Oct. 29, 1940. W. M. WATTIE 2,219,797

SUPPORT FOR LOOM TAKE-UP ROLLS

Filed Sept. 2, 1939 2 Sheets-Sheet 1

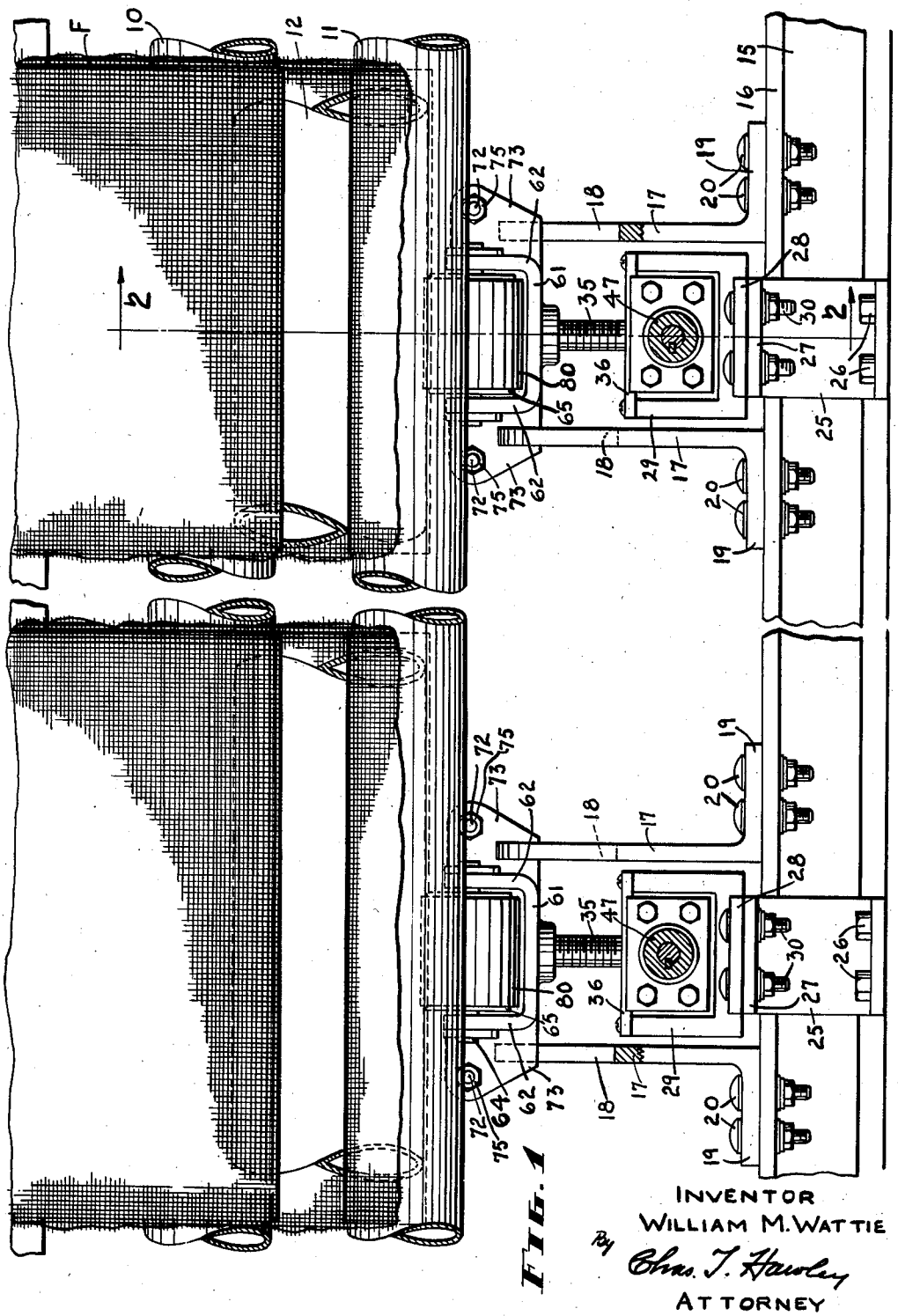


FIG. 1

INVENTOR
WILLIAM M. WATTIE
By Chas. T. Hawley
ATTORNEY

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FIG. 3

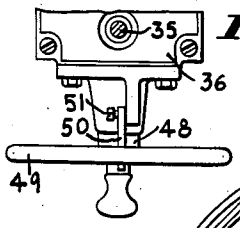
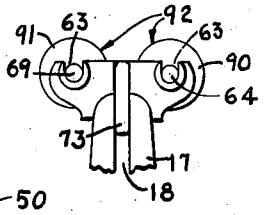
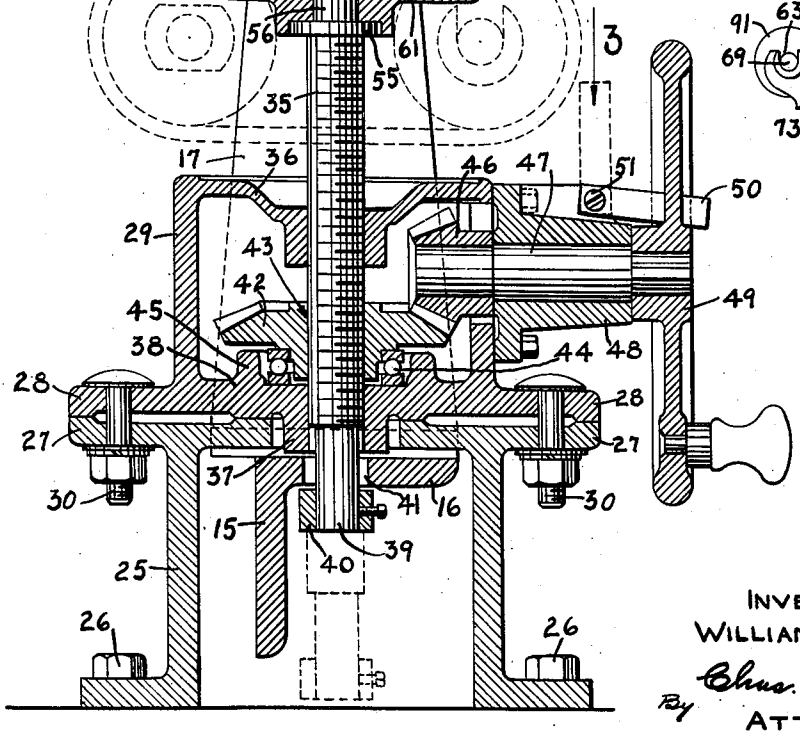


FIG. 2

FIG. 4





INVENTOR
WILLIAM M. WATTIE
By Chas. T. Hawley
ATTORNEY

Patented Oct. 29, 1940

2,219,797

UNITED STATES PATENT OFFICE

2,219,797

SUPPORT FOR LOOM TAKE-UP ROLLS

William M. Wattie, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts

Application September 2, 1939, Serial No. 293,189

12 Claims. (Cl. 139—307)

This invention relates to improvements in supports for loom take-up rolls and it is the general object of the invention to provide means to support the take-up roll at points between its ends.

In wide looms used in the manufacture of such fabrics as paper felts it is customary to provide a take-up roll several hundred inches in length. It has been the practice heretofore to prevent objectionable sagging of the roll by making it of considerable diameter, but this has necessitated a reduction in the space available for passing the knotted ends of a new warp between the take-up and guide rolls. When it is desired to provide more space it is necessary to reduce the diameter of the take-up roll with a resultant tendency of the latter to sag sufficiently to interfere with the proper taking-up operation of the loom. The cloth ordinarily passes around and under the take-up roll and is fed forwardly by rotation of the take-up roll. It is an important object of my present invention to provide an intermediate support for the take-up roll which shall have direct contact with the woven fabric and move with the latter. A hard unyielding support is likely to pinch the fabric and leave a lengthwise mark on the cloth. In order to support the roll without marking the cloth I provide an endless belt on which the cloth and take-up roll rest. The belt is moved around supporting rolls by frictional contact with the cloth as the take-up roll rotates, and is made of a material having a yielding surface preferably having a texture similar to the cloth. Heavy multiply jacketing is an example of material suitable for the belt, but I do not wish to be limited to the use of this material, nor do I wish to be limited to a belt, as a travelling surface having the characteristics described will suffice.

It is desirable when putting a new warp in a loom to have ample space for the passage of the knotted ends of the new warp and it is a further object of my present invention to provide a mounting for the endless belt which will permit the latter to be moved temporarily out of contacting position with the cloth and take-up roll. When the belt is lowered it is out of interfering position and permits the knots of the tied ends to move around the take-up roll.

It is another object of my present invention to achieve the last named result by means of a vertically adjustable support for the belt which will permit a varying degree of support to be provided for the take-up roll and also to provide means by which the support may be readily adjusted from the front of the loom.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawings, wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a front elevation of the intermediate portion of a wide loom having two of my improved supports of preferred form shown in supporting relation with respect to the take-up roll, parts being in section,

Fig. 2 is a vertical section on an enlarged scale on line 2—2 of Fig. 1,

Fig. 3 is a detail plan on a reduced scale taken in the direction of arrow 3, Fig. 2, and

Fig. 4 is a detail view similar to a part of Fig. 2 on a reduced scale showing a modified form of the invention,

Referring to the drawings, I have shown a cloth guide roll 10 near the upper forward part of the loom and below it a second guide roll 11. Behind these two rolls is a take-up roll 12 which may be driven by any approved form of take-up mechanism to move in the direction of arrow *a*, Fig. 2, during loom operation. The fabric F is led forwardly as usual from the point of weaving and then downwardly under roll 10 and around the take-up roll 12, after which it passes over the second guide roll 11 and descends to a cloth roll not shown. This part of the loom is of usual construction and of itself forms no part of my invention. The take-up roll 12 will ordinarily be provided with some form of friction surface not shown to grip the fabric and advance it toward the cloth roll. As viewed in Fig. 2 the fabric will move to the right while in engagement with the under side of the take-up roll and will cover the latter throughout the greater part of its length. The take-up roll may be supported at its ends in any desired manner forming no part of the present invention.

In carrying my invention into effect I provide a longitudinally extending angle brace 15 extending across the loom and having a horizontal web 16 on which certain parts of the intermediate supports are mounted. As shown in Fig. 1 a plurality of supports may be employed, but since they are identical it will be sufficient to describe but one of them.

Extending upwardly from the web 16 are spaced guides 17 having slots 18 in their upper ends for a purpose to be described. Each guide has a foot 19 which is held to the web 16 by bolts 20. The guides may be arranged along the angle support 15 at desired points.

The support comprises a hollow base 25 se-

cured to the floor under the take-up roll by bolt 26 and through which the angle brace 15 passes. Extending horizontally from the upper part of the base 25 are flanges 27 which support similar flanges 28 of a housing 29. Bolts 30 are provided to hold the housing in fixed position on the base. The housing 29 has extending vertically therethrough a threaded stud 35 which extends through and is guided by a top 36 serving as a cover for the housing 29 and projects downwardly through a neck 37 formed on the bottom 38 of the housing. The lower end of the stud may be reduced at 39 to receive a stop collar 40 somewhat larger in diameter than the hole 41 in the horizontal web 16 through which the bottom of the stud extends.

Located within the housing 29 is a beveled gear 42 having an internally threaded bore 43 which receives the threads of the stud 35. The gear 42 may be mounted on a roller bearing indicated generally at 44 supported by the bottom 38 of the housing and a rib 45 projecting upwardly from the bottom 38 may serve as an oil well. The gear 42 meshes with a bevel pinion 46 secured to the front side of the housing 29. The pinion is always in mesh with the beveled gear and may be turned by means of a hand wheel 49 readily accessible from the front of the loom when a new warp is being tied in.

A lock 50 pivoted as at 51 to the bearing 48 is movable to the position indicated in Fig. 2 between the spokes of the hand wheel to prevent the latter from rotating with respect to the bearing 48 and the housing. By moving the lock to the dotted position shown in Fig. 2 the hand wheel may be rotated in either direction to cause rotation of the bevel gear 42 for the purpose of raising and lowering the stud 35, after which the lock may be returned to its locking position to prevent further rotation of the gear 42.

The upper end of stud 35 has a supporting collet 55 on which rests a carriage designated generally at C. As shown in Fig. 1 the carriage may have a horizontal base 61 into which is driven the upper end 56 of stud 35 so that the stud will not turn relatively to the carriage. From the ends of the carriage rise arms 62 each having at its forward end an upwardly opening pocket 63 to receive the gudgeon 64 of a roll 65. The latter extends between the forward ends of the arms 62 and is freely rotatable in the bearing pocket 63. The rear end of each arm 62 is provided with a horizontal slot 68 for the gudgeon 69 of a rear roll 70. Gudgeon 69 extends through heads 71 of bolts 72 horizontally adjustable in wings 73 which project laterally from the arm 62. There will be one wing for each arm and the two bolts 72, as shown in Fig. 1, therefore support the roll 70 for adjustment relatively to roll 65. Nuts 75 provide and hold the horizontal adjustment of the bolts 72 with respect to the wings. Both the front and rear rolls rotate freely about their axes and the distance between them can be varied.

As previously stated, the immediate support for the take-up roll is made of a material having a yielding surface and preferably possessed of the same surface characteristics as those of the cloth being woven. This material may be relatively heavy multiply jacketing made of wool fibres, the same material of which paper felts are constructed, but I do not consider the jacketing to be the only material suitable for the purpose. Furthermore, the material may be in the form of a belt, or may be fastened to the rolls 65 and 70.

In the preferred form of my invention I provide an endless belt 80 of the type of material already described and mount it on the rolls 65 and 70, as shown in Fig. 2. This belt has the upper part thereof in contact with the fabric F on the underside of the take-up roll 12, and the tension of the belt can be adjusted by the bolts 72 and the nuts 75. Because of the weight of the take-up roll the top part of the belt is deflected downwardly as shown in Fig. 2, and thereby establishes a relatively large area of contact between the belt and woven cloth with resultant substantial frictional contact between these parts.

In the modified form shown in Fig. 4 the rolls 90 and 91 correspond to rolls 65 and 70, but are covered by the same material as that of which the belt is constructed. The surfacing 92 may be secured to the rolls in any approved manner, as by gluing, and is sufficiently thick to yield and compress under the weight of the take-up roll.

The wings 73 not only support the bolts 73 which carry the rear roll but also fit into the slots 18 in guides 17 already described and it is by this construction that the carriage is held so that the belt will extend transversely under the take-up roll. The slots 18 are sufficiently long to permit a considerable vertical adjustment of the carriage. As shown in Fig. 2 the gudgeon 69 is behind the guide 17 and the latter will therefore not interfere with the gudgeon as the carriage is lowered.

In operation, the lock will be raised and the carriage will be lowered when the new warp is to be tied in by turning the hand wheel 49 in the proper direction so that cooperation between the stud 35 and the bevel gear 42 will cause a downward feeding of the stud. After the new ends of the warp have been passed around the take-up roll and over the belt or coated rolls 90 and 91 the carriage will be raised by a reverse rotation of the hand wheel, the effect of which will be to raise the stud 35 and elevate the carriage until the top strand of the belt 80 or rolls 91 and 92, are in contact with the fabric F. The carriage is then raised sufficiently more to offset the sagging of the take-up roll, after which the lock will be placed in locking position to retain the carriage in its elevated position. As the loom weaves the advance movement of the fabric in frictional contact with the belt 80 will cause the latter to move in the direction of arrow b, Fig. 2. The belt will be sufficiently strong to provide the necessary support for the take-up roll and the frictional contact between the fabric and the belt will cause the latter to move with substantially the same linear rate as that at which the fabric travels. There will therefore be little or no sliding of these two parts to alter the surface of the fabric. A similar action will occur when the coated rolls 90 and 91 are used.

From the foregoing it will be seen that I have provided an intermediate support for a take-up roll which offsets the sag of the take-up roll but moves with the cloth and is made of such material as to prevent alteration of the surface characteristics of the fabric being woven. It will also be seen that this support in its preferred form may conveniently take the form of an endless belt the tension of which may be varied by the bolts 72, and that the downward deflection of the top strand of the belt provides a relatively large area of contact between the belt and woven cloth. Furthermore, provision is made for raising and lowering the carriage from a point readily accessible to the operator when a new warp is being put in a loom. The housing 29 protects the bevel

gears from lint and dust and also guides the stud 35. Another feature of the invention is the ability to lock the carriage in any vertical position to which it may be moved by rotation of the hand wheel 49. The guides 17 serve effectively to prevent rotation of the carriage and therefore maintain the rolls 65 and 70, or 90 and 91, belt 80 in proper position for engagement with the take-up roll.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll and around the under side of which fabric is fed by rotation of the roll, an endless belt the width of which is considerably less than the length of the take-up roll under the latter, a pair of rotatable members around which the belt is trained, and means to hold the members in such a position as to cause the belt to extend under and support the intermediate portions of the take-up roll between the ends thereof and prevent the aforesaid sag, said belt traveling with the fabric by reason of frictional contact therewith.

2. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll and around the under side of which fabric is fed by rotation of the roll, an endless belt of fibrous material the width of which is considerably less than the length of the take-up roll under the latter, a pair of rotatable members around which the belt is trained, and means to hold the members in such a position as to cause the belt to extend under and support the intermediate portions of the take-up roll between the ends thereof and prevent the aforesaid sag, said belt traveling with the fabric by reason of frictional contact therewith.

3. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll and around the under side of which fabric is fed by rotation of the roll, a pair of spaced rotatable members, an endless belt the width of which is considerably less than the length of the take-up roll, said belt being trained around said members under the take-up roll, means to separate the members to tighten the belt, and means to hold the members in position to cause the belt to extend under and support the intermediate portions of the take-up roll between the ends thereof and prevent the aforesaid sag, said belt traveling with the fabric because of frictional contact therewith.

4. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll and around the under side of which fabric is fed by rotation of the roll, a supporting member the length of which measured in the direction of the length of the take-up roll is relatively short with respect to the length of the take-up roll, said member to engage the fabric and support the intermediate portion of the take-up roll between the ends thereof to prevent the aforesaid sag, a rotatable unit comprising meshing bevel gear elements, manual means to cause rotation of the gear and pinion, and means to hold the member and connected to the unit, a holder for the support to be raised, rotation of the manual means moving the unit to cause the support to move against the cloth on the take-up roll and support the latter.

5. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll and around the under side of which fabric is fed by rotation of the roll, a support for the take-up roll the length of which measured in the direction of the length of the take-up roll is relatively short with respect to the length of the take-up roll, said member to engage the fabric and support the intermediate portion of the take-up roll between the ends thereof to prevent the aforesaid sag, a threaded stud having supporting relation with respect to the support, a gear having an internal threaded bore into which the stud is threaded, means to hold the gear in fixed horizontal position, and means to rotate the gear to cause the stud to rise and move the support against the fabric to support the take-up roll.

6. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll and around the under side of which fabric is fed by rotation of the roll, a support for the take-up roll the length of which measured in the direction of the length of the take-up roll is relatively short with respect to the length of the take-up roll, said member to engage the fabric and support the intermediate portion of the take-up roll between the ends thereof to prevent the aforesaid sag, a rotary element adapted for manual operation, connections between the element and the support to cause the latter to rise when the element is turned in a given direction to move the support into supporting relation with respect to the take-up roll, and a lock to hold the element against rotation after the support is raised to take-up roll supporting position.

7. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll, a housing thereunder, a supporting roll between the housing and the take-up roll, said supporting roll being relatively short with respect to the length of the take-up roll and positioned to support the central portions of the take-up roll to prevent the aforesaid sag, a carriage for the supporting roll, means to raise and lower the carriage and supporting roll with respect to the housing, and means to prevent turning of the carriage to maintain the axis of the supporting roll substantially parallel to the axis of the take-up roll.

8. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll, a stationary base under the take-up roll, a carriage supported by the base, means to raise and lower the carriage with respect to the base in a direction toward and from the take-up roll, a supporting roll mounted on the carriage, said supporting roll being relatively short with respect to the length of the take-up roll and positioned to support the central portions of the take-up roll to prevent the aforesaid sag, and means to prevent turning of the carriage to maintain the axis of the supporting roll substantially parallel to the axis of the take-up roll.

9. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll, a stationary housing thereunder, a threaded member projecting upwardly from the housing, a carriage supported by the threaded member and fixed with respect thereto, a supporting roll mounted on the car-

riage, said supporting roll being relatively short with respect to the length of the take-up roll and positioned to support the central portions of the take-up roll to prevent the aforesaid sag, rotary means within the housing and in engagement with the threaded member to raise and lower the carriage and roll toward and from the take-up roll when the rotary means is rotated, and means to prevent rotation of the carriage around the axis of the threaded member and thereby maintain the axes of the supporting and take-up rolls substantially parallel.

10. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll, a stationary housing thereunder, a threaded member extending into and projecting upwardly from the housing, a carriage supported on the upper end of the threaded member, a supporting roll carried by the carriage, said supporting roll being relatively short with respect to the length of the take-up roll and positioned to support the central portions of the take-up roll to prevent the aforesaid sag, a rotary element in the housing to be turned about the axis of the threaded member, said rotary element supported by the housing and having threaded contact with the threaded member to move the latter toward and from the take-up roll when the rotary element is rotated, and means to prevent rotation of the carriage around the axis of the threaded member to maintain the axes of the supporting roll and the take-up roll substantially parallel.

11. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll, a base under the take-up roll, a carriage supported by the base between the latter and the take-up roll, a supporting roll mounted on the carriage, said supporting roll being relatively short with respect to the length of the take-up roll and positioned to support the central portions of the take-up roll to prevent the aforesaid sag, means supported by the base to move the carriage and supporting roll toward and from the take-up roll, a stationary guide, and a wing moving with the carriage and engaging the guide to maintain the axes of the supporting roll and take-up roll substantially parallel.

12. In a loom having a take-up roll of such length that an objectionable sag is produced by downward bending of the roll, a carriage under the roll, a pair of spaced supporting rolls on the carriage having their axes substantially parallel to the axis of the take-up roll, a supporting belt trained around the supporting rolls, the width of the belt measured in the direction of the length of the take-up roll being considerably less than the length of the take-up roll, said belt supporting the central portions of the take-up roll to prevent the aforesaid sag, and means to vary the distance between the axes of the supporting rolls to maintain the belt taut.

WILLIAM M. WATTIE.