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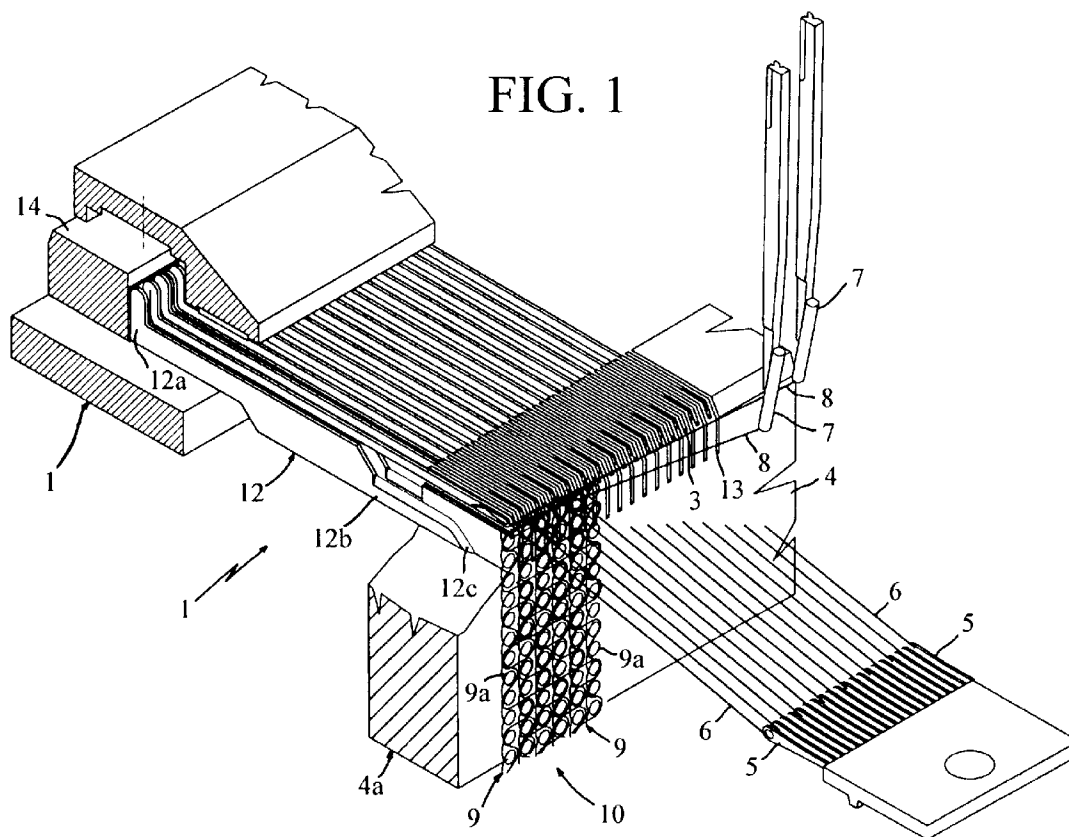
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### (54) Device for forming chenilles on a galloon crocheting machine

(57) A device is provided for the formation of chenilles for crochet textile machines for warp weaving comprising a plurality of cutting elements (12) able to cut the wool threads (8) and positioned immediately be-

low the area occupied by the needles (2) wherein the woven stitches (9a) are formed and means for controlling the cutting elements (12) defined by the same means for longitudinally driving the needles (2).



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## Description

**[0001]** The present invention relates to a device for forming chenilles on a crochet textile machine for warp weaving, said textile machine being of the type comprising a plurality of needles set side by side, at least one front bar presenting recesses for guiding said needles, a plurality of thread passers positioned side by side parallel to the front bar forward of the needles and set to engage each a respective warp thread, a plurality of thread-guiding cops positioned above the needles and able to engage each a respective woof thread and means for driving the needles longitudinally to confer thereto an alternating motion along their longitudinal development.

**[0002]** As is well known, in crochet textile machines for warp weaving the formation of the manufactured item is effected in correspondence with a front bar where a plurality of needles set side by side and simultaneously driven in the sense of their longitudinal development operates.

**[0003]** In front of the needles operates a plurality of thread passers through which the warp threads pass.

**[0004]** The co-operation between needles and thread passers gives rise to a sequence of woven stitches which form a plurality of parallel chains, as many as there are warp threads, which descend progressively from the front bar. The chains are normally concatenated with woof threads borne by respective thread-guiding cops operating above the needles.

**[0005]** Each woof thread is selectively laid astride one or more needles and passes underneath them when they reach the return stop.

**[0006]** The woof thread placed below the needles is enmeshed in the woven stitches of the warp threads in the following operative cycle.

**[0007]** If fabrics provided with chenilles are to be produced, to obtain such chenilles it is necessary, as is well known, to cut the woof threads.

**[0008]** The prior art for the formation of chenilles in crochet textile machines consists of placing a series of scissors cutting elements where space is available for their operative installation, i.e. below the front bar. Such scissors cutting elements, with double blade, require appropriate control means that allow to actuate the closure and opening of one blade with respect to the other.

**[0009]** The prior art, summarily described above, presents important drawbacks.

**[0010]** First of all, the chenilles that are obtained from the cutting action of the scissors elements, i.e. the sections of cut woof threads, are rather irregular with non uniform length since, due to the considerable distance between the area where the stitches are formed, i.e. the area of the needles, and the area where the woof threads are cut, the fabric is never set at each cut exactly in the same position or with the same alignment as the previous cut.

**[0011]** Moreover, prior art scissors cutting devices re-

quire their own control means and present rather considerable constructive complexity.

**[0012]** Their mounting and setting-up operations are also generally not simple and need non negligible operating times.

**[0013]** In this situation, the technical task constituting the basis for the present invention is to conceive a device for the formation of chenilles for crochet textile machines for warp weaving able substantially to obviate the aforementioned drawbacks.

**[0014]** Within said technical task, an important aim of the invention is to conceive a device that allows to attain a high precision in the execution of the cut of the woof threads and thereby to obtain regular and uniform chenilles.

**[0015]** Another important aim of the invention is to conceive a simple device of reliable operation.

**[0016]** A further aim is to obtain a device that allows to set up rapidly with simple operations a crochet textile machine when the production of chenille fabrics is required.

**[0017]** The technical task and the aims specified are essentially attained by a device for the formation of chenilles on a crochet textile machine for warp weaving which is characterised in that it comprises a plurality of cutting elements able to cut woof threads and positioned immediately below the area occupied by the needles wherein the woven stitches are formed and means for controlling said cutting elements.

**[0018]** The description is now provided, purely by way of indicative and non limiting example, of a preferred but not exclusive embodiment of a device according to the invention illustrated in the accompanying drawings, wherein:

- Figure 1 shows an interrupted perspective view, partially sectioned, of a portion of crochet machine provided with a device according to the present invention;
- Figure 2 shows a view analogous to Figure 1 but in a different operative phase;
- Figure 3 highlights a section of the machine in Figure 1 according to a vertical plane transverse to the front bar; and
- Figure 4 presents an enlarged front view of the front bar and of the manufactured item.

**[0019]** With reference to the mentioned figures, the device according to the invention is globally indicated with the number 1.

**[0020]** It is applied to a crochet textile machine known in the art comprising a plurality of needles 2 set side by side parallel to each other and slidably guided by recesses 3 obtained in a front bar 4.

**[0021]** Forward of the needles 2 and positioned side by side and parallel to the front bar 4 is a plurality of thread passers 5 set to engage each a respective warp thread 6.

**[0022]** Above the needles 2 operate, consecutively set side by side parallel to the front bar 4, thread-guiding cops 7 able to carry woof threads 8 to be concatenated with chains 9 formed by woven stitches 9a obtained from the warp threads 6 and all together defining a manufactured item 10. Longitudinal drive means 11 impose on needles 2 a simultaneous alternating motion along the direction of their longitudinal development.

**[0023]** Originally, the device 1 for the formation of chenilles comprises a plurality of cutting elements 12 able to cut the woof threads 8 of the manufactured item 10 immediately below the area occupied by the needles 2, i.e. the area wherein the stitches 9a are formed.

**[0024]** More specifically, cutting elements 12 advantageously operate on the manufactured item 10 in an area essentially comprised between a common base plane of the needles 10 and a lower edge 4a of the front bar 4.

**[0025]** The cutting elements 12 are defined by a plurality of blades slidingly housed in guiding grooves 13 obtained in the front bar 4 and intercalated between the guiding recesses 3 of the needles 2.

**[0026]** In practice the blades 12 present a longitudinal development parallel to that of the needles and, similarly thereto, comprise L-shaped rear attachment ends 12a able to be rigidly engaged to control means which, in a preferential embodiment, coincide with the means 11 for longitudinally driving the needles.

**[0027]** Such means 11 for longitudinally driving the needles 2 and the blades 12 comprise a movable front bar 14, actuated by appropriate kinematic mechanisms in a way known in itself, which confers simultaneously the same alternating motion to the needles and to the blades themselves.

**[0028]** The blades 12, to the side opposite to the attachment ends 12a, present each a front cutting portion 12b provided with a chamfered cutting edge 12c, oriented upwards, and with a pointed termination.

**[0029]** Advantageously the recesses 13 guiding the blades 12 present a depth suited to set the cutting edges 12c of the blades 12 at an appropriate distance from the needles 2, essentially corresponding to two woven stitches (see figure 4) and in any case preferably not exceeding five woven stitches.

**[0030]** The operation of the subject device, described above in a mainly structural sense, is as follows.

**[0031]** At each advancing motion of the needles towards the thread passers 5, the blades 12 also move from a back position wherein they do not emerge from the front bar 4 (see Figure 1) to positions progressively emerging more and more therefrom (see Figure 2).

**[0032]** The woof threads 8 already enmeshed in the woven stitches 9a and interfering with the cutting edges 12c of the blades 12 are cut by such advancing motion of the blades themselves and form the chenilles 10a (see Figure 4).

**[0033]** Since each cutting action is performed in an area at a very short distance from the needles 2, the

positioning of the woven chains 9 in such area of intervention is repeated always with the same precision and therefore the chenilles obtained present a high degree of regularity.

**[0034]** The invention attains important advantages.

**[0035]** First of all, with respect to the prior art, a greater number of cutting elements can be available, since each blade can be located without any problems between each pair of adjacent needles.

**[0036]** This also makes it possible to work with values of refinement superior to those attainable in the prior art.

**[0037]** The efficiency of the device in the formation of chenilles is therefore improved.

**[0038]** Moreover, the device is simpler and more reliable overall than the devices with scissors cutting elements, as it requires no additional driving means.

**[0039]** Lastly, also the setting-up process of a textile machine for producing chenille fabrics becomes easier and quicker since it is possible to have in stock a movable front bar wherein both the needles and the blades are already mounted and engaged, to be easily replaced with the movable front bar fitted only with needles, thereby avoiding the complex operations of mounting and de-mounting the scissors cutting elements of the prior art.

## Claims

1. Device for forming chenilles on a crochet textile machine for warp weaving, said textile machine comprising:

a plurality of needles (2) set side by side,  
at least one front bar (4) presenting recesses (3) for guiding said needles (2),  
a plurality of thread passers (5) positioned side by side parallel to the front bar (4) forward of the needles (2) and set to engage each a respective warp thread (6),  
a plurality of thread-guiding cops (7) positioned above the needles (2) and able to engage each a respective woof thread,  
and means (11) for longitudinally driving the needles to confer thereto an alternating motion along their longitudinal development,

characterised in that it comprises a plurality of cutting elements (12) able to cut woof threads (8) and positioned immediately below the area occupied by the needles (2) wherein the woven stitches (9a) are formed, and means for controlling said cutting elements.

2. Device according to claim 1, characterised in that said cutting elements (12) operate on the woof threads (8) in an area essentially comprised between a base plane of the needles (2) and a lower edge (4a) of the front bar (4).

3. Device according to claim 1, characterised in that said cutting elements (12) are defined by a plurality of blades interposed between said needles (2) and in that said front bar (4) presents grooves (13) for guiding said blades (12) intercalated between said recesses (3). 5
4. Device according to claim 3, characterised in that said blades (12) present a longitudinal development parallel to the needles (2) and said means for controlling the blades are defined by said means (11) for longitudinally driving the needles and simultaneously confer an alternating motion to the needles (2) and to the blades (12). 10 15
5. Device according to claim 4, characterised in that said means (11) for longitudinally driving the needles and the blades comprise at least one movable front bar (14) rigidly engaging rear attachment ends (12a) of the blades and of the needles. 20
6. Device according to claim 3, characterised in that each of said blades (12) presents a front cutting portion (12b) provided with a cutting edge (12c) that is chamfered and oriented upwards. 25
7. Device according to claim 6, characterised in that said grooves (13) for guiding the blades present a depth suited to position said cutting edges (12c) of the blades (12) at a distance from the needles (2) not exceeding five woven stitches (9a). 30

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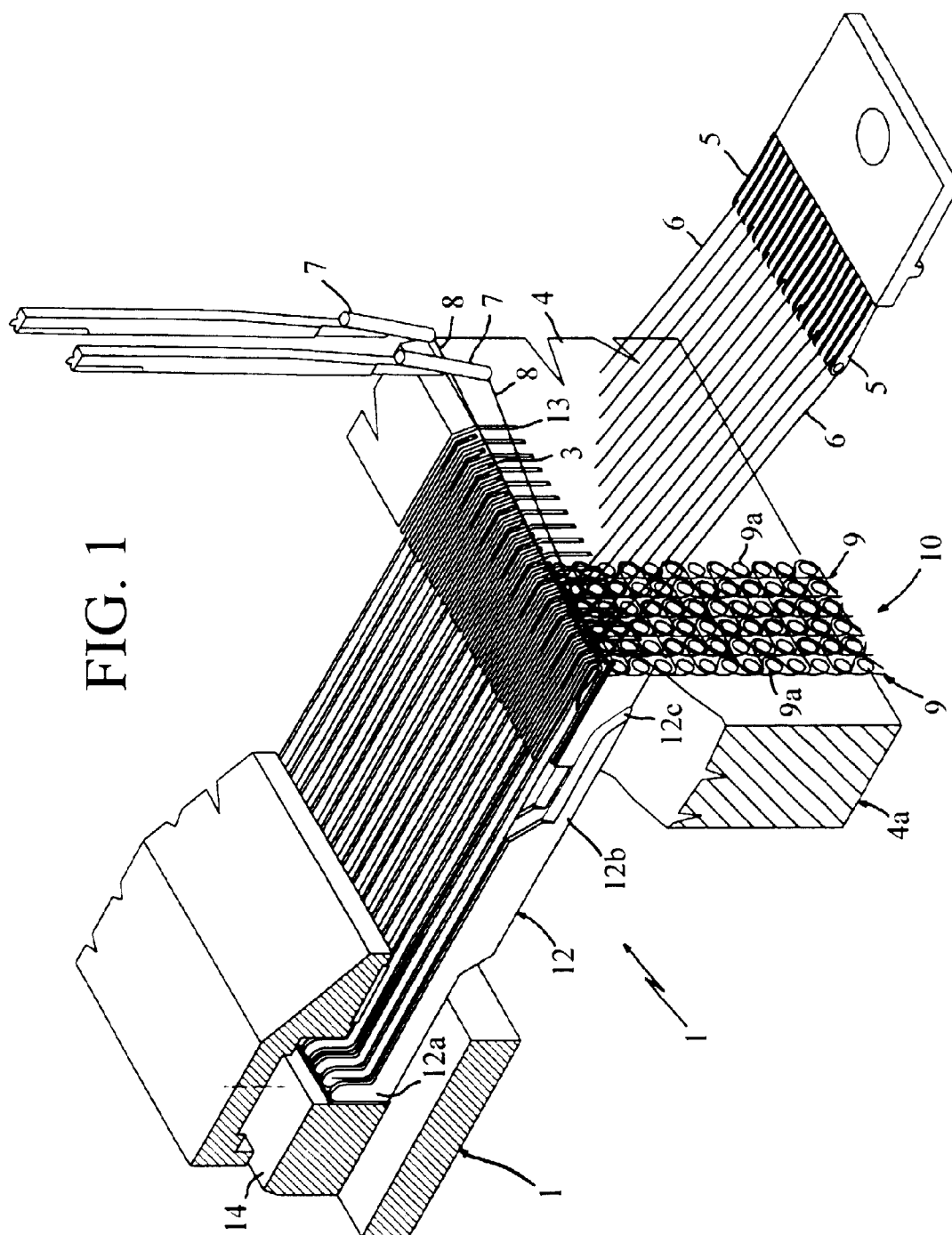


FIG. 2

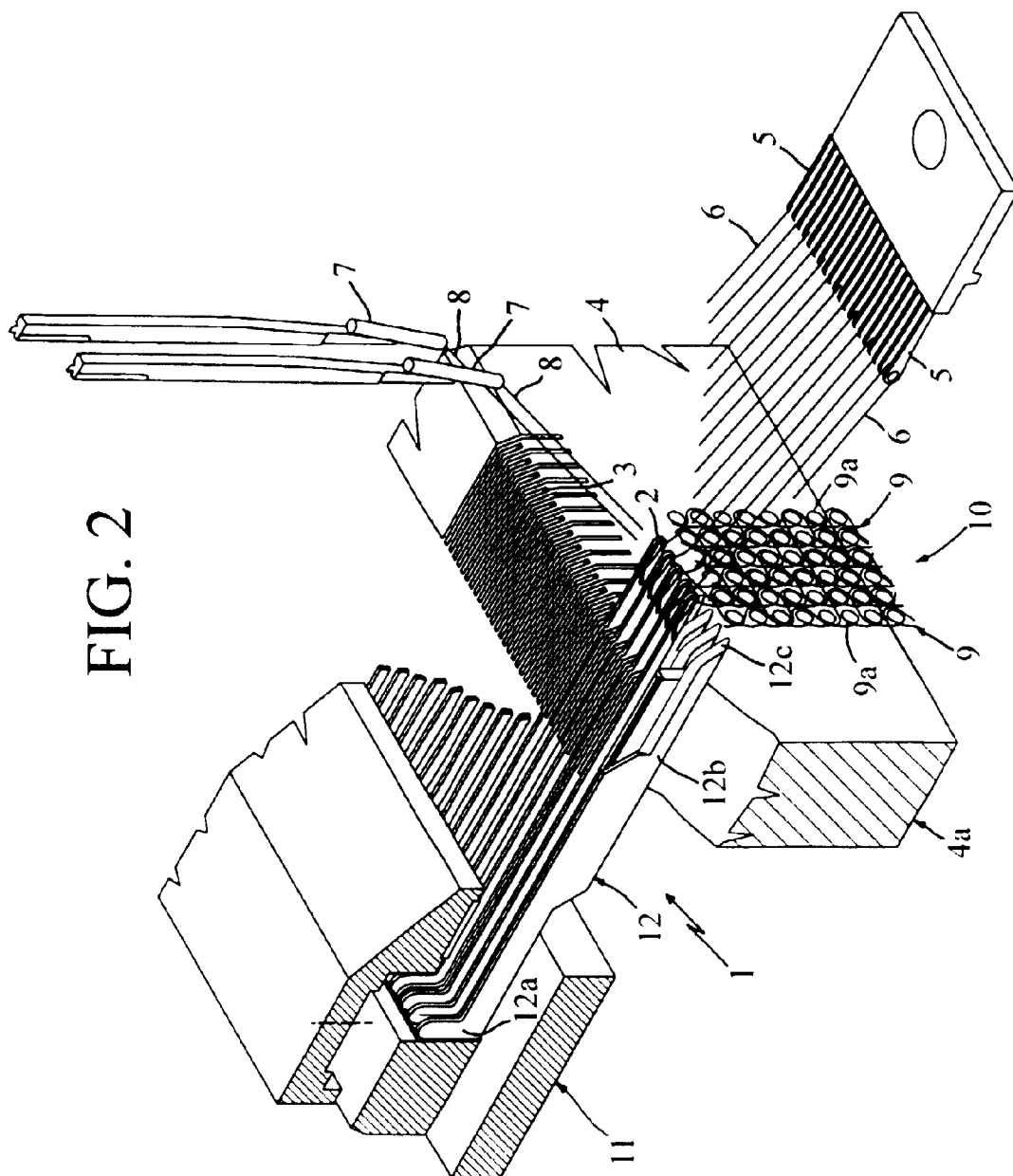


FIG. 3

