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Complete Specification

entitled (54) IMPROVEMENTS IN OR RELATING TO LOOMS.

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Related Art (56)	64879/65	41.2.
	238246(60123/60)	41.2
	28434/67	41.2.

The following statement is a full description of this invention, including the best method of performing it known to us:

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This invention relates to shuttleless looms of the kind provided with a reed mounted on a slay so as to extend through a warp in which sheds are to be formed and with a pair of weft carriers which are arranged, during each opening of a shed in the warp, to be moved successively towards and away from each other by means of flexible tapes while one of the weft carriers engages a weft yarn outside the shed at one end thereof and carries it to an intermediate position within the shed where it is received by the other weft carrier which then carries it to a position outside the shed at the other end thereof.

In known looms of this kind, the weft carriers are positively guided over the entire length of their movements by guiding means fixed to the slay, which guiding means usually include pairs of opposed hook element positioned at short intervals one from the other. The yarns of the warp are liable to become engaged on these hook elements and are thereby displaced from their proper positions during the operation of the loom. This leads to serious drawbacks because it facilitates breakage of warp yarns next to the hook elements.

An important object of this invention is to eliminate these drawbacks.

With this object in view, in the improved loom according to this invention guide means for the tapes are mounted on the slay so as to be located wholly outside the shed in positions beyond the two ends thereof, a track, having a flat track surface which is perpendicular to the plane of the reed and serves for slidably supporting the tapes and the weft carriers, extends alongside the

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reed and across the shed between points beyond the two ends respectively thereof, antifriction material is provided on those sides of the weft carriers which are adjacent the reed whereby the weft carriers are slidably guided on the reed during their movements into and out of the shed and the first-mentioned weft carrier is formed, in the side thereof provided with the said antifriction material, with a longitudinally extending recess for accommodating the weft yarn while it is being carried by said first-mentioned weft carrier to the said intermediate position and thereby prevent it from being rubbed against the reed.

The invention will now be described by way of example with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of the central portion of the improved loom with certain parts broken away, and

Figure 2 is a section according to line 2-2 of Figure 1.

As shown in the drawing, two weft carriers 1, 2 are moved alternately towards and away from each other, by means of tapes 3 and 4 respectively. The ends of the tapes 3, 4 are fixed to heads 5, 6 of weft carriers 1, 2 respectively. The tapes 3, 4 are provided at intervals along their lengths with notches 7 engaging the corresponding teeth of a driving gear wheel (not shown) which therefore moves the weft carriers connected to said tapes. The tapes 3, 4 are each guided, during their passage from an operating device including said gear wheel, by guides

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8 up to a point next to the shed and externally of it. The guidos 8, which are mounted on the slay, ensure that the corresponding tapes 3, 4 will travel along predetermined paths. No positive guide is provided for the tapes 3, 4 either between the ends of the guidos 8 and the warp shed p, or inside the shed. In other words, in the position of the loom where the weft carriers perform their functions, both they and the corresponding tapes are freely slidable. This is possible because of the provision of a track 9 extending along and adjacent to the reed 10 with its top surface perpendicular to the latter, and because members 11, 12 for guiding the weft carriers along the reed 10 are positioned on that side of the weft carriers which faces the reed 10.

The track 9 is made of a material having a low coefficient of friction which material may be a soft fabric such as velvet or a rigid material such as a polished laminated plastics material. The track 9 extends across the shed P and projects a very small distance beyond it at its ends.

The guiding member 11 for the weft carrier 1 is an elongated member of inverted L section and the longitudinal recess 13 between the limbs of its cross-section accommodates the weft yarn T pulled by the weft carrier 1. Thus, the yarn T can travel freely parallel to the reed 10 during the movement of the weft carrier 1 without rubbing against the reed.

Since there is no need to provide such a recess for the weft yarn when pulled by the gripper 2, the guiding member 12 of the weft carrier 2 may have a simpler shape.

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Generally this member will have an elongated shape of uniform cross-section along its length and, if desired it may be formed integrally with the head 6.

As a rule, the members 11, 12 will wear out quite rapidly and they must therefore be constructed and arranged so to be easily replaceable. Because of their function, which will be described below, it is desirable for the members 11, 12 to be made of a material having a low coefficient of friction e.g. of a self-lubricating plastics material, such as nylon.

In operation, the bottom surfaces of the weft carriers 1, 2 bear freely on the track 9, while their side portions bears through the members 11, 12 against the reed 10, so that the weft carriers can slide easily along the track 9. This ensures an efficient and dependable guide for the weft carriers that will travel and meet each other to change over the weft yarns with absolute precision at whatever speed they are moving. The tapes 3, 4 slide along the track 9, pushing or pulling the weft carriers with no need for a positive guiding device.

The advantages obtained by the operating and guiding system described above are manifold in comparison with the previously known systems.

The elimination of the need for guides inside the shed is a very important advantage of this invention. This reduces the stresses and warp yarns breakages to almost 20% of those encountered with comparable known arrangements. Thus looms having the features described above have all the advantages of normal shuttle looms without their disadvantages.

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Furthermore, the elimination of the need for guides within the loom shed results in a very substantial reduction in the friction which was normally developed in prior art looms between the moving tapes and the long guides provided for them inside the warp shed.

A certain amount of friction still occurs between the tapes 3, 4 and the track 9 as well as between the weft carriers 1, 2 on the one hand and the track 9 and reed 10 on the other hand, but this is negligible compared to the friction developed in previously known looms, because of the particular materials used for manufacturing the track 9 and the members 11 and 12.

This enables the loom speed to be increased to surprisingly large extent (up to 15 to 20% above that of normal looms) and maintenance to be substantially reduced. It also results in an increase in the life of the tapes and a further reduction in wear, substantially to zero, during their movement along their paths outside the fixed guides 8. Furthermore, it helps to avert loom jamming and stopping which often occur in looms having positive guiding of the weft carriers inside the shed. This improves production continuity.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A shuttleless loom of the kind provided with a reed mounted on a slay so as to extend through a warp in which sheds are to be formed and with a pair of weft carriers which are arranged, during each opening of a shed in the warp, to be moved successively towards and away from each other by means of flexible tapes while one of the weft carriers engages a weft yarn outside the shed at one end thereof and carries it to an intermediate position within the shed where it is received by the other weft carrier which then carries it to a position outside the shed at the other end thereof, wherein guide means for the tapes are mounted on the slay so as to be located wholly outside the shed in positions beyond the two ends thereof, a track, having a flat track surface which is perpendicular to the plane of the reed and serves for slidably supporting the tapes and the weft carriers, extends alongside the reed and across the shed between points beyond the two ends respectively thereof, anti-friction material is provided on those sides of the weft carriers which are adjacent the reed whereby the weft carriers are slidably guided on the reed during their movements into and out of the shed and the first-mentioned weft carrier is formed, in the side thereof provided with the said antifriction material, with a longitudinally extending recess for accommodating the weft yarn while it is being carried by said first-mentioned weft carrier to the said intermediate position and thereby prevent it from being rubbed against the reed.

2. A loom according to claim 1, wherein the

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antifriction material on the sides of the weft carriers is a synthetic plastics material.

3. A loom according to claim 1 or 2, wherein the track is composed of a fabric of the velvet type.

4. A loom according to claim 1 or 2, wherein the track is composed of a laminated plastics material and has a polished track surface.

5. A loom, substantially as hereinbefore described with reference to the accompanying drawings.

DATED this 10th day of JUNE, 1970.

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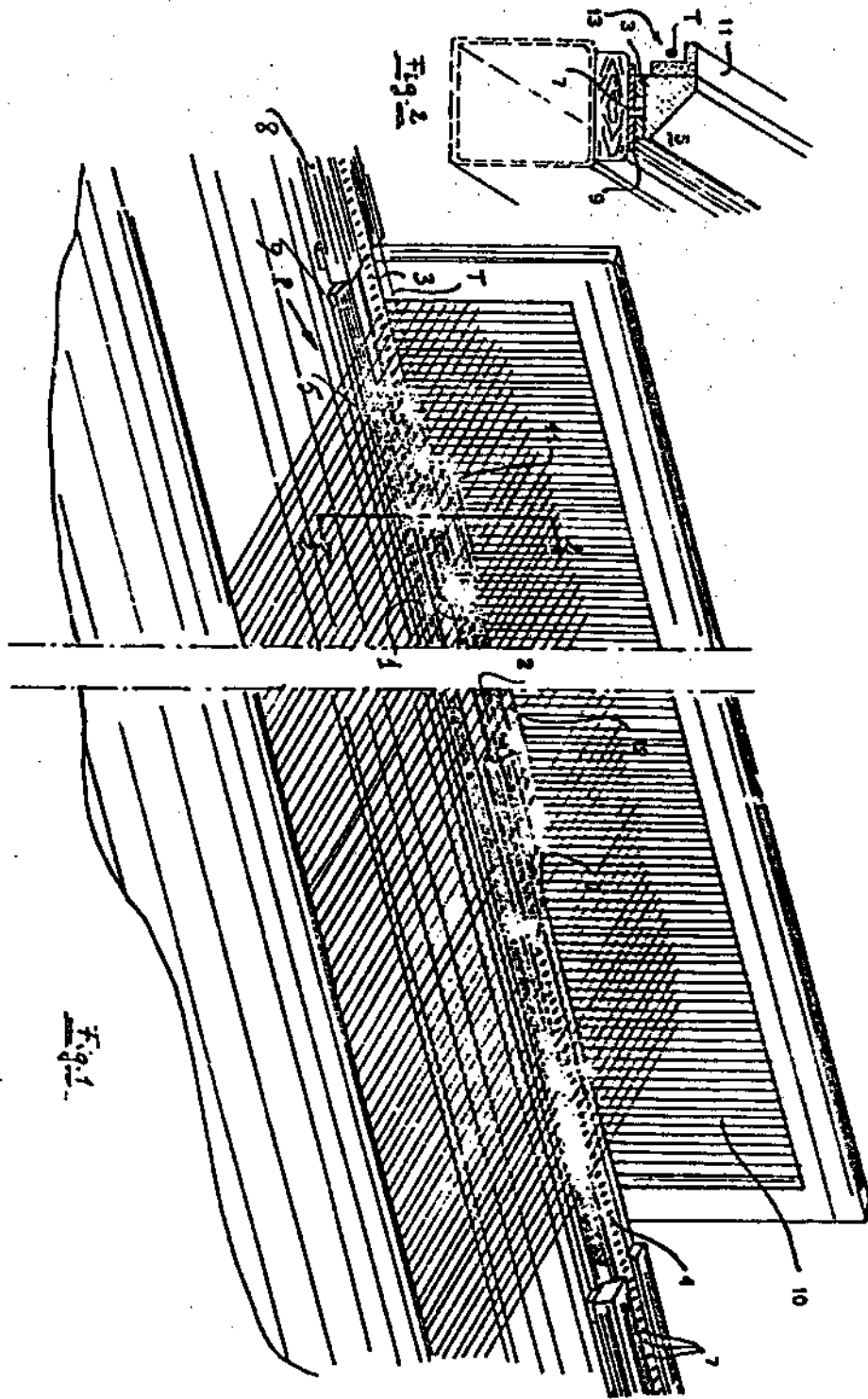


Fig. 1

Fig. 2