(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 393 468 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **90106797.5**

(51) Int. Cl.5: **D03D 47/30**

(22) Date of filing: **09.04.90**

(30) Priority: **21.04.89 IT 2095189 U**

(43) Date of publication of application:
24.10.90 Bulletin 90/43

(84) Designated Contracting States:
AT BE CH DE ES FR GB GR LI LU NL

(71) Applicant: **SOMET SOCIETA' MECCANICA TESSILE S.p.A.**
Provinciale Valseriana Km. 23
I-24020 Colzate-Bergamo(IT)

(72) Inventor: **Viscardi, Ettore,**
Via Rossini, 12
I-24027 Nembro, Bergamo(IT)

(74) Representative: **Faggioni, Marco, Dr. Ing. et al**
FUMERO - Studio Consulenza Brevetti
Widenmayerstrasse 4/I
D-8000 München 22(DE)

(54) Weft yarn suction device for air looms.

(57) A weft yarn suction device for air looms - of the type equipped with a main blow nozzle (3), through which the weft yarn is fed and which is positioned at one end of the loom, and with a suction device positioned at the opposite end of the loom which draws the weft yarn by depression -comprises a movable shutting lamina (5), apt to progressively close the suction mouth (4) of said device as the reed approaches the beating up position.

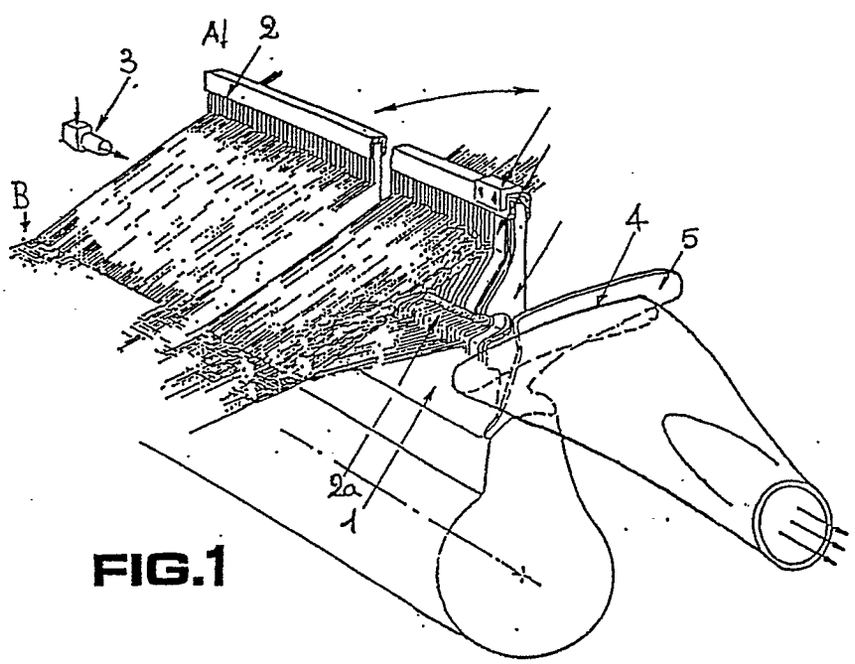


FIG.1

EP 0 393 468 A1

WEFT YARN SUCTION DEVICE FOR AIR LOOMS

The technique of shuttleless looms is known to include the so-called air looms, wherein the weft yarn is drawn into the warp shed by a controlled air stream. Said air stream is produced by a main blow nozzle - through which the weft yarn is fed - and is maintained and controlled by a plurality of secondary nozzles, each of which produces a so-called secondary jet in order to keep a regular air stream allowing to draw the weft yarn from one end of the loom - where the main blow nozzle is positioned - to the opposite end thereof, where a suction device is normally provided to draw and retain the weft yarn by depression.

The object of the present invention is to provide a suction device with improved performances as compared to prior art devices. This result is essentially obtained due to the fact that said device comprises a movable shutting lamina, apt to progressively close the suction mouth as the reed approaches the beating up position.

According to a preferred embodiment of the invention, the suction mouth is formed as an arched slit, extending along a width substantially corresponding to the width of the stroke of the sley, and the shutting lamina is associated to the reed moving with the sley.

Further characteristics and advantages of the suction device according to the present invention will anyhow be more evident from the following detailed description of a preferred embodiment thereof, illustrated by way of example on the accompanying drawings, in which:

Fig. 1 is a diagrammatic perspective view of part of an air loom equipped with the suction device of the invention;

Figs. 2 and 3 are diagrammatic partial views of the loom, on the side of the suction device and, respectively, from the front.

Figs. 4, 5 and 6 show diagrammatically some successive working positions of the shutting lamina of the suction device.

As shown in figs. 1 to 3, the loom comprises - in known manner -a sley 1 and a reed 2 moving from position A (backward waiting position of figs. 1 and 2) to the beating up position B. When the reed is in position A, the warp shed is open to allow the passage of the weft yarn.

As known, in air looms the weft yarn is drawn through the warp shed simply thanks to the action of a controlled air stream. Said air stream is blown by the main nozzle 3, is maintained through the shed by secondary nozzles (not shown), and reaches the mouth 4 of the suction device. The weft yarn follows the same path, in the sense that it is launched through said nozzle 3, it is guided by the air stream along the shed, and it is sucked into the mouth 4.

According to the present invention, to improve the performances of said device, the suction mouth 4 is formed as an elongated slit, shaped as a circle arc, which practically covers an area corresponding to the whole oscillation path of the channel 2a of the reed 2. Furthermore, always according to the main object of the present invention, a movable lamina 5 is associated to the oscillating reed 2 for the purpose of progressively shutting the suction mouth 4.

As shown more clearly in fig. 2, the lamina 5 is fixed just behind the reed channel 2a - in respect of the reed moving direction F during beating up - and it has a dimension such as to be apt to fully cover the suction mouth 4. In fact - as clearly shown in the sequence of figs. 4 to 6 - the shutting lamina 5 leaves the suction mouth 4 totally free in correspondence of the reed position A (fig. 4), that is, the reed waiting position, with open shed. As the reed moves in the direction F to perform its beating up movement, the lamina 5 moves in turn and progressively reduces the opening of the mouth 4 (fig. 5), up to full shutting thereof (fig. 6) at the end of the stroke.

This mechanism works as follows: with the reed 2 in a waiting position A, the weft yarn emerges from the nozzle 3, is drawn through the warp shed and reaches the mouth 4. The weft yarn is kept taut between the nozzle 3 and the mouth 4 thanks to the air stream in between them. At this point, the reed beating up movement starts, during which the mouth 4 is progressively shut by the lamina 5. As a result of the reduction in the section of the mouth 4, while the flow rate of the air stream keeps constant, its speed increases. The pulling action on the weft yarn is thereby also increased, whereby the yarn is more and more taut until weaving thereof.

A first great advantage of the device according to the present invention thus derives from the fact that it ensures a perfect tensioning of the weft yarn just at the critical moment of the weaving step.

A second advantage concerns instead the fact that, by increasing the speed of the air stream just when the shed closes and the reed approaches the beating up poSition, said air stream is apt to remove any waste or filaments which may be present at the bottom of the reed channel, as well as any dust produced during weaving; this allows to keep the loom members cleaner, especially sensors and photoelectric cells, and to make the weaving environment less dusty.

Claims

1) Weft yarn suction device for air looms, of the type equipped with a main blow nozzle through which the weft yarn is fed and which is positioned at one end of the loom, and with a suction device positioned at the opposite end of the loom which draws the weft yarn by depression, characterized in that it comprises a movable shutting lamina apt to progressively close the suction mouth of said device as the reed approaches the beating up position.

2) Suction device as in claim 1), wherein said suction mouth is formed as an arched slit, extending along a width substantially corresponding to the width of the stroke of the sley, and wherein said shutting lamina is associated to the reed moving with the sley.

3) Suction device as in claim 1), wherein said suction mouth is formed as an arched slit, of width substantially corresponding to the width of the path along whjch moves the reed channel, and wherein said shutting lamina is fixed onto the reed itself.

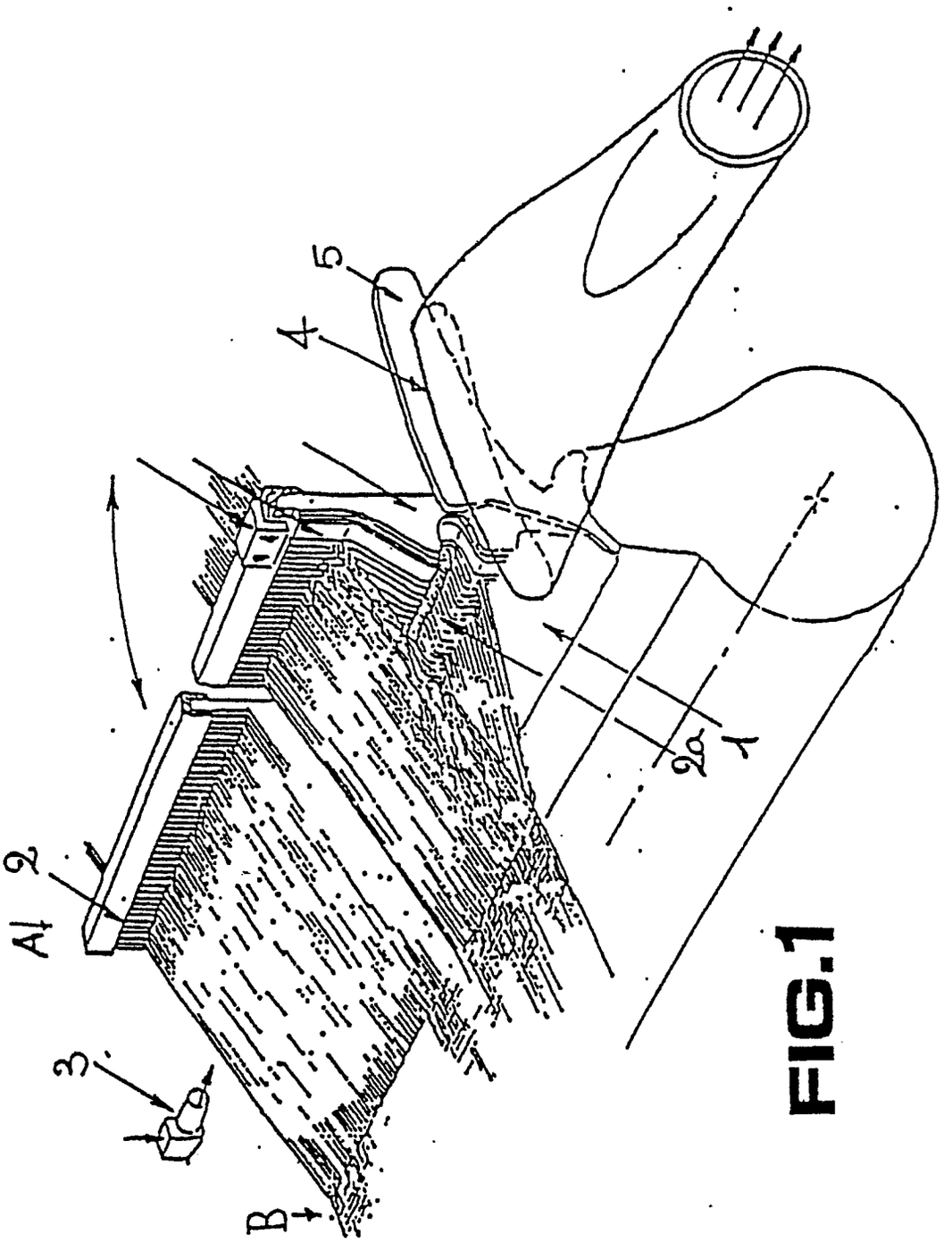


FIG.1

FIG.2

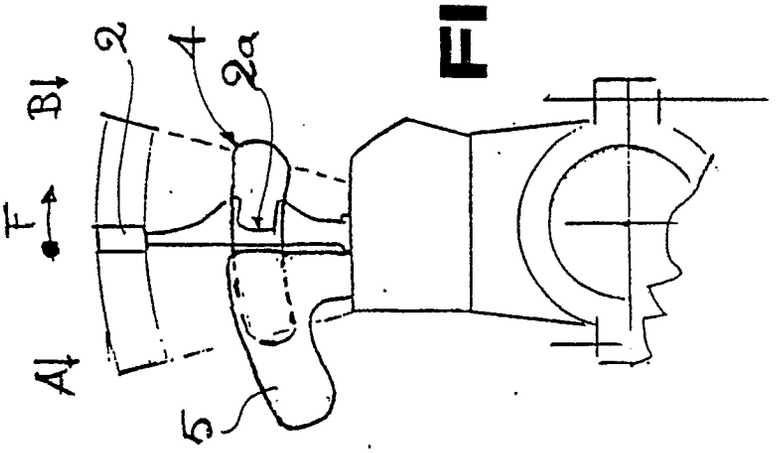


FIG.3

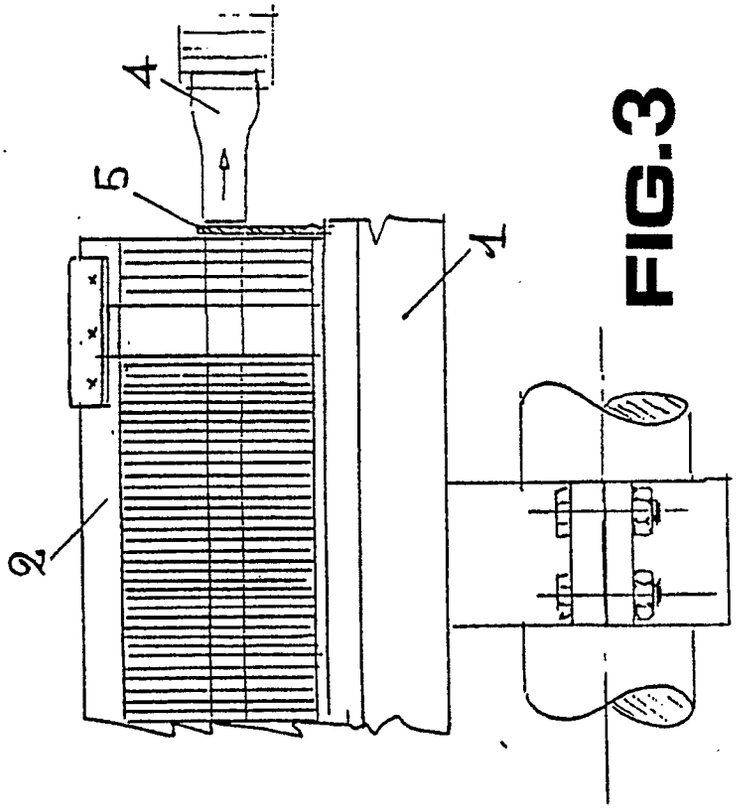


FIG.6

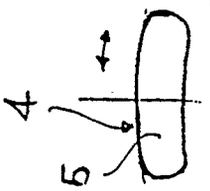


FIG.5

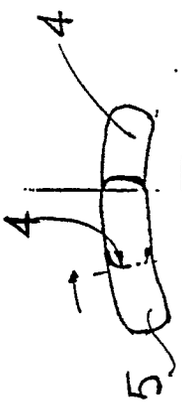
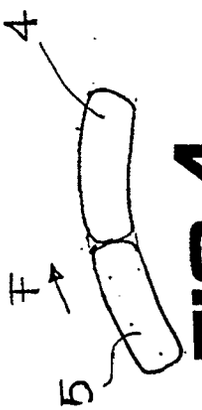


FIG.4



European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 10 6797

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	EP-A-0310804 (PICANOL N.V.) * column 6, line 50 - column 7, line 8; figures 1-3 *	1-3	D03D47/30
A	WO-A-8302466 (BONAS) * page 3, lines 1 - 15; figures 1-4 *	1	
A	GB-A-2081753 (RUTI-TE STRAKE B.V.) * figures 1-2 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			D03D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	01 AUGUST 1990	REBIERE J.L.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)