension;
- feeding a second segment 3c having a longitudinal axis of extension in an advancing direction which is transverse to the axis of extension;
- placing the first segment 3b, the second segment 3c and the third segment 3d side by side and axially aligning them with each other;
- applying to the first segment 3b, to the second segment 3c and to the third segment 3d a connecting strip 2b of wrapping material intended to form the tubular wrapper 2 of the rod-shaped article;
- wrapping the connecting strip 2b around the first segment 3b and the second segment 3c in order to form the rod-shaped article.

[0070] It is understood that the third segment 3d is optional.

[0071] Where applicable, what is described with reference to the method of the machine 100 illustrated in Figure 4 is also true for the method of the machine 100 illustrated in Figure 7.

[0072] The machine and the method of this invention thus allow alerting the tobacco factory operator if the glue fed to the machine is the wrong glue for that specific type of machine.

[0073] Advantageously, the proposed method allows issuing an alert if the fluid fed to the machine does not have the expected viscosity: if the viscosity is not the expected viscosity, it means the adhesive fluid is of a kind unsuitable for that machine and/or has not been stored correctly and/or has expired. Similarly, the proposed machine allows issuing an alert through the alarm means if the fluid fed to the machine does not have the expected viscosity: if the viscosity is not the expected viscosity, it means the adhesive fluid is of a kind unsuitable for that machine and/or has not been stored correctly and/or has expired.

Claims

1. A method for making a product (1) of the tobacco industry, by means of a machine (100) of the tobacco industry, comprising the steps of:

   - forming a product (1) of the tobacco industry by at least partially wrapping a wrapper (2) around a tubular element (3) of the tobacco industry;
   - dispensing an adhesive fluid on the wrapper (2) and/or on the tubular element (3);
   - detecting the viscosity of the fluid before dis-

pensing said fluid on the wrapper (2) and/or on the tubular element (3);
- comparing the detected viscosity of the fluid with a reference value;
- emitting an alarm signal if the detected viscosity of the fluid is different from the reference value.

2. The method according to claim 1, wherein the step of detecting the viscosity of the fluid is executed before starting the machine (100) of the tobacco industry.

3. The method according to claim 1, wherein the step of detecting the viscosity of the fluid is executed during operation of the machine (100) of the tobacco industry and, if the detected viscosity of the fluid is different from the reference value, the method comprises the steps of:

- stopping the machine (100) of the tobacco industry;
- replacing the adhesive fluid;
- restarting the machine (100) of the tobacco industry.

4. The method according to any one of the claims from 1 to 3, wherein:

the product (1) of the tobacco industry is a rod comprising a core (3a) of a material of the tobacco industry and a tubular wrapper (2) wrapped around the core (3a);
the step of forming the product (1) comprises the steps of:

- feeding a band (2a) of wrapping material intended to form the wrapper (2) of the rod;
- forming a core (3a) of a material of the tobacco industry;
- wrapping a band (2a) of wrapping material around the core (3a) to form the rod.

5. The method according to any one of the claims from 1 to 3, wherein:

the product (1) of the tobacco industry is a multicomponent rod-shaped article;
the step of forming the product (1) comprises the steps of:

- feeding a first segment (3b) having a longitudinal axis of extension in an advancing direction which is transverse to the axis of extension;
- feeding a second segment (3c) having a longitudinal axis of extension in an advancing direction which is transverse to the axis of extension;
- placing the first segment (3b) and the second segment (3c) side by side and axially aligning them with each other;
- applying to the first segment (3b) and to the second segment (3c) a connecting strip (2b) of wrapping material intended to form the wrapper (2) of the rod-shaped article;
- wrapping the connecting strip (2b) around the first segment (3b) and the second segment (3c) in order to form the rod-shaped article.

6. A machine (100) for making a product (1) of the tobacco industry, comprising:

a forming unit (4) for forming a product (1) of the tobacco industry in which a wrapper (2) is at least partially wrapped around a tubular element (3) of the tobacco industry;
an adhesive fluid dispensing station (5) configured to dispense the adhesive fluid on the wrapper (2) and/or on the tubular element (3);
sensor means (6) configured to detect the viscosity of the fluid;
a control unit (7) which is connected to the sensor means (6) and which receives the data detected by said sensor means (6), in which the control unit (7) is configured to compare the detected viscosity of the fluid with a reference value;
alarm means (8) which are controlled by the control unit (7) and which emit an alarm signal if the detected viscosity of the fluid is different from the reference value.

7. The machine (100) according to claim 6, wherein:

the dispensing station (5) comprises a tank (5a) which contains the adhesive fluid, a fluid dispensing nozzle (5b) and a conduit (5c) connecting the tank (5a) and the nozzle (5b);
the sensor means (6) are located at the tank (5a) and/or at the conduit (5c) of the dispensing station (5).

8. The machine (100) according to claim 6 or 7, wherein:

the product (1) of the tobacco industry is a rod comprising a core (3a) of a material of the tobacco industry and a tubular wrapper (2) wrapped around the core (3a);
the forming unit (4) comprises:

feeding means (4a) for feeding a band (2a) of wrapping material intended to form the tubular wrapper (2) of the rod;

a forming station (4b) for forming the core (3a) of material of the tobacco industry;
a wrapping station (4c) in which the band (2a) of wrapping material is wrapped around the core (3a) to form the rod.

9. The machine (100) according to claim 6 or 7, wherein:

the product (1) of the tobacco industry is a multicomponent rod-shaped article;
the forming unit (4) comprises:

a first feeding station (4d) to feed a first segment (3b) having a longitudinal axis of extension in an advancing direction which is transverse to the axis of extension;
a second feeding station (4e) to feed a second segment (3c) having a longitudinal axis of extension in an advancing direction which is transverse to the axis of extension;
a combining station (4f) in which the first segment (3b) and the second segment (3c) are placed side by side and axially aligned with each other;
an applicator station (4g) for applying to the first segment (3b) and the second segment (3c) a connecting strip (2b) of wrapping material intended to form the tubular wrapper (2) of the rod-shaped article;
a wrapping station (4c) in which the connecting strip (2b) is wrapped around the first segment (3b) and the second segment (3c) to form the rod-shaped article.

10. The machine (100) according to claim 8 or 9, wherein the dispensing station (5) is located upstream of or at the wrapping station (4c) to dispense the adhesive fluid on the band (2a) of wrapping material or on the connecting strip (2b).

11. The machine (100) according to any one of the claims from 6 to 10, wherein the sensor means (6) comprise a rotational viscometer or a vibrational viscometer or an oscillating piston viscometer.

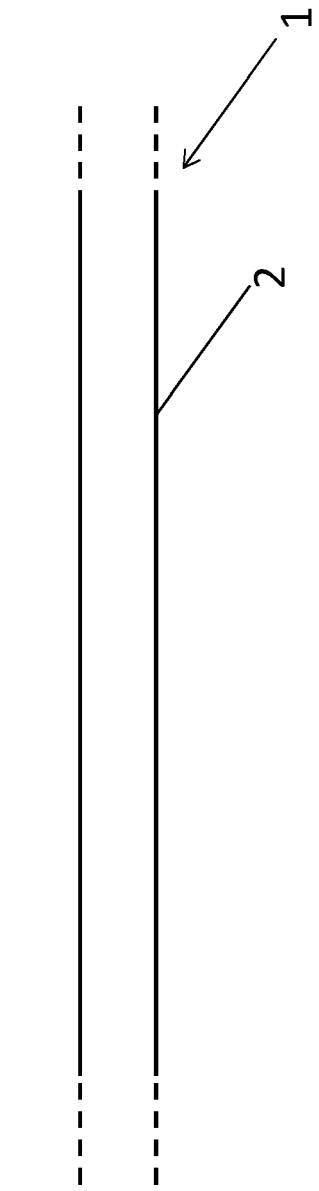

Fig. 1

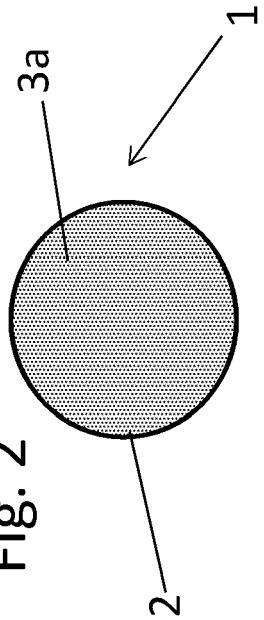

Fig. 2

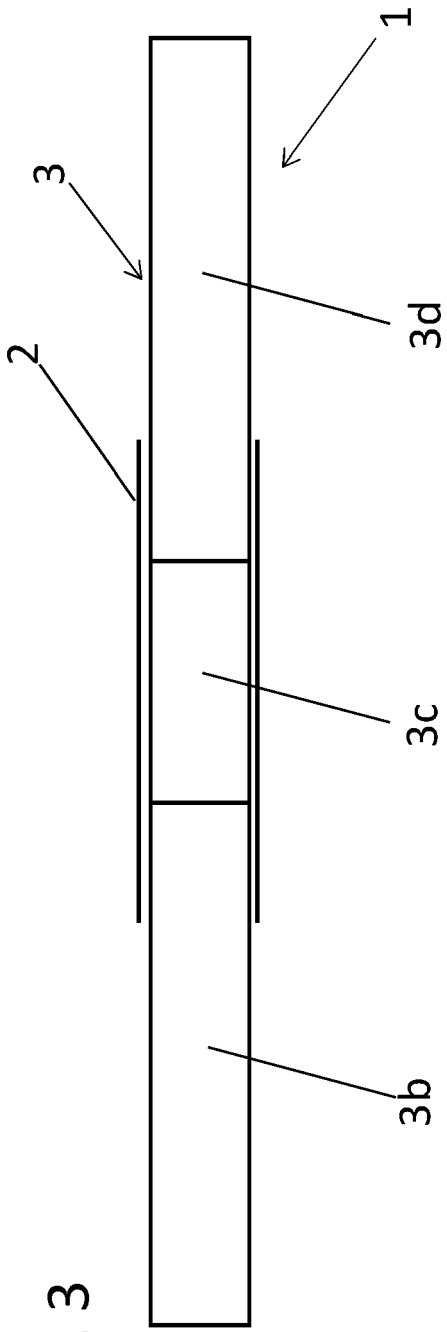

Fig. 3

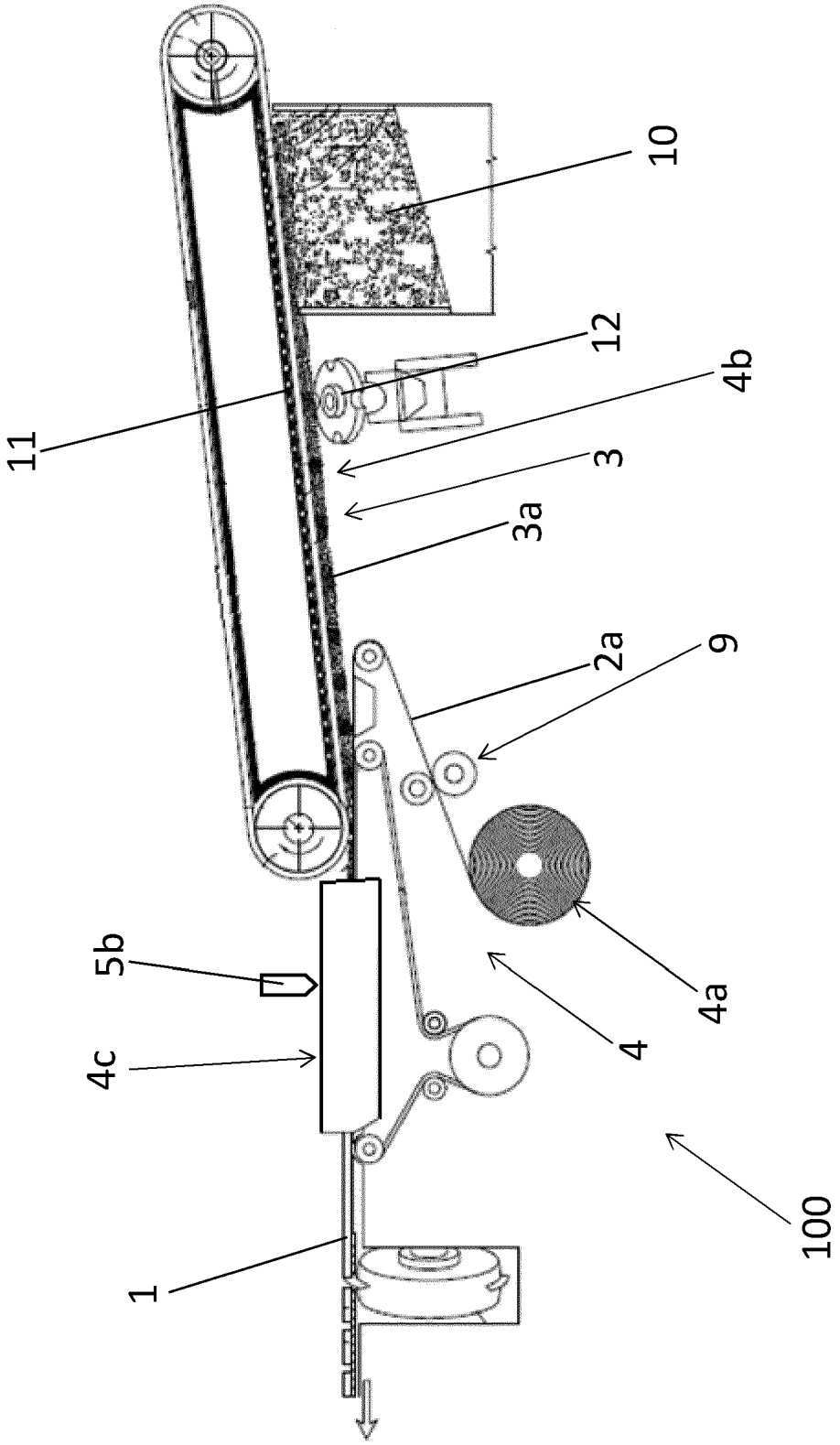

Fig. 4

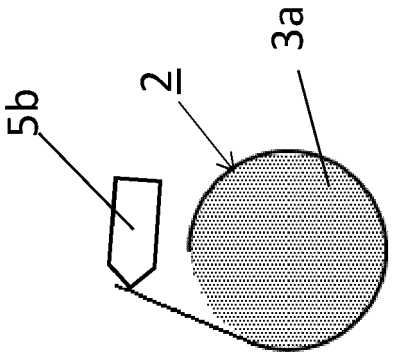

Fig. 6

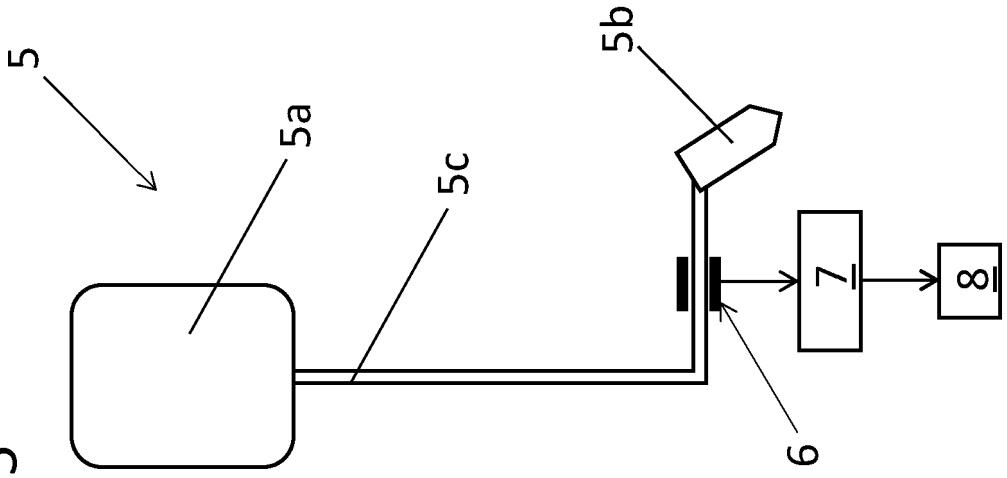

Fig. 5

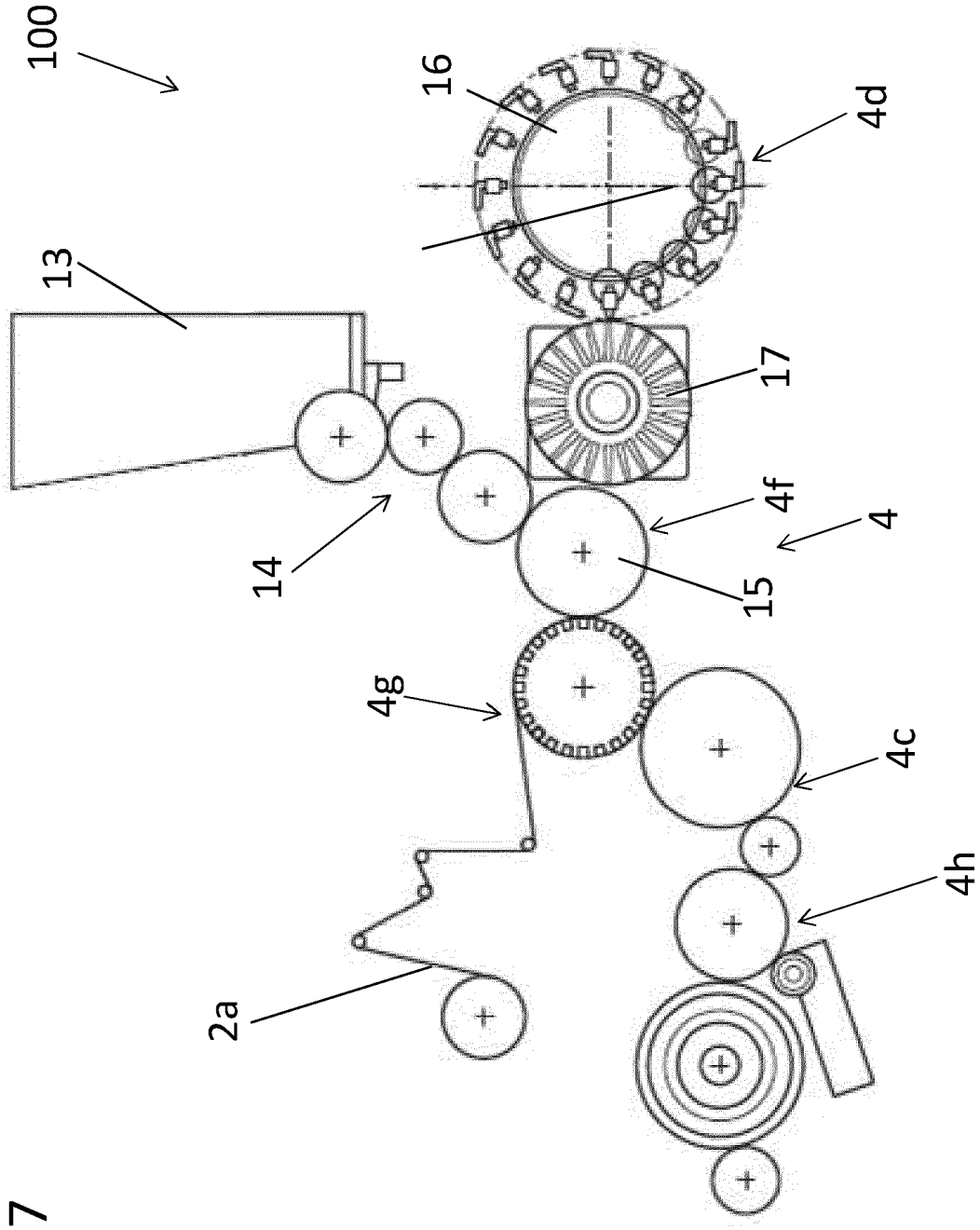

Fig. 7

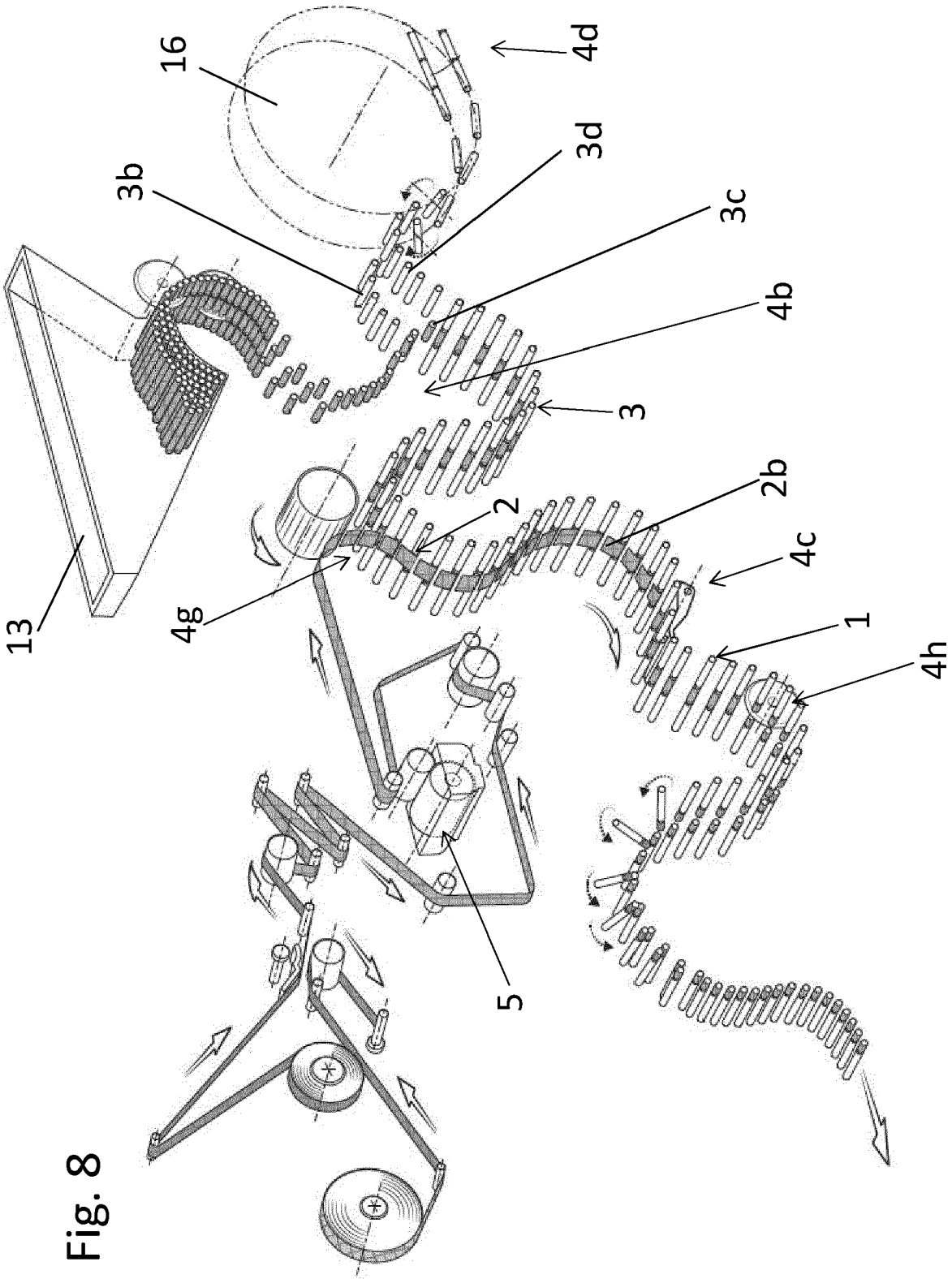

Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 22 16 3451

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 September 2022	Marzano Monterosso

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