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(71) Applicant: **SCHÖNHERR Textilmaschinenbau GmbH**
09113 Chemnitz (DE)

(72) Inventor: **Burkert, Martin**
95444 BAYREUTH (DE)

(74) Representative: **Myon, Gérard Jean-Pierre et al**
Cabinet Lavoix
62, Rue de Bonnel
69448 Lyon Cedex 03 (FR)

(54) Method for cutting pile warp yarns and double carpet weaving loom adapted to implement such a method

(57) This method is for cutting pile warp yarns (I, II, III, IV, V) in a double carpet weaving loom (2) where pile warp yarns selectively extend between an upper ground fabric (G1) and a lower ground fabric. These warp yarns are cut by a cutting device (6) including a knife carriage (64) which, in order to perform cutting operations, has translation movements (F, B) from a first side (G1 L) of a ground fabric (G1) to a second side (G1 R) of the ground fabric (G1). Each translation movement (F, B) of the knife carriage (64) takes place within a pick (P1-P9). Moreover, each translation movement (F, B) of the knife carriage (64) is controlled on a pick by pick (P1-P9) basis.

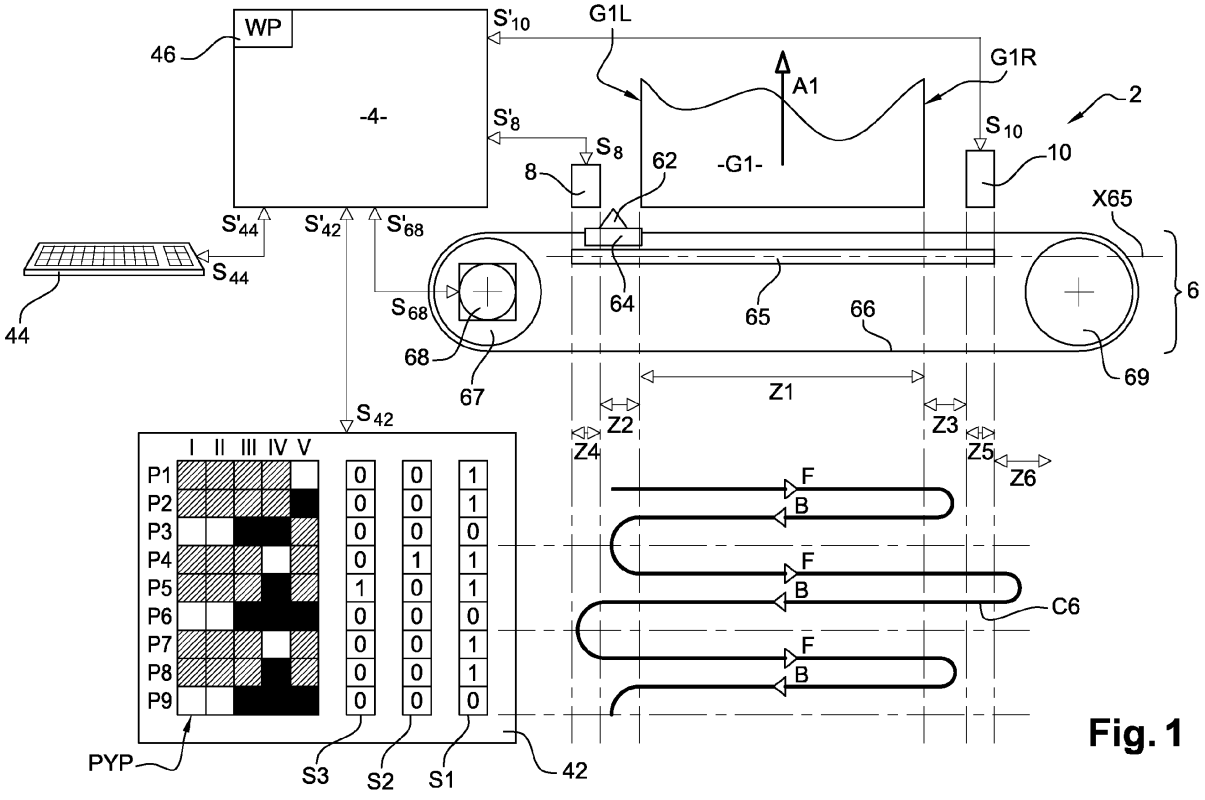

Fig. 1

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Description

[0001] This invention belongs to the field of double carpet weaving and relates to a weaving method and, more particularly, to a method for cutting pile warp yarns extending from one ground fabric to the other in a double carpet weaving loom. The invention also relates to a double carpet weaving loom adapted to implement such a method.

[0002] On a double carpet loom, two or more weft yarns are simultaneously inserted into one or more sheds located one above the other, so that two ground fabrics are woven one above the other with ground warp yarns. Pile warp yarns are interlaced in both ground fabrics and go between these two ground fabrics according to the carpet pattern. Those pile yarns are cut on the weaving loom by a knife which travels along the weft insertion direction from one side of the ground fabrics to the other.

[0003] EP-A-1 122 348 discloses a cutting device including a knife mounted on a carriage which is guided by a bench and attached to a belt. Driving means for the carriage include a servomotor whose output shaft is connected to a pulley driving the belt. The quality of the carpet highly depends on the cutting process. An important point is that the knife must be regularly and correctly sharpened. It is known from EP-A-1 122 348 to install a sharpening device on at least one side of the ground fabric and to drive the knife carriage towards this sharpening device so that the knife rubs on a grinding surface and gets sharpened.

[0004] EP-A-1 394 301 teaches how to improve the quality of a carpet by keeping the knife carriage speed constant during a cutting operation. The sharpening frequency of the knife can be set as a function of the pile density.

[0005] Despite these improvements, some "stripes" are generated during the pile yarn cutting operation, which is typical of an uneven height of the piles. High quality carpets are sheared after weaving. The more precise the cutting process performed in the weaving machine is, the less over measure of pile height is to be woven.

[0006] The invention aims at solving these problems with a new cutting method where the cutting operation is more precise than with the prior art methods.

[0007] To this end, the invention concerns a method for cutting pile warp yarns in a double carpet weaving loom where pile warp yarns selectively extend between an upper ground fabric and a lower ground fabric, these warp yarns being cut by a cutting device including a knife carriage which, in order to perform cutting operations, has translation movements from a first side of a ground fabric to a second side of this ground fabric, each translation movement taking place within a pick. According to the invention, each translation movement of the knife carriage is controlled on a pick by pick basis.

[0008] Thanks to the invention, it is possible for the weaver to manually or automatically decide pick by pick, if the knife carriage must travel from one side of a ground fabric to the other side. This allows an optimization of the quality of the cutting operation and of the lifetime of the knife. The invention permits a considerable reduction of waste of pile material, saves production cost and reduces the consumption of raw material and energy.

[0009] According to further aspects of the invention which are advantageous but not compulsory and which can be taken in any technically admissible combination, this method incorporates at least one of the following features:

- If, during one given pick, no pile warp yarn goes from one ground fabric to the other, then, the knife carriage is not moved in translation between the sides of the ground fabric for this given pick.
- A knife sharpening step and/or a knife cutting edge position resetting step are implemented on a pick by pick basis.
- The sharpening step and/or the resetting step are implemented in consideration of the amount of pile warp yarns already cut since the last sharpening step and/or since the last resetting step.
- When implementation of a resetting step is to take place or when implementation of a sharpening step is to take place, the new knife cutting edge position is selected among a set of predetermined knife cutting edge positions or the sharpening process is selected among a set of predetermined sharpening processes which include a double sharpening process.
- The method includes a pile yarn pattern analysis step and the result of this analysis step is taken into consideration to control the translation movements of the knife carriage and, possibly, to implement the sharpening step and/or the resetting step. In such a case, the analysis step can be performed in real time, pick to pick. Alternatively, the analysis step is performed in advance, on the basis of a weave pattern of a carpet woven on the loom.
- The pile yarn pattern analysis step is automatically performed and its result is automatically transferred to an actuator which controls the translation movements of the knife carriage. In such a case, the result of the pile yarn pattern analysis step can also be automatically transferred to a sharpening device and/or to a cutting edge position resetting device.
- Control of each translation movement of the knife carriage includes the selection of a motion law for said translation movement, among a set of predetermined motion laws, preferably a set of motion laws including a motion law for a forth and back cutting movement.
- The method includes a step of generating a logic file including, for each pick, some data stating whether or not a translation movement is to take place, whether or not a knife sharpening step is to take place and/or whether or not a knife cutting edge position

resetting step is to take place.

- Control of each translation movement of the knife carriage takes into account a delay between a beating time of the yarns interlaced at one given pick and the time when the pile warp yarns of this pick must be cut.

[0010] The invention also relates to a double carpet weaving loom adapted to the above-mentioned method. Such a loom comprises double-shed formation means, weft yarns insertion means and a pile warp yarns cutting device including a knife carriage which, in order to perform cutting operations, has translation movements from a first side of a ground fabric woven on the loom to a second side of this ground fabric, each translation movement taking place within a pick period. According to the invention, the loom includes programmable means which drive the cutting device according to a pick by pick sequence.

[0011] Advantageously, the loom also includes computation means to automatically edit a weave pattern for a carpet woven on the loom and the pick by pick sequence to be used by the programmable means to drive the cutting device, whereas the computation means include means to perform modifications of at least the pick by pick sequence.

[0012] The invention will be well understood on the basis of the following description which is given only by way of an example and in connection to the annexed figures where:

- figure 1 is a schematic representation of a weaving loom according to the invention where a method according to the invention is implemented,
- figure 2 is a principle cut view in a plane perpendicular to the weft yarns insertion direction for a loom of the prior art where a cutting method of the prior art is implemented,
- figure 3 is a cut view similar to figure 2 for the loom of figure 1 where a first method of the invention is implemented,
- figure 4 is a cut view similar to figure 3 for a second method according to the invention implemented on the loom of figure 1 and
- figure 5 is a cut view similar to figure 3 for a third method according to the invention implemented on the loom of figure 1.

[0013] The loom 2 partially represented on figure 1 is adapted to weave two carpets C1, C2 having each a ground fabric G1, G2 and piles H1, H2, as shown on figure 3.

[0014] The upper part of figure 1 can be considered as a top view which shows the upper ground fabric G1. The lower ground fabric G2 is located under ground fabric G1, thus non visible on figure 1.

[0015] Loom 2 includes an electronic controller 4 adapted to control non represented double shed forming means and weft yarns insertion means, in a known manner.

[0016] Loom 2 also includes a cutting device 6 which includes a knife 62 mounted on a knife carriage 64 slidable along a dovetail guiding rail 65 whose longitudinal axis X65 is perpendicular to the direction of movement of ground fabric G1 within loom 2, as represented by arrow A1 on figure 1. A drive belt 66 is fastened to knife carriage 64 and bent around a driving pulley 67 driven by a servomotor 68 and around a loose pulley 69.

[0017] Servomotor 68 is controlled by loom controller 4 via an electronic control signal S_{68} and provides controller 4 with a feedback signal S'_{68}- Servomotor 68 is adapted to move knife 62 and knife carriage 64 along directions parallel to axis X65, between positions which are respectively located on either sides of ground fabric G1. G1L and G1 R respectively denote the left and right lateral edges of ground fabric G1 as seen from the top. Drive means 66 to 69 allow to translate knife carriage 64 between a first side of ground fabric G1, on the left of left edge G1 L on figure 1, and a second side of ground fabric G1, on the right of right edge G1 R on figure 1, and vice versa. The rotation speed of servomotor 68 is set so that a translation movement of knife carriage 64 between the two sides of ground fabric G1 takes place within a pick period, that is within a time interval between two weft yarn insertions on loom 2 and outside the time interval where the reed is moving for beating the weft yarns.

[0018] Loom 2 also includes a cutting edge resetting device 8 whose function is to reset the cutting edge of knife 62 to its original position with respect to knife carriage 64. Actually, because of the wear of knife 62, the distance between its cutting edge and the non represented beating point of loom 2 increases. Cutting edge resetting device 8 might be of the type described in EP-A-1 122 348 or EP-A-1 394 301, or any known type.

[0019] Loom 2 also includes a sharpening device 10 which includes a grinding stone adapted to contact the cutting edge of knife 62 in order to abrade it. When necessary, the cutting edge of knife 62 is driven into contact with this grinding stone and sharpening is performed by rubbing of the knife cutting edge on the grinding stone.

[0020] Devices 8 and 10 are respectively located on the left-hand side and right-hand side of ground fabric G1. A reverse configuration is possible. These devices could also be located on the same side of the ground fabric.

[0021] Curve C6 on figure 1 represents the movements of knife carriage 64 along rail 65 as a function of the number of picks. Several zones can be identified for the movements of knife carriage 64.

[0022] In a central zone Z1 which is aligned with ground fabric G1, curve C6 is rectilinear. This zone corresponds to the movements of knife 62 and knife carriage 64 parallel to axis X65, which induce cutting of some pile warp yarns extending between ground fabrics G1 and G2.

[0023] Zones Z2 and Z3 are inversion zones where the direction of travel of knife carriage 64 in zone Z1 is in-

verted.

[0024] Zone Z4 is a zone where knife carriage 64 is aligned with cutting edge resetting device 8. In other words, when knife carriage 64 is brought in zone Z4, knife carriage 64 is in register with device 8 and the cutting edge of knife 62 with respect to knife carriage 64 can be set to its original position, or to another predetermined position. Thus, zone Z4 can be considered as a cutting edge resetting zone.

[0025] Zone Z5 is a sharpening zone where knife carriage 64 is aligned with sharpening device 10. In this zone, the cutting edge of knife 62 interferes with a grinding stone of sharpening device 10.

[0026] Zone Z6 is an inversion zone similar to zone Z3 but behind zone Z5 with respect to zone Z1.

[0027] On the figures, for the sake of simplicity, the cutting movement of knife 42 for one pick is represented as taking place after this pick and before the next pick. In practice, this cutting movement can occur afterwards, as explained here-below.

[0028] Controller 4 also includes a display screen 42 and a keyboard 44. Keyboard 44 is a data entry means for controller 4. Controller 4 is capable of sending electrical control signals S_8, S_{10}, S_{42} and S_{44} respectively to devices 8, 10, 42 and 44 and to receive feedback signals S'_8, S'_{10}, S'_{42} and S'_{44} rom these devices.

[0029] Controller 4 has an embedded memory 46 where several selectable weave patterns are stored. Controller 4 performs the weaving control of loom 4. In particular, controller 4 controls the non represented shedding devices of loom 2 on the basis of one of the weave patterns stored in memory 46. The shedding devices can include one or several dobbies for the ground fabrics G1 and G2 and one or several Jacquard mechanisms which control a shed for the yarns forming the piles H1 and H2. For this or these Jacquard mechanism(s), the pile yarn pattern PYP, which is a part of the weave pattern WP stored in memory 46, can be edited on screen 42 as shown on the left of the screen on figure 1.

[0030] This part of figure 1 represents the pile yarn pattern PYP of five pile yarns I, II, III, IV and V for nine picks P1 to P9.

[0031] As shown on figures 2 and 3, for each pick, one or two weft yarns can be inserted in the upper and/or lower shed of a loom. Y1 denotes an upper weft yarn and Y2 denotes a lower weft yarn on these figures. On the left of screen 42, for each pick P1 to P9, the position of a selection hook in a Jacquard mechanism is represented by a black square if the hook is in its top-most position, by a hatched square if the hook is in a middle position and by a white square if the hook is in its bottom-most position. The position of a hook directly corresponds to the position of the corresponding pile yarn in the shed. For instance, for pick P1 in figures 2 and 3, pile yarns I to IV are in an intermediate position, that is above weft yarn Y2, whereas pile yarn V is in its bottom-most position.

[0032] Letter F designates a forward movement of knife 62, that is a displacement of knife 62 in zone Z1 from the left-hand side of ground fabric G1 to the right-hand side of this ground fabric, as shown by the top most branch of curve C6. Letter B designates a backward movement of knife 62, that is a translation movement of knife carriage 62 from the right-hand side of ground fabric G1 to the left-hand side of this ground fabric, as shown by the second horizontal branch of curve C6 on figure 1.

[0033] Considering the weaving pattern shown on the left of screen 42 on figure 1, if knife carriage 64 is translated along rail 65 for each pick as in a prior art method, one obtains the forth and back movements of the knife represented by letters F and B on figure 2. Under such circumstances, the knife has a useless translation movement for pick P2, between picks P2 and P3, and for pick P5, between picks P5 and P6. With this approach, the forward movement of knife 62 prior to pick P1 is reproduced as a forward movement for a pile yarn in the same configuration only after pick P6.

[0034] One defines the pile-pattern repeat as the number of picks between two successive identical binding configurations, in the same ground fabric, of a patterning pile yarn. On figures 2 and 3, this pile pattern repeat equals 3, that is the difference between picks P4 and P7. One defines the cutting repeat R as the number of picks between two successive identical binding configurations, in the same ground fabric, of a patterning pile yarn where the cutting movement direction of the knife is the same. On figure 2, this cutting repeat equals 6, that is the difference between picks P1 and P7.

[0035] According to the invention, loom controller 4 controls servomotor 68 with signal S_{68} according to cutting, sharpening and resetting sequences S_1, S2 and S3 which are also editable on screen 42, as shown on the right of this screen on figure 1. These sequences respectively define, on a pick by pick basis, if the knife carriage 64 is to be moved from one side of ground fabric G1 to the other side, if the cutting edge of knife 62 is to be sharpened and if the position of this cutting edge is to be reset.

[0036] On figure 1, column S1 represents the cutting sequence and each box includes number "1" when a cutting movement is to take place and number "0" when no cutting movement is to take place. The same applies for columns S2 and S3 which respectively represent the sharpening sequence and the cutting edge setting sequence.

[0037] As cutting sequence S1 is defined on a pick by pick basis, that is individually for each pick P1 to P9, it can be adapted to the actual configuration of the pile yarns for each given pick.

[0038] For example, as shown on figure 3, when no pile yarns goes from ground fabric G1 to ground fabric G2 after pick P2, its is not necessary to move knife 62 for this pick. Under such circumstances, sequence S1 has number "0" in its third box, which corresponds to the fact that curve C6 does not include any movement in zone Z1 between picks P2 and P3. The same applies

between picks P5 and P6.

[0039] On figure 3, the pile-pattern repeat is three as mentioned here-above. On this figure, the cutting repeat R is also 3, that is the difference between picks P1 and P4 or between picks P4 and P7. Thus, the invention allows to substantially decrease the cutting repeat ratio R of a weaving and cutting method from 6, with the method of figure 2, to 3, with the method of figure 3. It has been experienced that the bigger the cutting repeat is, the more likely "stripes" appear on the pile side of the carpet pile side. Stripes are mainly due to uneven height of the piles and also to the fact that the cut section of the piles is oriented according to the cutting movement direction. The invention permits to reduce the number of picks of the cutting repeat R to a value for which the differences between cutting conditions of each successive pile is no more visible.

[0040] Sequence S1 can be manually adjusted by the weaver, via keyboard 44, in order to take into account the actual cut result. For instance, if the weaver realizes that it is not necessary to translate knife-carriage 64 even for a pick where some warp yarns go from one ground fabric to the other, e.g. in case where only a few piles are created in a pick, he can decide to cut these piles with the piles created at the next pick. Alternatively, this adjustment function can be performed automatically by loom controller 4.

[0041] Sequences S2 and S3 are also determined on a pick by pick basis, in consideration of the amount of piles already cut, by calculating for each pick how many pile yarns go from one ground fabric to the other and by planning to sharpen the knife cutting edge and/or to reset its position when a predetermined number of pile yarns have been cut since the last sharpening operation and/or the last resetting operation.

[0042] Each sequence S1, S2 and S3 can be determined and programmed directly on screen 42 by the weaver reading and analyzing the pile yarn pattern PYP on the left-hand side of screen 42.

[0043] In a more sophisticated method, one or all of these sequences S1, S2 and S3 can be automatically computed by loom controller 4 on the basis of an automatic analysis of the weave pattern WP in memory 46. Actually, for each pick, loom controller 4 determines if some pile yarns go from one ground fabric to the other and, if any, how many of these pile yarns do so. On this basis, the loom controller creates a cutting sequence S1 for all picks. In this cutting sequence, no movement of the cutting carriage is performed in case no pile yarn goes from one ground fabric to the other.

[0044] In particular, the loom controller 4 can compute and propose to the weaver sharpening sequence S2 and cutting edge resetting sequence S3 which are compatible with the side location of the sharpening and cutting edge resetting devices.

[0045] The weaver can actually modify this automatically generated cutting sequence S1 in order to take into account its actual result and the quality of the cutting operation. Such a modification can be made via keyboard 44 or any other convenient means.

[0046] Due to the distance between the beating point of loom 2 and the cutting edge of knife 62, a cutting sequence corresponding to a given pick is delayed with respect to the beating time of this pick. The corresponding delay period can be converted into a number of picks, since the weft density is a known parameter of weaving. Loom controller 4 manages this delay period and this period can be adjusted by the weaver via keyboard 44.

[0047] The approach explained here-above is applied for all picks of a weaving sequence, in particular all picks P1 to P22 represented on figure 3, on the basis of the weaving pattern WP and pile yarn pattern PYP.

[0048] In the second and third embodiments of the invention represented on figures 4 and 5, the same elements as in figure 3 have the same references. The upper box on figures 4 and 5 shows a cutting sequence S1 for nine picks P1 to P9 represented on each of these figures.

[0049] In the embodiment of figure 4, a W-pile pattern is used for pile warp yarn IV. Under such circumstances, once knife 62 has been translated in a forward movement to cut it after pick 1, it does not need to be moved after picks P2 and P3 since pile warp yarn IV remains in ground fabric G1 and since no other pile yarn goes from one ground fabric to the other. A backward movement of knife 62 takes place after pick P4 and a new forward movement takes place after pick P7. In the third embodiment represented on figure 5, two pile yarns have a W-pile pattern, namely pile yarns III and IV. One can speak here of a double W-pile pattern. In that case, the cutting sequence is adapted in order not to move the knife carriage in translation in zone Z1 after picks P2, P5 and P8, where all pile yarns remain in the ground fabrics G1 and G2. In the second and third embodiments, a sharpening sequence S2 and a resetting sequence S3 can be generated, manually by the weaver or automatically by loom controller 4, also on a pick by pick basis.

[0050] In all embodiments, sequences S1, S2 and S3 are logical files which can be stored in memory 46 in case the weave pattern analysis is performed in advance and these sequences are also generated in advance with respect to the actual weaving of carpets C1 and C2.

[0051] According to an optional improvement of the invention which can be implemented with all embodiments, it is possible to include into the cutting sequence S1 some additional pieces of information that permit to select one particular motion law for knife carriage 64 among a set of predetermined motion laws. These motion laws can include different cutting speeds or, for example, zones of different widths on which the speed of the knife carriage is constant. The technical teachings of EP-A-1 394 301 can be used for this. Moreover, the motion laws can take into account the fact that the width of the zone where pile yarns are to be cut is smaller than the total width of the ground fabrics. This allows to use a smaller cutting speed on the pile cut zone. In such a case, the cutting sequence is defined not only with "0" or "1 ", but with other numbers

"2", "3", "4" ... which all specify a different motion law. Loom controller 4 is then capable of applying, for each pick, a selected motion law via servo motor 68.

[0052] In a further development of the preceding improvement, it is also possible to assign to one pick a forth and back cutting movement. This functionality improves the cutting process and is particularly useful for strong pile yarns which are difficult to cut.

[0053] Another improvement is to make it possible to perform a double or more sharpening. In such a case, the sharpening sequence is defined not only with "0" or "1 ", but with other numbers "2", "3", "4"... For instance, "2" could be assigned to a double sharpening process in which the cutting edge is driven four times in contact with the grinding stone within two forth and back movements.

[0054] Another possible improvement is to include in the cutting edge resetting sequence some information concerning the required reset position of the knife cutting edge. The reset position can be selected among several predetermined defined positions. In such a case, the cutting edge resetting sequence is defined by several figures "0", "1 ", "2", "3", "4" ... and each of figures "1" and above corresponds to a predetermined reset position. In such a case, the cutting edge resetting device known from EP-A-1 122 348 can be modified as follows: the stopper is not parallel to the adjustment direction movement of the knife, but inclined with respect to this direction. The programmable dead-point is set on the basis of the amount of movement of the knife with respect to the carriage. The clamp-release lever is a plate, in order to allow a certain range of dead-point positions. This clamp-release lever is driven with a precise actuator whose working period defines reclamping of the knife and, thus, the position of the knife with respect to the carriage. The adjustment of the cutting edge position is done at a rather slow-motion speed. Alternatively, the stopper is set by an additional drive to a specific position, along the warp direction, in order to define one specific reset position of the knife.

[0055] The invention is described here-above with respect to the sides of a ground fabric which can be either the upper ground fabric G1 or the lower ground fabric G2 in the loom. Moreover, these sides also correspond to the sides of a weaving zone where sheds are formed for the weaving of the warp and weft yarns in the loom.

[0056] The invention is not limited by the number and the distribution of the sharpening devices and/or cutting edge resetting devices in the loom.

[0057] The technical features of the embodiments and improvements of the invention considered here-above can be combined.

Claims

1. A method for cutting pile warp yarns (I, II, III, IV, V) in a double carpet weaving loom (2) where pile warp yarns selectively extend between an upper ground fabric (G1) and a lower ground fabric (G2), said warp yarns being cut by a cutting device (6) including a knife carriage (64) which, in order to perform cutting operations, has translation movements (F, B) from a first side (G1 L) of a ground fabric to a second side (G1 R) of the ground fabric, each translation movement taking place within a pick (P1-P9), wherein each translation movement (F, B) of the knife carriage is controlled on a pick by pick (P1-P9) basis.

2. Method according to claim 1, wherein if, during one given pick (P2, P5; P2, P3, P5, P6; P2, P5), no pile warp yarn (I, II, III, IV, V) goes from one ground fabric (G1, G2) to the other, then, the knife carriage (64) is not moved in translation between the sides (G1 L, G1 R) of the ground fabric for this given pick.

3. Method according to any preceding claim, wherein a knife sharpening step and/or a knife cutting edge position resetting step are implemented on a pick by pick (P1-P9) basis.

4. Method according to claim 3, wherein said sharpening step and/or said resetting step are implemented in consideration of the amount of pile warp yarns (I, II, III, IV, V) already cut since the last sharpening step and/or since the last resetting step.

5. Method according to any one of claims 3 and 4, wherein when implementation of a resetting step is to take place or when implementation of a sharpening step is to take place, the new knife cutting edge position is selected among a set of predetermined knife cutting edge positions ("1 ", "2", "3", "4") or the sharpening process is selected among a set of predetermined sharpening processes ("1", "2", "3", "4") which includes a double sharpening process.

6. Method according to any preceding claim, wherein it includes a pile yarn pattern (PYP) analysis step and the result of this analysis step is taken into consideration to control the translation movements (F, B) of the knife carriage (64) and, possibly, to implement the sharpening step and/or the resetting step.

7. Method according to claim 6, wherein the pile yarn pattern (PYP) analysis step is performed in real time, pick to pick (P1-P9).

8. Method according to claim 6, wherein the analysis step is performed in advance, on the basis of a weave pattern (WP) of a carpet woven on the loom.

9. Method according to any one of claims 6 to 8, wherein the pile yarn pattern analysis step is automatically performed and its result is automatically transferred (S_{68}) to an actuator (68) which controls the translation movements (F, B) of the knife carriage (64).

10. Method according to claim 9, wherein the result of the pile yarn pattern analysis step is automatically transferred (S_8, $S_{10}$to a sharpening device (10) and/or to a cutting edge position resetting device (8).

11. Method according to any preceding claim, wherein control of each translation movement (F, B) of the knife carriage (64) includes selection of a motion law for said translation movement, among a set of predetermined motion laws ("1 ", "2", "3", "4"), , preferably a set of motion laws ("1 ", "2", "3", "4") including a motion law for a forth and back cutting movement.

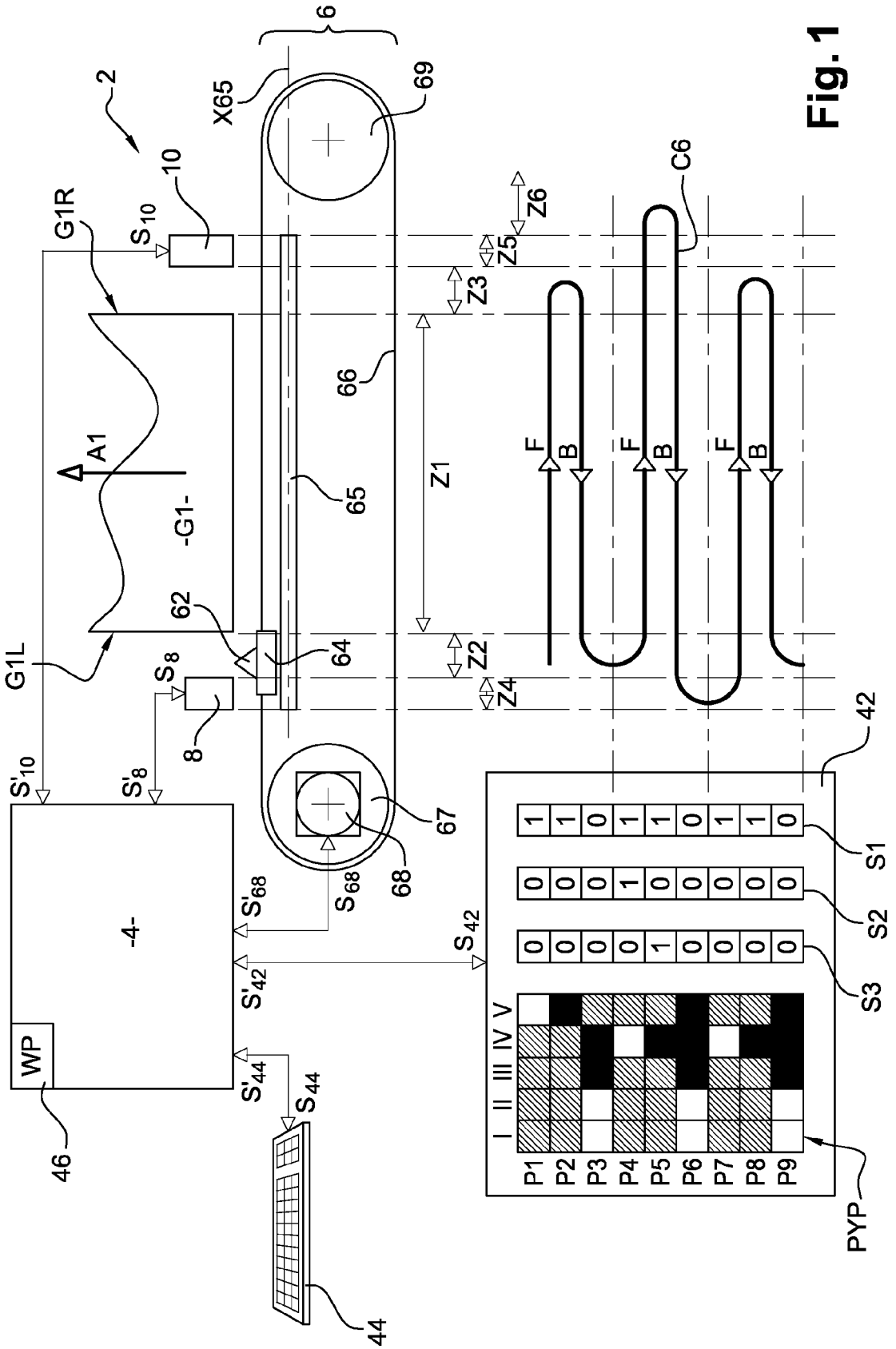
12. Method according to any preceding claim, wherein the method includes a step of generating a logic file (S1, S2, S3) including, for each pick (P1-P2), some data stating

- whether or not a translation movement is to take place (S1),
- whether or not a knife sharpening step is to take place (S2) and/or
- whether or not a knife cutting edge position resetting step is to take place (S3).

13. Method according to any preceding claim, wherein control of each translation movement (F, B) of the knife carriage takes into account a delay between a beating time of the yarns (I, II, III, IV, V) interlaced at one given pick (P1-P9) and the time when the pile warp yarns of this pick must be cut.

14. A double carpet weaving loom (2) comprising double shed formation means, weft yarns insertion means and a pile warp yarns cutting device (6) including a knife carriage (64) which, in order to perform cutting operations, has translation movements (F, B) from a first side (G1 L) of a ground fabric (G1) woven on the loom to a second side (G1 R) of this ground fabric, each translation movement taking place within a pick period, wherein said loom includes programmable means (4) which drive (S_{68}) the cutting device according to a pick by pick (P1-P9) sequence (S1).

15. Loom according to claim 14, wherein it also includes computation means (4) to automatically edit a weave pattern (WP) for a carpet (C1, C2) woven on the loom and the pick by pick sequence (S1) to be used by the programmable means to drive (S_{68}) the cutting device (6) and wherein the computation means include means (44) to perform modifications of at least the pick by pick sequence (S1).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64
G1L
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WP
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Z4
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Z6
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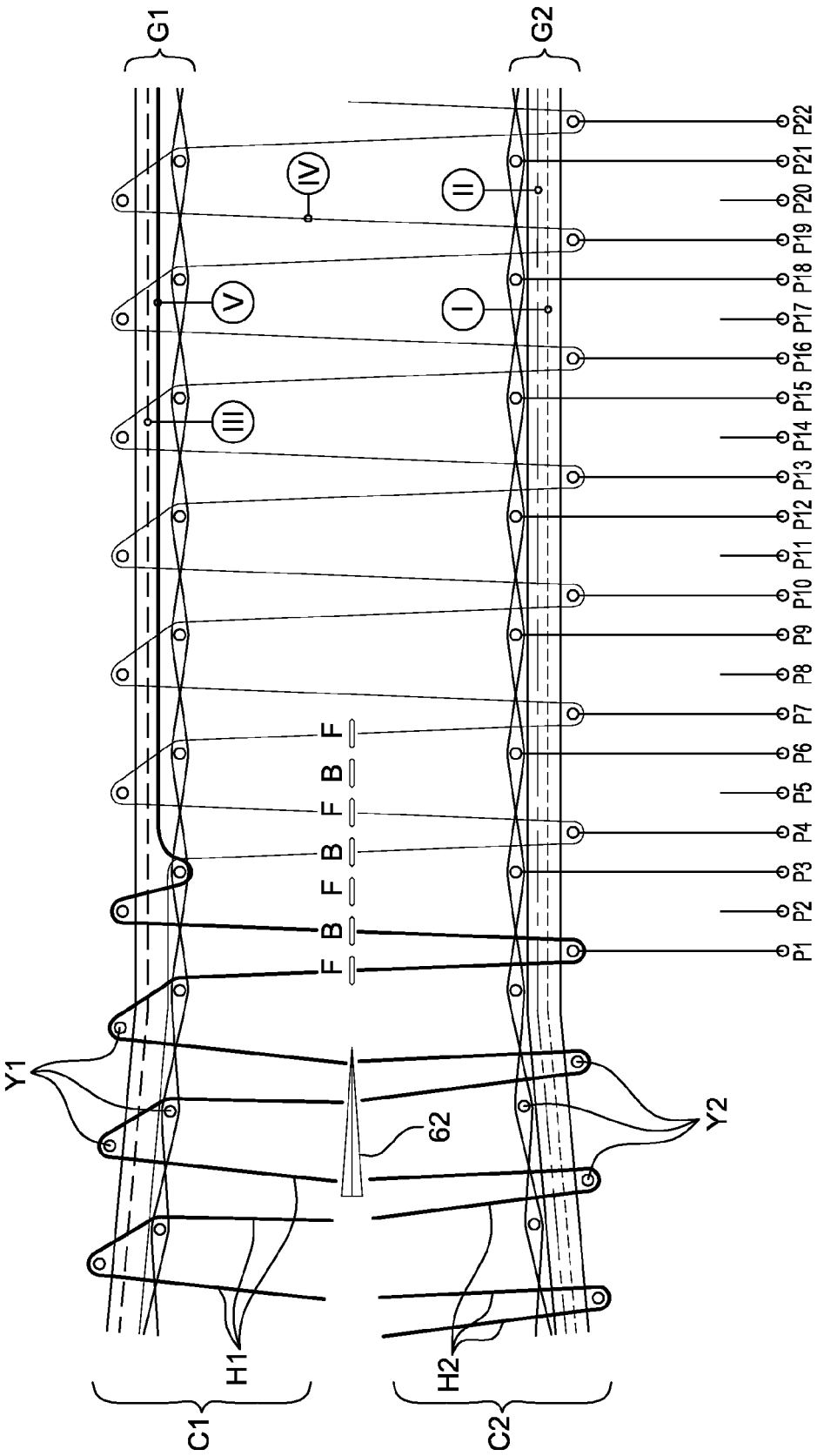
42
S1
S2
S3
I II III IV V
P1 P2 P3 P4 P5 P6 P7 P8 P9
PYP

Fig. 1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G2
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II
V
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III
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P11
P10
P9
P8
P7
P6
P5
P4
P3
P2
P1
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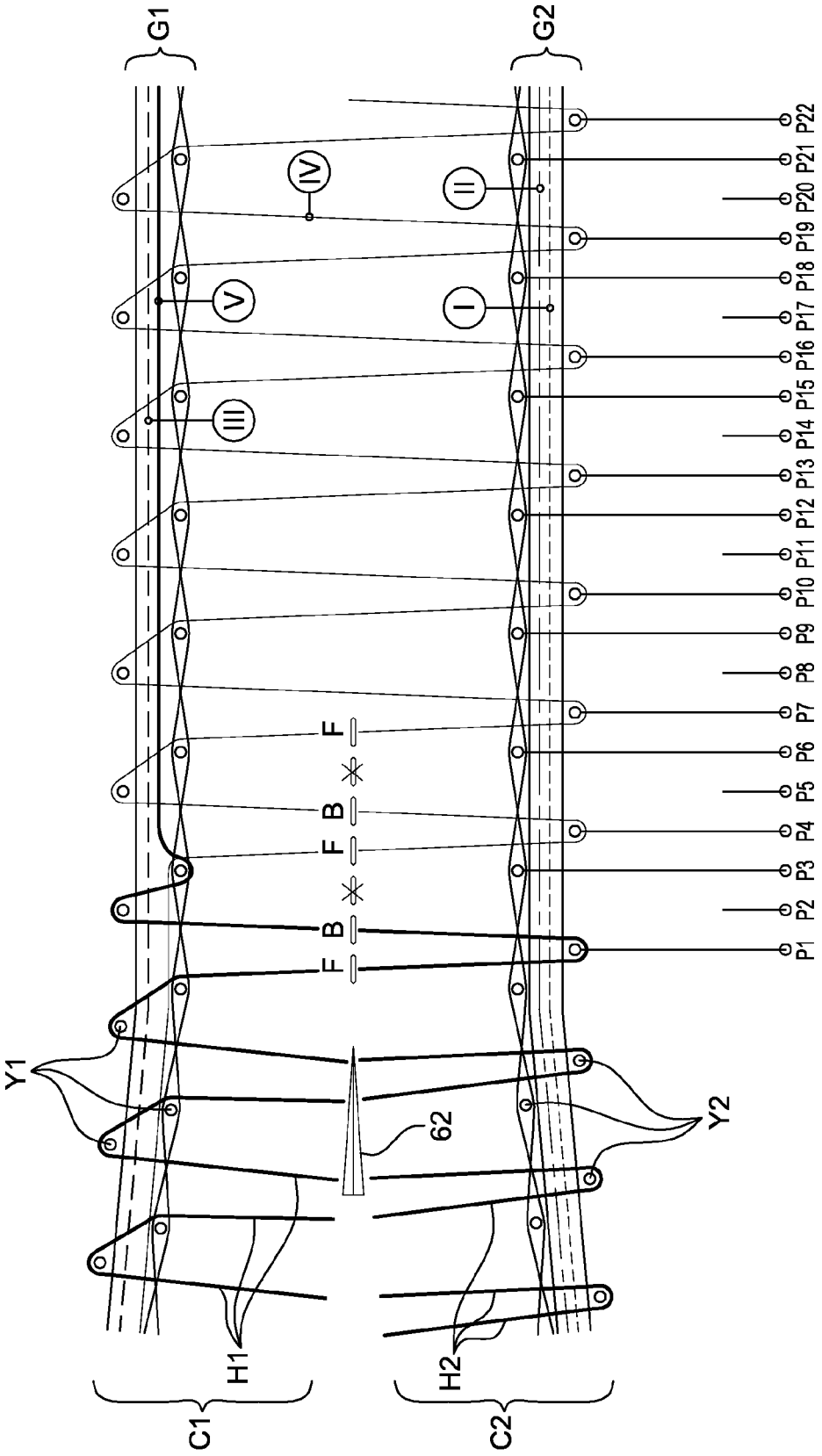
B
F
B
F
B
F
Y1
Y2
62
H1
H2
C1
C2

Fig. 2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P11
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P7
P6
P5
P4
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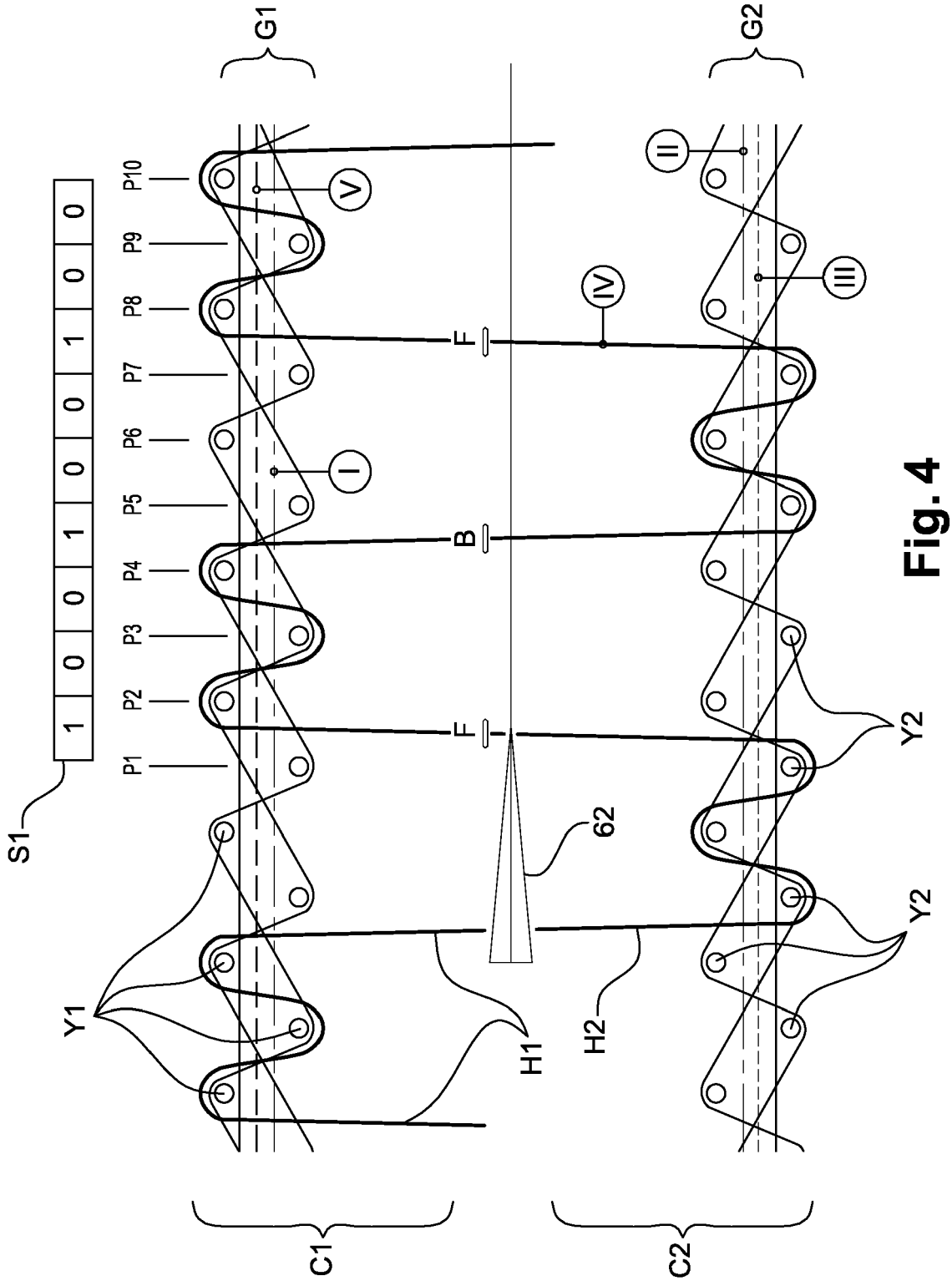
H1
H2
C1
C2

Fig. 3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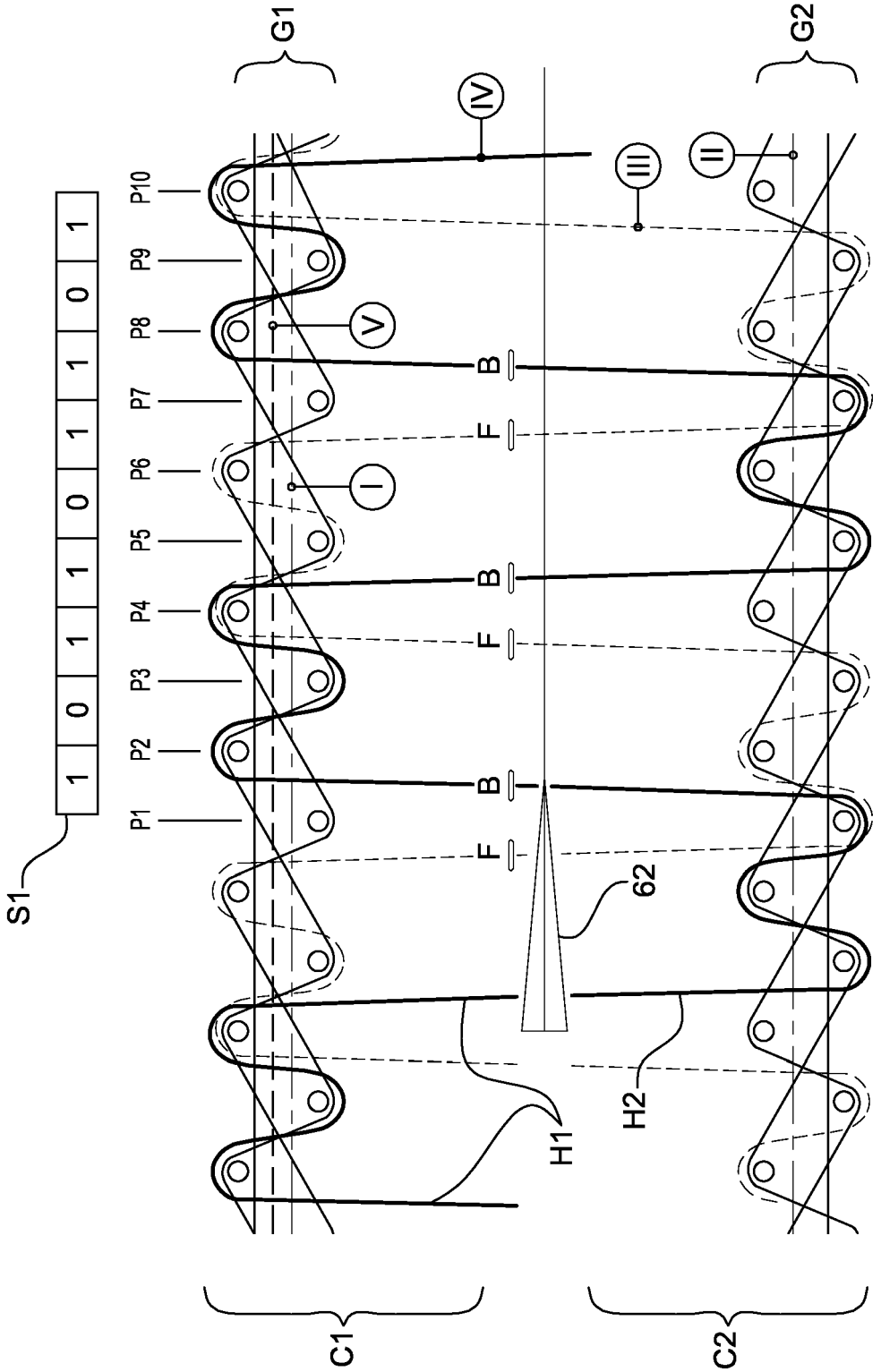
Y2
Y2
H1
H2
C1
C2

Fig. 4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P3
P2
P1
B
F
B
F
B
F
62
H1
H2
S1
1 0 1 1 0 1 0 1 1 0
C1
C2

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 11 30 6002

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	25 January 2012	Iamandi, Daniela

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25-01-2012

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