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E. L. TINKHAM

CENTER BRACE FOR DRAG ROLLS OF LOOMS

Filed July 18, 1925

Fig. 1.

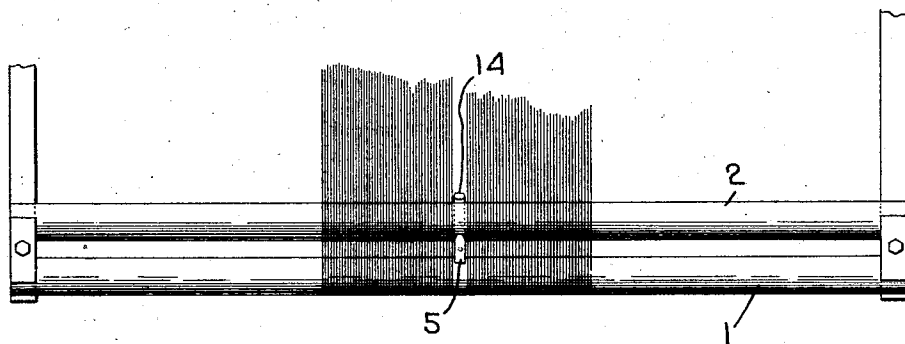


Fig. 2.

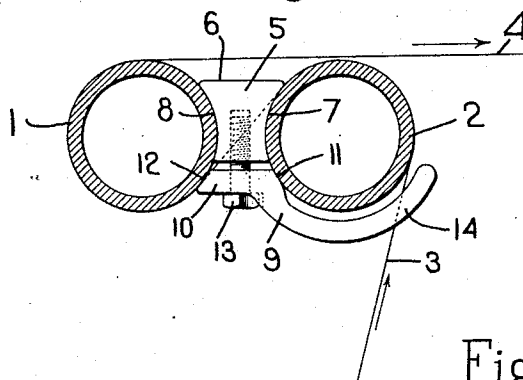


Fig. 4.

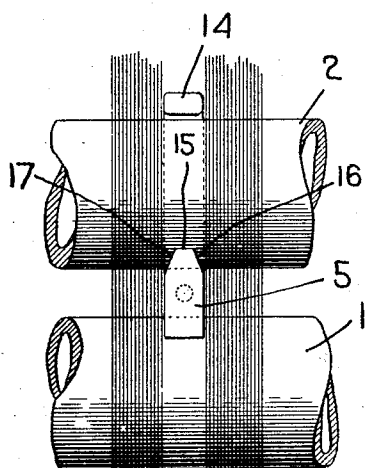
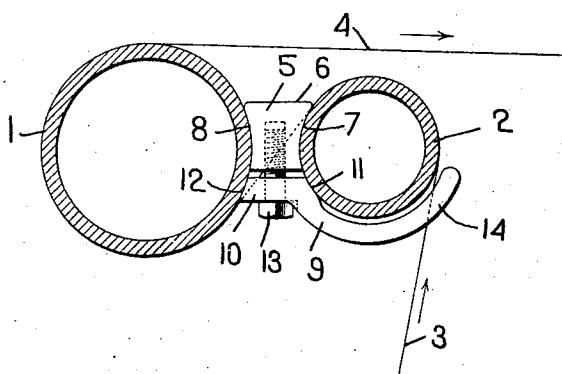


Fig. 3.



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UNITED STATES PATENT OFFICE.

EUGENE L. TINKHAM, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO DRAPER CORPORATION, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

CENTER BRACE FOR DRAG ROLLS OF LOOMS.

Application filed July 18, 1925. Serial No. 44,450.

To all whom it may concern:

Be it known that I, EUGENE L. TINKHAM, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Center Braces for Drag Rolls of Looms, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to improvements in drag rolls for looms. One of the principal objects of the invention is to provide means for preventing flexure of the drag rolls by the warp sheet as it is dragged over said rolls in its passage from the warp beam to the shed.

The usual drag rolls for looms comprise a main cylindrical roll and an auxiliary cylindrical roll supported at their ends upon the side frames or brackets extending from the side frames of the loom. The warp sheet passes from the warp beam over the auxiliary roll, thence beneath and around a substantial portion of the main drag roll and therefrom to the shed of the loom. The drag rolls act to spread the warp sheet out in proper form and apply the necessary drag or tension to the warps in the weaving operation. These drag rolls are desirably, but not necessarily, in the form of hollow, cylindrical bars or rolls, and the tension of the warps, particularly upon wide looms and when heavy warps are employed, tends to flex or bend one or both of the rolls so that an uneven tension is imposed upon the warps, which, of course, will produce a defect in the weave.

The object of the present invention is to provide means for stiffening the drag rolls and thereby prevent any flexure of the same which would produce such an uneven tension upon the warps.

Another object of the invention is to provide a drag roll construction in which the resultant forces acting laterally or substantially horizontally upon the respective drag rolls will be caused in a large measure to neutralize each other and thereby to aid in preventing flexure of the respective drag rolls.

A further object of the invention is to provide means for separating the warps of the approaching lead of the warp sheet so that

the warps will not be caught between the brace and a drag roll.

A further object of the invention is to provide a retaining device for the brace which will prevent it from movement relatively through the rolls.

Other objects and features of the invention will appear more fully from the following description and the accompanying drawings and will be pointed out in the claims.

Inasmuch as the invention relates only to this particular feature of the loom, it is necessary to illustrate and describe the construction of the loom only in so far as it is particularly concerned with the bracing mechanism for the drag rolls.

In the drawings:

Fig. 1 is a plan view of the drag rolls of the loom showing the same supported from the loom side with a portion of the warp sheet running over the drag rolls.

Fig. 2 is a vertical sectional view through the drag rolls showing in elevation a preferred form of brace and retaining means therefor having guiding means for separating the warp sheet and preventing the warp from being caught between the brace and a drag roll.

Fig. 3 is a similar view illustrating a pair of drag rolls in which the auxiliary roll is of smaller diameter than the main drag roll.

Fig. 4 is an enlarged plan view of a median portion of the drag rolls and the brace and spacing mechanism embodying the present invention applied thereto.

In the construction illustrated, a main drag roll 1 and an auxiliary roll 2, arranged in parallelism therewith, are supported at their ends upon the loom side or a bracket extending therefrom in the usual manner. These drag rolls may be, and preferably are, of cylindrical form. The approaching lead 3 of the sheet of warp passes from the warp beam upwardly over the auxiliary roll 2, thence downwardly beneath and around the main drag roll 1 and from which the warp sheet runs in a substantially horizontal lead 4 to the shed and thence to the tension and cloth rolls of the loom. In its passage around the auxiliary and main drag rolls, the drag or tension necessary to the weaving operation is imposed upon the warp and the warp

rolls act to spread out the warp sheet in proper form to pass to the harness and shed of the loom. The tension of the warps upon the drag rolls, particularly when heavy warps are used, tends to flex the rolls, thereby producing a lesser tension upon the warps throughout the intermediate portion of the drag rolls than upon those at the ends of the rolls, thus causing an imperfect weave. As the tension upon the warps is imposed by the cloth roll, there is a greater tendency to flex the main roll than the auxiliary roll.

The object of the present invention is to provide means for preventing such flexure of the main roll and, in fact, for preventing flexure of both rolls and also to maintain the rolls in parallelism against the tension of the warp sheet thus imposed upon the roll.

The preferred mechanism illustrated in the accompanying drawings comprises a brace interposed between the rolls, which acts both as a stiffener to the central portion of the roll and to maintain the same in parallelism. Any desired number of braces may be used, but ordinarily a single bracing member located centrally or substantially centrally of the roll will be sufficient for the purpose.

A preferred form of bracing member illustrated in the accompanying drawings comprises a metallic member or block 5 having a flat upper surface 6, which is located below a plane tangent to the upper surfaces of the rolls and which has downwardly converging opposite side faces 7 and 8 engaging and preferably complementary to the adjacent surfaces of the main and auxiliary drag rolls forming a wedge-like construction. The block 5 preferably extends below the axial plane of the rolls, as illustrated in Figs. 2 and 3. By reason of this construction, the forces which are imposed upon the outer peripheries of the auxiliary and main rolls respectively act against each other and upon the brace, thus substantially overcoming the forces which otherwise would tend to flex the respective rolls along their intermediate portions and thereby produce a less tension upon the warps at the intermediate portion of the rolls than at the ends thereof. By reason of the fact that the side faces 7 and 8 of the block, which are complementary to the respective rolls, extend both above and below the plane of the centers of the roll, a material proportion of the resultant lines of force, which act radially with respect to the points where the warps engage the respective rolls, pass into the brace 5 in opposite directions and consequently neutralize each other. In the operation of the loom, the tension of the warp acts more forcibly upon the main roll than upon the auxiliary roll and the un-

yielding brace which is located between these rolls also causes the auxiliary roll to reinforce or stiffen the main roll against flexure.

In order to maintain the brace 5, which may be of relatively narrow width, against movement longitudinally of the roll, a retaining member 9 is provided which preferably comprises a block 10 substantially parallel with the lower face of the block 5 and separated slightly therefrom, having faces 11 and 12 also complementary to the surfaces of the auxiliary and main drag rolls respectively. The retaining member is detachably secured to the block or brace 5 preferably by a machine screw 13, which, when set up, draws the retaining member 9 toward the brace or block 5, and thereby clamps it firmly in position. The retaining member 9 desirably is provided with the guiding finger 14, which extends across the path of the approaching lead 3 of the warp and is of sufficient width to separate the warps so that they will not be caught between the brace and a drag roll. In order further to prevent the catching of the warps which pass over the rolls closely adjacent to the brace 5, the upper end portion 15 of the brace 5, which engages the auxiliary drag roll, desirably is provided with bevelled faces 16 and 17 which will serve to guide any warps which might otherwise engage the brace along the rolls in such a manner that they will not be caught between the brace and the auxiliary drag roll.

The terms "brace" or "bracing member" as employed in the specification and claims will be understood to include a device which acts both as a brace to the drag rolls and as a spacing means for maintaining the drag rolls in parallelism. It will be understood that while a single bracing member of this character located centrally of the drag rolls is ordinarily sufficient, that any desired number of braces may be employed and that the bracing member may be of any desired form or construction. It will therefore be apparent that the present embodiment of the invention is of an illustrative character and is not restrictive to the meaning and scope of the following claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A drag roll construction for looms comprising a plurality of parallel rolls supported at their ends and rigid bracing means supported by said rolls and located between the rolls intermediate of the length of said rolls acting to stiffen said rolls against flexure by the warp sheet as it is dragged over said rolls in its passage from the warp beam to the shed.

2. A drag roll construction for looms comprising a main drag roll and a parallel aux-

iliary drag roll supported at their ends, a rigid brace supported by said rolls and having oppositely disposed surfaces complementary to adjacent surfaces of the respective rolls located intermediate of the length of said rolls and extending above and below the horizontal plane of the axes of said rolls and acting to prevent flexure of the rolls by the warp sheet as it is dragged over said rolls and its passage from the warp beam to the shed.

3. A drag roll construction for looms comprising a main drag roll and a parallel auxiliary drag roll supported at their ends, a rigid brace supported by said rolls and having oppositely disposed downwardly converging surfaces complementary to adjacent surfaces of the respective rolls forming a wedge-like construction located intermediate of the length of said rolls and acting to prevent flexure of the rolls by the warp sheet as it is dragged over said rolls and its passage from the warp beam to the shed, and adjustable retaining means secured to said brace detachably engaging said rolls operable to clamp the wedge-like brace firmly upon the rolls.

4. A drag roll construction for looms comprising a main drag roll and a parallel auxiliary drag roll supported at their ends, a rigid brace supported by said rolls and having oppositely disposed downwardly converging surfaces complementary to the segments of surfaces of the respective drag rolls and a retaining member adjustably secured to said brace and engaging said rolls and having a guiding arm extending beneath the forward roll and out of contact therewith into the path of the approaching lead of the warp sheet and acting to divide the warp sheet and prevent the warps from being caught between said brace and a drag roll.

5. A drag roll construction for looms comprising a main drag roll and a parallel auxiliary drag roll supported at their ends, a rigid brace having its upper surface located

below a plane tangent to the upper surfaces of said rolls and opposite side surfaces complementary to segments of the surfaces of the respective rolls and extending below the plane of the axes of said rolls and a retaining member spaced apart from the lower surface of said bracing member engaging the surfaces of the respective rolls, and adjustable means connecting said spacing member and said bracing member.

6. A drag roll construction for looms comprising a main drag roll and a parallel auxiliary drag roll supported at their ends, a rigid brace having its upper surface located below a plane tangent to the upper surfaces of said rolls and opposite side surfaces complementary to segments of the surfaces of the respective rolls and extending below the plane of the axes of said rolls and a retaining member spaced apart from the lower surface of said bracing member engaging the surfaces of the respective rolls, adjustable means connecting said spacing member and said bracing member, and a curved finger extending from said retaining member in substantial parallelism with the under-surface of the auxiliary roll into the path of the approaching lead of the warp sheet.

7. A drag roll construction for looms comprising a main drag roll and a parallel supplemental drag roll supported at their end, a rigid bracing member having its upper surface located below a plane tangent to the upper surface of said roll and converging at its end adjacent the supplemental roll and opposite side faces complementary to segments of the surfaces of the respective rolls and extending below the axes of said rolls and a retaining member spaced apart from the lower surface of said bracing member engaging the surfaces of the respective rolls and adjustable means connecting said retaining member to said bracing member.

In testimony whereof, I have signed my name to this specification.

EUGENE L. TINKHAM.