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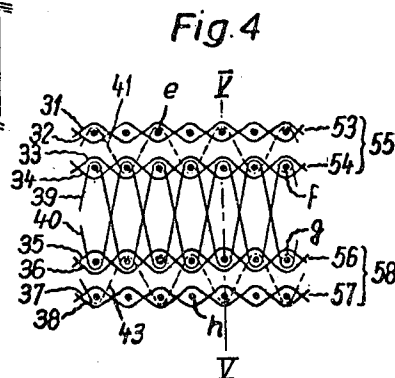
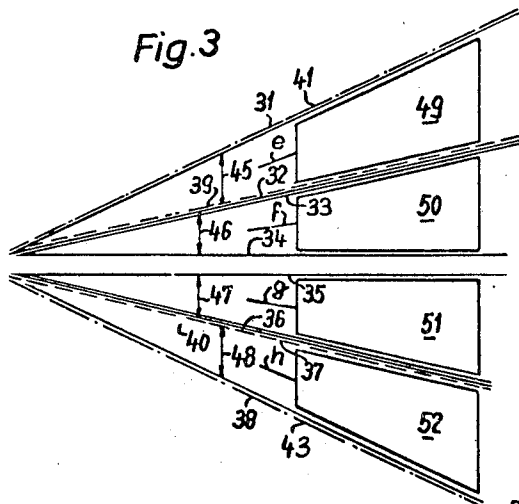
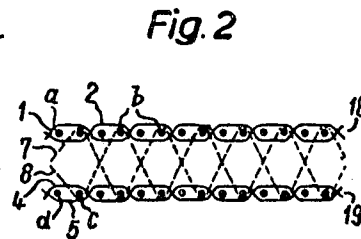
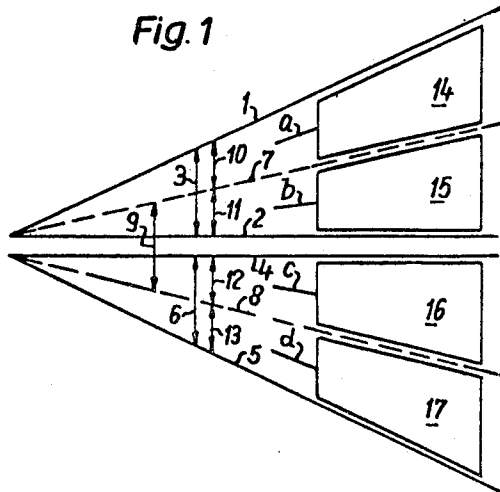
H. KUNY

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METHOD OF WEAVING VELVET TAPES AND THE LIKE

Filed May 12, 1967

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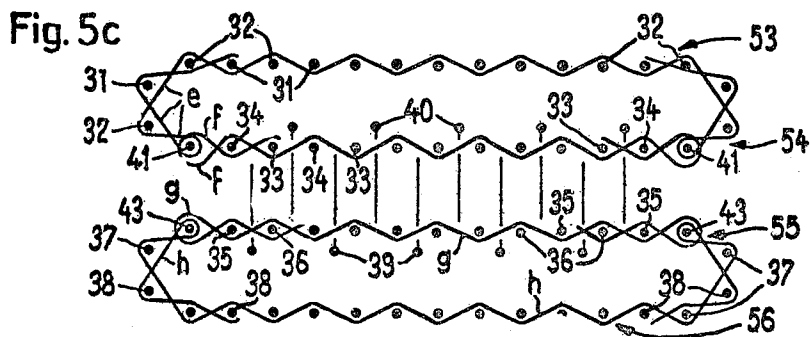
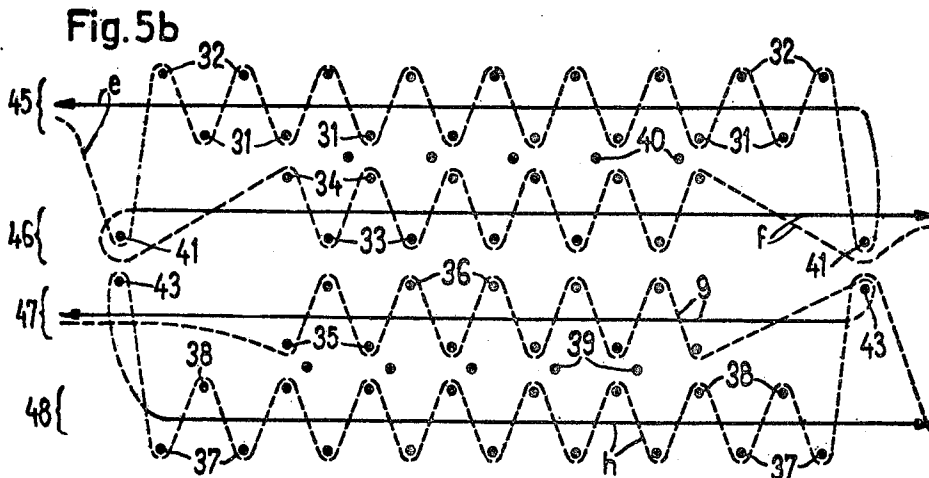
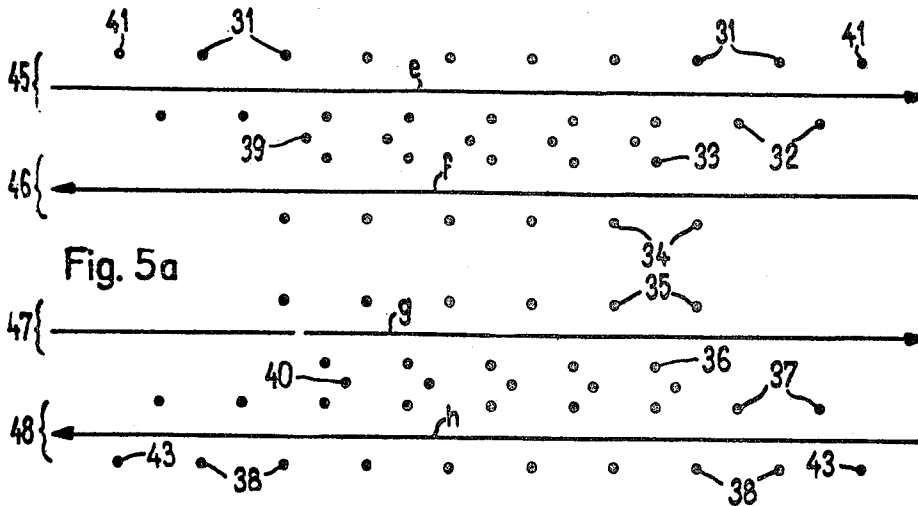
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METHOD OF WEAVING VELVET TAPES AND THE LIKE

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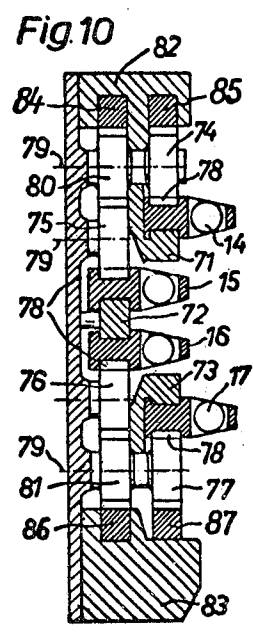
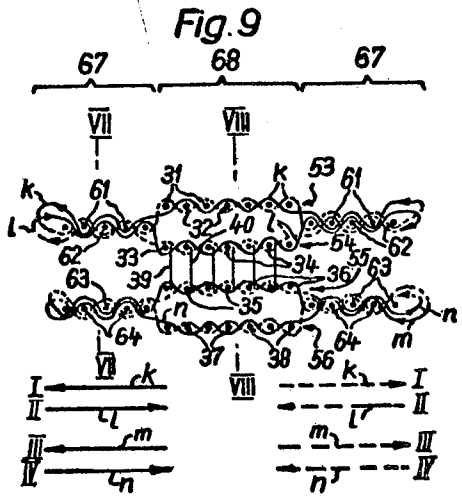
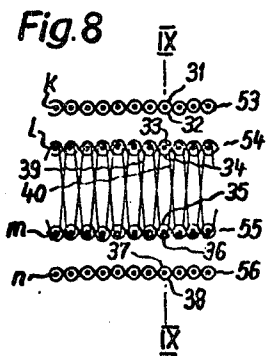
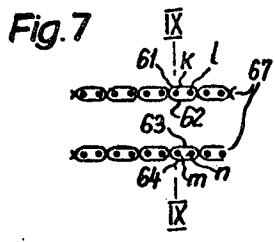
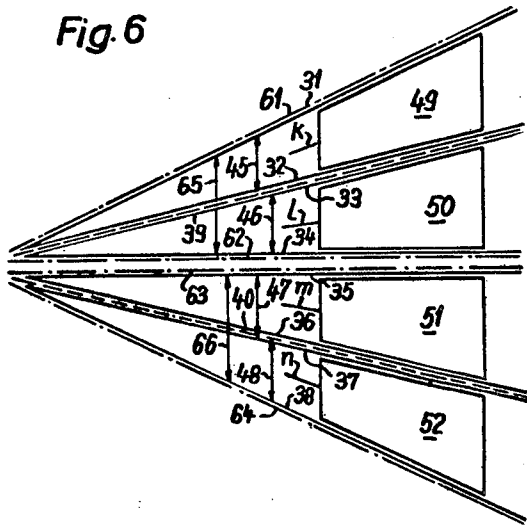
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METHOD OF WEAVING VELVET TAPES AND THE LIKE

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**METHOD OF WEAVING VELVET TAPES  
AND THE LIKE**

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Claims priority, application Switzerland, May 12, 1966,  
6,891/66

Int. Cl. D03d 39/16, 27/10

U.S. Cl. 139—21

5 Claims

**ABSTRACT OF THE DISCLOSURE**

In the manufacture of velvet ribbons, two ribbons connected to each other by common pile warp threads are woven simultaneously and separated by cutting up the pile. According to the invention, four weft threads are simultaneously inserted each by one shuttle, two for each ribbon, only one of them carrying the pile. The two weft threads may be inserted for each ribbon, either into one shed subdivided by a set of pile warp threads, on both sides of the latter, or each into one of two superposed sheds so as to produce tubular ribbons.

This invention relates to the manufacturing of ribbons. More particularly, it relates to the weaving of velvet ribbons according to the method in which each weaving cycle comprises the insertion of weft threads simultaneously into superposed sheds each formed by two sets of ground warp threads and into a shed formed by two sets of pile warp thread, the weft threads being inserted in such manner that at least two superposed ribbons are formed which are connected to each other by common pile warp threads and which thereafter are separated by severing the pile warp threads.

According to known methods of this kind, and considering the moments at which a weft thread is inserted into each of the two sheds formed by the ground warp threads the two sets of pile warp threads are alternately situated at one time in the same planes as the outermost sets of ground warp threads, that is, as the upper set of the upper shed and the lower set of the lower shed, so that the two weft threads are inserted each between a set of ground warp threads and a set of pile warp threads, and at another time in the same planes as the inner sets of ground warp threads, that is, as the lower set of the upper shed and the upper set of the lower shed, whereby the two weft threads are inserted each between the ground warp threads of one of the two sheds, outside of the pile warp threads.

The invention has for its object to improve the method outlined above in such manner that without increasing the shuttle speed, a greater length of ribbon can be produced in a given time.

The invention also comprises velvet ribbons as will be obtained according to the method of the invention, and apparatus for carrying out that method.

The accompanying drawings illustrate, by way of example only, some embodiments of the invention.

FIG. 1 shows schematically in longitudinal section, the warp sheds formed when weaving two plain velvet ribbons according to one mode of carrying out the invention;

FIG. 2 represents in longitudinal section, at a larger scale than FIG. 1, the double ribbon produced in accordance with FIG. 1, before that double ribbon is cut up into two velvet ribbons;

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FIG. 3 shows schematically, in longitudinal section, the warp sheds formed when weaving two tubular velvet ribbons according to another mode of carrying out the invention;

FIG. 4 represents in longitudinal section, at a larger scale than FIG. 3, the double ribbon produced in accordance with FIG. 3, before it is cut up into two tubular velvet ribbons;

FIGURE 5a is a schematical cross-section, at a larger scale than FIGURE 4, through the warp sheds during a first passage of the respective shuttles;

FIGURE 5b is a schematical cross-section through the same warp sheds as FIGURE 5a during the subsequent return passage of the shuttles;

FIGURE 5c is a cross-section taken at the same scale as FIGURES 5a and 5b, on line V—V of FIGURE 4 and representing schematically the structure of the double ribbon as it will result from beating-up and tensioning of the weft threads.

FIG. 6 shows schematically, in longitudinal section, the warp sheds formed when weaving two tubular velvet ribbons with plain lateral portions or attachment bands, according to still another mode of carrying out the invention;

FIG. 7 represents in longitudinal section along line VII—VII of FIG. 9 and at a larger scale than FIG. 6, the said plain lateral portions of the two ribbons produced in accordance with FIG. 6;

FIG. 8 represents in longitudinal section along line VIII—VIII of FIG. 9 and at substantially the same scale as FIG. 7, the double ribbon produced in accordance with FIG. 6, showing the tubular portions of the two ribbons which will be obtained therefrom;

FIG. 9 represents the same double ribbon in cross-section taken on the line IX—IX of FIGS. 7 and 8; and

FIG. 10 is a simplified vertical section through the slay of an embodiment of the ribbon loom used in accordance with the invention.

In FIG. 1, six sets of warp threads are shown schematically, from which velvet ribbons are woven by pairs. The warp threads forming each set pass at the right of the figure through the eyes of the heddles in a heddle shaft (not shown) which is movable up and down, then between the teeth of a reed (not shown) and converge to the left toward the fell of the double ribbon, which is shown at a larger scale in FIG. 2.

Two sets 1 and 2 of ground warp threads form an upper shed 3 in the ribbon loom, and two other sets 4 and 5 of ground warp threads form a lower shed 6. The fifth set 7 and sixth set 8 are formed of pile warp threads indicated in interrupted lines and of which at the considered moment the set 7 is situated approximately in the middle of the upper shed 3 and divides it into two superposed sheds 10 and 11. The set 8 is approximately in the middle of the lower shed 6 and divides it into two superposed sheds 12 and 13. The two sets of pile warp threads 7 and 8 form together a shed 9 of their own.

Into each of the four sheds 10 to 13 one of four weft threads a, b, c, d is inserted by a corresponding shuttle 14, 15, 16 and 17, respectively, on the passage thereof. The shuttles 14 and 15 are reciprocated in opposite directions through their sheds 10 and 11 between the said reed (not shown) and the fell of the double ribbon, and similarly the shuttles 16 and 17 are reciprocated in opposite directions through the sheds 12 and 13, the shuttle 14

moving in opposite sense to the shuttle 17 and the shuttle 15 in opposite sense to the adjacent shuttle 16.

As soon as the four shuttles have simultaneously traversed the whole weaving width and have left the sheds laterally, the weft threads *a, b, c, d* inserted by them into the sheds are beaten up against the fell of the ribbon by a forward movement of the slay (not shown) whereupon the heddle shafts (not shown either) each of which guides the ground warp threads of one of the four sets 1, 2, 4, 5 are moved in such manner that both the warp sets 1 and 2 and the warp sets 4 and 5 exchange their positions in the respective sheds 3 and 6. Similarly, the heddle shafts which guide the pile warp threads each of one of the pile warp sets 7 and 8 are moved so that these latter sets exchange their positions as well. The ground warp threads 1 and 2 are crossed behind the weft thread *a* and *b* (i.e. on their side remote from the fell of the ribbon) and the ground warp threads 4 and 5 are crossed in front of the weft threads *c* and *d*, as will be seen in FIG. 2.

By the tension of the warp threads, the uppermost and lowermost weft threads *a* and *d* are shifted each over the adjacent weft thread *b* and *c*, respectively, towards the fell of the ribbon, so that they assume positions in front and at the same level as the last-mentioned weft threads, as visible from the said FIGURE 2. On crossing of the warp threads 1 with 2 and 3 with 4, the two weft threads of each pair *a, b*, and *d, c*, respectively, are pressed together, thus arresting those of the pile warp threads 7 and 8 which pass between them.

Through the sheds thus changed, the shuttles 14 to 17 are now returned, each moving in the sense opposite to that in which it moved through the first described shed.

The shuttle 14 thereby enters the weft thread *a* into the shed 10 which is now formed by the set 2 of ground warp threads and the set 8 of pile warp threads, and the shuttle 15 enters the weft thread *b* into the shed 11 now formed by the set 8 of pile warp threads and the set 1 of ground warp threads. The shuttle 16 enters the weft thread *c* into the shed 12 formed by the sets 5 (ground warp) and 7 (pile warp), and the shuttle 17 enters the weft thread *d* into the shed 13 formed by the pile warp set 7 and the lowermost set 4 of ground warp threads.

Thereafter, the weft threads are again beaten up and the associated movement of the heddle shafts carries the sets 1, 2, 4 and 5 of ground warp threads and 7 and 8 of pile warp threads back into their original positions, whereby the inserted portions of the weft threads *a* and *d* are moved forward and the ground warp threads are crossed behind them, thus binding them into the ribbon structure.

The described cycle comprising two phases each with one passage of the four shuttles is constantly repeated.

The double ribbon thus obtained is schematically shown in longitudinal section in FIG. 2. As will be seen, two superposed ribbons 18 and 19 have been produced, one of which consists of the sets 1 and 2 of ground warp threads and the weft threads *a* and *b*, and the other of the sets 4 and 5 of ground warp threads and the weft threads *c* and *d*. The two ribbons are connected to each other by the common sets 7 and 8 of pile warp threads, each of which runs to and fro between the ribbons 18 and 19. In the ribbon 18, the pile warp threads pass over portions of the weft thread *b* and in the ribbon 19 they pass over portions of weft thread *c*.

From the place where this double ribbon has been produced, it is advanced (in FIGS. 1 and 2, to the left) through a cutting device (not shown) in which the pile warp threads 7 and 8 are severed half-way between the two ribbons 18 and 19. The ribbons then can be separated and each of them carries on one of its faces a pile formed by the portions of the pile warp threads 7 and 8, each such portion being maintained on the weft thread *b* or *c* over which it runs, by the adjacent portions of the weft thread *a* or *d*, respectively. If the weft threads running to and fro over the width of the fabric are drawn off the ribbon, one weft thread *b* or *c* which all over its length carries

pile thread portions and another weft thread *a* or *d* which is entirely free of pile thread will be found.

As shown in FIGURES 3, 4 and 5a to 5c, in order to produce a pair of tubular velvet ribbons each of which on one of its outer faces carries a pile, one uses eight sets 31 to 38 of ground warp threads, two sets 39 and 40 of pile warp threads, and two pairs 41 and 43 of connecting warps threads in the zone of the outermost lateral ground warps threads. At the moments at which the weft threads are inserted, pairs of ground warp sets 31 and 32, 33 and 34, 35 and 36, and 37 and 38 each form one of four superposed sheds 45 to 48, with the adjacent sets 32 and 33, 34 and 35, and 36 and 37 of the directly superposed sheds 45 and 46, 46 and 47, and 47 and 48 lying approximately in the same planes.

Of the two pairs of connecting warp threads, each of the two threads 41 of the upper pair is, at the moment considered in FIGS. 3 and 5a, next to the outermost ground warp thread of the set 31 on one edge of the ribbon, lower pair is next to the corresponding ground warp thread of the set 35.

As in the preceding example, four shuttles 49 to 52 move through the sheds 45 to 48 formed by the ground warp threads, and they insert each one of four weft threads *e, f, g, h* into the respective shed. Here as well, the shuttles 49 and 52, 49 and 50, 51 and 52 and thereby also the shuttles 50 and 51 move in opposite directions.

After the passage of the four shuttles the entered weft threads are beaten up and the positions of the two sets 31 and 32, 33 and 34, 35 and 36, and 37 and 38 of ground warp threads forming each of the sheds 45 to 48 are exchanged so that they reach the positions schematically indicated in FIGURE 5b. At the same time, the two sets 39 and 40 of pile warp threads mutually change their positions, and the two connecting warp threads 41 move downwards to the level occupied in FIGURES 3 and 5a by the set 34 and now to be occupied by the set 33 of ground warp threads. Similarly, the two connecting warp threads 43 move upwards to the level occupied in FIGURES 3 and 5a by the set 35 and now to be occupied by the set 36 of ground warp threads. The configuration of the warp threads in the sheds now is as diagrammatically shown in FIGURE 5b. At the fell of the fabric, however, the warp threads of each shed converge to nearly the same level, with the last-entered portions of the respective weft threads running across them along a slightly undulating line. In FIGURE 5b, however, this portion has been represented as a strongly undulating dotted line to show how the last-entered weft thread portion runs around the respective warp threads. Thereby, the weft threads just inserted by the shuttles are bound into the four ribbon webs produced in the sheds 45 to 48.

The four shuttles 49 to 52 then are moved through the warp sheds across the weaving width in the opposite direction as before and they return to their initial positions, thereby inserting a further portion of the weft threads *e, f, g* and *h*, respectively, into these sheds as shown the straight full-line portion of the lines representing these weft threads in FIGURE 5b. These weft thread portions are beaten up again and bound in by ground warp threads, as each two sets of the latter which form, respectively, one of the sheds 45 to 48 exchange their positions. At the same time, the two sets 39 and 40 of pile warp threads again exchange their positions and the connecting threads 41 and 43 return to the levels of the sets 31 and 38, respectively, of the ground warp threads. Thus all warp threads will be again in the position shown in FIGS. 3 and 5a. The pile warp threads of the sets 39 and 40 are drawn towards each other over the last inserted portion of weft threads *g* and *f*, respectively (see FIG. 4), so that the next portion of the respective weft thread which will be bound in, will press these pile warp threads against the said last inserted weft thread portion.

The described alternation of two phases is continuously repeated.

Since each of the two connecting warp threads 41 in the upper ribbon is alternately brought to the level of the set 31 of warp threads when this set is at the top of the shed 45 forming the uppermost ribbon web 53 (FIGURE 4) and to the level of the set 33 of warp threads when this set is at the bottom of the shed 46 forming the second ribbon web 54 (FIGURE 4), each of these two warp threads 41 becomes encircled alternately by the weft thread *e* of the upper web 53 and by the weft thread *f* on the second web 54. Thereby the warp threads 41 connect the two webs 53 and 54 to each other at both their edges, whereby these webs form a flat tubular ribbon 55. Similarly, the two connecting warp threads 43 reciprocate between the levels of the sets 36 and 38 of warp threads, when they are at the top of the shed 47 and at the bottom of the shed 48, respectively, in the course of the weaving of the ribbon webs 56 and 57. Thus, each of the two connecting warp threads 43 becomes alternately encircled, at the edges of the respective webs, by the weft threads *g* and *h* of the upper and lower web 56 and 57, respectively, of what is to become another flat tubular ribbon 58.

The resulting double ribbon is shown in longitudinal section in FIG. 4. As can be seen, the ground warp threads of sets 31 and 32 form with the weft thread *e* a first ribbon web 53 and those of sets 33 and 34 form with the weft thread *f* a second ribbon web 54. In the present example, these ribbon webs are in plain weave. Both webs are connected to each other at each of their edges by a connecting warp thread 41 so as to form together one tubular ribbon 55. In weaving, the number of warp threads of the sets 33 and 34 is chosen a little smaller than that of the warp threads of the sets 31 and 32 and the tension of the weft thread *f* is made somewhat higher than that of the weft thread *e*, so that on beating up and tensioning the weft threads are shown in FIGURE 5c the lower ribbon web 54 becomes narrower than the upper one 53, and the connecting warp thread 41 will be situated on the pile face of the tubular ribbon. Thereby, the smoothness of the edges of that ribbon is improved.

In a similar way, the ground warp threads of the sets 35 and 36 together with the weft thread *g* and those of the sets 37 and 38 together with the weft thread *h* form two ribbon webs 56 and 57 which are connected to each other at their edges by means of the connecting warp thread 43 so as to form a tubular ribbon 58.

Between the inner ribbon webs 54 and 56 of the two tubular ribbons 55 and 58, the pile warp threads of sets 39 and 40 run to and fro in such manner that either the threads of the set 39 or those of the set 40 pass over each portion of the weft threads *f* and *g*.

Thereupon, the described double ribbon is divided into the two tubular ribbons 55 and 58 by cutting through the pile threads so that each of these ribbons carries on its one face a pile formed of portions of the warp threads 39 and 40.

The rear web 53 or 57 of each tubular ribbon carries no pile. As represented, it can have a plain weave pattern. However, it could be woven in a pattern differing from that of the pile-carrying ribbon web, for example in satin weave.

According to the example represented in FIGS. 6 to 9, a pair of tubular velvet ribbons with plain attachment bands along their edges is obtained by using, as in the example of FIGS. 3 to 5, eight sets 31 to 38 of ground warp threads and two sets 39 and 40 of pile warp threads. These sets of pile warp threads extend only over the width of the tubular portions 68 without the plain attachment bands 67. Instead of connecting warp threads as used in the preceding example, four additional sets 61 to 64 are provided for the attachment bands of the upper and of the lower tubular ribbon. In the considered initial position the sets 61 and 62 are in the same planes as the sets 31 and 34 of ground warp threads and the sets 63 and 64 are in the same planes as the ground warp threads 35 and 38, respectively. These additional sets of warp threads are

provided only on both sides of the sets 31 to 38 of ground warp threads in the zones in which the attachment bands 67 are to be woven. In these zones the additional sets 61 and 62 form an upper shed 65 laterally of the sheds 45 and 46 and the additional sets 63 and 64 form a lower shed 66 laterally of the sheds 47 and 48.

Again, four shuttles 49 to 52 are used of which, in the position of the warp sets shown in FIG. 6, the shuttle 49 first passes between the additional sets 61 and 62 forming the shed 65 where one of the attachment bands 67 is woven. Thereupon, the shuttle 49 passes above the set 39 of pile warp threads through the uppermost shed 45 formed by the ground warp threads, and finally it passes between the additional sets 61 and 62 where the other of the attachment bands 67 is woven. At the same time, the shuttle 50 passes in the opposite direction between these same additional sets of warp threads where the last-mentioned attachment band is woven, then between the sets 39 and 40 of pile warp threads through the second ground warp shed 46 and finally between the additional sets of warp threads where the first-mentioned of the attachment bands 67 is woven. The shuttle 51 travels in the direction opposite to that in which the shuttle 50 moves; it passes between the additional sets 63 and 64 which form the shed 66 where the first attachment band of the lower velvet ribbon is woven, then also between the sets 39 and 40 of pile thread through the third shed 47 of ground warp threads, and between the additional sets 63 and 64 for the other attachment band 67 of that lower ribbon. Lastly, the shuttle 52 travels in the opposite direction to shuttle 51, passing between the same additional warp sets 63 and 64 as the latter; in the middle part of its stroke, however, it passes through the lowermost ground warp shed 48 below the set 40 of pile threads. During their travel, the four shuttles insert weft threads *k*, *l*, *m*, *n* into the respective sheds. Thus, in the sheds 65 and 66 formed by the additional sets of warp threads, portions of two weft threads *k*, *l* or *m*, *n*, respectively, are laid side by side as can be seen from FIGS. 7 and 9.

The inserted portions of the four weft threads *k*, *l*, *m*, *n* are then beaten up, and simultaneously the sets 31 and 32, 33 and 34, 35 and 36, 37 and 38 of all ground warp sheds 45 to 48, respectively, as well as the pile warp sets 39 and 40 and the two additional sets 61 and 62 of the upper shed 65 and the two additional sets 63 and 64 of the lower shed 66 exchange their positions within the respective sheds.

The four shuttles return to their starting positions through the sheds thus modified, whereupon the weft tread portions inserted by them are beaten up again and the sets of warp threads again exchange their positions, thereby returning to those in which they are shown in FIG. 6.

In this way, the double velvet ribbon shown in FIGS. 6, 7 and 9 is obtained, which in the middle portion 68 of its width has the same structure as that of FIGS. 4 and 5(a-c); in place of the connecting warp threads 41 to 44 of the latter, the greater number of warp threads forming the additional sets 61 to 64 of the two attachment bands 67 and with which the same weft threads are either woven as with the ground warp threads, serve for mutually connecting the outer and inner ribbon webs 53 and 54, or 56 and 55, respectively, of each of the two tubular portions 68 of the double ribbon.

As in the preceding example, each of the pile warp threads of the sets 39 and 40 alternately passes over a portion of the weft thread *l* which is interwoven with the ground warp threads of the sets 33 and 34, and over a portion of the weft thread *m* which is interwoven with the ground warp threads of the sets 35 and 36. Each of these pile warp threads is maintained between adjacent portions of these weft threads, which in turn are bound in by the said ground warp threads.

By severing the pile warp threads in the middle plane between the two tubular parts of the double ribbon, two tubular ribbons are obtained, each with plain lateral at-

tachment bands 67 and with a middle portion having a pile on one of its faces.

For carrying out the method illustrated by the examples according to FIGS. 1 and 2, FIGS. 3 to 5(a-c) and FIGS. 6 to 9, a conventional velvet double ribbon loom can be used in which, however, the normal two-shuttle slay is replaced by a slay with guides for four shuttles 14 to 17 or 49 to 52, and with means for their synchronous opposite reciprocation by pairs. In FIG. 10, such a slay is represented in vertical section along a plane outside the openings through which the warps pass, that is, in a region in which the shuttles are at rest during the beat-up and shed-changing phases. In these openings, the reeds are mounted through which the warp threads are carried.

In FIG. 10, the shuttles working across a slay opening are designated by 14 to 17 in accordance with FIG. 1; however, these shuttles could also be those designated by 49 to 52 in FIGS. 3 and 6.

Each shuttle is guided, on one hand, by a rail 71, 72, 73 which is fast on the frame 82, 83 of the slay, the rail 72 guiding both the shuttles 15 and 16. The rails 71, 72 and 73 do not extend across the slay opening. They are long enough on each side of that opening for accommodating the full length of the respective shuttle in its terminal position. Opposite the respective guiding rail 71, 72, 73 each shuttle 14, 15, 16, 17 is engaged on each side of the slay opening, by a gearwheel 74, 75, 76 or 77, respectively, which retains the shuttle against a corresponding portion of its respective guiding rail and which moreover, by its engagement with a row of gear teeth 78 formed on each shuttle, serves for driving the latter across the slay opening. These gearwheels are freely rotatable on pins 79 mounted on the slay frame. The shuttles and their row of teeth 78 are long enough to be temporarily in mesh simultaneously with the corresponding gearwheels 74 to 77 on both sides of the slay opening but as they move out of that opening to permit the beating up of the weft thread and the changing of the sheds, they remain in mesh with one only of these gearwheels.

The gearwheels 75 and 76 each mesh with another similar gearwheel 80, 81, respectively, which is freely rotatable on the same pin 79 as the gearwheel 74, 77, respectively.

In each of the horizontal members 82, 83 of the slay frame, two racks 84, 85, and 86, 87, respectively are slidably mounted parallel to each other. The upper rack 84 and the lower rack 86 mesh with the intermediate gearwheels 80, 81, respectively, while the upper rack 85 and the lower rack 87 similarly mesh with the gearwheels 74 and 77. These racks pass above and below the slay opening and are not interrupted at the latter. The two upper racks 84 and 85 are connected to each other so as to move jointly among the frame member 82, and similarly the two lower racks 86 and 87 are connected to each other, for joint motion along the frame member 83.

The upper pair of racks 84, 85 and the lower pair of racks 86, 87 are connected to each other, e.g. by a set of gearwheels (not shown in the drawing) in such manner that they move in opposite directions.

During operation of the loom, after the last inserted portions of the weft threads have been beaten up against the fell of the double ribbon, the racks 84, 85 are actuated by some mechanism well known for the purpose, to move in one direction, and the racks 86, 87 at the same time move in the opposite direction.

Thereby, the gearwheels 74 and 77 and the intermediate gearwheels 80 and 81 are all rotated in the same sense, and the gearwheels 75 and 76 are rotated by the said intermediate gearwheels in the opposite sense. The shuttles 14 and 16 are then driven by the gearwheels 74 and 76 in one sense and the shuttles 15 and 17 are driven by the gearwheels 75 and 77 in the opposite sense. The shuttles 14 and 16 start their travel on one side of the

slay opening and the shuttles 15 and 17 start on the opposite side thereof, so that all shuttles are driven across that opening by the respective gearwheels on the side on which they have started. Eventually, they will reach the opposite side of the opening and their teeth 78 will come into engagement with the corresponding gearwheel on that opposite side of the opening; thereby, the shuttles are caused to complete their strokes although they now come out of engagement with the gearwheels which first drove them. The slay is then swung forward to beat up the inserted weft threads, and the heddle shafts are operated to change the sheds. The racks 84 to 87 are then moved in the opposite direction to drive the shuttles back across the slay opening, whereupon the whole cycle starts again.

I claim:

1. A velvet ribbon comprising a plurality of warp threads, two weft threads, a pile on one of its faces consisting of a multitude of pile thread sections all carried by a single one of said weft threads, two elongated webs, the first of which contains the weft thread carrying said pile and the second of which contains the other weft thread, and further warp threads adjacent to each edge of each said elongated web around which both weft threads are woven whereby said elongated webs are connected to form a tubular ribbon.

2. A velvet ribbon as claimed in claim 1 in which one of said elongated webs is narrower than the other.

3. A velvet ribbon as claimed in claim 1 and comprising an attachment band adjacent at least one longitudinal edge of said tubular ribbon, the weft threads of both said webs being interwoven with said further warp threads forming the said attachment band therewith.

4. In a method of manufacturing velvet tapes comprising the steps of forming superposed ground warp sheds each comprising two converging sets of ground warp threads, and a pile warp shed comprising two converging sets of pile warp threads, inserting weft threads into said ground warp sheds and said pile warp shed and beating them up, shifting said sets of ground warp threads and of pile warp threads to change said sheds for binding each of said weft threads into a ribbon formed by the ground warp threads of one of the ground warp sheds and each of said pile warp threads alternately into one and the other of said ribbons, severing the pile warp threads intermediate said two ribbons, positioning, on each shifting of the sets of warp threads, each set of pile warp threads between two sets of ground warp threads forming one of the ground warp sheds, respectively, and thereafter inserting into each ground warp shed, two weft threads, one on each side of said set of pile warp threads, the improvement which comprises the utilization and formation of four ground warp sheds each comprising two sets of ground warp threads, inserting one of the weft threads into each of said ground warp sheds, said two weft threads which are inserted into the two superposed ground warp sheds are crossed with at least one common connecting warp thread, the webs produced in each of such two sheds being joined together so as to form a tubular ribbon, and two of said ground sheds being outside said pile warp shed formed by said pile warp threads whereby binding of any of the pile warp threads in the uppermost and the lowermost of the four layers which are woven is precluded.

5. The method as claimed in claim 4 in which, moreover, an additional shed is formed laterally of each pair of adjacent ground warp sheds on at least one edge thereof, said additional shed comprising two sets of ground warp threads, two weft threads being inserted simultaneously each into one of the ground warp sheds of the said pair and side by side into said additional shed.

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