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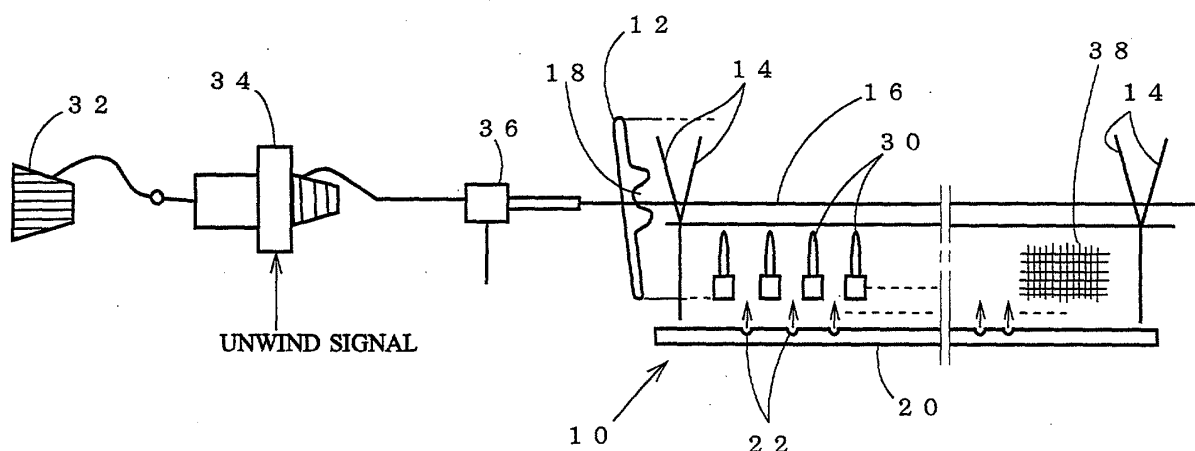
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(54) **Running weft control device of air-jet loom**

(57) A plurality of air jet holes 22 are provided along a longitudinal direction of a reed 12 to be a piece with the reed 12 of a loom or separately therefrom. The air jet holes are formed to an air jet pipe 20 provided along the reed 12 and are provided towards the front of the

reed 12 in a direction different from a jet direction of an auxiliary nozzle 30 provided to the reed 12. The air jet holes 22 are formed towards a weft guiding section 18 of the reed 12. The air jet holes 22 may be formed to a running control auxiliary nozzle 42 arranged between the auxiliary nozzles 30.

FIG. 1



Description

Field of the Invention

[0001] The present invention relates to a running weft control device of an air-jet loom for picking through air jet.

Description of the Background Art

[0002] Conventionally, an air-jet loom for picking through air jet uses a reed having a recess for weft guiding. Along the guiding recess of the reed, the weft is subject to picking through air jet specifically for picking. The weft having run along the guiding recess is beaten up by the reed.

[0003] JP-A-60-59151 discloses a technique of providing an auxiliary nozzle along a reed. In order not to cause air jet from the auxiliary nozzle to diffuse, also proposed is a picking device of an air-jet loom provided with one more auxiliary nozzle as a pair with the auxiliary nozzle for directing air jet in parallel to the jet direction thereof.

[0004] The problem is that, with the former conventional technology above, the weft subjected to picking along the weft guiding recess of the reed is sometimes off from the weft guiding recess serving as the running path for the weft. This is caused depending on the physical properties of the weft, reed condition such as air leakage or contamination, or setting condition of the jet direction of the auxiliary nozzle provided to the reed. Once off the weft guiding recess, the weft does not sufficiently receive the jet from the auxiliary nozzle, causing the weft to be unstable when it runs.

[0005] Further, the latter conventional technology above merely includes, one more auxiliary nozzle as a pair with an existing auxiliary nozzle for directing air jet in parallel to the jet direction thereof. Thus, the newly-provided auxiliary nozzle is directed towards the weft running path for air jet as does the other auxiliary nozzle, resulting in air jet interference between the auxiliary nozzles. As such, the weft resultantly becomes unstable when it runs. Further, the air is injected toward the running path from the auxiliary nozzle as well as another auxiliary nozzle. Therefore, once off the weft guiding recess, the weft does not sufficiently receive the jet from each auxiliary nozzle, causing the weft to be unstable when it runs.

[0006] The present invention is as claimed in the claims.

[0007] The present invention is proposed in view of such conventional problems, and provides a running weft control device of an air-jet loom capable of stable picking with a simple structure.

[0008] The present invention is directed to a running weft control device of an air-jet loom including a plurality of air jet holes provided along a longitudinal direction of a reed as a piece with the reed of the loom or separately

therefrom. The air jet holes are provided towards the front of the reed in a weft running direction different from a jet direction of an auxiliary nozzle provided to the reed. The air jet holes are formed towards a weft guiding section of the reed so as not to cause the weft to come off from the weft running path due to air jet coming from the air jet holes.

[0009] Note here that, the expression of "as a piece with the reed of the loom" means that the air jet holes are provided to a member swinging together with the reed (herein, a reed retainer, which is not shown but will be described later). Further, "separately therefrom" means, in stead of the member swinging together with the reed, the air jet holes are securely fixed to a position not causing interference with the reed and the auxiliary nozzle.

[0010] The air jet holes may be formed to an air jet pipe provided along the reed, or to a running control auxiliary nozzle arranged between the auxiliary nozzles provided along the reed. The running control auxiliary nozzle is provided between the auxiliary nozzles provided along the reed to be farther from the reed than the auxiliary nozzles. Also, the running control auxiliary nozzle may be provided between the auxiliary nozzles provided along the reed, and the air jet direction of which is directed upward towards the weft guiding section. Alternatively, the air jet holes may be each provided at a tip part of the auxiliary nozzle provided along the reed to direct air jet more upward than the air jet aimed for weft conveyance.

[0011] In the running weft control device of the air-jet loom of the present invention, air jet is directed towards the weft running path being the weft guiding section from the front of the reed in a direction different from a jet direction of the auxiliary nozzle. In such a manner, the weft being about to come off the weft running path is controlled to be on the running path, or the weft already off from the running path is put back onto the running path with reliability. As such, the weft is controlled by its running position on the weft running path, thereby enabling stable picking.

[0012] Further, using the running control auxiliary nozzle can bring the air jet holes closer to the weft running path, and thus can prevent the weft from coming off from the running path with more reliability. Further, forming the air jet holes to an auxiliary nozzle for running weft control can simplify the device structure to a greater degree.

[0013] Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, of which:

FIG. 1 is a schematic plane view showing a running weft control device of a first embodiment of the present invention;

FIG. 2 is a schematic vertical section view showing the running weft control device of the present embodiment;

FIG. 3 is an enlarged front view showing the running weft control device of the present embodiment; FIGS. 4A and 4B are vertical section view and schematic front view, respectively, showing a running weft control device of a second embodiment of the present invention;

FIGS. 5A and 5B are vertical section view and schematic front view, respectively, showing a running weft control device of a third embodiment of the present invention; and

FIG. 6 is a vertical section view showing a modified example of a running control auxiliary nozzle of a third embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0014] Embodiments of the present invention are described by referring to accompany drawings. FIGS. 1 to 3 are diagrams showing a first embodiment of the present invention. Therein, a running weft control device 10 of an air-jet loom of the present embodiment is structured, to be a piece, with a reed 12 extending to the direction along which a plurality of thin reed dents are arranged parallel to one another. As to the reed 12, the front and back sides of the reed dent plurally arranged at regular intervals are so arranged as to be parallel to the opening plane of the weft 14. Each of the reed dents is formed with a weft guiding section 18 being a recess to serve as a running path over which a weft 16 passes due to air jet. Along with the weft guiding section 18 of the reed 12, an auxiliary nozzle 30 for picking is provided at regular intervals for air jet in the picking direction.

[0015] The running weft control device 10 of the present embodiment is attached to a reed retainer, which is swingably attached to the loom for swinging motion in a predetermined manner by a driving mechanism (not shown). Further included is an air jet pipe 20 provided to the reed 12 to be a piece therewith. The air jet pipe 20 is located below the reed 12 along the longitudinal direction thereof. Along the longitudinal direction of the reed 12, a plurality of predetermined positions of the air jet pipe 20 are each formed with an air jet hole 22, which is formed sideways at predetermined intervals. The air jet holes 22 are formed towards the weft guiding section 18 of the reed 12. To the air jet pipe 20, connected is an air source 28 via an electromagnetic valve 24 and a regulator 26 for pressure adjustment. The air source 28 is exemplified by a compressor for generating compressed air.

[0016] Referring to FIG. 1, the picking device is provided with a feeder 32 to the base of the loom to feed the weft 16. The weft 16 drawn out from the feeder 32 is stored for length measurement by a length measurement storage device 34. The weft 16 thus stored by the length measurement storage device 34 is unwound responding to an unwind signal coming from a control device, which is not shown. The unwound weft is subjected

to picking by air jet coming from a main nozzle 36.

[0017] Described next is the operation and effects of the running weft control device 10 of the present embodiment. First, the weft 16 subjected to picking by the main nozzle 36 runs along the weft guiding section 18 of the reed 12. Further, still along the weft guiding section 18, the weft 16 is guided to run by air jet coming from an auxiliary nozzle 30. With respect to the running weft 16, air jet is directed from the air jet hole 22 of the air jet pipe 20 provided to the reed 12 towards the weft guiding section 18 being the weft running path. Thus directed air jet places the weft 16 being about to be off from the weft running path back to the weft guiding section 18. Here, the air jet coming from the air jet hole 22 of the air jet pipe 20 is directed with a picking timing by the electromagnetic valve 24. The control device that is not shown is in charge of this control.

[0018] According to the running weft control device 10 of the present embodiment, by the air jet directed towards the weft guiding section 18, the weft 16 can be put back to the running path with reliability even if it is about to be off therefrom, realizing picking in a stable manner. Moreover, with a structure of directing air jet by the electromagnetic valve 24 from the air jet holes 22 with a picking timing, the amount of air jet is reduced, successfully achieving power saving.

[0019] Herein, the air jet pipe 20 may be provided to upper or lower part of a textile fabric 38. The air jet pipe 20 is not necessarily provided to be a piece with the reed 12. Without being attached to the reed retainer, the air jet pipe 20 may be provided separately from the reed 12 and the auxiliary nozzle 30 so as not to cause interference therewith. As shown in FIG. 2, air jet may be directed towards the weft guiding section 18, preferably towards an upper jaw of the weft guiding section 18. Further, the pipe and the air jet holes 22 may be so set as to cover the entire width of the textile fabric 38, or may be provided in such positions that the weft 16 easily comes out. In consideration of the weft 16 easily coming out, the hole diameter of the air jet hole 22 or a hole pitch may be also set as appropriate. As an example, the number of the air jet holes 22 may be increased in the latter picking period in which picking becomes easily unstable. Still further, instead of directing air jet from the air jet holes 22 with a picking timing period, the electromagnetic valve 24 may continue directing air jet while the weaving machine is in operation but stop when the weaving machine is not operating. Alternatively, without using the electromagnetic valve, air jet may be always manually directed when the weaving machine is in operation.

[0020] Referring to FIG. 4, described next is a running weft control device 40 of a second embodiment of the present invention. Herein, any component similar to that in the above embodiment is provided with the same reference numeral, and not described again. In the running weft control device 40 of the present embodiment, an air jet hole for directing air jet to the weft guiding section

18 of the reed 12 is each provided to a plurality of running control auxiliary nozzles 42 coupled to a pipe connected to the air source. In order to put back the weft 16 to the weft running path with reliability even if it is about to be off therefrom, the plurality of running control auxiliary nozzles 42 are provided between the auxiliary nozzles 30 with some distance from the reed 12. Alternatively, the running control auxiliary nozzles 42 may be provided to the reed 12 via an attachment piece (not shown) so as to be adjustable in position in the weft or warp direction.

[0021] According to the running weft control device 40 of the present embodiment, similar effects as above embodiment can be successfully achieved. What is better, the running control auxiliary nozzles 42 can be closer to the weft running path, thereby achieving more reliable running weft control.

[0022] Referring to FIG. 5, described next is a running weft control device 50 of an air-jet loom of a third embodiment of the present invention. Herein, any component similar to that in the above embodiments is provided with the same reference numeral, and not described again. The running weft control device 50 of the present embodiment is also structured by a plurality of running control auxiliary nozzles 52 provided between the auxiliary nozzles 30. These running control auxiliary nozzles 52 are arranged in the same direction as the auxiliary nozzles 30, and air jet is directed upward towards the weft guiding section of the reed. Such a structure also can put back the weft 16 to the running path with reliability even if it is about to be off therefrom.

[0023] Note herein that, the running control auxiliary nozzles 52 of the running weft control device 50 of the present embodiment may be, as shown in FIG. 6, used together with the auxiliary nozzles 30, and other than a jet hole 31 of the auxiliary nozzle 30, another air jet hole 22 may be formed to the top of the auxiliary nozzle 30. Such a structure allows component sharing, and thus favorably leads to cost reduction.

[0024] The running weft control device of the air-jet loom of the present invention is not surely restrictive to the above embodiments, and the air jet hole for running weft control may be set by number, position, and structure as appropriate.

of an auxiliary nozzle provided to the reed, and the air jet holes are formed towards the weft guiding section of the reed.

- 5 2. The running weft control device of the air-jet loom according to claim 1, wherein the air jet holes are formed to an air jet pipe provided along the reed.
- 10 3. The running weft control device of the air-jet loom according to claim 1, wherein the air jet holes are formed to a running control auxiliary nozzle arranged between the auxiliary nozzles provided along the reed.
- 15 4. The running weft control device of the air-jet loom according to claim 3, wherein the running control auxiliary nozzle is provided between the auxiliary nozzles provided along the reed to be farther from the reed than the auxiliary nozzle.
- 20 5. The running weft control device of the air-jet loom according to claim 3, wherein the running control auxiliary nozzle is provided between the auxiliary nozzles provided along the reed, and the air jet direction of which is directed toward upward.
- 25 6. The running weft control device of the air-jet loom according to claim 1, wherein the air jet hole is provided at a tip part of the auxiliary nozzle provided along the reed to direct air jet more upward than air jet aimed for weft conveyance.
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Claims

1. A running weft control device of air-jet loom provided to an air-jet loom for picking through air jet for directing air jet towards a reed including a weft guiding section serving as a weft running path, the device comprising
 - a plurality of air jet holes provided in a longitudinal direction of the reed as a piece with the reed of the loom or separately therefrom, wherein
 - the air jet holes are provided towards front of the reed in a direction different from a jet direction

FIG. 1

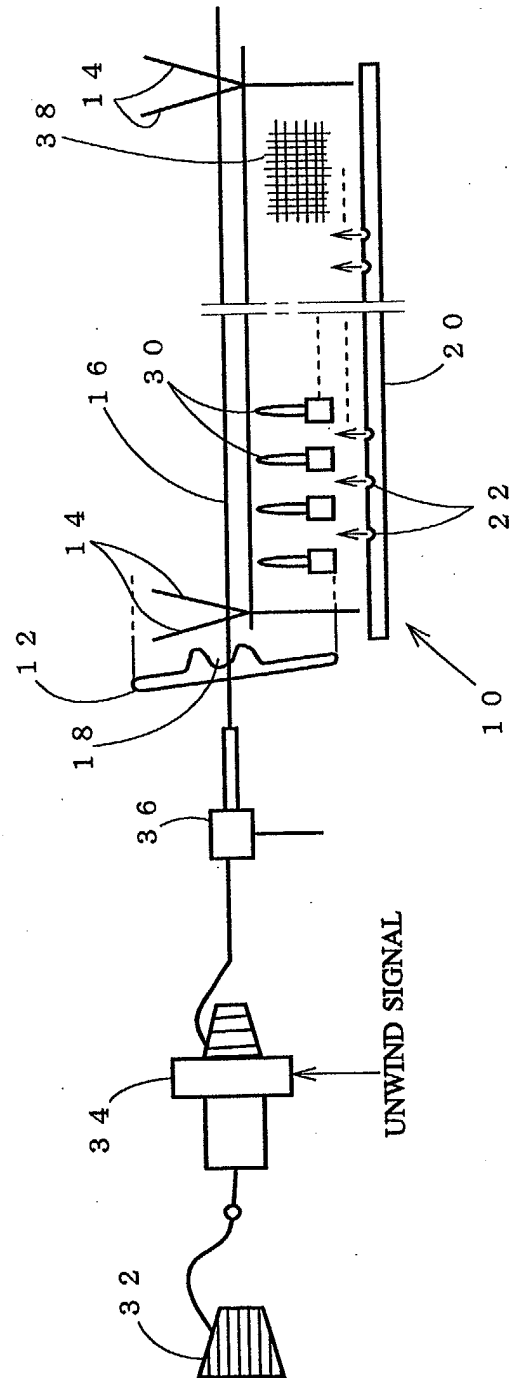


FIG. 2

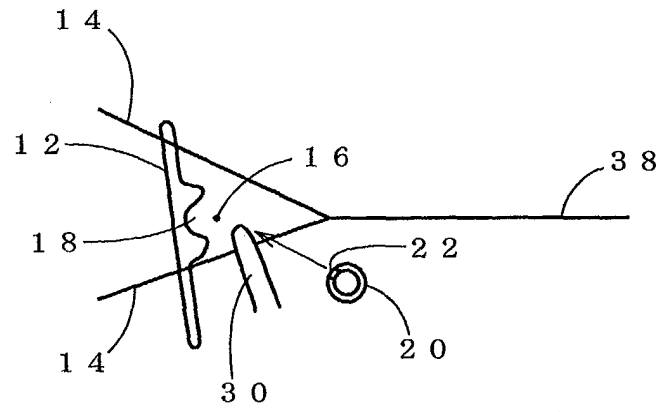


FIG. 3

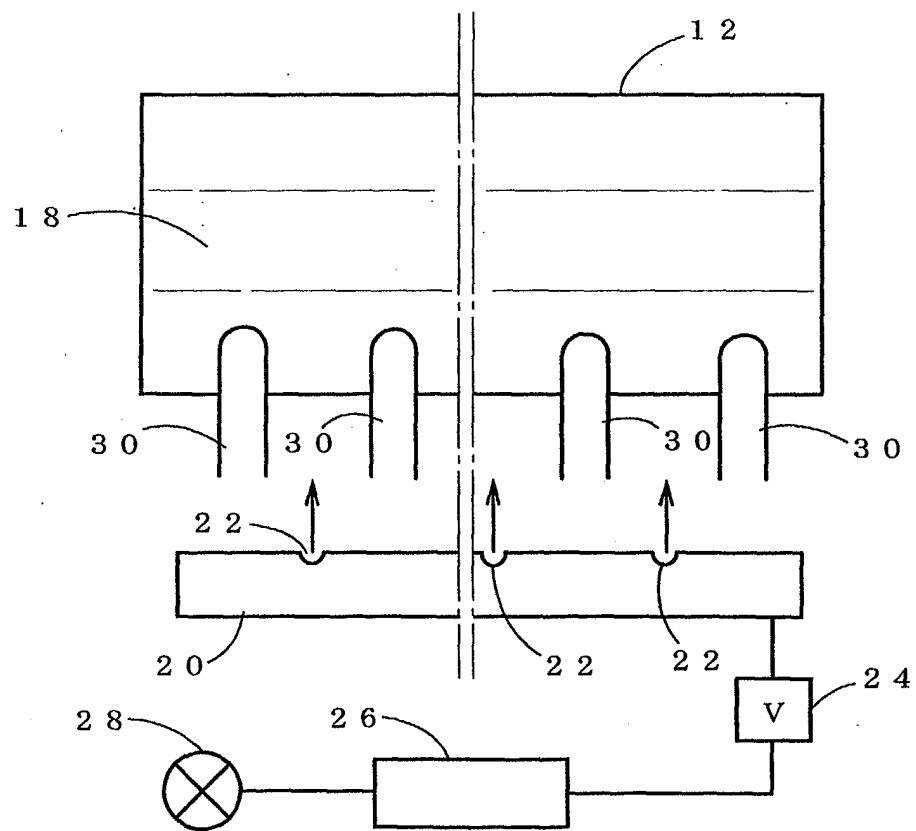


FIG. 4

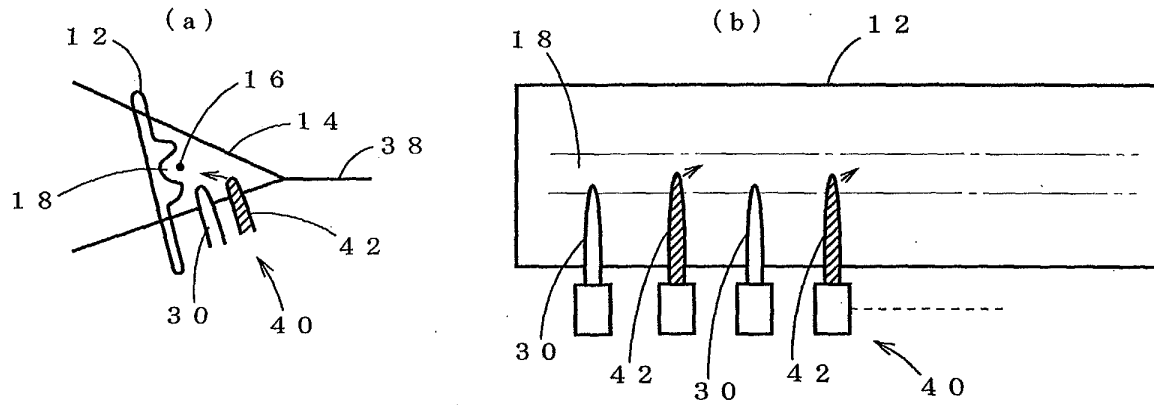


FIG. 5

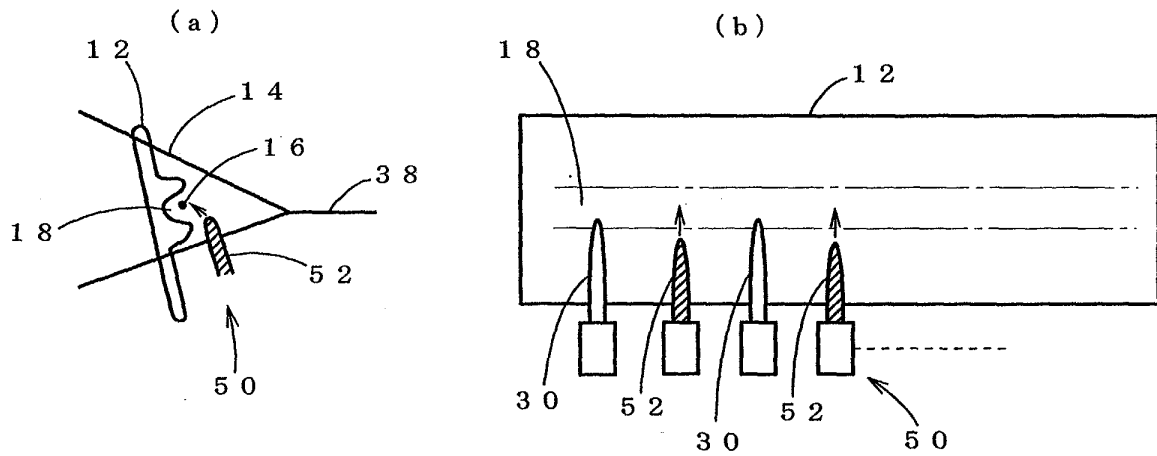


FIG. 6

