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(54) **Weft guide means.**

(57) A weft guide means for an air jet loom, the guide means including a channel (9) defined by a plurality of spaced teeth (18) which are shaped to form opposed sides, a bottom region (9a), and an open mouth (9b) of the channel, a plurality of air jets (25) spaced along the channel and positioned adjacent its mouth (9b) for directing air into the channel (9) through said mouth (7b) to create an air flow therealong for carrying the weft yarn therealong, the inner faces of each tooth which define said sides and bottom region being shaped so as to constrain said air flow within the channel (9).

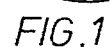


FIG. 1

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WEFT GUIDE MEANS

The present invention relates to weft guide means for use in an air jet loom wherein weft yarn is propelled through a warp shed by an air flow.

According to one aspect of the present invention there is provided a weft guide means for an air jet loom, the guide means including a channel defined by a plurality of spaced teeth which are shaped to form opposed sides, a bottom region, and an open mouth of the channel, a plurality of air jets spaced along the channel and positioned adjacent its mouth for directing air into the channel through said mouth to create an air flow therealong for carrying the weft yarn therealong, the inner faces of each tooth which define said sides and bottom region being shaped so as to constrain said air flow within the channel.

According to another aspect of the present invention there is provided a weft guide means for an air jet loom, the guide means including a channel defined by a plurality of spaced teeth which are shaped to form opposed sides, a bottom region and an open mouth of the channel, a plurality of air jets spaced along the channel and positioned adjacent its mouth for directing air into the channel through said mouth to create an airflow therealong for carrying the weft yarn therealong, the jets being closely spaced from the mouth so that yarn being carried by said air flow is urged toward the jets during its movement along the channel.

Reference is now made to the accompanying drawings, in which;

Figure 1 is a part cross-sectional end elevation of a weft guide means according to the present invention, shown in situ on an air jet loom.

Figure 2 is a front elevation of the guide means shown in Figure 1.

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Figure 3 is a sectional plan view of part of the guide means of Figures 1 and 2.

Figure 4a, 4b are respective end views of alternative shaped channels for the present guide means.

As can be seen from the drawings and in particular  
5 Figures 1 and 2, there is provided in an air jet loom, a reed assembly which consists of a main shaft 10 mounted to oscillate about its longitudinal axis to cause beat-up movement of a reed 11. Mounted on the shaft 10 is a reed holder 12, which, as can be seen, is held in position  
10 by means of studs 13. The reed holder 12 includes an angularly upwardly extending reed support 14, against which the lower baulk 15 of the reed 11, is held by means of a series of spaced-apart studs 16. Mounted on the reed support 14, conveniently by the studs 16, and forwardly  
15 of the lower baulk 15 of the reed 11 (that is the opposite side of the lower baulk 15 to the reed support 14) is a base portion 17 of a weft guide means yet to be described.

The weft guide means comprises a plurality of weft guide teeth 18, which define a channel 9 having opposed  
20 side walls, a base region 9a and mouth 9b. The teeth extend upwardly from the base portion 17 of the weft guide means and are spaced-apart to enable the teeth to pass through the lower warp shed to position the channel defined by the teeth between the upper and lower sheds. Each weft guide  
25 tooth 18 comprises a rear wall 20 (nearest the reed 11), a base 21, and a front wall 22 and as can be seen the guide teeth 18 are open-topped and the rear wall 20 extends to a greater height than the front wall 22. As can be seen particularly from Figure 3 the adjacent edges or faces of the walls 20 and 22 are angularly inclined so that, in the  
30 direction of weft travel, (indicated by the arrow A in Figure 3) the space between the front and rear walls 22, 20 of the weft guide teeth 18, reduces. This has the effect of deflecting the air flow inwardly and thus discourages

escape of air flow between the teeth. As can be seen from Figure 2 it is convenient to build up the weft guide means 18 from a series of pre-cast or moulded units each of which consists of a base portion 17 and a plurality of guide teeth 18. One such unit is shown in Figure 2 together with part of an adjacent unit.

The exact shape and the bulk can of course be altered. For example Figure 4a shows an embodiment in which the walls 18 and 22 are of the same height and have front and rear faces which are parallel to one another. In Figure 4b, the walls 18 and 22 have front and rear faces which are curved as shown. The shape of each tooth defining the bottom region of the channel is such as to encourage air flow to escape between adjacent teeth. This has the effect of urging the air flow downwards toward the base of the channel and thus reduces the tendency of the air flow to move toward the mouth and out of the channel. Thus the face of each tooth defining the base region of the channel may be planar and substantially parallel to the axis of the channel, or it may be inclined downwardly away from said mouth.

At spaced intervals along the length of the weft guide means and conveniently at about the mid-point of each of the units from which it is composed, is provided an air jet means to supply subsidiary air jets into the weft guide means to assist in the passage of a weft through a warp shed formed by warp yarns 23, 24. Each of the auxiliary jet means comprises a supply pipe 25 which is mounted on the base portion of the weft guide means by a bracket 26 and studs 27. Each supply pipe 25 is connected to a flexible air supply pipe 28, which itself is connected to a source of compressed air (not shown).

The supply pipe 25, as can best be seen in Figure 1 is so formed at its upper end region (the end which extends above the bracket 26) that its free end lies above mouth of the channel and between the front wall 22 and the rear wall 20 of the weft guide teeth. The supply pipe 25 is

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provided at its free end with a nozzle which is directed in such manner that air issuing therefrom will be directed into the space between the walls of the teeth 18 and will therefore serve the purpose of carrying the weft yarn 29 along the channel through the warp shed. The nozzle is closely spaced from the mouth of the channel so that the weft yarn is urged, by suction toward the nozzles during travel along the channel. This assists in maintaining control of feed of the yarn along the channel. Ideally, the distance between the nozzle and the mouth of the channel is less than the depth of the channel.

The nozzle aperture of each jet issues a generally conical jet of air and accordingly, the axis of the nozzle aperture may be substantially parallel with the longitudinal axis of the channel or it may be inclined slightly downwardly. An air jet located at one side of the loom may be used for injecting the weft yarn into the channel and for assisting in carrying the weft yarn 29 across the warp shed. The apparatus for producing the primary air jet is not described since it can take any known form.

It is found by disposing the adjacent edges of the front and rear walls 22, 20 of the weft guide teeth 18 in an angular manner, air losses between the teeth 18 are reduced and in fact the air stream across the weft guide is consolidated in the channel formed by the teeth. The base 21 of each of the teeth 18 may be conveniently be flat, or angularly at an angle different to that of the sides thus to create a tendency for air loss between the teeth 18 to be generally from the base region of the teeth thus assisting in locating the weft yarn 29 within the space bounded by the three walls of the apertures and the auxiliary jet tubes.

Whilst the description above refers to the weft guide means as consisting of a base portion 17 and a plurality of teeth 18 it will be appreciated that this element

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can be of unitary construction and in fact can conveniently be moulded from a rigid plastics material.

In Figure 1 of the drawings we have illustrated in broken lines the position of the fell point, the position  
5 of the loom temples and the plane of the fabric passing from the loom to the take-up means. It will be appreciated that as the shaft 10 oscillates to cause beat-up of the weft thread 29 that has been inserted through a warp shed, the weft guide means follows an arcuate path such  
10 that at the beat-up position of the reed 11, the whole of the weft guide means lies below the general plane of the fabric and thus does not interfere with the beating-up action of the reed 11.

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CLAIMS

1. A weft guide means for an air jet loom, the guide means including a channel defined by a plurality of spaced teeth which are shaped to form opposed sides, a bottom region, and an open mouth of the channel, a plurality of  
5 air jets spaced along the channel and positioned adjacent its mouth for directing air into the channel through said mouth to create an air flow therealong for carrying the weft yarn therealong, the inner faces of each tooth which define said sides and bottom region being shaped so as to  
10 constrain said air flow within the channel.
2. A weft guide means according to claim 1 wherein each air jet is closely spaced to the mouth of the channel.
3. A weft guide means according to claim 1 or 2 wherein the inner faces of each tooth defining the sides of the  
15 channel are shaped so as to discourage escape of air flow between adjacent teeth.
4. A weft guide means according to claim 3 wherein the inner faces of each tooth defining the sides of the channel are angularly chamfered.
- 20 5. A weft guide means according to any preceding claim wherein the inner face of each tooth defining the bottom region of the channel is shaped so as to encourage escape of air flow between adjacent teeth.
6. A weft guide means according to claim 5 wherein the  
25 inner face of each tooth defining the bottom region of the channel is planar and substantially parallel to the longitudinal axis of the channel.
7. A weft guide means according to any preceding claim wherein, in cross-section the opposed sides of said channel  
30 are linear and are parallel to one another.
8. A weft guide means according to any preceding claim wherein, in cross-section the opposed sides of said channel are linear and inclined outwardly from the base region to the mouth.
- 35 9. A weft guide means according to any preceding claim wherein a group of teeth are moulded integrally from a suitable plastics material.



10. A weft guide means for an air jet loom, the guide means including a channel defined by a plurality of spaced teeth which are shaped to form opposed sides, a bottom region and an open mouth of the channel, a plurality  
5 of air jets spaced along the channel and positioned adjacent its mouth for directing air into the channel through said mouth to create an airflow therealong for carrying the weft yarn therealong, the jets being closely spaced from the mouth so that yarn being carried by said  
10 air flow is urged toward the jets during its movement along the channel.

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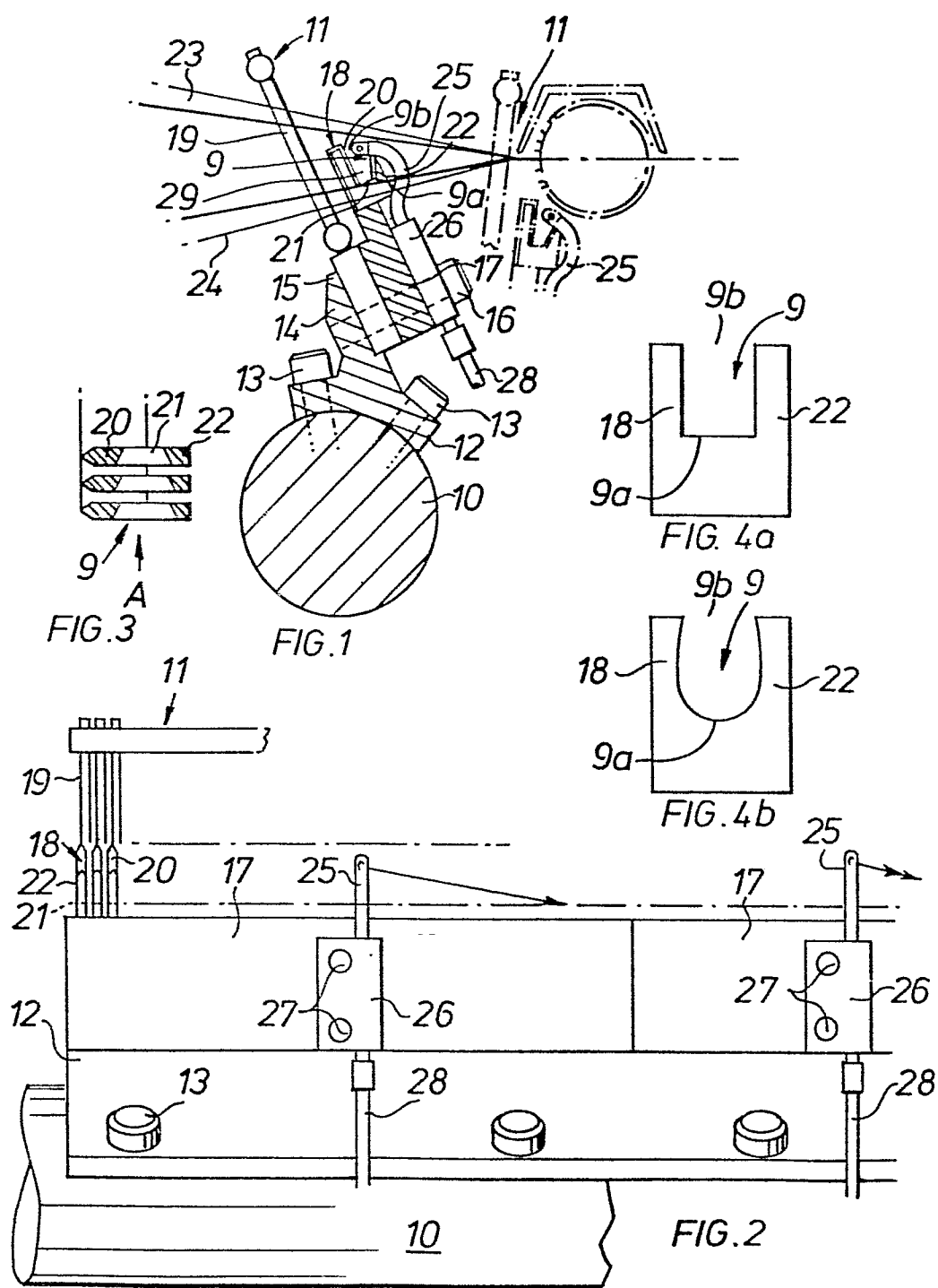
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European Patent  
Office

# EUROPEAN SEARCH REPORT

0019418  
Application number

EP 80 30 1499

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	<p>FR - A - 2 325 735 (VYZKUMNY A VYVOJOVY USTAV ZAVODU)</p> <p>* Page 3, line 21 - page 5, line 10; figures *</p> <p>--</p> <p>CH - A - 482 040 (VYZKUMNY A VYVOJOVY USTAV ZAVODU)</p> <p>* Figures 1,2; claim *</p> <p>--</p> <p>FR - A - 2 086 212 (TE STRAKE)</p> <p>* Figure 1; claim 1 *</p> <p>--</p> <p>BE - A - 686 061 (PERTUSIO)</p> <p>* Claim 3; figure 1 *</p> <p>----</p>	<p>1-8, 10</p> <p>1-3</p> <p>1,7, 10</p> <p>9</p>	<p>D 03 D 47/30</p> <p>TECHNICAL FIELDS SEARCHED (Int.Cl. 3)</p> <p>D 03 D</p> <p>CATEGORY OF CITED DOCUMENTS</p> <p>X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons</p> <p>&amp;: member of the same patent family, corresponding document</p>
X	The present search report has been drawn up for all claims		
Place of search		Date of completion of the search	Examiner
The Hague		06-08-1980	BOUTELEGIER