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LOOM WITH BIG WEAVING WIDTH

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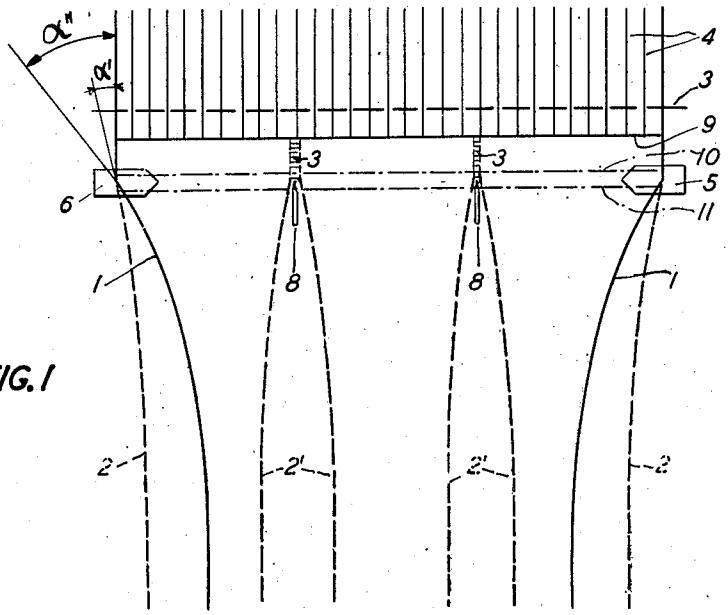

FIG. 1

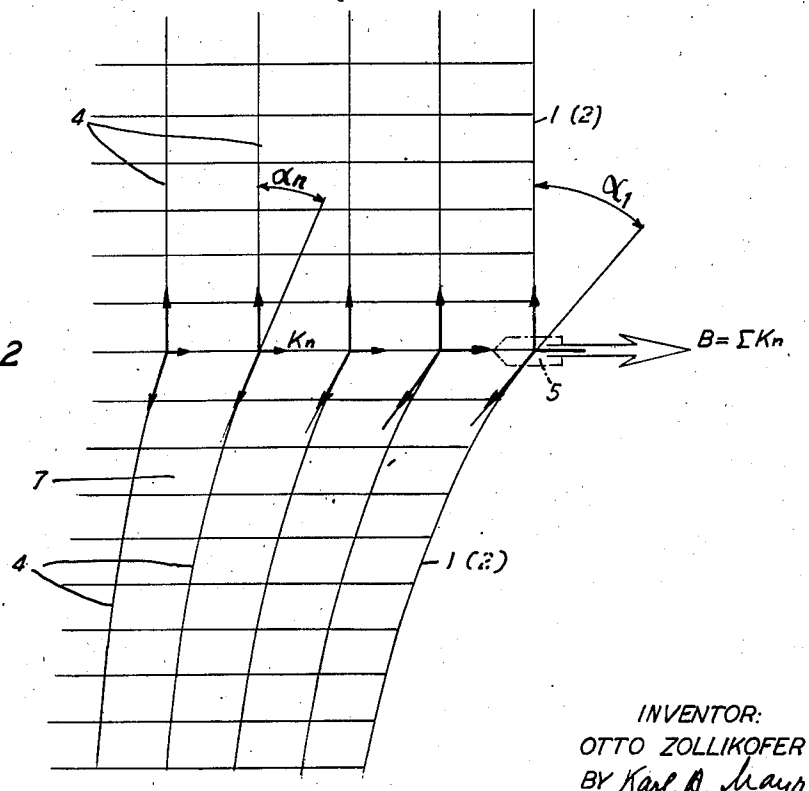

FIG. 2

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LOOM WITH BIG WEAVING WIDTH

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3 Claims. (Cl. 139—291)

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The wider the loom, the greater will be the tensions which occur in the fabric in the direction of the width and have to be taken by the temples. In thick fabrics which have to be woven with high tensions, the forces taken up by the temples are so great that the weaving width is restricted by them.

Looms with big weaving width have the advantage of greater economy; overhead expenses and maintenance costs become lower, whilst the production of fabric becomes greater. In spite of that, these looms are adopted only to a limited extent, principally because of the difficulties mentioned above.

It is known to weave several strips of a fabric beside each other on one loom. In such cases, however, the strips are only separated by cutting at the breast beam, where the transverse tensions are greatly reduced. The forces to be taken by the temples with this method of weaving are the same as when weaving a fabric in one strip of the same total width.

The invention relates to a loom with big weaving width and division of the fabric into several woven strips, and consists in that the weft threads between two neighbouring strips are cut at the same distance from the apex of the shed as the temples are. The weft threads may be cut at the same height at which the fabric leaves the temples. They may, however, also be cut at the place where the weaving-in of the fabric has been completed. Preferably the weft threads may be cut between two pairs of binding threads that make a twisted binding in which the threads cross always in the same direction. The strips of fabric may be held stretched by temples at the place where they are cut, in order to relieve the weft threads still uncut between the two strips of fabric.

One example of execution of the subject matter of the invention is shown diagrammatically in the drawing.

Fig. 1 shows the run of the strip of fabric.

Fig. 2 shows the fabric at the temples (to a larger scale), from which it can be seen how the transverse forces which the temples have to take are built up.

The full lines 1 in Fig. 1 represent the edges of a fabric woven in one strip on a wide loom, and the broken lines 2 represent the edges of a fabric woven in several strips on a loom of the same width and with weft threads cut according to the invention. For the sake of clearness, the warp and weft threads in the fabric are not shown. On the other hand the weft threads 3,

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before they have been severed by the cutting device 8, are shown between the strips of fabric. The weft threads are cut at the same distance from the end of the shed 9 as the temples 5 and 6 are. These cut places are located between the two chain-dotted lines 10 and 11 in the example in Fig. 1.

The weft threads 3 are inserted without tension, or with very slight tension, into the warp threads 4 by means of a shuttle which for the sake of clearness is not shown in the drawing. The tensions existing in the weft threads 3 after the beating up arise from the warp tension and depend on the thickness of the warp and weft threads. The tensions arising in this way draw the warp threads 4 (Fig. 2) closer together in the fabric, so that the fabric 7 is more or less shrunk beyond the temples 5, 6.

The tensions in the weft thread 3 may be determined as follows: The warp tension k is the same for each shed. The fabric 7 is kept stretched by the temples 5 and 6. Beyond the temples 5 and 6 the fabric shrinks and each warp thread 4 is inclined with a definte change of direction α_n (Fig. 2), which is greatest at the edge warp threads 1 or 2 (α_1) and diminishes to zero at the middle of the fabric 7. This change of direction can only be effected by the pull of forces k_n, which are transmitted by the weft threads 3. These forces k_n are finally taken up by the temples 5 and 6. The magnitude of the stretching force B is consequently equal to the sum Σk_n (Fig. 2) of the forces resulting from the change of direction of the forces in the warp threads.

From Fig. 1 it can be seen that the change of direction α' of the warp threads is smaller when severing the strips of fabric at the height of the temples than when the fabric has not been separated (α''). Further, the weft threads 3 should not be cut until the binding of the edges of the fabric is finished, otherwise the appearance of the fabric at the ends where the weft threads have no longer any tension will be different from the appearance in the body of the fabric. According to the type of weaving, in particular for heavy fabrics, the beating up of the weft threads may still have an effect on weft threads already deep in the fabric.

According to the type of weaving, it will be found preferable to fit temples to hold the severed middle edges 2'.

I claim:

1. In the method of producing a plurality of parallel lengths of fabric on the same loom by

weaving a length of fabric of great width, the combination of the steps of transversely stretching the fabric over its whole width, and of cutting it into substantially parallel lengths at the line of greatest transverse tension.

2. In a loom for weaving fabric of great width, the combination of temple means disposed at the outside edges of the woven fabric spaced from the apex of the shed, and of cutting means having a cutting edge disposed between the edges of the woven fabric and spaced from said temple means and positioned substantially at an imaginary line interconnecting the points of action of said temple means and cutting the fabric into parallel lengths at the line of greatest transverse tension.

3. In a loom for weaving fabric of great width, the combination of temple means disposed at the outside edges of the woven fabric spaced from the apex of the shed, and of a plurality of cutting means disposed between the edges of the fabric and spaced from one another and from said temple means and individually having a cutting edge positioned substantially at an imaginary line interconnecting the points of action of said temple means and cutting the fabric at the line of greatest transverse tension into a plurality of parallel lengths.

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