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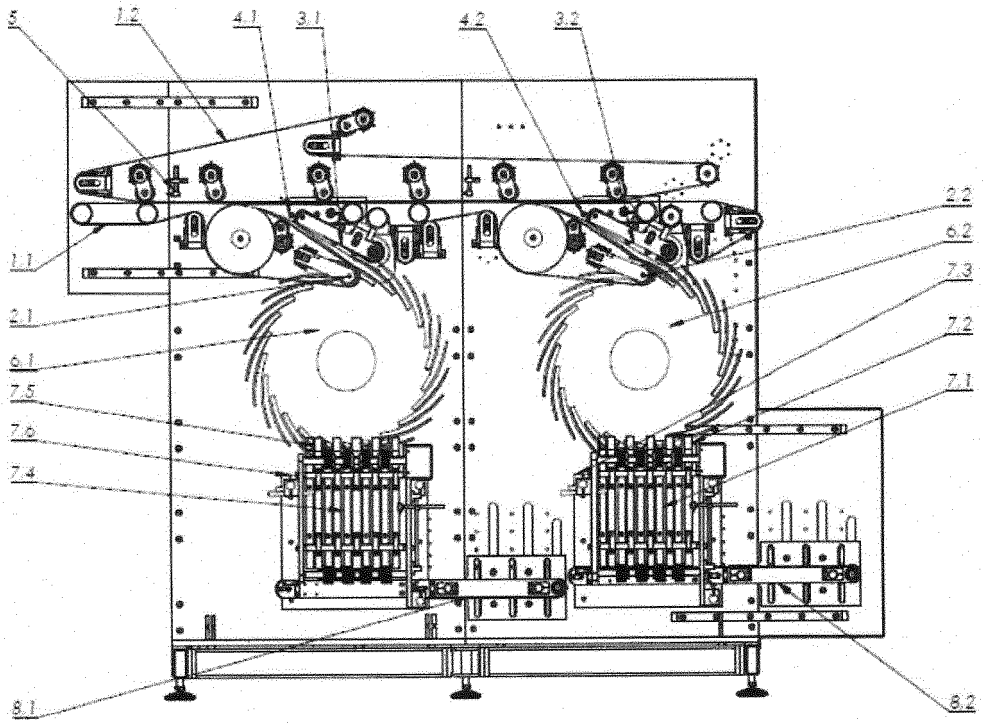
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(54) DEVICE FOR STACKING WORKPIECES SOAKED WITH A FLUID AND A METHOD FOR STACKING WORKPIECES SOAKED WITH A FLUID

(57) The object of the invention is a device for stacking applicable in production plants, in particular in industrial stacking of individual workpieces of non-woven fabric, soaked with a fluid, of any basis weight and various sizes. The device for stacking workpieces soaked with a fluid is provided with elastic belts, contacting each other with their surfaces, of a guiding conveyor (1.1) and of a pressing conveyor (1.2), above the belt of the pressing conveyor (1.2), a counting sensor (5) is arranged, and along the elastic belts of the guiding conveyor (1.1) and of the pressing conveyor (1.2), forks (4.1) (4.2) are mounted. The device consists of at least two stacking units, preferably, the first unit consist of elastic belts, contacting each other with their surfaces, of a guiding conveyor (2.1) and of a pressing conveyor (3.1), a stacking star (6.1) arranged beneath them, provided with longitudinal, directed inwards, curved slots, and a lift (7) mounted on a horizontal extension arm, at a close distance to the stacking star (6.1). Below the lift (7), there is a belt of a delivery conveyor (8). The device is provided with vertical transporters (7,1, 7,4) having adjustable bands (7,2, 7,5) mounted below the stacking star (6.1) and which are provided with belts (1,2) with pickers. Adjustable stops (7,3, 7,6) are mounted to the vertical transporters, further, the vertical transporters (7,1, 7,4) are provided with receiving transporters (8,1, 8,2). A method for stacking workpieces soaked with a fluid, consisting in that the soaked workpieces are guided to the units of the guiding conveyor (1.1) and of the pressing conveyor (1.2) which are counted by means of a counting sensor (5) and are guided through the fork (4.1) to stacking units in which workpieces are guided by means of the guiding conveyor (2.1) and of the pressing conveyor (3.1) onto the arms of the stacking star (6.1) which, by rotational movement, buffers them and passes them onto the lift (7.1) where the workpieces are arranged into an even stack which is carried onto the delivery conveyor (8). The stacking units operate alternately, at the time the lift (7.1) is activated the fork (4.1) is closed and respectively the fork (4.2)is opened, guiding the workpieces to the second stacking unit, the said workpieces being guided by means of the guiding conveyor (2.2) and the pressing conveyor (3.2) onto the arms of the stacking star (6.2) which, by rotational movement, buffers them and passes them onto the lift (7.2) where the workpieces are arranged into an even stack which is carried onto the delivery conveyor (8) transporting the workpiece stack outside the machine, wherein at the time the lift is activated (7.2), the fork (4.2) is closed and the fork (4.1) is opened. By means of the vertical transporters (7,1; 7,4) with belts provided with pickers, the stacked products is separated from the star (6.1) and the product is then carried by means of the adjustable stop (7,3; 7,6), preferably set in a given position depending on the packet length, and the adjustable bands (7,2; 7,5) set depending on the packet width. Reception of the stacks is carried out by receiving transporters (8,1; 8,2) moving at a constant speed so that the transporter (8,1) is intended to receive the packet from the stacking transporter (7,4) and to pass it onto the transporter (8,2), whereas the transporter (8,2) is intended to

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transport the packet between the pickers of the vertical transporter (7,1) and to receive the next packet stack from this conveyor and to transport it outside the machine.



Description

[0001] The object of the invention is a device for stacking applicable in production plants, in particular in industrial stacking of individual workpieces of non-woven fabric, soaked with a fluid, of any basis weight and various sizes.

[0002] From the specification of patent P- 407908, entitled "Device for stacking workpieces soaked with a fluid and a method for stacking workpieces soaked with a fluid" (Polish title: "Urz[ą]dzenie do sztaplowania formatek nas[ą]czonych p[ł]ynem oraz sposób sztaplowania formatek nas[ą]czonych p[ł]ynem"), a solution is known, which is provided with elastic belts, contacting each other with their surfaces, of a guiding conveyor and of a pressing conveyor. Above the belt of the pressing conveyor, a counting sensor is arranged, and along the elastic belts of the guiding conveyor and of the pressing conveyor, forks are mounted. The device preferably consists of at least two stacking units. Preferably, the first unit consist of elastic belts, contacting each other with their surfaces, of a guiding conveyor and of a pressing conveyor, a stacking star arranged beneath them, provided with longitudinal, directed inwards, curved slots, and a lift mounted on a horizontal extension arm, at a close distance to the stacking star. Below the lift, there is a belt of a delivery conveyor. The object of the invention is also a method for stacking workpieces soaked with a fluid. The present solution is a development of the solution according to P-407908.

[0003] The aim of the solution according to the invention is a solution relating to a device for stacking workpieces soaked with a fluid and a method for stacking workpieces soaked with a fluid allowing maintaining the continuity of production by stacking tissues soaked with a fluid.

[0004] The device for stacking workpieces soaked with a fluid is provided with elastic belts, contacting each other with their surfaces, of a guiding conveyor and of a pressing conveyor, a counting sensor is arranged above the belt of the pressing conveyor, along the elastic belts of the guiding conveyor and of the pressing conveyor, forks are mounted. The device preferably consists of at least two stacking units, preferably, the first unit consist of elastic belts, contacting each other with their surfaces, of a guiding conveyor and of a pressing conveyor, a stacking star arranged beneath them, provided with longitudinal, directed inwards, curved slots, and a lift mounted on a horizontal extension arm, at a close distance to the stacking star. Below the lift, there is a belt of a delivery conveyor. The device is characterised in that it is provided with vertical transporters having adjustable bands mounted below the stacking star and which are provided with belts with pickers, further, adjustable stops are mounted to the vertical transporters, further, the vertical transporters are provided with receiving transporters.

[0005] The method for stacking workpieces soaked with a fluid, consisting in that the soaked workpieces are guided to the units of the guiding conveyor and of the pressing conveyor which are counted by means of a counting sensor and are guided through the fork to stacking units, in which workpieces are guided by means of the guiding conveyor and of the pressing conveyor onto the arms of the stacking star which, by rotational movement, buffers them and passes them onto the lift where the workpieces are arranged into an even stack, which is carried onto the delivery conveyor. The stacking units operate alternately, at the time the lift is activated, the fork is closed, and respectively the fork guiding the workpieces to the second stacking unit is opened, the said workpieces being guided by means of the guiding conveyor and the pressing conveyor onto the arms of the stacking star which, by rotational movement, buffers them and passes them onto the lift where the workpieces are arranged into an even stack, which is carried onto the delivery conveyor, transporting the workpiece stack outside the machine. At the time the lift is activated, the fork is closed and the fork is opened. The method is characterised in that by means of the vertical transporters with belts provided with pickers, the stacked product is separated from the star and the product is carried by means of the adjustable stop, preferably set in a given position depending on the packet length, and the adjustable bands set depending on the packet width. Reception of the stacks is carried out by receiving transporters moving at a constant speed so that the transporter is intended to receive the packet from the stacking transporter and to pass it onto the transporter, whereas the transporter is intended to transport the packet between the pickers of the vertical transporter and to receive the next packet stack from this conveyor and to transport it outside the machine.

[0006] Preferably, the belts with pickers move at different speeds depending on currently performed operation, i.e. at a lower speed, depending on the packet thickness and the number of packets in a stack, when receiving the packets from the star, and at a maximum speed when depositing the stack onto an output transporter in order to achieve the required efficiency, respectively returning to the home position. By using the device for stacking workpieces soaked with a fluid and the method for stacking workpieces soaked with a fluid, continuity of production is maintained, also in case of maintenance or breakdown of one device from the set series. Inclusion, into the technological line of a further device for stacking workpieces (multiplication of stacking stars) provides multiplication of packaging speed and efficiency of the line.

[0007] The object of the invention is presented in an embodiment in the accompanying drawing which shows the device in a side view.

[0008] The device for stacking workpieces soaked with a fluid is provided with elastic belts, contacting each other with their surfaces, of a guiding conveyor **1.1** and of a

pressing conveyor **1.2.** Above the belt of the pressing conveyor **1.2,** a counting sensor **5** is arranged, and along the elastic belts of the guiding conveyor **1.1** and of the pressing conveyor **1.2,** forks **4.1, 4.2** are mounted. The device consists of two stacking units. The first unit consist of elastic belts, contacting each other with their surfaces, of a guiding conveyor **2.1** and of a pressing conveyor **3.1**, a stacking star **6.1** arranged beneath them, provided with longitudinal, directed inwards, curved slots, and a lift **7** mounted on a horizontal extension arm, at a close distance to the stacking star **6.1.** Below the lift **7,** there is a belt of a delivery conveyor **8**. The device is provided with vertical transporters **7,1, 7,4** having adjustable bands **7,2, 7,5** mounted below the stacking star 6.1 and which are provided with belts **1,2** with pickers. Adjustable stops **7,3, 7,6** are mounted to the vertical transporters, further, the vertical transporters **7,1, 7,4** are provided with receiving transporters **8,1, 8,2.**

[0009] The method for stacking workpieces soaked with a fluid, consisting in that the soaked workpieces are guided to the units of the guiding conveyor **1.1** and of the pressing conveyor **1.2** which are counted by means of a counting sensor **5** and are guided through the fork **4.1** to stacking units in which workpieces are guided by means of the guiding conveyor **2.1** and of the pressing conveyor **3.1** onto the arms of the stacking star **6.1** which, by rotational movement, buffers them and passes them onto the lift **7.1** where the workpieces are arranged into an even stack which is carried onto the delivery conveyor **8.** The stacking units operate alternately, at the time the lift **7.1** is activated the fork **4.1** is closed and, respectively, the fork **4.2** is opened guiding the workpieces to the second stacking unit, the said workpieces being guided by means of the guiding conveyor **2.2** and the pressing conveyor **3.2** onto the arms of the stacking star **6.2** which, by rotational movement, buffers them and passes them onto the lift **7.2** where the workpieces are arranged into an even stack which is carried onto the delivery conveyor **8** transporting the workpiece stack outside the machine. At the time the lift **7.2** is activated, the fork **4.2** is closed and the fork **4.1** is opened. By means of the vertical transporters **7,1; 7,4** with belts provided with pickers, the stacked products is separated from the star **6.1** and the product is then carried by means of the adjustable stop **7,3; 7,6** set in a given position depending on the packet length, and the adjustable bands **7,2; 7,5** set depending on the packet width. Reception of the stacks is carried out by receiving transporters **8,1; 8,2** moving at a constant speed so that the transporter **8,1** is intended to receive the packet from the stacking transporter **7,4** and to pass it onto the transporter **8,2,** whereas the transporter **8,2** is intended to transport the packet between the pickers of the vertical transporter **7,1** and to receive the next packet stack from this conveyor and to transport it outside the machine. The belts **1,2** with pickers move at different speeds depending on currently performed operation, i.e. at a lower speed, depending on the packet thickness and the number of packets in a stack, when receiving the packets from the star **6.1,** and at a maximum speed when depositing the stack onto an output transporter in order to achieve the required efficiency, respectively returning to the home position.

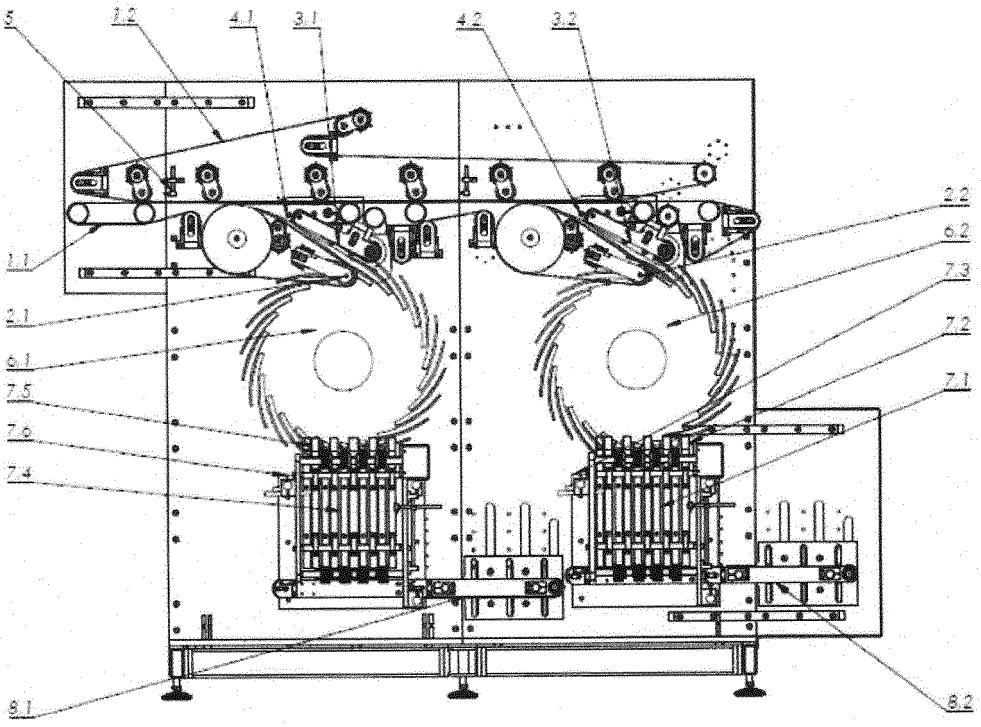
Claims

1. A device for stacking workpieces soaked with a fluid is provided with elastic belts, contacting each other with their surfaces, of a guiding conveyor (1.1) and of a pressing conveyor (1.2), above the belt of the pressing conveyor (1.2), a counting sensor (5) is arranged, and along the elastic belts of the guiding conveyor (1.1) and of the pressing conveyor (1.2), forks (4.1) (4.2) are mounted, wherein the device consists of at least two stacking units, preferably, the first unit consist of elastic belts, contacting each other with their surfaces, of a guiding conveyor (2.1) and of a pressing conveyor (3.1), a stacking star (6.1) arranged beneath them, provided with longitudinal, directed inwards, curved slots, and a lift (7) mounted on a horizontal extension arm, at a close distance to the stacking star (6.1), further, below the lift (7), there is a belt of a delivery conveyor (8), **characterised in that** it is provided with vertical transporters (7,1, 7,4) having adjustable bands (7,2, 7,5) mounted below the stacking star (6.1) and which are provided with belts (1,2) with pickers, further, adjustable stops (7,3, 7,6) are mounted to the vertical transporters, further, the vertical transporters (7,1, 7,4) are provided with receiving transporters (8,1, 8,2).

2. A method for stacking workpieces soaked with a fluid, consisting in that the soaked workpieces are guided to the units of the guiding conveyor (1.1) and of the pressing conveyor (1.2) which are counted by means of a counting sensor (5) and are guided through the fork (4.1) to stacking units in which workpieces are guided by means of the guiding conveyor (2.1) and of the pressing conveyor (3.1) onto the arms of the stacking star (6.1) which, by rotational movement, buffers them and passes them onto the lift (7.1) where the workpieces are arranged into an even stack which is carried onto the delivery conveyor (8), wherein the stacking units operate alternately, at the time the lift (7.1) is activated the fork (4.1) is closed and respectively the fork (4.2) is opened, guiding the workpieces to the second stacking unit, the said workpieces being guided by means of the guiding conveyor (2.2) and the pressing conveyor (3.2) onto the arms of the stacking star (6.2) which, by rotational movement, buffers them and passes them onto the lift (7.2) where the workpieces are arranged into an even stack which is carried onto the delivery conveyor (8) transporting the workpiece stack outside the machine, wherein at the time the lift is activated (7.2), the fork (4.2) is closed and the

fork (4.1) is opened, **characterised in that** by means of the vertical transporters (7,1; 7,4) with belts provided with pickers, the stacked products is separated from the star (6.1) and the product is then carried by means of the adjustable stop (7,3; 7,6), set in a given position depending on the packet length, and the adjustable bands (7,2; 7,5) set depending on the packet width, wherein the reception of the stacks is carried out by receiving transporters (8,1; 8,2) moving at a constant speed so that the transporter (8,1) is intended to receive the packet from the stacking transporter (7,4) and to pass it onto the transporter (8,2), whereas the transporter (8,2) is intended to transport the packet between the pickers of the vertical transporter (7,1) and to receive the next packet stack from this conveyor and to transport it outside the machine.

3. The method according to claim 2, **characterised in that** the belts (1,2) with pickers move at different speeds depending on currently performed operation, i.e. at a lower speed, depending on the packet thickness and the number of packets in a stack, when receiving the packets from the star (6.1), and at a maximum speed when depositing the stack onto an output transporter in order to achieve the required efficiency, respectively returning to the home position.


5
1.2
4.1
3.1
4.2
3.2
2.2
6.2
7.3
7.2
7.1
1.1
2.1
6.1
7.5
7.6
7.4
9.1
8.2