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GUIDE BAR CONSTRUCTION FOR
WARP KNITTING MACHINES
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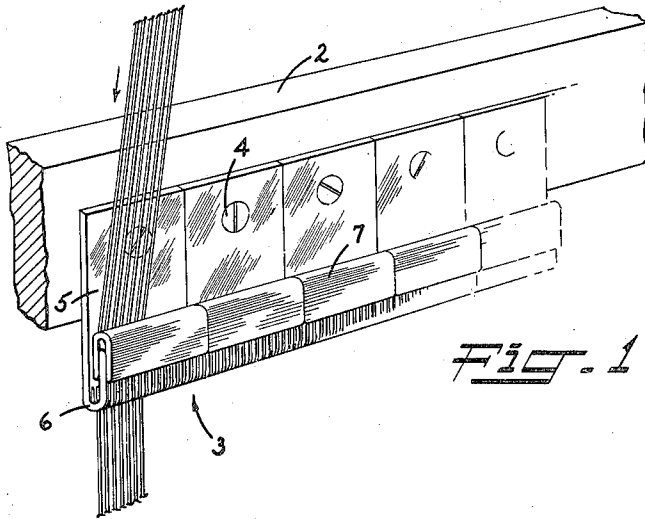


Fig. 1

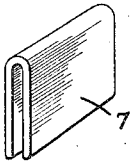


Fig. 3

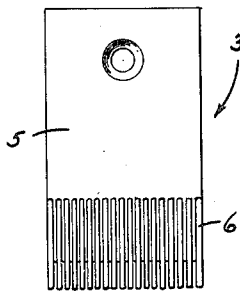


Fig. 2

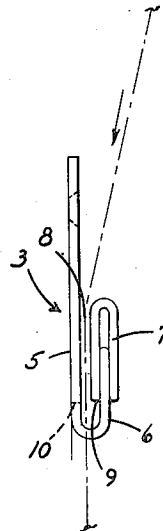


Fig. 4

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GUIDE BAR CONSTRUCTION FOR WARP
KNITTING MACHINES

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The present invention relates to warp knitting machines and is particularly concerned with an improved form of guide bar construction to be used in such machines.

In warp knitting machines, the guide bars are swung back and forth relative to the needles and also are traversed or shogged longitudinally in order to wrap the threads about the needles at intervals during the knitting as controlled by the pattern mechanism. Generally, the guide bar is merely provided with a plurality of guide eyes which are arranged in a row and each eye is aligned with that of the others in the row so that the plane of the guide is substantially perpendicular to the length of the machine and to the length of the guide bar. This arrangement requires that the thread be deflected in an S-curve from one side of the upper bight of the guide eye through the eye and then along the other side of the lower bight of the guide eye. This construction has the disadvantages not only of difficulty of lacing but of considerable friction upon the thread as it passes through the guide to the knitting needles.

The present invention has as its object to provide a construction of warp guides which reduces the frictional effect by eliminating the S-curve deflection and also is much simpler to lace up. Other objects and advantages of the invention will be apparent from the drawing and the description thereof hereinafter.

In the drawing,

Figure 1 is a perspective view of a portion of a guide bar provided with guides constructed in accordance with the present invention,

Figure 2 is a front view of one of the guide units,

Figure 3 is a perspective view of the guard which fits upon the guide units of Figure 2, and

Figure 4 is an end elevation of the assembled unit.

In the drawing, the guide bar 2 carries a plurality of guide units 3 each of which may be secured to the bar by means of one or more screws or bolts 4. Each unit 3 shown comprises a plate 5 having prongs or tangs 6 formed at one end thereof. Such tangs may be formed by slitting along parallel lines from the end of the plate. The tangs are bent outwardly to provide yarn-guiding portions between the roots 10 of the slots and the ends of the tangs which are provided with a guard 7. The tangs are preferably smoothly polished and may be rounded off at the edges to reduce the wear on the thread and they may be bent at any angle outwardly from the plate. Thus they could project at an angle of

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90° from the base supporting plate 5 and carry guard 7 to prevent the thread from slipping out. When such an angle is used, the guard 7 may be omitted whenever the warp proceeds to the guides near the base of their tangs and require no guard to keep them well within the tangs. However, a much neater and more compact arrangement is shown in which the tangs are bent to form a U-shape in end view and in this situation, it is preferable to use a guard 7 at all times to prevent the thread from escaping. The bend of the tangs 6 and the thickness of the guard 7 are such as to provide a free space 8 between the base supporting plate 5 and the adjacent inside surface of the guard 7. Such space 8 allows for free passage of the yarns directly downwardly through the spaces between the tangs without requiring deflection laterally through an S-curve as in the conventional form of guides. While the extent to which the guard member 7 covers the ends of the tangs 6 may be varied widely, and the position of the roots 10 relative to the yarn-guiding portions of the tangs may also be varied widely, in the preferred construction the lower edge 9 of the inner face of the guard member 7 is approximately at the same level as the roots 10 of the tangs, and both 9 and 10 are close to the yarn-guiding portions of the tangs extending therebetween. Since the root 10 and the edge 9 serve to confine the yarn, this specific relationship gives the maximum control of the yarn.

Each unit 3 shown comprises a plurality of tangs and the complete guide bar is made up of a plurality of juxtaposed and aligned units 3. However, if desired, a single base supporting plate 5 may extend the full length of the guide bar and with such a unit, a single guard 7 extending the length of the guide bar or a plurality of such guards may be used. The guides may be made by any suitable method of any suitable material. For example, a flat base plate of ductile material, such as of metal or of a thermoplastic material may be slitted at one end while in flat condition after which the tangs thus obtained may be bent outwardly therefrom at the desired angle. Similarly, the guard may be made of a flat sheet of ductile material which is later bent into the desired shape. The width of the space between the opposite faces of the guard preferably increases slightly from the deepest portion thereof to the open end so that when placed upon the tangs 6 the guard frictionally grips such tangs. Of course any other means of securement of the guard upon the tangs may be employed and if desired, it may rest gravitationally thereon, in

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which event, the depth of the space between its faces may be less than the straight outer portion of the tangs 6 so that the bend of the guard rests against the ends of the tangs.

An alternative method of making the guides is to bend the blank material to the desired shape and thereafter forming slots inwardly from the ends of the bent portions to the base plate. Alternatively, the base plate and guard may be cast in the desired shape, either from plastics or from metals and the tangs may be formed during the casting or they may be cut into the cast shapes.

When lacing up a warp knitting machine provided with guides of the improved construction, the operator merely removes the guards 7 altogether or as needed, and inserts the yarns which proceed from above into the slots between the tangs. As each unit 3 is thus provided with yarns, a guard 7 is placed on the tangs thereof to prevent escape of the yarns. This lacing operation is much simpler than the procedure heretofore employed in that it is merely necessary to align the yarn with the slot and push it back into the slot, whereas in the previous guides it has been necessary to thread the yarn through the eye of the guide, a delicate operation because of the necessity to reach in between the guides with a hook or the like and force or pull the thread laterally through the eye. During the knitting operation, there is much less frictional wear upon the thread because the guide does not force the thread to be deflected through an S-curve.

It will be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A warp guide construction comprising a base plate having a plurality of aligned tangs projecting outwardly from the plane thereof, and guard means carried upon the outer ends of said tangs to prevent escape of yarns passing between said tangs and between the guard means and the roots of the tangs.

2. A warp guide construction comprising a base supporting plate having one end terminating in hook-shaped tangs, and guard means carried by the ends of the tangs to prevent escape of yarns passing between said tangs.

3. A warp guide construction comprising a base

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supporting plate terminating in hook-shaped tangs, and a U-shaped guard member carried by the ends of the tangs, the face of the guard member opposed to the base supporting plate being spaced sufficiently therefrom to provide free passage of the yarns therebetween.

4. A warp guide construction comprising a base supporting plate terminating in hook-shaped tangs, the outer ends of the tangs extending upwardly to a position above the roots of the tangs, and a U-shaped guard member carried by the tangs and having its lower yarn restricting edge at approximately the level of the roots of the tangs, the face of the guard member opposed to the base supporting plate being spaced sufficiently therefrom to provide free passage of the yarns therebetween.

5. A warp guide construction comprising a supporting base having a plurality of aligned tangs, each projecting laterally from the base and then extending back to form a generally U-shaped hook adjacent the portion of the base from which the tang extends, and guard means carried by the ends of the tangs to prevent escape of yarns passing between said tangs.

6. A warp guide construction comprising a supporting base having a plurality of aligned tangs, each projecting laterally from the base and then extending back to form a generally U-shaped hook adjacent the portion of the base from which the tang extends, and a U-shaped guard member carried by the ends of the tangs, the face of the guard member opposed to the base being spaced sufficiently therefrom to provide free passage of the yarns therebetween.

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