E. L. MORRILL.

SLASHER.

APPLICATION FILED MAR. 26, 1910.

964,531. Patented July 19, 1910.

Fig. 1.

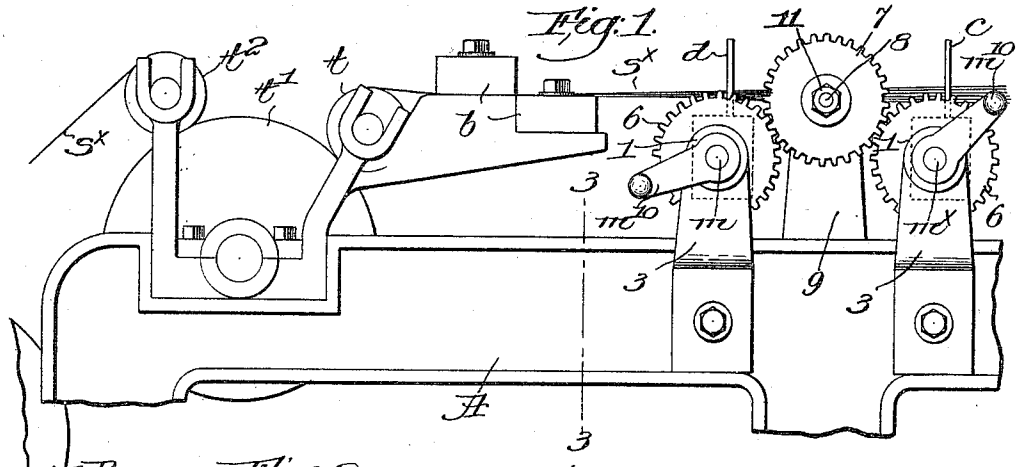


Fig. 2.

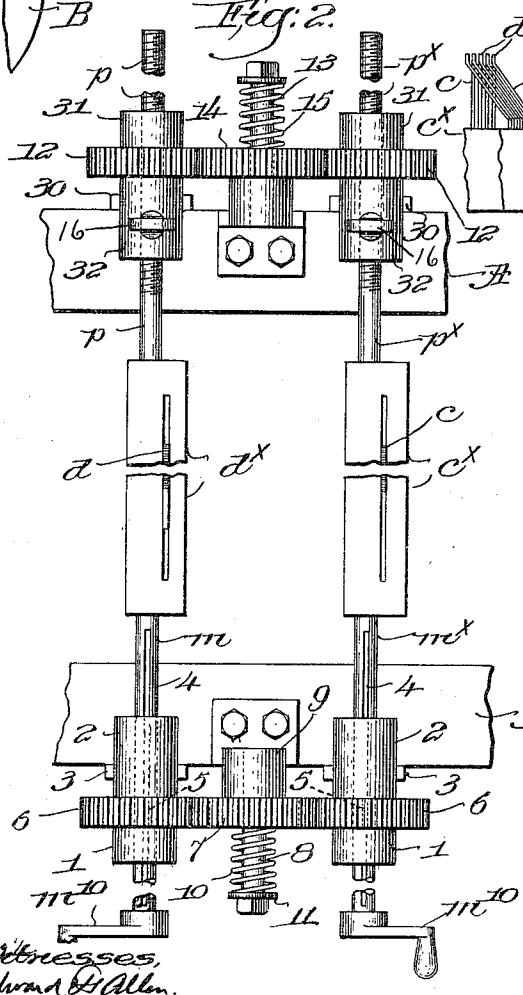


Fig. 3.

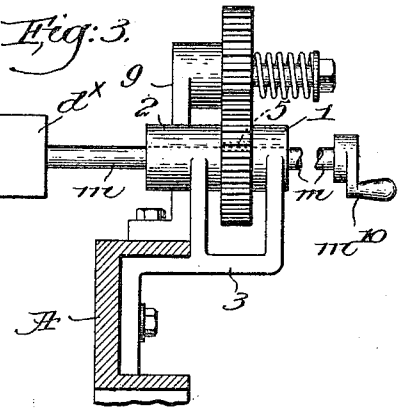
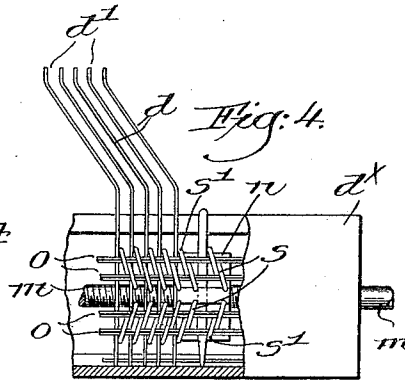


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SLASHER.

964,531. Specification of Letters Patent. Patented July 19, 1910.

Application filed March 26, 1910. Serial No. 551,614.

To all whom it may concern:

Be it known that I, ERNEST L. MORRILL, a citizen of the United States, and resident of Saco, county of York, State of Maine, have invented an Improvement in Slashers, 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 slashers, and has more particular reference to that portion of the slasher which acts upon and controls the warp as it passes to the beam from the drying instrumentality.

In United States Patent No. 949,732 granted to me February 15, 1910, I have shown means whereby the groups or sheaths of warp threads traveling toward the beam are positively and automatically repositioned so that the threads of the several sheaths are caused to lie side by side as they near the beam. This is effected by causing the warp threads to be acted upon by two transverse combs, the first one having upright teeth between which the sheaths travel in upright and substantially parallel planes, the teeth of the second comb being inclined and acting upon the sheaths to turn them from their vertical planes of travel simultaneously and in the same direction into a substantially horizontal plane.

The teeth of the combs are mounted in the comb boxes in such manner that they are laterally adjustable to vary the distance between adjacent teeth, and in my present invention I have provided manually controlled means whereby the teeth of both combs can be adjusted laterally simultaneously or independently, at the will of the operator. Ordinarily simultaneous adjustment is desired, for if the spaces between the teeth of one comb are to be changed the spaces between the teeth of the other comb must be changed correspondingly. Sometimes it is necessary to effect the adjustment of the teeth of one comb independently of the other comb, and accordingly I have so constructed the manually controlled means that a member thereof can be rendered inoperative temporarily, to enable such independent adjustment to be effected. Herein I have also provided manually controlled means for effecting simultaneous bodily adjustment of the combs transversely of the direction of travel of the warp, in order that the combs may be placed in the proper position to direct the sheet of warp to the beam. This adjusting means is also constructed to permit of independent bodily adjustment of the combs, when desired, such adjustment enabling the teeth of one comb to be offset laterally with relation to the teeth of the other comb.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a side elevation of a portion of a slasher at the end adjacent the beam on which the sheet of warp is wound, with one embodiment of my present invention applied thereto; Fig. 2 is a top plan view, broken out to save space, showing the two combs and the separate means for effecting lateral adjustment of the comb teeth and bodily transverse adjustment of the combs; Fig. 3 is a detail in cross section on the line 3—3, Fig. 1, looking toward the right; Fig. 4 is an enlarged detail of a portion of the comb having the inclined teeth, the box being broken out to show the usual means therein for regulating the lateral spacing of the teeth.

In Fig. 1 the loom beam B, the tension rolls t, t', t^2, adjacent thereto, and the flat binding or smoothing bars b designed to smooth out and maintain flat the sheet of warp passing to the beam B, are and may be of usual construction. From the splitting rods (not shown) the divided sheets of warp threads pass through the teeth of the two combs, as in my patent referred to, first through the upright, parallel teeth c of the usual expansion comb, sustained in the comb-box c^x, a group or sheath of threads passing between adjacent teeth, the threads of each group being arranged substantially one above the other, so that the several groups travel toward the beam B in upright and substantially vertical parallel planes. Thence the sheaths or groups pass between adjacent teeth d of the second comb, and said teeth are parallel but inclined, as shown in Figs. 3 and 4, as in my patent, such inclination of the teeth turning all of the sheaths over simultaneously and in the same direction, so that the several groups or sheaths are brought into a common flat sheet s^x of warp as they pass into the control of the binding and smoothing bars.

The shanks of the teeth d are parallel and vertical and extend into the comb-box d^x, as in my patent, but as shown in Figs. 3 and 4 the upper ends or tips of the teeth are upturned into substantially vertical position, at d', to facilitate the "striking in" of the teeth into the warp.

The expansion comb is well known in the art, and needs no detailed description, but referring to Fig. 4 it may be stated that the shanks of the teeth pass between the coils of spiral springs s, s', arranged in pairs and attached at their ends to nuts, as n, controlled by the rotatable right and left hand screw-threaded adjusting shaft m, the longitudinally extended guides o passing through the springs. Rotation of the shaft m operates through the nuts and springs to move the teeth of the comb toward or from each other, in well known manner, and it will be understood that each comb-box is equipped in a manner similar to that shown in Fig. 4. For convenience, however, I have denoted the screw-shaft of the comb-box c^x by the reference letter m^x.

In accordance with my present invention I prolong the outer ends of the shafts m, m^x, to cause each one to pass through two alined sleeve bearings 1, 2, on a yoke-like bracket 3 bolted to one of the side frames A of the slasher, the outer ends of said shafts having attached thereto suitable handles m^{10}. Said shafts are rotatable in the bearings and also movable longitudinally therein, each shaft having a splineway 4 therein to receive a spline 5 fixed in the bore of a gear 6, the two gears thus rotating with the shafts while being held from axial movement by the separated bearings 1 and 2, one of said gears being mounted between each pair of the bearings, as shown clearly in Fig. 2. The comb-boxes are thus sustained at one end by the shafts carried in the bearings 1, 2, as will be manifest, and the means for sustaining the opposite ends of the comb-boxes will be referred to hereinafter. An intermediate gear 7, normally meshing with the gears 6, is rotatably mounted on an elongated stud 8 on a fixed bracket 9, a spring 10 surrounding the outer end of said stud, between a washer and nut 11, and the gear 7, acting to retain the latter in meshing position. Manifestly the rotation of either screw-shaft by means of its handle m^{10} will not only effect lateral adjustment of the teeth of the corresponding comb, but through the gearing 6, 7, 6 the shaft of the other comb will be rotated simultaneously and in the same direction, to effect a like lateral adjustment of the teeth of such second comb. Hence I have provided manually controlled means to effect simultaneous and like adjustment of the teeth c and d under normal conditions, and as the member 7 of such means can be moved on its stud 8 out of mesh with the two gears 6, 6, it follows that by so doing either shaft m or m^x can be revolved, to thereby effect the lateral adjustment of the teeth of its comb without any change being made in the teeth of the other comb. This capability of independent adjustment is convenient in setting up the machine, or at other times when for any reason the teeth of one comb should be changed irrespective of the other comb. The spring 10 operates to return the intermediate gear to normal, meshing position, shown in the drawing. At the opposite side of the slasher, see Fig. 2, I provide brackets 30, having each two alined bearings 31, 32, like the brackets 3 and their bearings, to receive the threaded ends or rods p, p^x rigidly attached to the adjacent ends of the comb-boxes, to sustain the latter at that side of the main frame. Said rods are freely movable in the bearings, and engage threaded nuts, each located between the bearings of a pair and made as gears 12, rotation of either gear acting to move the engaged rod p, or p^x, longitudinally, to thereby shift the corresponding comb-box transversely of the direction of travel of the warp. Upon a fixed stud 13 an intermediate gear 14 is rotatably mounted and normally held by the spring 15 in meshing position with the two gears 12, so that rotation of any one of said three gears will effect simultaneous rotation of the gears 12 in the same direction. As said gears 12 serve as nuts it follows that the rods p, p^x will be moved inward or outward simultaneously, to position the combs properly with relation to the beam, in order that the warp shall pass thereto correctly.

In practice it is preferable to set the turning comb so that its teeth d are offset laterally from the corresponding teeth c of the first comb, as explained in my patent, and this initial relative setting of the comb is readily effected by drawing the gear 14 outward against its spring 15 until it is out of mesh with the gears 12. Thereupon either of the latter gears is revolved to effect the desired relative setting of the comb-teeth.

To prevent any possibility of the comb-boxes turning when the slasher is in operation I have provided each of the bearings 32 with a set-screw 16, Fig. 2, to engage and hold from rotative movement the threaded rod extended therethrough. These set-screws are loosened when "striking in", as at such time the comb-boxes are rocked to facilitate the operation.

When the comb-boxes are shifted bodily by the means described it will be manifest that the screw-shafts m, m^x will be moved longitudinally in their bearings 1, 2 and through the gears 6, and the splineways 4 permit such movement while the keys 5 maintain the requisite connection between said shafts and their gears.

The outer ends of the shafts m, m^x beyond the bearings are made long enough to accommodate the bodily adjustment of the comb-boxes, and for a like reason the threaded rods p, p^x are extended well beyond the outer bearings 31.

Various changes or modifications may be made in different details of construction, and arrangement by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

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

1. In a slasher, two transverse combs, one having upright, laterally adjustable teeth and the other having inclined and laterally adjustable teeth, the teeth of the latter comb acting to turn simultaneously and in the same direction the groups of warp threads traveling between the teeth of the first comb, manually controlled means to effect simultaneous lateral adjustment of the teeth of both combs and separate, manually controlled means to effect simultaneous bodily movement of said combs transversely to the direction of travel of the warp threads.

2. In a slasher, two transverse combs, one having upright, laterally adjustable teeth and the other having inclined and laterally adjustable teeth, said inclined teeth acting to turn simultaneously and in the same direction into a single plane the sheaths of warp threads traveling in parallel planes between the upright teeth of the first comb, and manually controlled means to effect simultaneous lateral adjustment of the teeth of both combs.

3. In a slasher, two transverse combs, one having upright, laterally adjustable teeth and the other having inclined and laterally adjustable teeth, said inclined teeth acting to turn simultaneously and in the same direction into a single plane the sheaths of warp threads traveling in parallel planes between the upright teeth of the first comb, and manually controlled means to effect simultaneous lateral adjustment of the teeth of both combs, said means including a member capable of movement temporarily into inoperative position to permit lateral adjustment of the teeth of either comb independently of the other comb.

4. In a slasher, two transverse combs, one having upright, laterally adjustable teeth and the other having inclined and laterally adjustable teeth, the teeth of the latter comb acting to turn simultaneously and in the same direction the groups of warp threads traveling between the teeth of the first comb, and manually controlled means to effect simultaneous bodily shifting of the combs transversely to the direction of travel of the warp threads.

5. In a slasher, two transverse combs, one having upright, laterally adjustable teeth and the other having inclined and laterally adjustable teeth, the teeth of the latter comb acting to turn simultaneously and in the same direction the groups of warp threads traveling between the teeth of the first comb, and manually controlled means to effect simultaneous bodily shifting of the combs transversely to the direction of travel of the warp threads, said means including a member capable of movement temporarily into inoperative position to permit bodily transverse shifting of either comb.

6. In a slasher, two transverse combs, one having upright, laterally adjustable teeth and the other having inclined and laterally adjustable teeth, said inclined teeth acting to turn simultaneously and in the same direction into a single plane the sheaths of warp threads traveling in parallel planes between the upright teeth of the first comb, means including longitudinally movable, rotatable screw-shafts and gears splined thereon, to effect lateral adjustment of the teeth of the combs, fixed bearings for the outer end of each shaft, between which bearings the corresponding gear is held from axial movement, an intermediate gear, a fixed stud on which it is rotatable and axially movable into and out of mesh with the shaft gears, and a spring normally acting to maintain the intermediate gear in mesh with the shaft gears, whereby rotation of either shaft effects rotation of the other shaft simultaneously and in the same direction, manual retraction of the intermediate gear permitting lateral adjustment of the teeth of either comb.

7. In a slasher, a plurality of expansion combs, each having means, including a rotatable screw-shaft, to effect lateral adjustment of the teeth of the comb, means cooperating with said shafts to cause them to be rotated simultaneously in the same direction, and a manually actuated instrumentality to effect simultaneous and bodily shifting of the combs, said instrumentality including a member capable of movement into inoperative position to permit independent shifting of said combs.

8. In a slasher, two transverse combs, one having upright parallel teeth and the other having inclined, parallel teeth, said inclined teeth acting to turn simultaneously and in the same direction into a single plane the sheaths of warp threads traveling in parallel planes between the upright teeth of the first comb, and manually controlled means to effect simultaneous bodily shifting of the combs transversely to the direction of travel of the warp threads.

9. In a slasher, a plurality of transverse combs each having teeth to act upon and control the warp threads, and manually con-

trolled means to effect simultaneous bodily shifting of the combs transversely to the direction of travel of the warp threads, said means including a member capable of movement temporarily into inoperative position to permit bodily transverse shifting of either comb.

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

ERNEST L. MORRILL.

Witnesses:
EDGAR H. MINOT,
THOMAS B. WALKER.