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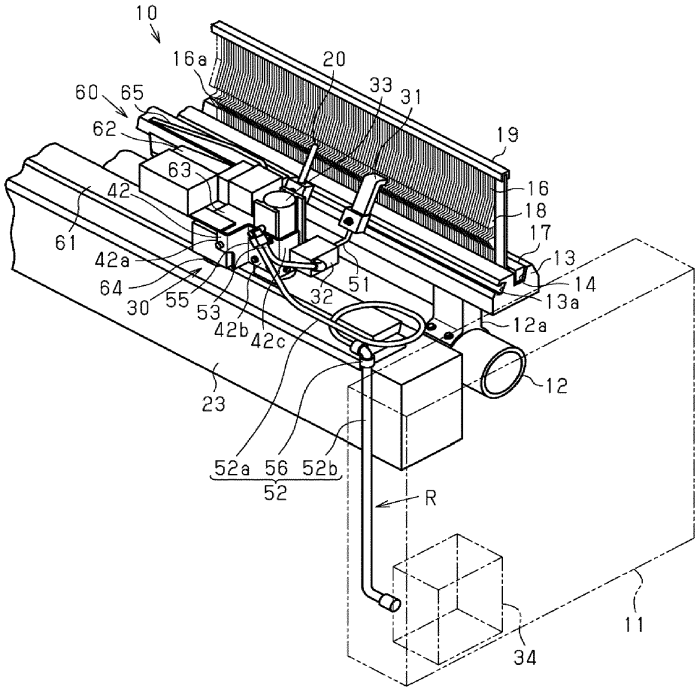
(54) **WEFT YARN TENSIONING DEVICE FOR AIR JET LOOM**

(57) A weft yarn tensioning device (30) for an air jet loom (10) including a pair of side frames (11), a rocking shaft (12), a sley (13), a profile reed (16) that forms a weft yarn guide passage (16a), the weft yarn tensioning device includes a stretch nozzle (31) that is provided such that the stretch nozzle (31) is movable in a weft insertion direction of a weft yarn, a main tank (34) as a supply source of compressed air, and an on-off valve (32) connected to the stretch nozzle (31) through a first air tube (51). The on-off valve (32) is provided on an end portion of a temple base (61, 71) on a counter weft insertion side. A sub tank (33) is smaller than the main tank (34), connected to the on-off valve (32), and connected to the main tank (34) through a second air tube (52).

FIG. 1



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Description

BACKGROUND ART

[0001] The present invention relates to a weft yarn tensioning device for an air jet loom.

[0002] For example, a weft yarn tensioning device for an air jet loom disclosed in Japanese Patent Application Publication No. 2014-231649 includes a stretch nozzle, an air tank, and an on-off valve. The stretch nozzle is attached to a sley fixed to a rocking shaft. The stretch nozzle is located on a downstream side of a sub nozzle for weft insertion in a weft insertion direction, and the position of the stretch nozzle is adjustable in the weft insertion direction in accordance with a change of a width of woven fabric. The air tank is provided on a part of a frame of the air jet loom. The on-off valve is attached to the air tank and connected to the stretch nozzle through a flexible air supply tube.

[0003] However, in the weft yarn tensioning device for the air jet loom disclosed in the Publication, the stretch nozzle is far from the on-off valve, so that pressure loss between the stretch nozzle and the on-off valve causes an air injection pressure from the stretch nozzle to decrease.

[0004] Here, the on-off valve may be disposed near the stretch nozzle to reduce the pressure loss between the stretch nozzle and the on-off valve. In this case, the on-off valve remains far from the air tank, and thus, a tube connecting the on-off valve to the air tank is required to have a large diameter in order to reduce pressure loss between the on-off valve and the air tank. However, when the tube connecting the on-off valve and the air tank has the large diameter, the on-off valve is difficult to move in accordance with a positional adjustment of the stretch nozzle because the large diameter tube has high stiffness.

SUMMARY

[0005] In accordance with an aspect of the present invention, there is provided a weft yarn tensioning device for an air jet loom including a pair of side frames, a rocking shaft that is supported by the side frames and rotatable in a reciprocating manner, a sley that swings together with the rocking shaft, and a profile reed that is provided in the sley and forms a weft yarn guide passage. The weft yarn tensioning device includes a stretch nozzle oriented toward the weft yarn insertion passage, the stretch nozzle being provided in the sley such that the stretch nozzle is movable in a weft insertion direction of a weft yarn, a main tank as a supply source of compressed air, the main tank being provided in the side frame close to the stretch nozzle of the pair of side frames, and an on-off valve connected to the stretch nozzle through a first air tube. The on-off valve is provided on an end portion of a temple base on a counter-weft insertion side. The temple base is supported by a supporting bar formed between the pair of side frames. A sub tank is provided on the end portion of the temple base on the counter-weft insertion side. The sub tank is smaller than the main tank, connected to the on-off valve, and connected to the main tank through a second air tube.

[0006] Other aspects and advantages of the invention will become apparent from the following description, taken in conjunction with the accompanying drawings, illustrating by way of example the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The invention, together with objects and advantages thereof, may best be understood by reference to the following description of the embodiments together with the accompanying drawings in which:

FIG. 1 is a perspective view illustrating a weft yarn tensioning device and the surroundings according to an embodiment;
FIG. 2 is a front view illustrating the weft yarn tensioning device and the surroundings according to the embodiment;
FIG. 3 is a side view illustrating the weft yarn tensioning device and the surroundings according to the embodiment;
FIG. 4 is a figure illustrating a sub tank and an on-off valve that are adjusted in position; and
FIG. 5 is a perspective view illustrating a weft yarn tensioning device and the surroundings according to another embodiment.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0008] The following will describe an embodiment of a weft yarn tensioning device for an air jet loom with reference to FIG. 1 to FIG. 4.

<Air jet loom>

[0009] As illustrated in FIGS. 1 and 2, an air jet loom 10 includes a pair of left and right side frames 11 and a rocking shaft 12 that is supported by the side frames 11 and rotatable in a reciprocating manner. A plurality of arms 12a is provided on the rocking shaft 12 and extends upward from the rocking shaft 12. A sley 13 is supported on upper ends of the arms 12a. The sley 13 swings together with the rocking shaft 12 by the reciprocating motion of the rocking shaft 12.

[0010] The sley 13 has a supporting groove 14 into which a lower end of a profile reed 16 is inserted. The profile reed 16 forms a weft yarn guide passage 16a. That is, the profile reed 16 that forms the weft yarn guide passage 16a is provided in the sley 13. The lower end of the profile reed 16 is fixed by a wedge 17 inserted into the supporting groove 14. The profile reed 16 is formed of a lot of dents 18 arranged in a longitudinal direction of the sley 13. Upper ends of the dents 18 are held by an

upper frame 19 of the profile reed 16.

[0011] The air jet loom 10 includes a sub nozzle 20 disposed on a front surface side of the profile reed 16. The sub nozzle 20 is attached to a groove 13a formed in a sley 13 and movable along the groove 13a. A position of the sub nozzle 20 is adjustable in the longitudinal direction of the sley 13.

[0012] As illustrated in FIGS. 1 and 3, the air jet loom 10 includes a weft yarn catching pipe 22. The weft yarn catching pipe 22 is disposed on a rear surface side of the profile reed 16. The weft yarn catching pipe 22 is fixed at a predetermined position in the longitudinal direction of the sley 13. The weft yarn catching pipe 22 is bent to have an L-shape. A short portion 22a of the weft yarn catching pipe 22 is disposed substantially at right angles to the profile reed 16. An inlet 22b is open at an end portion of the short portion 22a. The inlet 22b communicates with the weft yarn guide passage 16a.

[0013] A long portion 22c of the weft yarn catching pipe 22 is disposed substantially in parallel with the profile reed 16. An outlet 22d is open at a rear end portion of the long portion 22c and is oriented to a downstream side in a weft insertion direction. Here, the weft yarn insertion direction is a direction in which a weft yarn travels through the weft yarn guide passage 16a. Compressed air injected from an injection hole 31a of a stretch nozzle 31, which will be described later, is blown into the inlet 22b across the weft yarn guide passage 16a. The compressed air flows from the short portion 22a to the long portion 22c in the weft yarn catching pipe 22 while turning the corner of the substantially right angles, and flows out from the outlet 22d.

[0014] As illustrated in FIGS. 1 and 2, the air jet loom 10 includes a supporting bar 23 formed between the pair of side frames 11. A temple device 60 for preventing crimp of woven fabric is provided on the supporting bar 23. The temple device 60 includes a temple base 61 and temple device main bodies 62 each provided on left and right sides of the temple base 61. The temple base 61 is a plate having a trapezoidal shape when viewed in a cross-section and is supported on an upper surface of the supporting bar 23. The temple base 61 is supported by the supporting bar 23 with a longitudinal direction of the temple base 61 coinciding with a longitudinal direction of the supporting bar 23. Note that although the temple device main bodies 62 are each provided in one end portion of the temple base 61 on a weft insertion side from which the weft yarn is inserted into the weft yarn guide passage 16a and in the other end portion of the temple base 61 on a counter-weft insertion side, which is a side opposite to the weft insertion side across the temple base 61, an illustration of the temple device main body 62 on the weft insertion side is omitted. Here, the temple base 61 extends in a left and right direction of the air jet room 10. The following will describe the temple device main body 62 provided on the end portion of the temple base 61 on the counter-weft insertion side.

[0015] The temple device main body 62 is movable in the longitudinal direction of the temple base 61 such that its attachment position to the temple base 61 is adjusted. The temple device main body 62 includes a temple bracket 63, a supporting bracket 65 integrated with the temple bracket 63, and a temple main body supported by the supporting bracket 65. An illustration of the temple main body is omitted. The temple device main body 62 also includes an attachment piece 64 integrated with the temple bracket 63. In the temple device main body 62, the temple bracket 63, the supporting bracket 65, and the temple main body which is not illustrated are integrated with each other.

[0016] The attachment piece 64 of the temple device main body 62 is disposed so as to face a side surface of the temple base 61. The temple device main body 62 is positioned relative to the temple base 61 by screwing a bolt 67 inserted through the attachment piece 64 while the bolt 67 is pressed against the temple base 61. In addition, when the bolt 67 is screwed out from the attachment piece 64, the temple device main body 62 is movable in the longitudinal direction of the temple base 61.

<Weft yarn tensioning device>

[0017] A weft yarn tensioning device 30 for the airjet loom 10 includes the stretch nozzle 31, an on-off valve 32, a sub tank 33, and a main tank 34.

[0018] The main tank 34 is provided in the side frame 11 located on the counter-weft insertion side of the pair of side frames 11. The main tank 34 stores compressed air at high pressure. The main tank 34 is a supply source from which the compressed air is supplied to the stretch nozzle 31.

[0019] As illustrated in FIG. 3, the stretch nozzle 31 is attached to the groove 13a formed in the sley 13. A position of the stretch nozzle 31 is adjustable along a longitudinal direction of the groove 13a. That is, the stretch nozzle 31 is provided in the sley 13 such that the stretch nozzle 31 is movable in the weft insertion direction of a weft yarn. The stretch nozzle 31 is provided such that the injection hole 31a of the stretch nozzle 31 faces the inlet 22b of the weft yarn catching pipe 22, and the stretch nozzle 31 is oriented toward the weft yarn guide passage 16a.

[0020] As illustrated in FIGS. 1, 2, and 3, the on-off valve 32 and the sub tank 33 are integrated with the temple device main body 62. A bracket 42 is fastened to the temple bracket 63. The bracket 42 has a first attachment piece 42a attached to the temple bracket 63, a second attachment piece 42b attached to the sub tank 33, and a third attachment piece 42c to which the on-off valve 32 is attached. The bracket 42 is formed by bending a plate material so that the first attachment piece 42a, the second attachment piece 42b, and the third attachment piece 42c are formed.

[0021] In the bracket 42 attached to the temple bracket 63 by the first attachment piece 42a, the second attachment piece 42b is attached to the sub tank 33, and the

on-off valve 32 is attached to the third attachment piece 42c. Accordingly, the temple device main body 62, the on-off valve 32, and the sub tank 33 are integrated by the bracket 42. When the temple device main body 62 is moved relative to the temple base 61, the on-off valve 32 and the sub tank 33 are also moved integrally with the temple device main body 62. In addition, when the temple device main body 62 is attached to the temple base 61, the on-off valve 32 and the sub tank 33 are also provided on the temple base 61 through the temple device main body 62. Thus, the on-off valve 32 and the sub tank 33 are provided on the temple base 61.

[0022] The on-off valve 32 is connected to the stretch nozzle 31 through a first air tube 51. The first air tube 51 is, for example, a flexible tube such as a resin hose. The first air tube 51 with extra length connects the stretch nozzle 31 to the on-off valve 32.

[0023] The sub tank 33 is connected to the on-off valve 32 through a first joint 55 and a third air tube 53. The first joint 55 is connected to the sub tank 33. The third air tube 53 is, for example, a flexible tube such as a resin hose. The third air tube 53 with extra length connects the on-off valve 32 to the sub tank 33.

[0024] The main tank 34 is provided in the side frame 11 on a side where the on-off valve 32 is attached to the temple device main body 62, that is, in the side frame 11 on the counter-weft insertion side, of the pair of side frames 11. The stretch nozzle 31 is provided near the on-off valve 32, and thus, the main tank 34 is provided in the side frame 11 close to the stretch nozzle 31 of the pair of side frames 11. The main tank 34 is connected to the sub tank 33 through the first joint 55 and a second air tube 52. The second air tube 52 includes a sub tank side tube 52a, a second joint 56, and a main tank side tube 52b. A first end of the sub tank side tube 52a is connected to the first joint 55, and a second end of the sub tank side tube 52a is connected to the second joint 56. A first end of the main tank side tube 52b is connected to the second joint 56, and a second end of the main tank side tube 52b is connected to the main tank 34.

[0025] The sub tank side tube 52a is a flexible tube. The sub tank side tube 52a with extra length connects the first joint 55 to the second joint 56.

[0026] The main tank side tube 52b is made of a steel tube, and a diameter of the main tank side tube 52b is larger than that of the sub tank side tube 52a. The main tank side tube 52b extends straight downward from the second joint 56, and is bent toward the main tank 34 near the second end of the main tank side tube 52b. The main tank side tube 52b is integrated with the side frame 11, and keeps a shape extending straight by itself due to stiffness of the main tank side tube 52b. The second joint 56 connected to the first end of the main tank side tube 52b is positioned at a predetermined position due to the stiffness of the main tank side tube 52b.

[0027] That is, the second joint 56 is located above the upper surface of the supporting bar 23 and near the temple base 61. Accordingly, this sub tank side tube 52a connecting the second joint 56 to the first joint 55 is disposed above the upper surface of the supporting bar 23. An extra length portion of the sub tank side tube 52a is also disposed above the upper surface of the supporting bar 23. The extra length portion of the sub tank side tube 52a is made short or long between the first joint 55 and the second joint 56 above the upper surface of the supporting bar 23. That is, the sub tank side tube 52a is a flexible tube disposed above the upper surface of the supporting bar 23.

[0028] A length of the sub tank side tube 52a between the first joint 55 and the second joint 56 is set depending on a movable range of the temple device main body 62. The length of the sub tank side tube 52a is set such that the sub tank side tube 52a does not get strained and has some extra length even when the temple device main body 62 is moved to a position farthest from the side frame 11 in which the main tank 34 is provided.

[0029] The compressed air at high pressure stored in the main tank 34 is supplied to the sub tank 33 through the main tank side tube 52b, the second joint 56, the sub tank side tube 52a, and the first joint 55. Pressure loss between the main tank 34 and the sub tank 33 is reduced due to the main tank side tube 52b with the large diameter as compared with a configuration in which the main tank side tube 52b and the sub tank side tube 52a have the same diameter.

[0030] As described above, a flow passage R is formed of the third air tube 53, the first joint 55, the sub tank 33, and the second air tube 52 between the on-off valve 32 and the main tank 34. The sub tank 33 smaller than the main tank 34 is disposed on this flow passage R. The size of the sub tank 33 is set such that one air injection from the stretch nozzle 31 does not cause a pressure drop of a predetermined value or more.

[0031] In the above-described weft yarn tensioning device 30, when the on-off valve 32 opens, the compressed air stored in the sub tank 33 is supplied to the stretch nozzle 31 through the first air tube 51. On the other hand, when the on-off valve 32 closes, the air flow to the first air tube 51 is shut off, so that the supply of the compressed air from the sub tank 33 to the stretch nozzle 31 is stopped and the compressed air is supplied from the main tank 34 to the sub tank 33 through the main tank side tube 52b and the sub tank side tube 52a until the next air injection. Accordingly, the compressed air is supplied from the main tank 34 to the sub tank 33 while the on-off valve 32 is closed, so that the sub tank 33 stores the compressed air at high pressure before the on-off valve 32 opens, similarly to the main tank 34.

<Weaving by air jet loom>

[0032] During operation of the air jet loom 10, a weft yarn is inserted into the weft yarn guide passage 16a by a weft yarn insertion nozzle and the sub nozzle 20. Illustrations of the weft yarn and the weft yarn insertion nozzle are omitted. When the inserted weft yarn reaches the

front of the injection hole 31a of the stretch nozzle 31, the on-off valve 32 opens. The compressed air in the sub tank 33 is supplied to the stretch nozzle 31 through the third air tube 53, the on-off valve 32, and the first air tube 51. Then, the compressed air is injected from the injection hole 31a of the stretch nozzle 31 in a direction perpendicular to the weft yarn guide passage 16a.

[0033] The weft yarn in the weft yarn guide passage 16a is blown to the inlet 22b of the weft yarn catching pipe 22 by the compressed air. The compressed air is guided from the short portion 22a to the long portion 22c in the weft yarn catching pipe 22. Accordingly, after the weft yarn is bent at the right angles while being blown from the weft yarn guide passage 16a to the short portion 22a of the weft yarn catching pipe 22, the weft yarn is maintained in a bent state at the right angles while being blown from the short portion 22a to the long portion 22c in the weft yarn catching pipe 22 again. When the weft yarn is beaten in this state, the inserted weft yarn is woven into woven fabric while being applied to a predetermined tension over an entire length of the weft yarn because the weft yarn is held by the profile reed 16, the stretch nozzle 31, and the weft yarn catching pipe 22.

<Operation of embodiment>

[0034] As illustrated in FIG. 4, in order to weave woven fabric with a certain width, the position of the stretch nozzle 31 is adjusted along the longitudinal direction of the groove 13a formed in the sley 13. In addition, the position of the temple device main body 62 is also adjusted in accordance with the width of the woven fabric. In the positional adjustment of the temple device main body 62, the bolt 67 is screwed out from the attachment piece 64 to make the temple device main body 62 movable along the temple base 61. Then, the position of the temple device main body 62 is adjusted such that the temple main body, which is not illustrated, is located at a position in accordance with the width of the woven fabric. The on-off valve 32 and the sub tank 33 are integrated with this temple device main body 62, so that the on-off valve 32 and the sub tank 33 are also moved integrally with the temple device main body 62 as the temple device main body 62 moves.

[0035] In the temple device main body 62 adjusted at a desired position, the bolt 67 is inserted into the attachment piece 64 and screwed while pressed against the temple base 61. This positions the temple device main body 62, and by extension, the on-off valve 32 and the sub tank 33. As a result, the on-off valve 32 and the sub tank 33 are provided on the end portion of the temple base 61 on the counter-weft insertion side.

[0036] In accordance with the positional adjustment of the stretch nozzle 31, positions of the on-off valve 32 and the sub tank 33 are also adjusted. Here, the on-off valve 32 is moved integrally with the sub tank 33, and thus, the third air tube 53 connecting the on-off valve 32 to the sub tank 33 is hardly stretched or slackened. On the other hand, a distance between the sub tank 33 and the main tank 34 varies. For example, when the sub tank 33 leaves the main tank 34, the sub tank side tube 52a with the extra length portion is stretched such that the extra length portion is shortened. This stretch of the sub tank side tube 52a allows the movement of the sub tank 33. On the other hand, the main tank side tube 52b does not stretch.

[0037] On the contrary, as compared with a case in FIG. 4, when the sub tank 33 approaches the main tank 34 as illustrated in FIG. 2, the stretch nozzle 31 is moved toward the side frame 11 in which the main tank 34 is provided to adjust its position. In addition, the position of the temple device main body 62 is also adjusted in accordance with the width of the woven fabric. Here, the temple device main body 62 is moved by the same method described above, and the on-off valve 32 and the sub tank 33 are also moved integrally with the temple device main body 62.

[0038] Here, the on-off valve 32 is moved integrally with the sub tank 33, and thus, the third air tube 53 connecting the on-off valve 32 to the sub tank 33 is hardly stretched or slackened. On the other hand, the sub tank 33 moves so as to approach the main tank 34. Here, the first end of the stretched sub tank side tube 52a with the shortened extra length portion is displaced such that the extra length portion becomes long. This displacement of the sub tank side tube 52a allows the movement of the sub tank 33. On the other hand, the main tank side tube 52b is not stretched.

[0039] The following effects are obtained by the above-described embodiment.

(1) The compressed air is supplied from the main tank 34 to the sub tank 33 while the on-off valve 32 is closed, so that the sub tank 33 stores the compressed air at high pressure before the on-off valve 32 opens, similarly to the main tank 34. The sub tank 33 is provided on the temple base 61, and thus, the sub tank 33 is closer to the on-off valve 32 than the main tank 34. With this configuration, pressure loss between the sub tank 33 and the on-off valve 32 is reduced, which suppresses the decrease of the injection pressure from the stretch nozzle 31. As a result, in the second air tube 52 between the on-off valve 32 and the main tank 34, the sub tank side tube 52a connected to the sub tank 33 may be formed of a flexible tube with a smaller diameter than that of the main tank side tube 52b. This suppresses that the stiffness of the second air tube 52 interferes with the positional adjustment of the on-off valve 32 when the on-off valve 32 is moved in accordance with the positional adjustment of the stretch nozzle 31. Thus, the on-off valve 32 is easily moved.

(2) The on-off valve 32 is integrated with the sub tank 33 by the bracket 42. With this configuration, the on-off valve 32 and the sub tank 33 are disposed closer

to each other by shortening the distance between the on-off valve 32 and the sub tank 33. Thus, the decrease of the injection pressure from the stretch nozzle 31 is further suppressed by shortening the distance between the sub tank 33 and the on-off valve 32.

(3) The on-off valve 32 and the sub tank 33 are integrated with each other by the bracket 42, and thus, the sub tank 33 is also moved as the on-off valve 32 moves. Here, the distance between the on-off valve 32 and the sub tank 33 is constant, so that the distance between the on-off valve 32 and the sub tank 33 does not become longer even when the on-off valve 32 and the sub tank 33 are moved. Accordingly, the pressure loss between the on-off valve 32 and the sub tank 33 does not increase by the movement of the on-off valve 32 and the sub tank 33.

(4) The sub tank 33 is connected to the main tank 34 by the first joint 55 and the second air tube 52. The main tank side tube 52b in the second air tube 52 is the tube with the large diameter, and the sub tank side tube 52a is a flexible tube with the smaller diameter than that of the main tank side tube 52b. With this configuration, in the weft yarn tensioning device 30, the pressure loss between the main tank 34 and the sub tank 33 is reduced due to the main tank side tube 52b with the large diameter. In addition, in the weft yarn tensioning device 30, the on-off valve 32 is easily moved due to the flexible sub tank side tube 52a with the small diameter. Resistance against deformation of the sub tank side tube 52a when the sub tank 33 is moved is suppressed by using the flexible sub tank side tube 52a with the small diameter, so that the sub tank 33 is easily moved.

[0040] The present embodiment may be modified as follows. The present embodiment and the following modification may be combined with each other as long as they do not technically contradict each other.

[0041] As illustrated in FIG. 5, a temple base 71 may be supported above the supporting bar 23. A temple device main body, which is not illustrated, is supported on the temple base 71 supported above the supporting bar 23.

[0042] In this case, the on-off valve 32 is attached to a first bracket 451, and the sub tank 33 is attached to a second bracket 452. Then, the first bracket 451 and the second bracket 452 are attached to a supporting member 453, and the supporting member 453 is attached to the temple base 71. Thus, the on-off valve 32 and the sub tank 33 are separately provided on the temple base 71.

[0043] The supporting member 453 is attached to the temple base 71 such that a position of the supporting member 453 is adjustable in a longitudinal direction of the temple base 71. Furthermore, positions of the first bracket 451 and the second bracket 452 are adjustable in the longitudinal direction of the temple base 71 with respect to the supporting member 453.

[0044] It is sometimes preferable to adjust the positions of the on-off valve 32 and the sub tank 33 separately in accordance with the width of the woven fabric. Even in such a case, the on-off valve 32 and the sub tank 33 are separately moved to be adjusted in position by adjusting the positions of the first bracket 451 and the second bracket 452 with respect to the supporting member 453.

[0045] In this case, the third air tube 53 connecting the on-off valve 32 to the sub tank 33 preferably has an extra length portion in order to adjust the positions of the on-off valve 32 and the sub tank 33 such that the distance between on-off valve 32 and the sub tank 33 becomes longer.

[0046] The main tank side tube 52b is not limited to the tube with the large diameter described in the embodiment, and may be a flexible tube or a tube with a small diameter, such as the sub tank side tube 52a. Even with this configuration, due to the sub tank 33 disposed near the stretch nozzle 31 and the on-off valve 32, the decrease of the injection pressure from the stretch nozzle 31 is suppressed. In addition, the on-off valve 32 is easily moved due to the sub tank side tube 52a.

[0047] The second joint 56 may be fixed to the side frame 11 or the supporting bar 23.

[0048] The second joint 56 may be omitted. In this case, the second air tube 52 connecting the sub tank 33 to the main tank 34 is formed of one air tube.

[0049] The second joint 56 may be located below the upper surface of the supporting bar 23. In this case, the sub tank side tube 52a is disposed on the upper surface of the supporting bar 23, and extends also below the supporting bar 23.

[0050] The sub tank 33 may be attached to the temple base 61. In this case, only the on-off valve 32 is integrated with the temple device main body 62 and moved in accordance with the positional adjustment of the stretch nozzle 31.

[0051] The on-off valve 32 and the sub tank 33 need not be integrated with the temple device main body 62. For example, the on-off valve 32 and the sub tank 33 may be separately movable along the upper surface of the temple base 61 and be provided on the temple base 61. In short, as long as the positions of the on-off valve 32 and the sub tank 33 are adjustable in accordance with the positional adjustment of the stretch nozzle 31, the on-off valve 32 and the sub tank 33 may be provided in any suitable manner.

[0052] In the embodiment, the first air tube 51 connecting the on-off valve 32 to the stretch nozzle 31 may be a steel tube with high stiffness instead of the flexible tube.

[0053] The on-off valve 32 and the sub tank 33 are integrated with the temple device main body 62 by the bracket 42. However, the on-off valve 32 and the sub tank 33 may be separately integrated with the temple device main body 62.

[0054] The on-off valve 32 and the sub tank 33 need not be integrated with the temple device main body 62.
[0055] The on-off valve 32 and the sub tank 33 may be directly connected without the third air tube 53.
[0056] The following will describe a technical idea to be obtained from the above-described embodiment and modifications.

(I) The main tank side tube is made of a steel tube.

A weft yarn tensioning device (30) for an air jet loom (10) including a pair of side frames (11), a rocking shaft (12), a sley (13), a profile reed (16) that forms a weft yarn guide passage (16a), the weft yarn tensioning device includes a stretch nozzle (31) that is provided such that the stretch nozzle (31) is movable in a weft insertion direction of a weft yarn, a main tank (34) as a supply source of compressed air, and an on-off valve (32) connected to the stretch nozzle (31) through a first air tube (51). The on-off valve (32) is provided on an end portion of a temple base (61, 71) on a counter weft insertion side. A sub tank (33) is smaller than the main tank (34), connected to the on-off valve (32), and connected to the main tank (34) through a second air tube (52).

Claims

1. A weft yarn tensioning device (30) for an air jet loom (10) including a pair of side frames (11), a rocking shaft (12) that is supported by the side frames (11) and rotatable in a reciprocating manner, a sley (13) that swings together with the rocking shaft (12), and a profile reed (16) that is provided in the sley (13) and forms a weft yarn guide passage (16a),
the weft yarn tensioning device (30) comprising:

a stretch nozzle (31) oriented toward the weft yarn insertion passage (16a), the stretch nozzle (31) being provided in the sley (13) such that the stretch nozzle (31) is movable in a weft insertion direction of a weft yarn;
a main tank (34) as a supply source of compressed air, the main tank (34) being provided in the side frame (11) close to the stretch nozzle (31) of the pair of side frames (11); and
an on-off valve (32) connected to the stretch nozzle (31) through a first air tube (51), **characterized in that**
the on-off valve (32) is provided on an end portion of a temple base (61, 71) on a counter-weft insertion side, the temple base (61, 71) being supported by a supporting bar (23) formed between the pair of side frames (11), and
a sub tank (33) is provided on the end portion of the temple base (61, 71) on the counter-weft insertion side, the sub tank (33) being smaller than the main tank (34), connected to the on-off valve (32), and connected to the main tank (34) through a second air tube (52).

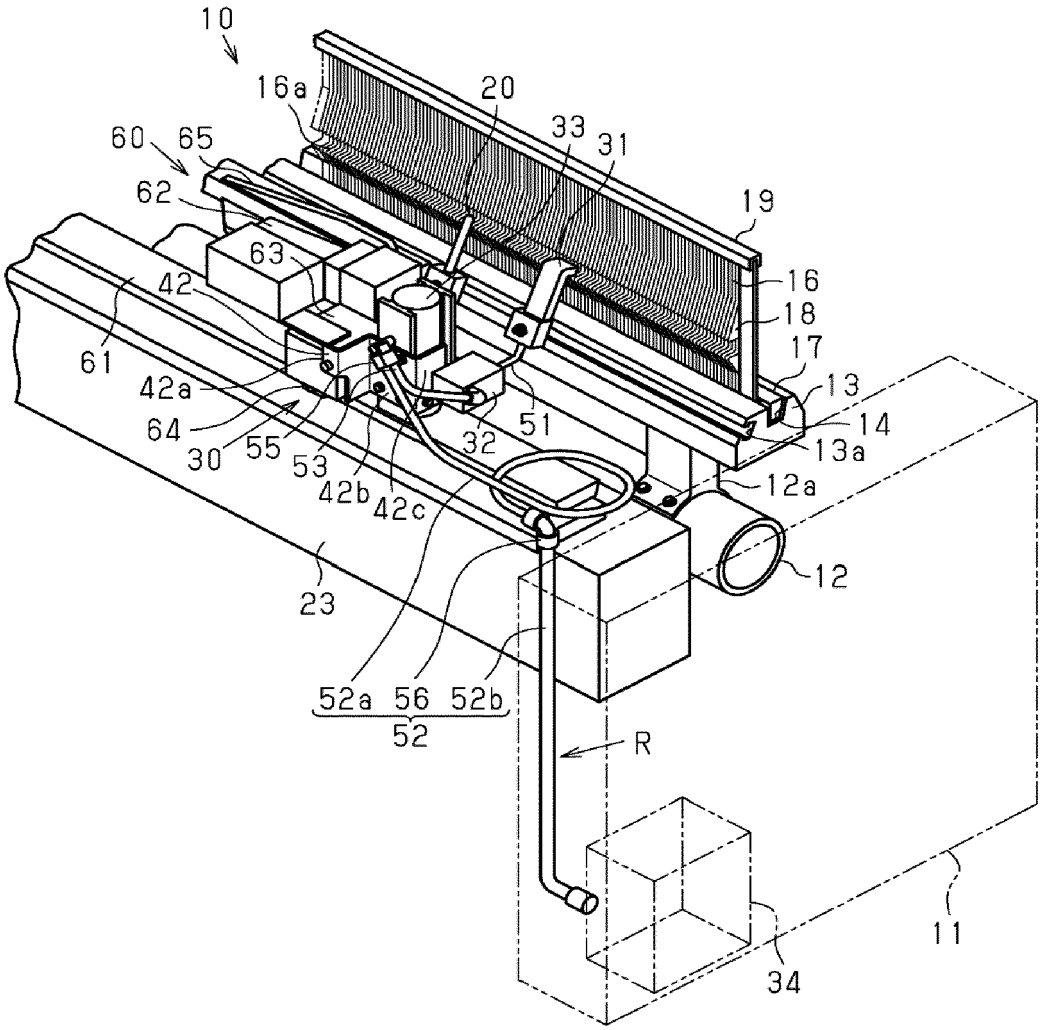
2. The weft yarn tensioning device (30) for the air jet loom (10) according to claim 1, **characterized in that**
the on-off valve (32) and the sub tank (33) are integrated with each other.

3. The weft yarn tensioning device (30) for the air jet loom (10) according to claim 1, **characterized in that**
the on-off valve (32) and the sub tank (33) are separately provided on the temple base (61, 71).

4. The weft yarn tensioning device (30) for the air jet loom (10) according to any one of claims 1 to 3, **characterized in that**

the second air tube (52) is formed of a sub tank side tube (52a) connected to the sub tank (33), a main tank side tube (52b) connected to the main tank (34), and a joint (56) connecting the sub tank side tube (52a) to the main tank side tube (34),
the main tank side tube (52b) has a diameter larger than a diameter of the sub tank side tube (52a), and
the sub tank side tube (52a) is a flexible tube.

FIG. 1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33
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62
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63
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18
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61
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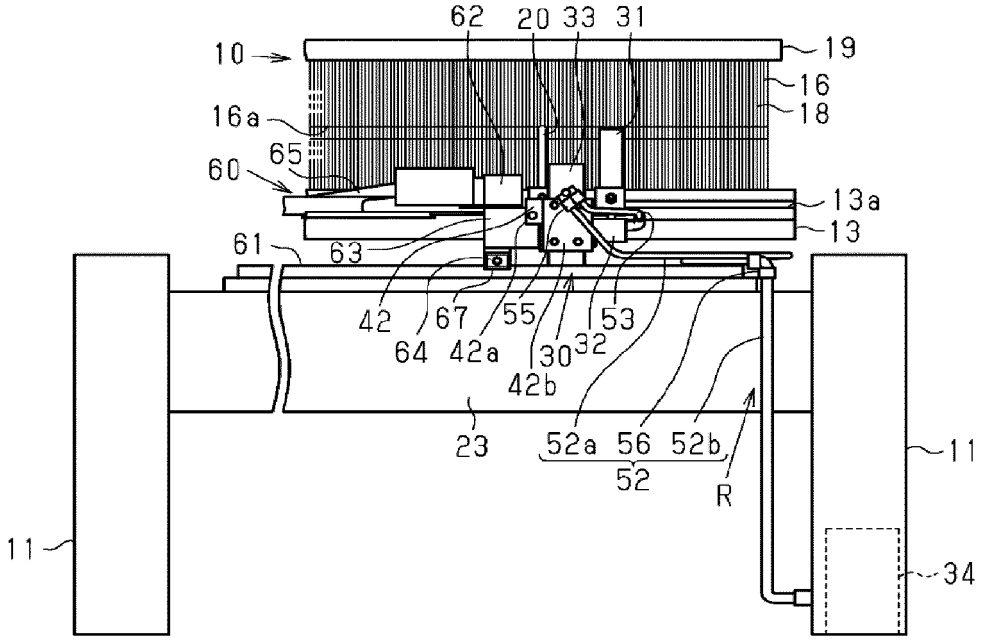
42a
14
64
51
13a
30
55
53
32
12a
42b
42c
12
23
52a
56
52b
52
R
11
34

FIG. 2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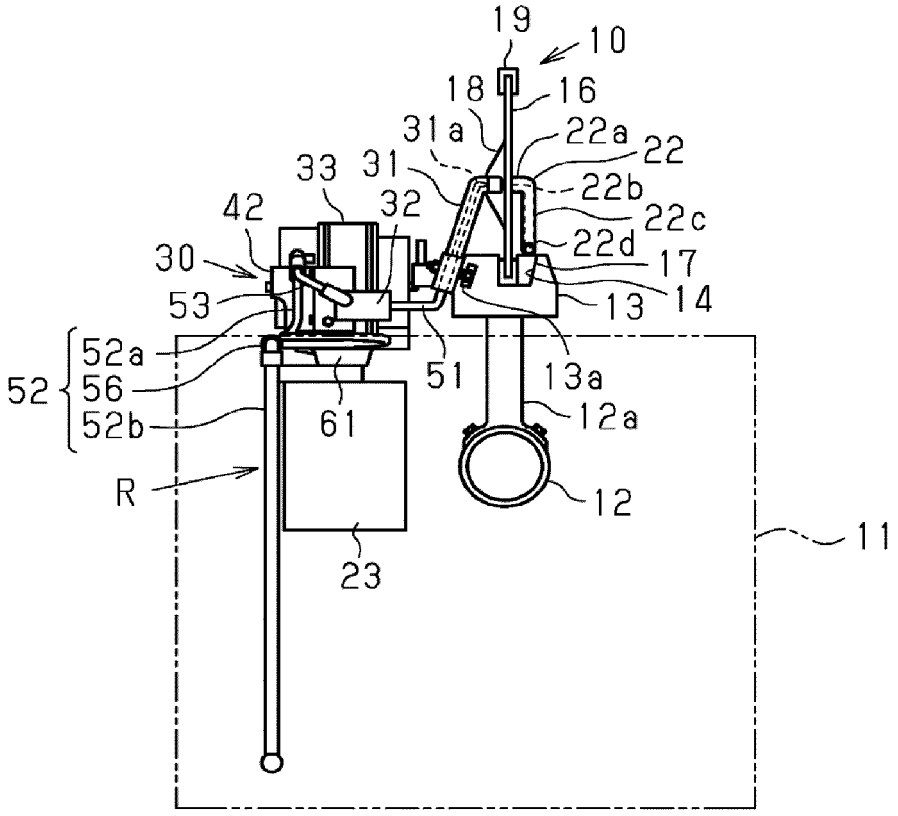
42a
30
32
42b
23
52a
56
52b
52
R
11
11
34

FIG. 3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18
16
31a
22a
22
33
31
22b
42
32
22c
22d
30
17
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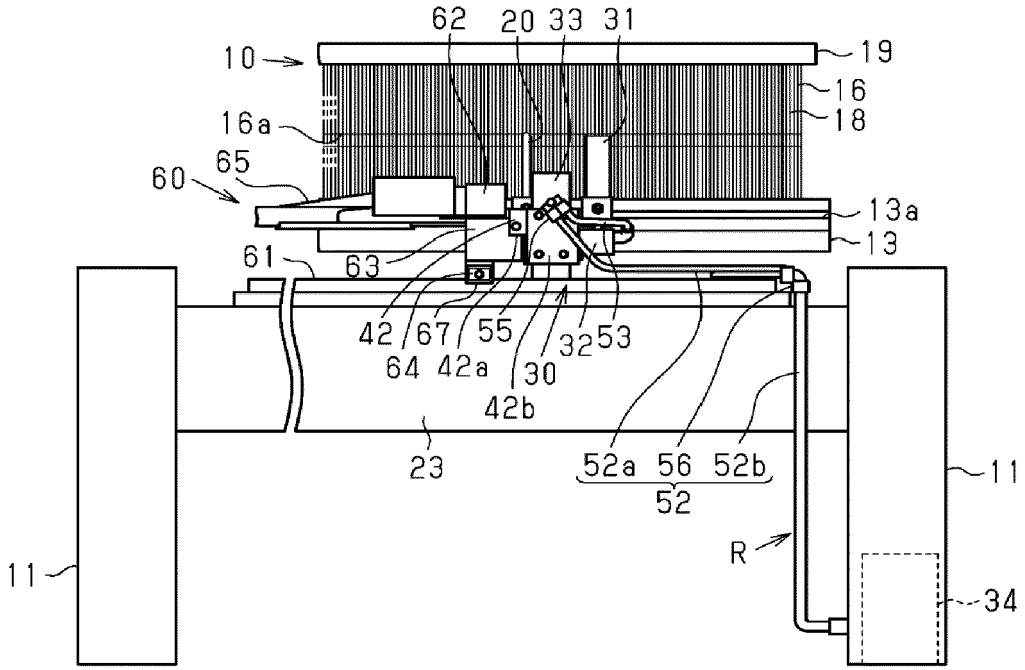
14
52a
56
52b
52
51
13a
12a
61
R
12
11
23

FIG. 4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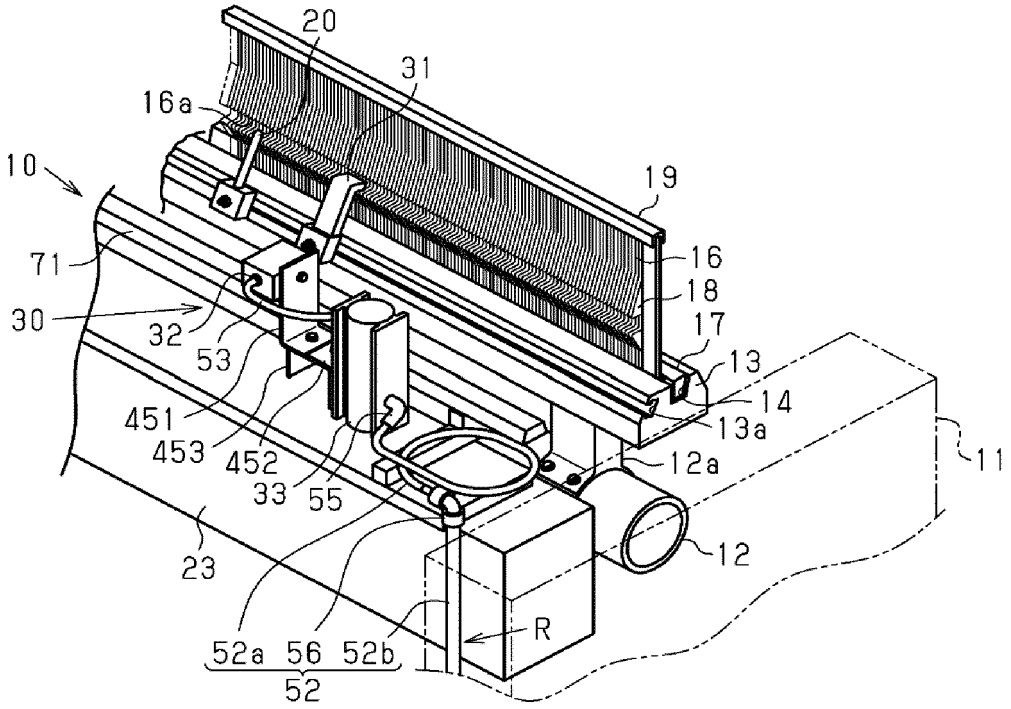
64
42a
30
42b
23
52a
56
52b
52
11
R
34
11

FIG. 5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13a
12a
11
23
12
R
52a
56
52b
52

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EUROPEAN SEARCH REPORT

Application Number
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A	JP H06 33982 U (UNKNOWN) 6 May 1994 (1994-05-06) * figure 1 * * paragraph [0012] *	1-4	

TECHNICAL FIELDS SEARCHED (IPC)

D03D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 July 2024	Hausding, Jan

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03-07-2024

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