Feb. 28, 1939. P. SCHÖNFELD 2,149,032

PRODUCTION OF PLAIN WARP GOODS

Filed April 15, 1938

Fig. 1.

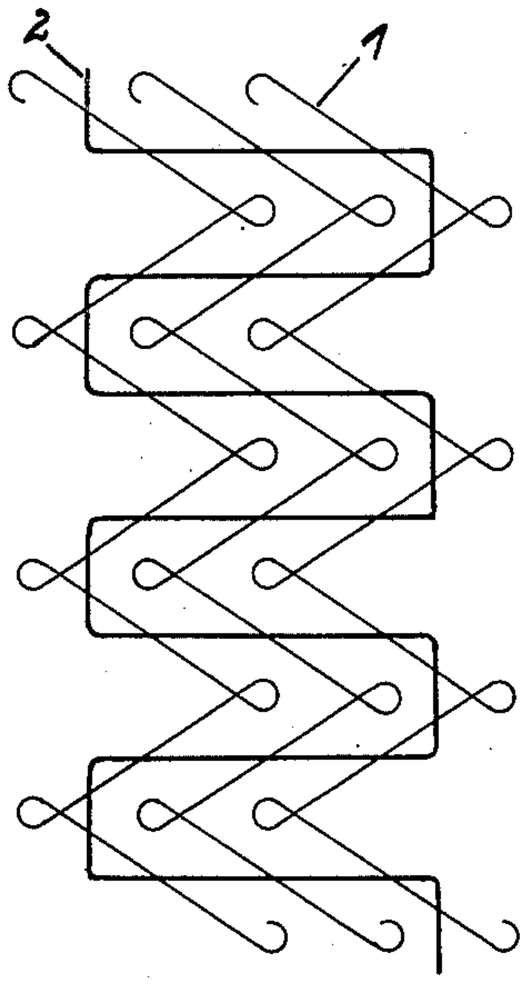
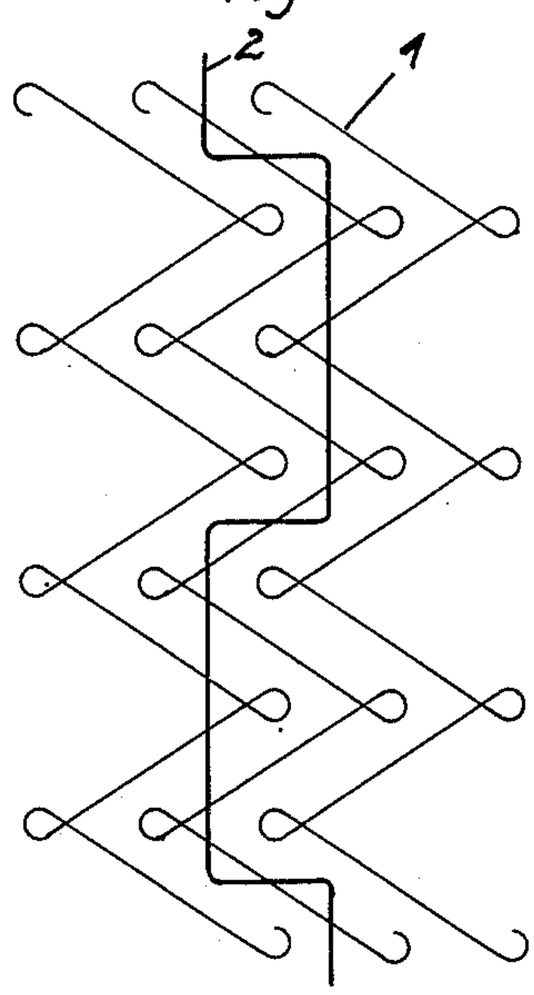


Fig. 2.



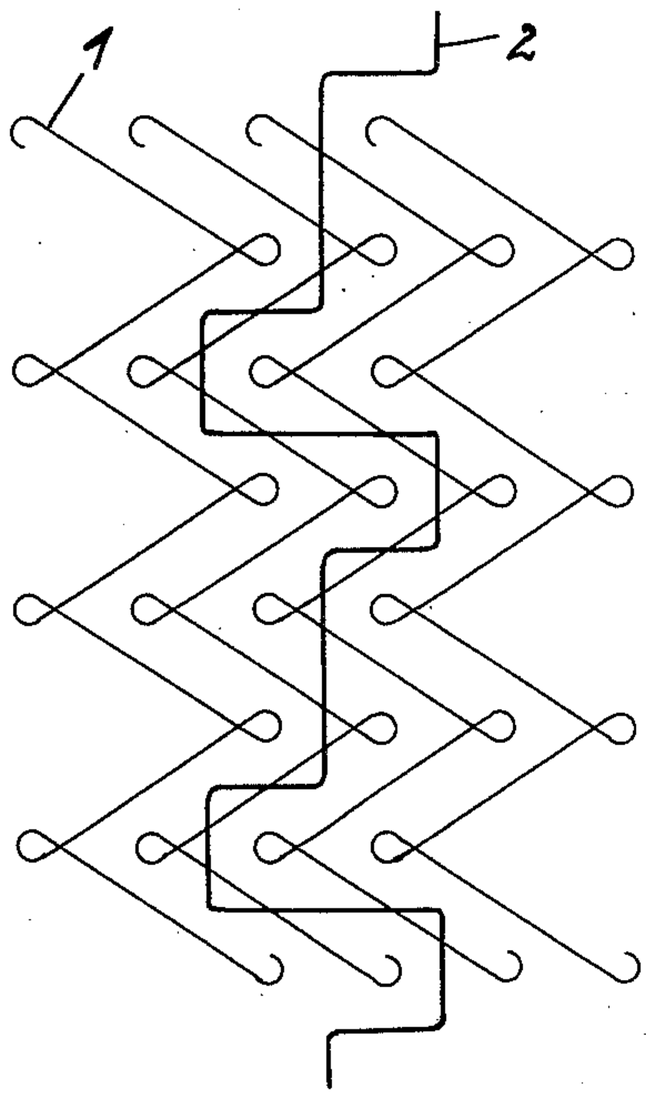


Fig. 3.

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PRODUCTION OF PLAIN WARP GOODS

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3 Claims. (Cl. 66—84)

This invention relates to a method of producing plain knitted warp goods wholly or partly provided with rubber warp threads.

It has been proposed already to produce a warp fabric provided with rubber warp threads by means of two lapping machines on a warp loom having only one row of needles, the rubber threads being gathered in the upper lapping machine and the ground threads in the lower one. According to this method, a plain tricot i. e. under 1 over 1 and back, is produced on the lower machine, while the upper machine carries out underlaying operations and is racked in a direction opposite to the lower machine. This operation of the upper machine, carried out for the purpose to render the fabric also elastic in transverse direction, has the effect that the fabric is drawn together in transverse direction and thus narrowed. In certain instances such goods furthermore disclose a tendency to curl up from the longitudinal edges.

The object of the invention is to produce a fabric of this type in the production of which the upper lapping machine for the rubber threads is never racked in opposite direction to the lower machine during underlaying operations, so that the narrowing of the width of the fabric and the curling tendency are eliminated. The production of such goods involves certain difficulties inasmuch as the rubber threads if opposite lapping is avoided cannot, according to the older proposal, be looped into the fabric if the underlaying operations of the upper machine are equal in extent to those of the lower machine. This difficulty has to be overcome.

It has further been proposed to produce a transversely ribbed warp fabric of rubber-like elasticity by means of two lapping machines on a warp loom having only one row of needles, but the ground fabric, according to this method, is lapped again only under 1 over 1 and back and the rubber threads to be underlaid are lapped in opposite direction. Production of this fabric differs from that of the goods described above only in so far as the upper machine with its rubber threads is racked once in the same direction as the lower machine and then in a direction opposite thereto. Lateral pull upon the goods still exists, and in certain circumstances the fabric will also tend to curl up from its longitudinal edges. Furthermore, the ribs of such goods are somewhat curved, whereby further working is made difficult.

The invention attains its object by causing the lower machine with its ground thread to lap at least under 2, for instance under 2 over 1 and back, whilst the upper machine carries out greater or smaller underlaying operations than the lower machine and is always racked in the same direction as the lower machine.

In this manner it becomes possible to loop the rubber threads into the ground fabric.

By way of example, the invention is illustrated in the accompanying drawing which shows three lapping diagrams.

Fig. 1 shows the underlaid threads in each row of meshes, whereby the threads were underlaid under the same number of needles;

Fig. 2 shows the underlaid threads between two underlaying operations without lateral racking; and

Fig. 3 shows the underlaid threads which in places are underlaid not only without any lateral racking but also partly under the same number of needles as the ground threads.

The ground threads 1 are gathered in known manner in the lower machine which underlays under at least two needles. As indicated in the drawing, the lower machine laps a plain cord, so that the threads 1 are lapped under 2 over 1 and back. The rubber warp threads 2 are gathered in the upper machine which carries out larger or smaller underlaying operations than the lower machine. The upper machine is racked always in the same direction as the lower machine and not in a direction opposite thereto. As shown in Fig. 1, the upper machine with its rubber threads 2 continually laps under 3, and the fabric produced has therefore a perfectly plane surface. The upper machine with its rubber threads 2, as indicated in Fig. 2, laps under 1 and is not racked laterally between two of these underlaying operations. In this way it becomes possible according to the invention to produce also a transversely ribbed fabric. The fabric is transversely ribbed at the points where the upper machine is not racked laterally, so that the rubber threads 2 at these points are free on one side of the goods. As they are interlaced above and below these points, they naturally draw the fabric together into a rib. A fabric made according to Fig. 2 is ribbed only on one side, because the rubber threads 2 always project therefrom on one side only. This one-sided transverse rib is not produced as suggested by older proposals, since, as shown in Fig. 2, the upper machine is always racked during underlaying operations in the same direction as the lower machine with its ground thread 1. It may be mentioned in this connection that lateral racking of the rubber

threads 2 between two underlaying operations may be omitted also of course when, as shown in Fig. 1, the underlaying operations do not cover three needles.

As indicated in the lapping diagram shown in Fig. 3, the upper machine carries out underlaying operations also and is racked in the same direction as the lower machine. As in Fig. 2, there are also between every two underlaying operations points where racking is omitted. Furthermore, at some places the upper machine carries out underlaying operations equal in size to those of the lower machine. According to the drawing, the upper machine in this instance continually laps in the first course under 2, in the second under 1, in the fourth under 1 again whilst the third course racking is omitted, whereupon in the fifth row the repeat begins again with placing the threads under two needles. As stated with respect to Fig. 2, on the places where racking has been omitted the rubber warp threads draw ribs on one side of the goods, and where the upper machine carries out underlaying operations of the same size as those of the lower machine these rubber threads are free on the other side of the goods and thus draw ribs there also. The result of lapping according to Fig. 3 is therefore a warp knitted fabric transversely ribbed on both sides without any opposite racking of the upper machine.

The manner of gathering of the rubber threads in the upper lapping machine depends upon requirements. For the sake of clearness the diagrams in the drawing show only a single rubber warp thread. It is possible, moreover, to work a textile thread group before or behind the rubber threads 2, for instance for the purpose of filling the ground fabric.

It is to be remarked that the upper lapping machine is the one nearest the frame needles when the lapping machines are on the take-up side of the frame needles.

I claim:—

1. A method of producing plain knitted warp goods wholly or partly provided with rubber warp threads by means of a lower machine for the ground thread and an upper machine for the rubber thread, consisting in causing the lower machine to lap at least under 2, as under 2 over 1 and back, and the upper machine to carry out underlaying operations which are different in size from those of the lower machine and to be racked in the course of the underlaying operations always in the same direction as the lower machine.

2. A method according to claim 1, in which the upper lapping machine is not racked laterally at intervals.

3. A method in accordance with claim 1, wherein the upper laying machine is not racked laterally at predetermined moments and in intervals between said moments carries out partly underlaying operations equal in size to those of the lower machine.

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