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A method of forming, on a needle loom, a bridge in ribbons particularly for up-down moving curtains.

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EP-A-0 036 920
DE-A-2 017 446
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Description

As is known up-down moving curtains, and specifically so-called packing curtains, are currently provided with several ribbons arranged across the curtain at substantially equal distances apart such as to lay in a parallel direction to the curtain up-down direction of movement.

Such ribbons require that loops or small pockets be formed therein at regular intervals through which a string is passed slidingly which engages with its end the bottom edge of the curtain to move it up and down.

Such ribbons may be formed on a shuttle loom wherein a shuttle weaves the background ribbon and a second shuttle weaves the string from which the loops are formed coaxially with the background ribbon.

When a loop is to be formed, the first shuttle is stopped, and the second shuttle will produce a length of string appropriate to form on the ribbon the loop to be used for leading the string that controls the up-down movement of the curtain.

Where a needle loom is employed, instead, a tape is weaved on the ribbon which usually has a smaller width than the ribbon, and at regular intervals, the ribbon and tape are not sewn to each other so as to leave a pocket having a substantially vertical axis to the ribbon axis.

In this case, it is necessary to use, for passing the string, a ring engaged with the pocket, through which the string controlling the up-down movement of the curtain is then passed.

As can be taken from the above discussion, the cited ribbons have the disadvantage of either being weaved on shuttle looms, which are very slow in operation and labour-consuming, or if weaved on needle looms, and accordingly at a high weaving rate and join labour input, that rings have to be used.

Furthermore, in either cases, to weave the string or tape over the ribbon, a large amount of warp yarn is to be used because the tape or string are weaved onto the ribbon even where no pockets or loops are formed thereon.

Also known is a European patent applications FR-A-0 036 920 wherein a method is described for application to a pleating strap or head ribbons for horizontally sliding curtains to only form pockets at evenly spaced points, wherein the curtain hanging hooks shall then have to be engaged.

The method described in the European patent application consists of forming, at those areas where the strap fabric and cited pocket are to be formed, a double shed and using a warp yarn as the weft yarn in the double weaved part.

Furthermore, the cited warp yarn is placed, when used as the weft yarn, halfway up in the upper shed of the double shed, and the number of the warp yarns required for the weft yarns is equal to the number of the lengthwise yarns of the double weaved fabric to be weaved.

Even if: an amount of warp yarn, for use as the weft yarn, is required which is considerably less than that used in the ribbons described initially,

the fact remains that the amount of warp yarn used is still large, and that the formed pocket makes it difficult to insert a curtain control string therethrough.

It is the aim of this invention to eliminate such prior disadvantages by providing a method of forming a bridge which is adapted to receive a control string slidingly therethrough for up-down moving curtains using a very small amount of the warp yarn substantially equal in length to just twice the width of the ribbon on which the bridge is weaved.

Within the above aim, it is an important object of the invention to provide a method of forming a bridge, on needle looms, adapted to attain, on completion of the product, a length which is substantially greater than the width of the ribbon on which it is retained.

A not least object of the invention is to provide a method of forming a bridge, on needle looms, which has a lower hot shrinkage rate than the ribbon on which it is weaved.

The above aim and these and other objects are achieved by a method of forming, on a needle loom, a bridge in ribbons particularly for up-down moving curtains, using to form the bridge on the ribbon at least one warp yarn as a weft yarn, characterised in that said at least one warp yarn is not preset to exhibit on completion of said bridge a lower hot shrinkage rate than that of said ribbon, said at least one warp yarn being taken from a first side of said ribbon over and across all the warp yarns in said ribbon to engage with at least one warp yarn of the edge of the second side of said ribbon, said warp yarn being then likewise taken back to said first side to engage with at least one warp yarn of the edge of said first side to thereby complete said bridge.

Further features and advantages of the invention will become apparent from the following description of a preferred but not exclusive embodiment of the method of forming, on a needle loom, a bridge in ribbons particularly for up-down moving curtains, and from the accompanying drawings which illustrate an embodiment of a device for implementing the method, and where:

Figure 1 is a fragmentary perspective view of two heald frames and a reed of the slay with a plain shed open to show the yarns of the front heald frame at the top;

Figure 2 is a perspective view similar to Figure 1 showing the warp yarn raised such that it can engage with a sickle and be utilised for a weft yarn;

Figures 3, 4, 4a, and 5 are plan views, to enlarged scales, showing the positions taken up successively by a sickle, a latch needle, and a reed;

Figure 6 is a plan view showing the bridge retained by the edge yarns of the ribbon according to the invention;

Figure 7 is a plan view showing the bridge retained by several warp yarns in the edges of the ribbon sides according to the invention;

Figure 8 is a plan view showing the different rates of hot shrinkage for the warp yarn forming the bridge and the ribbon on which it is weaved; and

Figure 9 is a sectional plan view of an extendible piston effective to enhance the arcuate lay of the bridge during its formation on the ribbon.

With particular reference to Figures 1, 2 and 8, it may be seen that the yarns 2 are passed through the heald eyes 30 in the front frame 3 of the frame pair 3 and 4, and in this condition the loom, in accordance with conventional techniques and as shown in Figure 1, will weave the bottom of the ribbon 7. When a bridge 8 is to be formed, the warp yarn 9 is laid substantially above the upper shed owing to its being passed through the oblong eye 10 of the heald 11.

By means of a sickle 12, having advantageously its end 13 bifurcated, the warp yarn 9 is taken in a substantially transverse direction to the ribbon 7, and specifically from a first side 14 of the ribbon 7 over and across all the warp yarns making up the ribbon 7 to engage with at least one warp yarn and precisely only with the warp yarn 15 in the edge of the second side 16 of the ribbon 7.

Thereafter, the warp yarn 9 is taken back likewise to the first side 14 to engage with at least one warp yarn, and precisely only with the warp yarn 17 in the edge of the first side 14 to form the bridge 8.

It should be further pointed out that the warp yarn 9 would be hot preset, prior to being weaved onto the ribbon, thereby on completion of the bridge it will exhibit on the ribbon a hot shrinkage rate which is lower than the ribbon hot shrinkage rate, so as to yield, on completion of the product, a bridge having a definitely greater length than the width of the ribbon following heat treatment.

Where a bridge is sought which has a smaller size than the ribbon width, or a bridge which is so bonded to the ribbon as to exhibit a higher pulling strength, then the warp yarn would only be taken across with its initial section 20, as shown in Figure 4a, over the warp yarns comprehensively designated 22 of the middle portion of the ribbon 7 to only engage, as the weft yarn, with several warp yarns comprehensively designated 23 and 24 close to the first and second sides 14 and 16 of the ribbon 7. Thereafter, the warp yarn 9 is taken back likewise to the first side 14 of the ribbon 7 to engage, again as the weft yarn, with the warp yarns comprehensively designated 24 close to the side 14 so as to form the bridge 8 having a free section 20 substantially shorter than the ribbon 7 is wide.

Merely as an example, by the time the warp yarn engages with the sickle 12 to be taken

across the ribbon to the edge of the latter, the warp yarn is disposed substantially above the shed 25, as shown in Figure 2, owing to its being passed through the oblong eye 10 presented by the heald 11 of the frame 3.

Furthermore, on the frame there will be present a latch needle 25 serving the sole function of holding back the warp yarn 9 as the sickle 12 is being returned to its original position as shown in figure 5.

Where instead a bridge is sought which has a smaller size than the ribbon width, then several side healds would be raised, for example, leaving the middle healds down, thereby the warp yarn can be used, on engaging with the side yarns, as the weft yarn, it being therefore held by these firmly on the ribbon 7 while it will pass over the middle yarns and remain disengaged from the latter to form a bridge having a desired size.

On the frame, close to the latch needle 25, there may be also present an elastically extensible element 30 in a substantially parallel direction to the ribbon axis, so as to arrange itself advantageously between the ribbon and the warp yarn which is taken by the sickle 12 across the ribbon so as to space the warp yarn forming the bridge of the ribbon 7 further away and enable the curtain up-down movement control string to be passed through the space defined between the bridge and the ribbon 7.

In this case, during the heat treatment and hence on the ensuing shrinkage of the ribbon but not of the bridge, it will be possible to further expand the distance between the ribbon and the warp yarn forming the bridge so as to provide a shed 31 having such a breadth as to accommodate an up-down control string even for large size curtains.

It is further pointed out that each portion of the ribbon 7 proximate the sides 14 and 16 has a higher number of warp yarns than the number of the warp yarn in the middle portion of the ribbon 7. Thus, the ribbon 7 will exhibit during the heat treatment a differentiated shrinkage rate that is a lower shrinkage rate close to the sides 14 and 16 and a higher one close to its middle portion, thus expanding the advantages afforded by presetting the warp yarn forming the bridge relatively to the ribbon 7, so as to provide a bridge which is spaced farther from the ribbon on which it is weaved and favour passing a string or another element having any size.

In practicing the invention, the materials used and the dimensions may be any ones contingent on requirements and the state of the art.

Claims

1. A method of forming, on a needle loom, a bridge in ribbons particularly for up-down moving curtains, using to form the bridge on the ribbon at least one warp yarn as a weft yarn, characterised in that said at least one warp yarn is hot preset to exhibit on completion of said bridge a lower hot

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shrinkage rate than that of said ribbon, said at least one warp yarn being taken from a first side of said ribbon over and across all the warp yarns in said ribbon to engage with at least one warp yarn of the edge of the second side of said ribbon, said warp yarn being then likewise taken back to said first side to engage with at least one warp yarn of the edge of said first side to thereby complete said bridge.

2. A method according to Claim 1, characterised in that the portion of said ribbon next to said first and second sides has a higher number of warp yarns than the warp yarns of the middle portion of said ribbon for a higher hot shrinkage rate of said middle portion than said portion next to said first and second sides.

3. A method according to Claims 1 and 2, characterised in that said at least one warp yarn is taken across solely with a section thereof over the warp yarns in said middle portion of said ribbon to only engage, as a weft yarn, with several warp yarns with said first and second sides of said ribbon, said warp yarn being then likewise taken back to said first side to engage, again as a weft yarn, with several warp yarns next to said first side to provide said bridge having the length of the free section substantially smaller than the width of said ribbon.

4. A method according to one or more of the preceding claims, characterised in that for its implementation, at least one element is disposed on the weaving loom which is extensible elastically in a parallel direction to the axis of said ribbon and below said warp yarn to space said warp yarn apart from said ribbon as said warp yarn is being passed from said first side to said second side and vice versa.

Patentansprüche

1. Verfahren zum Herstellen eines Steges an Raffbändern für nach oben und unten bewegbare Vorhänge auf einem Nadel-Webstuhl, bei dem man für die Herstellung des Steges mindestens einen Kettfaden als Schlußfaden verwendet, dadurch gekennzeichnet, daß der mindestens eine Kettfaden heiß vorgeschrumpft wird, um bei Fertigstellung des Steges ein geringes Maß an Heißschrumpfung als dasjenige beim Raffband aufzuweisen, daß der mindestens eine Kettfaden an einer ersten Längsseite des Bandes aufgenommen und quer über alle Kettfäden im Band hinweggeführt wird, um an mindestens einem Kettfaden an der Kante der zweiten Längsseite des Bands anzugreifen, und daß dieser herübergeführte Kettfaden in gleicher Weise zur ersten Längsseite zurückgeführt wird, um an mindestens einem Kettfaden an der Kante der zweiten Längsseite des Bandes anzugreifen.

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2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß die jeweils der ersten und der zweiten Längsseite des Raffbandes zunächst liegenden Bandpartien eine größere Anzahl von Kettfäden als der Mittelteil des Bandes haben, um auf diese Weise im Mittelteil des Bandes ein Maß an Heißschrumpfung zu erhalten, das größer als dasjenige der ersten und der zweiten Längsseite des Raffbandes ist.

3. Verfahren nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der mindestens eine Kettfaden lediglich mit einem Abschnitt quer über die Kettfäden des Mittelteils des Raffbandes gezogen wird, lediglich um als Schußfaden an mehreren Kettfäden der vorgenannten ersten und zweiten Längsseiten des Bandes anzugreifen, und daß sodann der vorgenannte Kettfaden in gleicher Weise zur ersten Längsseite zurückgeführt wird, wobei er als Schußfaden an mehreren der vorgenannten ersten Längsseite des Bandes zunächst liegenden Kettfäden angreift, um den Steg zu bilden, bei dem die Länge des freien Abschnittes wesentlich kleiner als die Breite des Bandes ist.

4. Verfahren nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß zu seiner Ausführung am Webstuhl mindestens ein elastisch in Längsrichtung und parallel zur Achse des Bandes ausdehnbares Element unterhalb des Kettfadens vorgesehen ist, das den Kettfaden vom Band entfernt hält, wenn der Kettfaden von der ersten zur zweiten Längsseite und umgekehrt geführt wird.

Revendications

1. Procédé de formation, sur un métier à tisser à aiguilles, d'un pont en rubans destiné, en particulier, à des rideaux se déplaçant dans un mouvement de haut en bas, en utilisant, pour former le pont sur le ruban, au moins un fil de chaîne comme fil de trame, procédé caractérisé en ce qu'au moins ce fil de chaîne est prétréglé à chaud pour présenter, à l'achèvement du pont, un taux de rétrécissement à chaud inférieur à celui du ruban, ce fil de chaîne au moins unique étant pris d'un premier côté du ruban sur tous les fils de chaîne et en travers de tous les fils de chaîne du ruban, pour s'engager avec au moins un fil de chaîne du bord du second côté du ruban, ce fil de chaîne étant ensuite ramené de la même façon au premier côté, pour s'engager avec au moins un fil de chaîne du bord de ce premier côté pour terminer ainsi le pont.

2. Procédé selon la revendication 1, caractérisé en ce que la partie du ruban, situé au voisinage du premier et second côté, présente un plus grand nombre de fils de chaîne que les fils de chaîne de la partie médiane du ruban, de manière à obtenir un taux de rétrécissement à chaud de cette partie médiane plus élevé que celui de la partie voisine du premier et second côté.

3. Procédé selon l'une quelconque des revendications 1 et 2, caractérisé en ce que le fil de chaîne au moins unique est pris, uniquement par une section de celui-ci, en travers des fils de chaîne de la partie médiane du ruban pour s'engager seulement, comme un fil de chaîne, avec plusieurs fils de chaîne du premier et second côté du ruban, ce fil de chaîne étant ensuite ramené de la même façon au premier côté pour s'engager, encore comme un fil de chaîne, avec les différents fils de chaîne situés au voisinage du premier côté, de manière à donner au pont une longueur de section libre nettement plus petite que la largeur du ruban.

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4. Procédé selon l'une ou plusieurs des revendications précédentes, caractérisé en ce que, pour sa mise en oeuvre, on dispose au moins un élément sur le métier à tisser qui soit extensible élastiquement dans une direction parallèle à l'axe du ruban et vienne au-dessous du fil de chaîne pour écarter ce fil de chaîne du ruban, lorsqu'on fait passer ce fil de chaîne du premier côté au second côté et vice versa.

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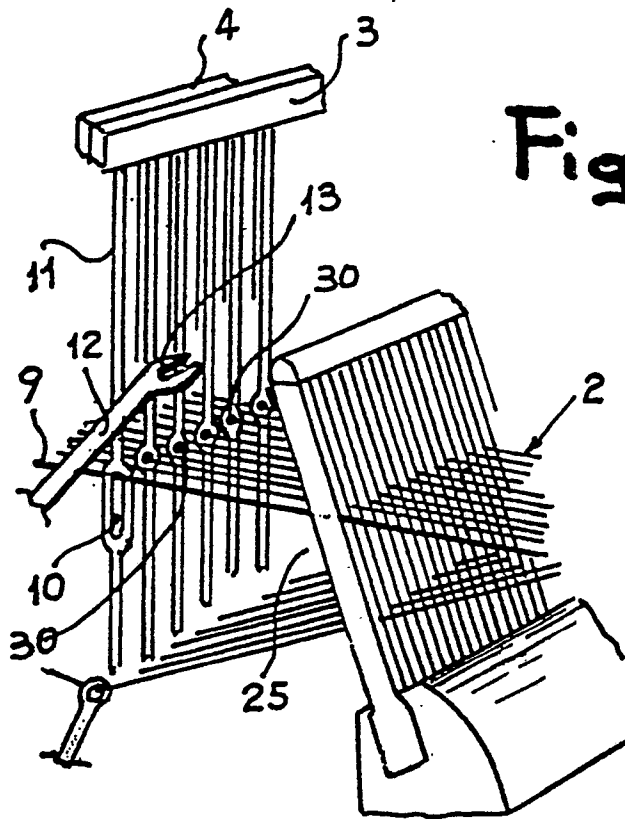


Fig. 1

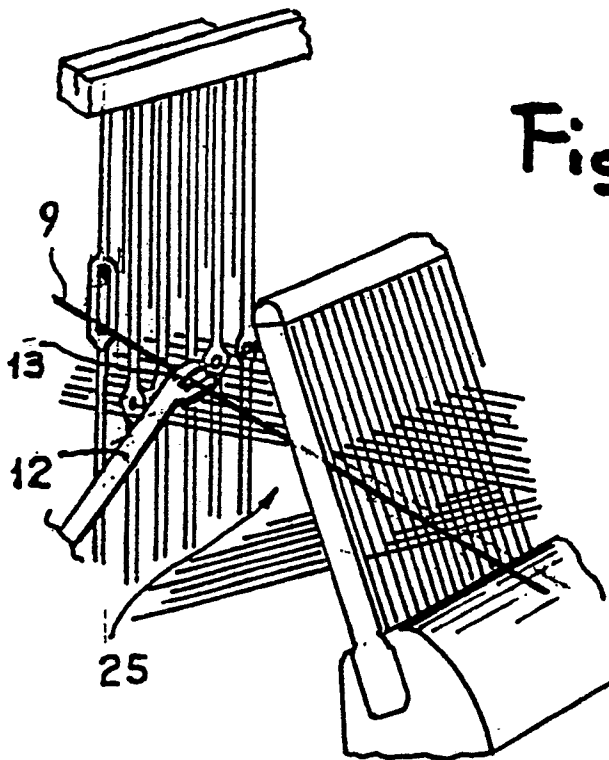
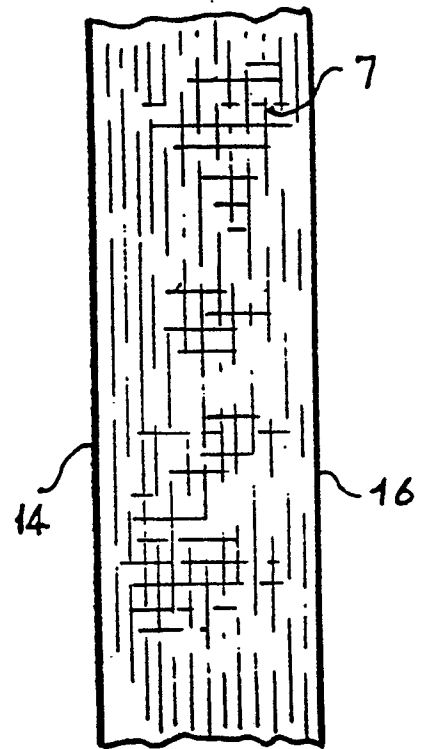
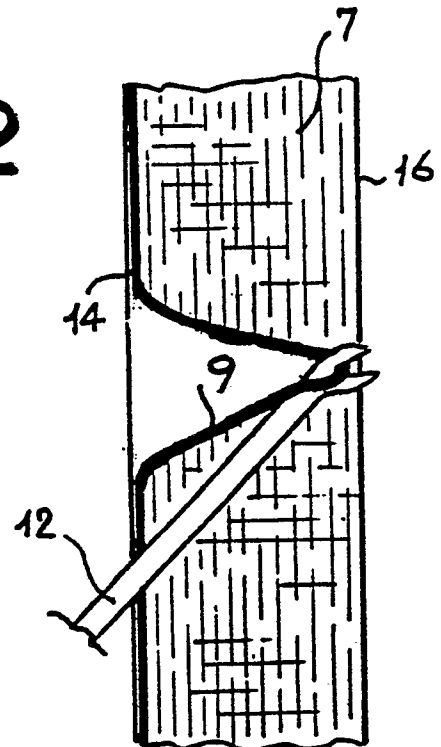


Fig. 2



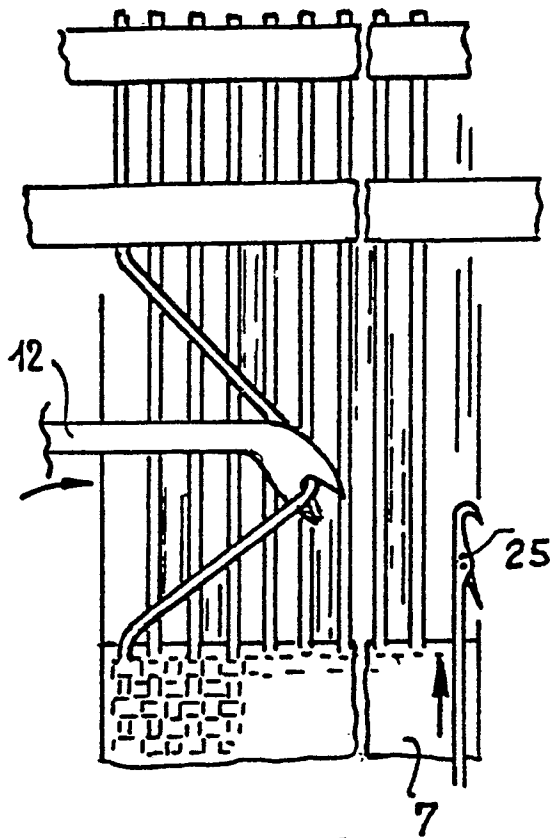


Fig. 3

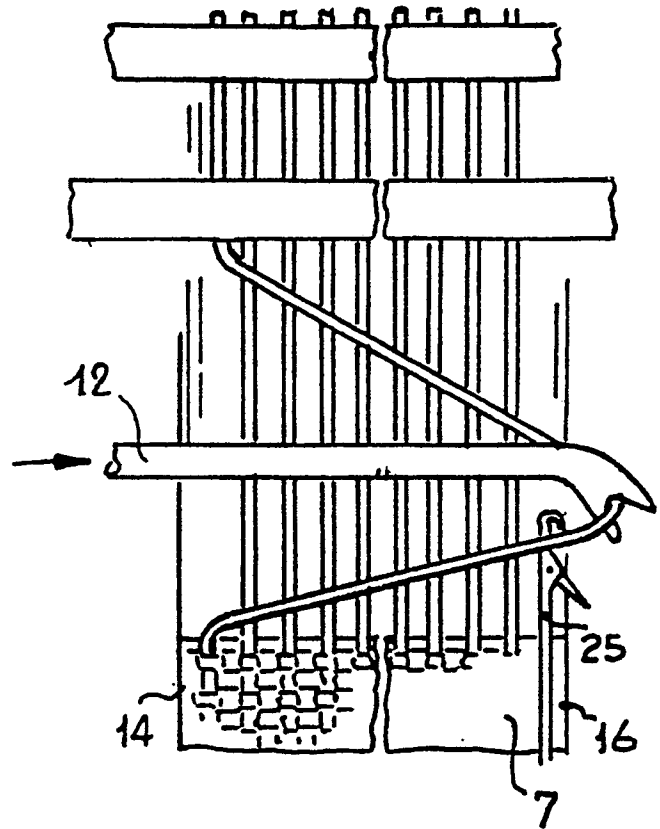


Fig. 4

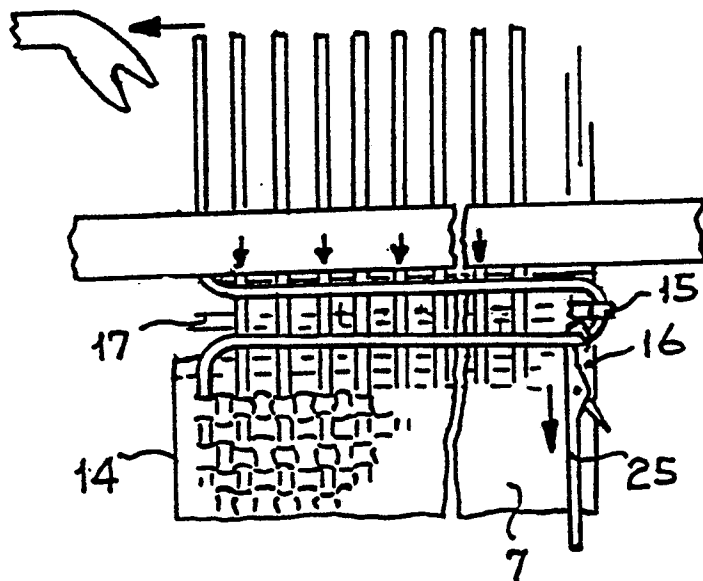


Fig. 5

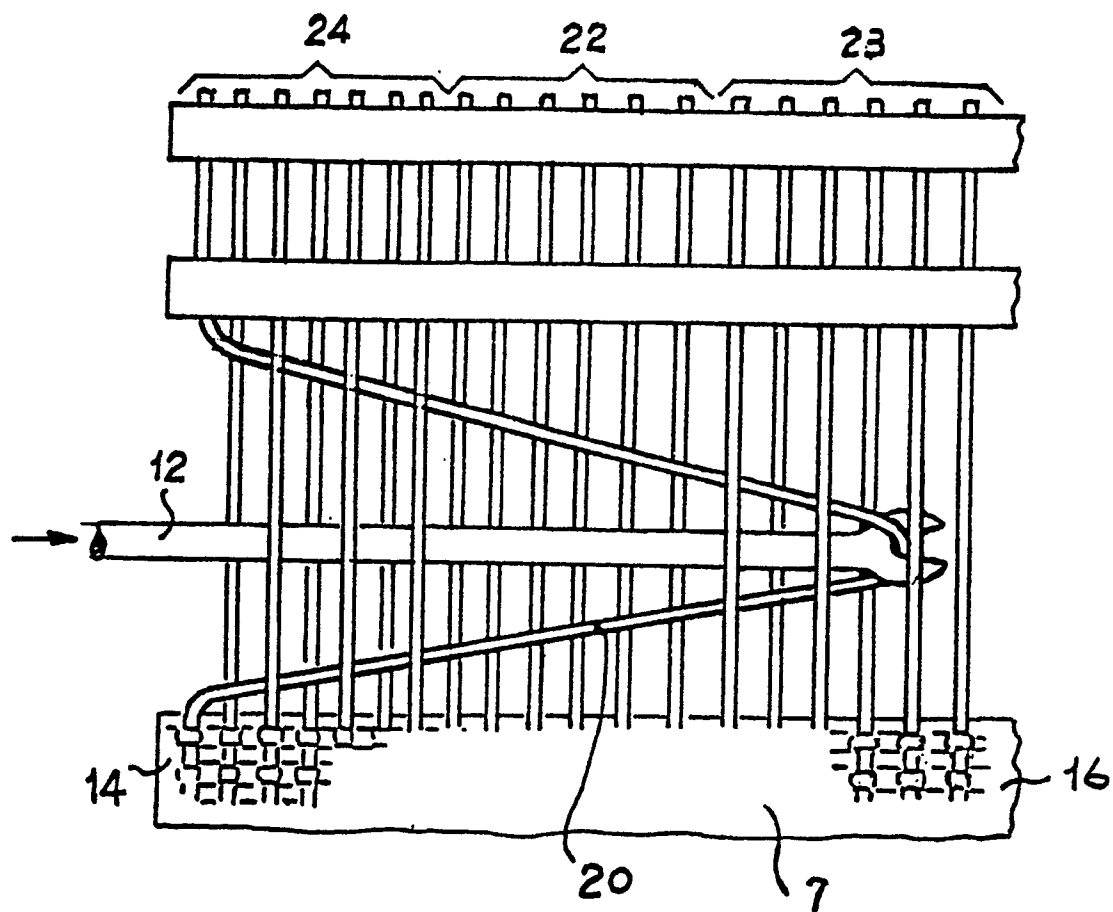


Fig. 4a

Fig.6

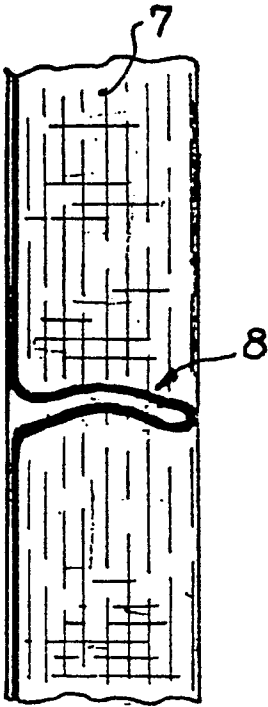


Fig.7

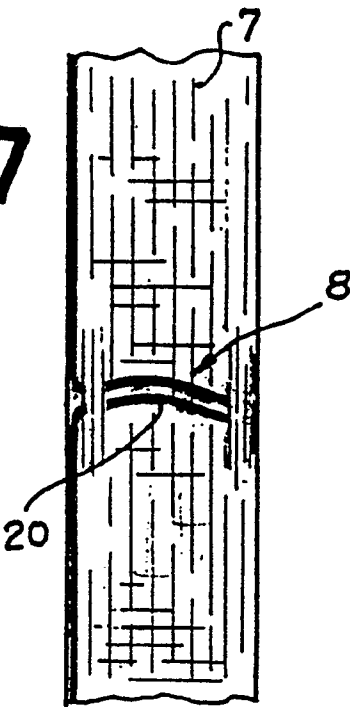


Fig.9

