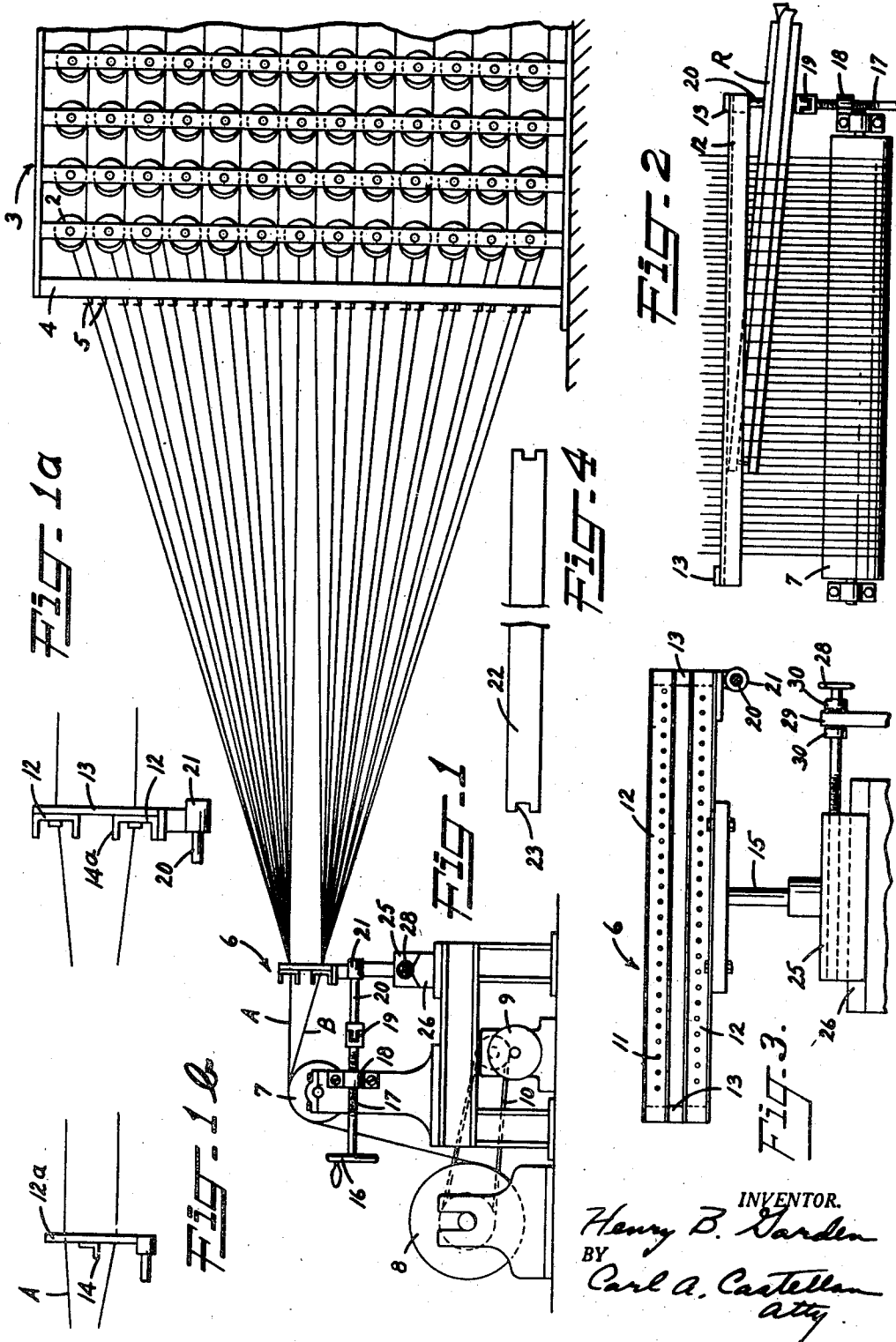


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H. B. GARDEN
BEAMING APPARATUS
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INVENTOR.
Henry B. Garden
BY
Carl A. Castellani
Atty.

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BEAMING APPARATUS

Henry B. Garden, Paoli, Pa., assignor to American Viscose Corporation, Wilmington, Del., a corporation of Delaware

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5 Claims. (Cl. 28—40)

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This invention relates to a warp beaming apparatus and its primary object is to provide a construction and arrangement thereof adapted to facilitate lacing up and leasing.

The more specific objects and advantages of the invention will be apparent from the drawing and description thereof. In the drawing, which is merely illustrative of one embodiment of the invention—

Figure 1 is a side elevation, partially diagrammatic, of a warping system with the invention in position,

Figure 1a is a side elevation, somewhat enlarged, of the eye-bars of Figure 1,

Figure 1b is a side elevation corresponding to that shown in Figure 1a but illustrating a modification of the eye-bars,

Figure 2 is a plan view of a part of the system of Figure 1,

Figure 3 is a front view of the eyeboard of Figure 1, and

Figure 4 is a plan view of the lease rod.

In beaming, a multiplicity of yarns are drawn from a creel or equivalent yarn supply through suitable guides and tension-controlling devices mounted on the creel or supply frame. As they leave the creel, they generally pass through an eyeboard and through thread-breakage detector devices either on the eyeboard or in front thereof or each positioned in association with a given supply package in the creel. Between the creel and the delivery roll for feeding the yarns to the beam take-up, the yarns heretofore were divided into two or more sheets by passing over and under one or more lease rods or bars positioned in back of an expansible comb just back of the delivery roll. If division was to be made into two sheets, one rod was used, every other yarn being passed above the rod and the remaining yarns being passed below the rod. If division was to be made into three or more sheets, two or more rods were used and corresponding aliquot parts of the yarns were taken in alternation and passed either between two of the rods or over or under them.

In leasing, it is necessary to manipulate the leasing rod or rods or temporarily to insert an additional rod or rods to separate the sheets away from each other in front of the comb to permit the insertion between each two sheets of a tape which conveniently is carried by a rod that the operator inserts by hand. This leasing operation is time-consuming and requires great care and effort on the part of the operator to be sure that the leasing rod he inserts by hand does not catch

upon the yarns of the sheets above or below the rod.

In accordance with the present invention, a much simpler and less expensive arrangement of equipment is provided and at the same time the leasing operation is greatly facilitated so that it can be done rapidly and requires less care and effort on the part of the operator. As shown in the drawing, the yarns proceed from the numerous supply packages 2 in the creel 3. As they leave the creel they pass through the guides provided in the eyeboard 4 which may be provided with suitable breakage-detectors 5 which are connected in conventional fashion to stop the warp beam upon the breakage of the yarn. Thereupon, the yarns converge and proceed through the guide means provided at 6 from which they emerge as a plurality of separate sheets, two being shown in the specific embodiment and designated A and B. The yarns then proceed about the delivery roll 7 to the take-up beam 8 which may be driven by a motor 9 through a belt 10. The driving and stopping connections are not shown in detail since these may be conventional.

The guide means 6 comprises a plurality of vertically offset guiding means. As shown, (Figures 1 and 1a) these may comprise a plurality of guides, such as eyes 11 of porcelain set within vertically spaced bars 12. The guides 11 in one of the bars are preferably laterally offset from the alternatively disposed guides in the other bar or bars 12. As shown, the eye-bars 12 are formed of channels and are secured together by end plates 13. Instead of channels, any other cross-sectional shape of the bars 12 may be used and if desired, a single bar of any desired cross-section may be substituted for the two, the guides 11 being disposed in correspondingly arranged positions in the single bar. However, in such an arrangement, as shown in Figure 1b, it is desirable to provide a ledge or shelf 14 by suitable attachment to the single plate 12a of an angle-sectioned bar. The upper flange 14a of the lower channel-shaped bar 12, (in Figure 1a) serves a purpose corresponding to that served by the ledge 14 (in Figure 1b) in that a leasing rod may be slid over this ledge by the operator. It thus serves to support the leasing rod as it is being inserted in front of the guide bars 12 or 12a respectively for carrying an adhesive tape between the sheets. This practically minimizes the danger of the lease rod catching the yarns as it is inserted by the operator.

Means is provided for adjusting the overall width of the sheets. This may comprise piv-

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otally mounting the eye-bars 12 upon an axis 15. The adjustments can be made by the operator by means of the hand wheel 16 on the screw 17 which engages a thread in the mounting bracket 18. The endwise motion of the screw 17 may be transmitted through a universal coupling 19 and rod 20 to the bracket 21 secured to the eye-bars 12.

Means is provided for laterally shifting the entire guide means 6 as a unit in order to compensate for variations in beam widths. This lateral moving means comprises a slidable supporting block 25 in which the shaft 15 is pivotally mounted. The block 25 is slidably supported upon a base 26 and has a screw thread engaging the screw 27 which is adjustable by means of the hand wheel 28. The shank of the screw 27 is freely rotatably mounted in a bearing 29 and is prevented from axial movement by means of collars 30 which are fixed to the shank on either side of the bearing 29.

In operation, the yarns are divided into a plurality of sheets, each of which is constituted of alternate yarns. The yarns in a given sheet are passed through the individual guides 11 in one of the vertically spaced eye-bars 12. During beaming, the operator may from time to time adjust the overall width of the sheets by turning the hand wheel 16 one way or the other. Whenever it is desired to lease, it is only necessary for the operator to insert between the sheets, as A and B, a flat lease rod 22 (see Figure 4), over the free forked end 23 of which a paper strip is folded so that a double thickness thereof is left between the sheets. This insertion is greatly facilitated by the fact that the guide means 6 maintains the sheets separated so that no preliminary manipulation is required to separate the yarns into sheets, such as was required heretofore, and when inserting the lease rod, it may be slid into the space between roll 7 and guide means 6 over the ledge 14a or 14, as illustrated in Figure 2 particularly in which such lease rod is designated R. The leasing may otherwise follow conventional procedure. For example, the paper strip thus inserted between two sheets is moved sideways into position on top of roll 7 but still between sheets A and B.

At this point, an adhesive tape may be applied over the assembly on the delivery roll. Then the beam may be rotated until the paper is brought to the top of the beam and another adhesive tape may then be applied to the outside of the assembly. This produces a plurality of separable groups of yarns, the yarns in each group being held together by the adhesive tapes. Thereafter, if the beam is full and an empty beam is to be substituted, the yarns may be cut between the roll 7 and beam 8 and tied together to prevent them from passing back through the guides 11 of the eye-bars. An empty beam may be substituted and the yarns laced about the new beam in the conventional manner.

Since the guide means 6 of the present invention replaces both the expansible comb and the lease rod or rods which normally remain in position during beaming in the manner heretofore practiced, the system of the present invention has fewer rubbing surfaces against which the yarns engage and consequently it is particularly valuable when it is desired to beam yarns comprising filaments of a delicate nature, such as artificially produced filaments or fibers of extremely small diameters, including low denier rayon or low denier resin or nylon filaments.

It is to be understood that changes and varia-

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tions may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In combination with apparatus for beaming yarns comprising means for supplying a multiplicity of yarns and means for winding the yarns upon a common take-up, vertically offset guide bars disposed between the supply means and winding means for maintaining groups of the yarns as separate sheets as they leave the guide bars, each of said guide bars carrying a plurality of laterally spaced individual guides, one for each yarn in a sheet, said guides being alternately disposed in the several vertically offset guide bars, at least the lower of the guide bars having an upper lease-rod-guiding surface, and means to move said guide bars a unit for adjusting the overall width of the sheets.
2. In combination with apparatus for beaming yarns comprising means for supplying a multiplicity of yarns and means for winding the yarns upon a common take-up, vertically offset guide bars disposed between the supply means and winding means for maintaining groups of the yarns as separate sheets as they leave the guide bars, each of said guide bars comprising a plurality of laterally spaced individual guides, one for each yarn in a sheet, said guides being alternately disposed in the several vertically offset guide bars, at least the lower of the guide bars having an upper lease-rod-guiding surface, the guide bars being mounted pivotally as a unit on a vertical axis, and means for adjustably swinging said guide bars about their vertical axis.
3. In combination with apparatus for beaming yarns comprising means for supplying a multiplicity of yarns and means for winding the yarns upon a common take-up, means adjacent the supply means for controlling the paths of the yarns from the supply means, guide means comprising a plurality of vertically offset rows of guides disposed between the controlling means and winding means for maintaining groups of the yarns as separate sheets as they leave the guide means, a lease-rod-guiding support between each two adjacent rows of guides, and means to move said guide means as a unit for adjusting the overall width of the sheets.
4. In combination with apparatus for beaming yarns comprising means for supplying a multiplicity of yarns and means for winding the yarns upon a common take-up, guide means comprising a plurality of vertically offset rows of guides disposed between the supply means and winding means for maintaining groups of the yarns as separate sheets as they leave the guide means, a lease-rod-guiding support extending horizontally and transversely of the width of the sheet at a height between that of each two adjacent rows of guides, and means to move said guide means as a unit for adjusting the overall width of the sheets.
5. In combination with apparatus for beaming yarns comprising means for supplying a multiplicity of yarns and means for winding the yarns upon a common take-up, a plurality of vertically offset guide bars disposed between the supply means and winding means for maintaining groups of the yarns as separate sheets as they leave the guide bars, each of said guide bars having a plurality of laterally spaced individual guides, one for each yarn in a sheet, each of the bars below that at the top having an upper lease-rod-guiding surface, and means to move

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said guide bars for adjusting the overall width of the sheets.

HENRY B. GARDEN.

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Certificate of Correction

Patent No. 2,446,580.

August 10, 1948.

HENRY B. GARDEN

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 4, line 18, claim 1, after the word "bars" insert *as*;
and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of December, A. D. 1948.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.