United States Patent [19]

Serturini

[11] **3,795,261**

[45] **Mar. 5, 1974**

[54] **SELVEDGES FORMING APPARATUS**

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[22] Filed: **June 21, 1972**

[21] Appl. No.: **264,918**

[30] **Foreign Application Priority Data**

June 21, 1971 Italy.....26138/71

[52] **U.S. Cl.** **139/54**

[51] **Int. Cl.**..... **D03d 47/40**

[58] **Field of Search**..... 139/54, 122 S

[56] **References Cited**

UNITED STATES PATENTS

2,918,945 12/1959 Hall 139/54

3,227,191 1/1966 Juillard 139/54

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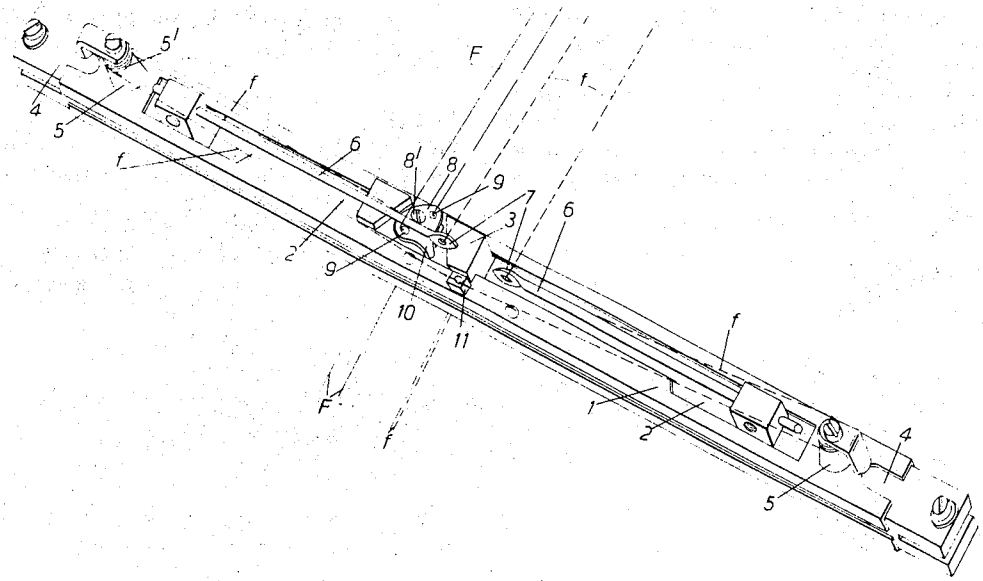
[57] **ABSTRACT**

A device for carrying out slotted leno healds in the making of selvedges in looms having a movable slide which carries pivoted in it a small plate adapted to cooperate with means in the frame of the device for obtaining a sure deviation of yarns passing through the plate in the respect of fixed needles of the device through which other yarns pass.

7 Claims, 3 Drawing Figures



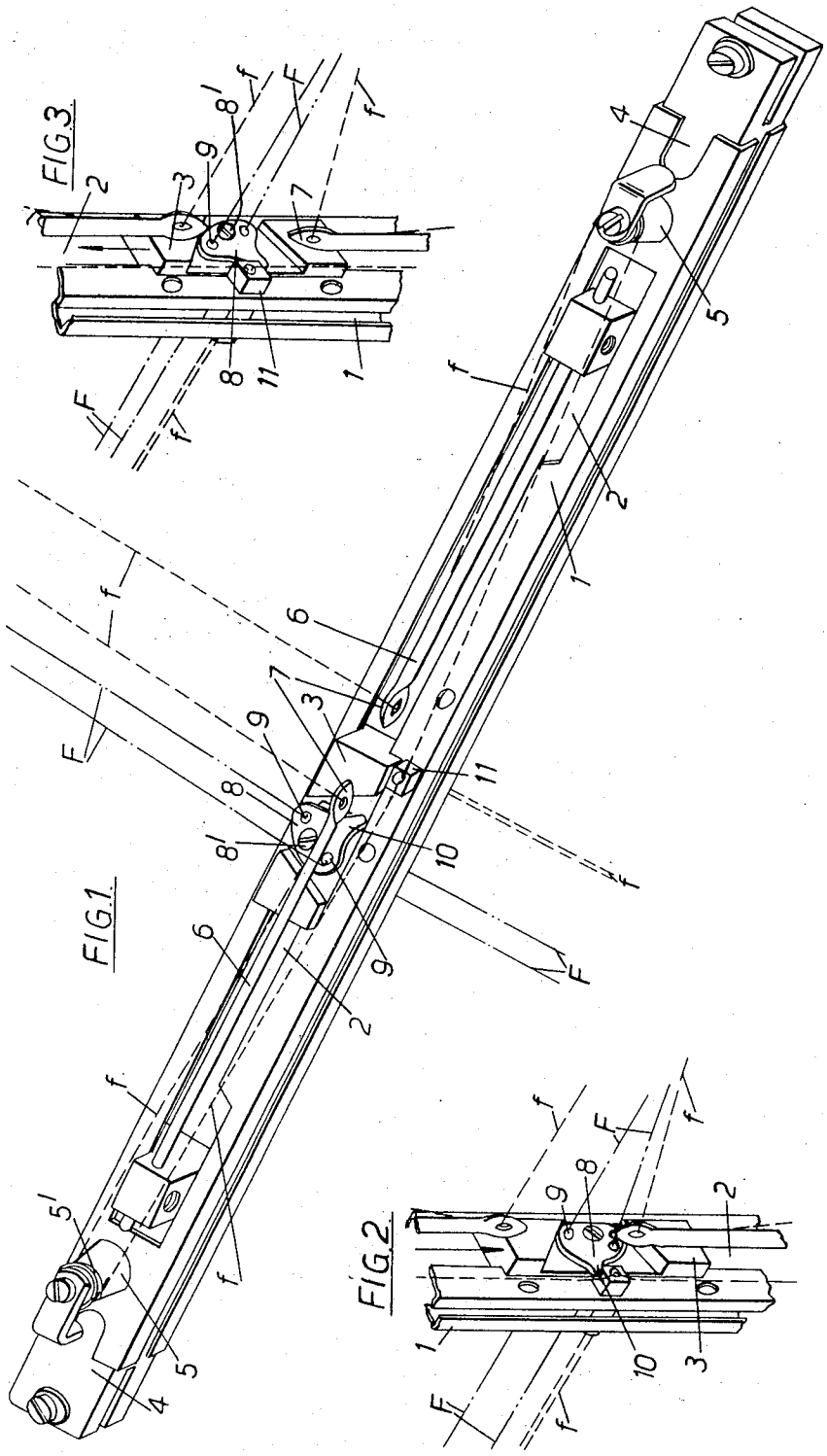


FIG.3
FIG.1
FIG.2

SELVEDGES FORMING APPARATUS

BACKGROUND OF THE INVENTION

It is known how selvedges, formed in cloths made on shuttleless looms for the continuous feeding of the weft not provided with devices for taking in the weft tails, require particular attention for the purpose of avoiding frayings and undoings of the selvedges themselves. To this purpose one makes suitable tyings with some of the selvedges warp yarns, among which tyings those making use of the so-called "slotted leno heald" have given particularly good results. The above can be applied also to the case of traditional shuttle looms when the cloth is prepared to be subjected to intermediate cuttings along its length, with internal selvedges.

In order to make the selvedges tying by the "slotted leno heald" the known art has already provided devices which have given good results which are mounted on suitable loom healds, for instance the first two, and which substantially comprise an elongated frame located vertically in the plane of the healds and comprising means for the connection to the healds, a pair of end transmissions projecting from one side of the frame, a pair of needles extending lengthwise of the frame externally of the said side from near the said transmissions to the central zone thereof where they end at a short distance from each other with their tips transversally perforated, thread guide means crossing the frame close to said tips and a slide adapted to run lengthwise of the frame crossed by two slots raking at 45° with the axis of the frame and forming a right angle with each other. Such a device is as shown for example in U.S. Pat. No. 2,918,945.

In the devices of this kind two warp yarns for the selvedges, meant not to cross, are taken by the thread guides to the end transmissions and from the latter to the holes in the needle tips coming from the warp beam and going towards the cloth being woven, while two other warp yarns, coming and going like the said ones, merely cross the two raking slots of the slide. The slide, on the other hand, is mounted with the possibility of a suitable adjustment of the friction developing between itself and the guides of the frame on which it is mounted when it moves from one end to the other of the frame.

When the loom is set into motion a relative movement takes place between the warp yarns passing within the slide slots and the frame of the device for making the slotted leno heald. The slide is thus displaced by reciprocating motion from one end to the other of the frame of the device in which it is mounted by the yarns which are within the slots, one on one side and one on the other side of one of the needles. When the slide passes in the zone comprised between the tips of the two needles, the yarns displacing it move from one end to the other of the relative slot, each moving to the position in correspondence of the opposite side of the other needle: this takes place provided the friction between the slide and its guides is conveniently adjusted, that is to say provided said friction is greater than the friction encountered by the warp yarns when moving along their slots in the slide. By said displacement (which is obviously repeated in the opposite direction when the slide runs along the frame in opposite direction after reversal of the motion at the ends) the warp yarns passing through the slide slots and are crossed tying with the yarns which are not crossed passing through the thread guides the transmissions and the holes of the needle tips, in order to realize the slotted leno heald tying.

In addition to the ends of the cloth devices of this kind can also be mounted in correspondence of intermediate healds if selvedges are to be formed within the cloth, such as in the instance when the same is meant for towels and the like.

The great drawback of such devices lies in the fact that their correct functioning depends so much on the perfect adjustment of the friction between the slide and the guides of the frame of the device itself.

It is easy to understand how difficult it is to obtain the said perfect adjustment and how even more difficult it is to maintain it, particularly in looms working at high speed. If the friction falls below a certain limit the inversion in the position of the yarns with respect to the needles does not take place and the slotted leno heald is not carried out with the serious drawbacks easy to be imagined, such as untyings, necessity of darnings, or of stopping the looms. In any case the interventions for the adjustment of the apparatus and those required to remedy the drawbacks due to its adjustment will be rather frequent and not always short with remarkable wastes of time for the staff in charge and breaks in the production times. It must be added that even if the initial adjustment is very accurate, it is practically impossible to maintain a constant or at least correct value of the friction within relatively short functioning times, because of the high wear of the reciprocally sliding parts.

SUMMARY OF THE INVENTION

In order to avoid the above mentioned drawback, the present invention provides a device for making the slotted leno heald in which the above mentioned slide is provided, instead of the two raking slots, with a positive deviation member comprising a small plate suitably shaped, pivoted on the slide itself and provided with two holes for the passage of the warp yarns to be crossed, which plate cooperates with means fixed to the frame of the device to cause an oscillation of the small plate in its own plane in correspondence with the passage between the tips of the needles, in order to obtain a sure deviation of the yarns from one side to the other of the needles, in the two directions.

Preferably the said means fixed to the frame consist of a single thread guide, for both the warp yarns not to be crossed, projecting from the frame of the device and the small plate cooperates with it through an extension projecting from the part opposite the one connecting the two holes for the yarns which are crossed.

BRIEF DESCRIPTION OF THE DRAWING

The invention will now be described in detail, by way of nonlimitative example, with reference to the annexed drawing which shows a preferred embodiment thereof; and wherein:

FIG. 1 shows the device as per the invention in a front perspective view, with the slide in an intermediate position; and

FIGS. 2 and 3 show the central part of the device in the two possible positions of engagement of the member deviating the yarns to be crossed with the fixed means controlling it.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The device according to the present invention comprises a frame **1** provided with a wide prolonged central opening **2** in which there slides a slide **3.** In a known way it comprises end members **4** for the connection to the healds or heddle bars (not shown), a pair of transmissions **5** with seats **5'** for the yarns, a pair of needles **6** ending in tips **7** transversally perforated and spaced apart a short distance in the middle of the frame **1** on the same side from which the transmissions **5** project. The general arrangement of the loom and the function of the frame **1** and its associated parts in the loom can be as in the above-identified patent except as noted hereafter.

According to the invention the slide **3,** which slides within the wide opening **2,** carries — pivoted on its outer surface - a shaped small plate **8** made of plastic material crossed by two holes **9** lined with metal rings and having an extension **10** projecting from the side opposite to the one connecting the two holes **9.** The said extension emerges from the slide when the holes **9** are aligned with the axis of the slide and of the device frame, but can go back within the shape of the slide by making the small plate **8** oscillate on its plane around the pivoting point **8'.** The extension **10** cooperates with a member fixed to the frame **1** which in the shown embodiment is represented by a thread guide **11** emerging from the frame in the form of a cubic body crossed by a cylindrical hole.

As is clearly shown in the figures of the annexed drawing, two warp yarns f meant not to cross and coming from the warp beam (not shown) both cross the thread guide **11,** wind on the opposite transmissions **5** pass through the holes of the tips **7** of the needles **6** and go toward the cloth being woven. Two other selvedges warp yarns F coming from the warp beam merely pass through the holes **9** of the small plate **8** to direct themselves to the cloth being woven. The frame **1** of the device is vertically mounted on a heald or heddle bar (not shown) of the loom and is moved vertically by the heald when the loom is set into motion. The reciprocating movements deriving between the yarns F and the frame **1** of the device produce the moving of the slide **3** wherein the small plate **8** maintains the yarns F one on one side and one on the other side of the corresponding needle **6.** FIGS. **2** and **3** show how, when the slide **3** is brought to the central zone of the frame **1,** the small plate **8** is made to oscillate so that in one direction it takes up the position of FIG. **2** and in the other the one of FIG. **3,** in order to deviate the yarns F inverting their position with respect to the central line of the frame **1** traversed by the needles **6,** thus taking the yarns to the side of the next needle opposite to the preceeding one. This takes place in a positive and safe way without any possibility for mistakes and determines the tying between the yarns F and the yarns f, thus obtaining the desired formation of the slotted leno heald.

By the described device — which of course can also be carried out by making use of variations obvious to the experts in the fields with regard to the deviation means causing the oscillation of the small plate and to the shape and structure of the plate itself — one avoids all the stops, adjustments, repairs and corrections required by the known devices, thus improving remarkably the efficaciousness of the looms and simplifying their running, especially in the case of highly automatic high speed looms.

I claim:

1. In selvedge warp control means for a loom having a pair of crossing warps and a pair of non-crossing warps, a pair of aligned needles, one for each non-crossing warp, having their adjacent ends separated by a space, deflector means for the crossing warps, and guides fixed with respect to the needles on which the deflector means is slidable in a direction generally lengthwise of the needles on one side of said needles from one side to the other side of said space; the improvement in which said deflector means comprises a slide which slides in said direction on said guides, and a plate mounted for pivotal movement on and relative to said slide on the same side of said slide as said needles, the plate having two spaced holes therethrough, each of said crossing warps passing through a different one of said holes and means causing said plate to pivot between operative positions.

2. Apparatus as claimed in claim **1,** said plate being mounted to pivot about an axis perpendicular to said direction of sliding of said deflector means.

3. Apparatus as claimed in claim **2,** said holes being disposed substantially on opposite sides of said axis.

4. Apparatus as claimed in claim **1,** said means comprising a fixed abutment and said plate having a projection thereon adapted to contact said abutment means upon each movement of said slide in each direction thereby to pivot said plate.

5. Apparatus as claimed in claim **4,** in which said abutment means comprises a single thread guide for both of said non-crossing warps.

6. Apparatus as claimed in claim **1,** in which said holes are substantially circular.

7. Apparatus as claimed in claim **6,** in which said plate is of plastic material having a low coefficient of friction and the margins of said holes are lined with metal.

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