

UNITED STATES PATENT OFFICE.

BENJAMAN F. LEE, OF BELTON, SOUTH CAROLINA, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

FILLING TENSION DEVICE FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 721,206, dated February 24, 1903.

Application filed July 30, 1902. Serial No. 117,597. (No model.)

To all whom it may concern:

Be it known that I, BENJAMAN F. LEE, a citizen of the United States, and a resident of Belton, county of Anderson, State of South Carolina, have invented an Improvement in Filling Tension Devices for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to looms for weaving; and it has for its object the production of novel means for acting upon the filling at the time the latter, if properly laid, engages the usual filling-fork, so that the operation of the latter is rendered more accurate and effective. In order that the filling shall tilt the fork, it is common to provide the lay with a rack or grid to support the filling in front of the fork as the lay beats up, and sometimes this device has been reinforced by putting more tension on the filling in the shuttle. Both of these devices are objectionable, because lint is liable to choke the grate and impair the proper action of the fork, and owing to the closeness of the grate-bars to each other any looseness in the lay or the fork-support will cause the tines of the fork to strike the grate and prevent the detecting action of the fork, while the increased tension on the filling in the shuttle causes the filling to pull too hard on the selvage when the shuttle is going across the lay. By my present invention I am enabled to dispense entirely with the grate in front of the filling-fork and to avoid putting any extra tension on the filling in the shuttle.

The various novel features of my invention will be hereinafter described, and particularly pointed out in the following claims.

Figure 1 is a partial plan view of a loom, taken at the side on which the filling-fork is located, with one embodiment of my invention applied thereto. Fig. 2 is an enlarged transverse sectional view on the line 2 2, Fig. 1, looking toward the left. Fig. 3 is an enlarged perspective detail of the thread-engaging portion of the tension device to be described, and Fig. 4 is an enlarged plan view of a modification of the part shown in Fig. 3.

The lay 1, breast-beam 3, guide 4 for the fork-slide 5, the filling-fork 6, pivotally mount-

ed on the rear end of the slide, the shipper S, knock-off lever 7, Fig. 1, and the weft-hammer W may be and are all of usual or well-known construction, the lay being provided with a shuttle-box at each end, as usual, and in Fig. 1 the top or cover plate 8 of the shuttle-box B is broken off at its inner end to show the back wall 9 thereof. The raceway of the lay is transversely recessed at 10 opposite the fork 6, as is usual; but no grating or grid is employed in my present invention, as I use other and novel means for imparting to the filling the requisite tension when presented to the filling-detector on the detecting beat of the lay.

Adjacent the guide 4 I mount on the breast-beam a stand 12, and for convenience it may rest upon the offset 11 of the guide 4, Fig. 1, and the stand is held in place by set-screws 13, extended through a slot 14 in the stand, the latter being transverse to the breast-beam. By means of the slot and set-screws the stand can be adjusted fore and aft relatively to the lay. I have shown the stand as provided with a longitudinal upturned web 15, Fig. 2, having at its outer end an ear 16 and at its rear end a housing 17, (shown in section, Fig. 1,) the ear being higher than the housing, and in said two parts I mount a longitudinally-slidable member, shown as a bar 18 19, having a collar 20 fast thereon. The part 18 is preferably made square in cross-section, sliding in a correspondingly-shaped hole in the housing 17 to prevent any rotative movement, and between the collar and the ear 16 the cylindrical part 19 of the slidable member is surrounded by a suitable coiled spring s^x , which normally maintains the parts in the position shown in the drawings. At its rear extremity the member 18 19 has mounted upon it by a species of knuckle-joint a head, (shown separately in Fig. 3,) the head comprising a base 21, a projecting central web 22, provided with an enlarged extremity 23, and parts 24 25 of a knuckle-joint. Felt, cloth, leather, or other suitable non-metallic yielding material is applied to the web, as shown at C, and held in place by side plates 26, clamped to the web by a suitable bolt 27. The end of the part 18 is oppositely shaped to the knuckle portion 24 25 of the head to cooperate there-

with, and a combined pivot and clamp-bolt 28 connects the head with the slidable member, tightening of the bolt holding the head rigidly in adjusted position on the member
5 18 19.

Referring to Fig. 2, it will be seen that the slidable member is inclined to the horizontal in order that the head thereof may engage properly the back wall 9 of the shuttle-box as the latter beats up, and normally the head is so located that as the lay beats up the head and back wall of the shuttle-box will engage prior to the instant at which the filling will engage the detector or fork 6 on the detecting beat.
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It is understood that in the structure herein shown the filling-detector operates on alternate beats of the lay, as is common in looms.

Remembering that when the shuttle is in the adjacent or left-hand shuttle-box B the filling *t*, Fig. 1, will extend from the edge of the cloth to the delivery-eye of the shuttle, it will be obvious that as the latter beats up on the detecting beat the thread will be caught
25 between the covering or cushion C of the head on the slidable member and the back wall of the shuttle-box, and thereby clamped. This causes the thread to be held sufficiently taut between the edge of the cloth and the
30 point at which it is clamped to enable it to present sufficient resistance to tilt the fork or detector, the spring *s*^x yielding as the forward movement of the lay moves the slidable member 18 19 toward the front of the lay.
35 The collar 20 limits the rearward movement of said member as the lay swings back.

The object of the grid commonly used is to support the filling immediately in front of the filling-detector, so that the filling will act
40 upon and tilt the detector. By means of my present invention it will be manifest that I entirely obviate the use of the grid or equivalent device, and thereby present a clear path for the tines of the fork or detector as the lay
45 beats up, and yet I provide the requisite tension on the filling-thread to enable it to operate the fork properly. By making the covering C of the tension device non-metallic and of some soft or yielding material the thread
50 is not damaged or broken no matter how soft or fine the filling may be, and so, too, the latter is firmly held between the covering C and the back wall of the shuttle-box at the time it is clamped. By my invention I also obviate
55 the use of any device to vary the tension of the filling in the shuttle, which latter is objectionable, as hereinbefore pointed out.

In Fig. 4 the head 30 is connected by a knuckle-joint with the end 18 of the slidable
60 member, substantially as hereinbefore described; but said head is cut away to leave a projecting cheek 31 and a recessed portion 32, while a removable cheek-piece 33 is adapted to rest in the recess and be clamped therein
65 by a suitable bolt 34. A cushion or block 35, of felt or other suitable yielding material, is clamped between the cheeks 31 and 33 by

means of a clamping-bolt 36, extended through the cheeks and the cushion 35.

By the adjustable connection between the head and the slidable member I am enabled to adjust the head so that the filling-engaging portion thereof will be practically in parallelism with the back wall of the shuttle-box when engaged thereby.
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My invention is not restricted to the precise construction and arrangement herein shown, as the same may be modified or altered in various details by those skilled in the art without departing from the spirit and scope
80 of my invention.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a loom, the lay, a shuttle-box thereon, a filling-detector movable across the raceway of the lay adjacent the mouth of the shuttle-box as the lay beats up, and means to clamp the filling between the filling-detector and the shuttle when the latter is boxed.
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2. In a loom, the lay provided with a shuttle-box, a shuttle, a filling-detector to detect presence or absence of the filling when the shuttle is in the shuttle-box, and means supported independently of the lay to clamp the
95 filling adjacent and independently of the shuttle on the detecting beat of the lay.

3. In a loom, the lay provided with a shuttle-box, a shuttle, a filling-detector, and means independent of the shuttle to clamp
100 the filling adjacent the mouth of the shuttle-box when the shuttle is therein, and between the shuttle and filling-detector, on the forward beat of the lay, to maintain the filling taut when engaged by the filling-detector as the
105 lay beats up.

4. In a loom, the lay provided with a shuttle-box, a shuttle, a filling-detector, and yieldingly-mounted means independent of the lay and the shuttle to act upon and maintain the
110 filling taut when engaged by the filling-detector on the detecting beat of the lay.

5. In a loom, the lay provided with a shuttle-box, a shuttle, a filling-detector, and means to cooperate with the back wall of the
115 shuttle-box adjacent the mouth of the latter and clamp the filling on the detecting beat of the lay, to present the filling taut to the filling-detector.

6. In a loom, the lay, a shuttle-box thereon, a filling-detector movable across the raceway of the lay adjacent the mouth of the shuttle-box as the lay beats up, a fixedly-mounted stand, and a yieldingly-supported filling-clamp on the stand, to engage and hold the
120 125 filling adjacent the mouth of the shuttle-box on the detecting beat of the lay.

7. In a loom, the lay, a shuttle-box thereon, a filling-detector movable across the raceway of the lay adjacent the mouth of the shuttle-box as the lay beats up, a fixed stand, a longitudinally-movable, yieldingly-controlled member mounted thereon transverse to the lay, and a non-metallic head on said mem-
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ber, to engage the filling and clamp it between the head and the back wall of the shuttle-box on the detecting beat of the lay.

8. In a loom, the lay, a shuttle-box thereon,
5 a filling-detector movable across the raceway of the lay adjacent the mouth of the shuttle-box as the lay beats up, a yieldingly-controlled member longitudinally movable transversely to the lay, an adjustable head on the
10 rear end of said member, and a yielding, non-metallic cover for the head, to engage the fill-

ing on the detecting beat of the lay and clamp it against the back wall of the shuttle-box, to thereby maintain the filling taut when presented to the action of the filling-detector. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMAN F. LEE.

Witnesses:

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