No. 696,212. Patented Mar. 25, 1902.

A. B. TAPLIN.

LOOSE REED MOTION FOR LOOMS.

(Application filed Sept. 16, 1901.)

(No Model.)

Fig. 1.

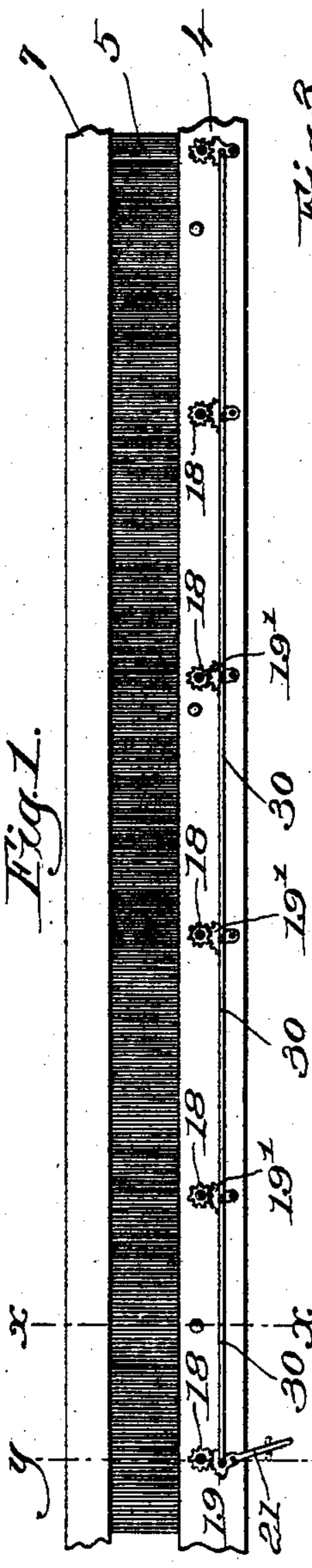

Fig. 3.

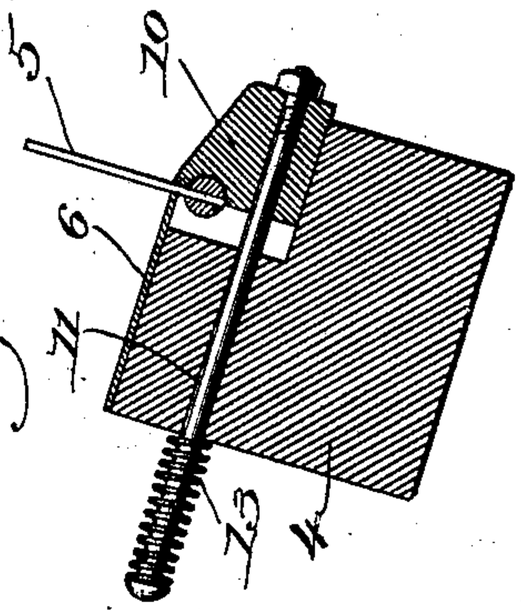

Fig. 5.

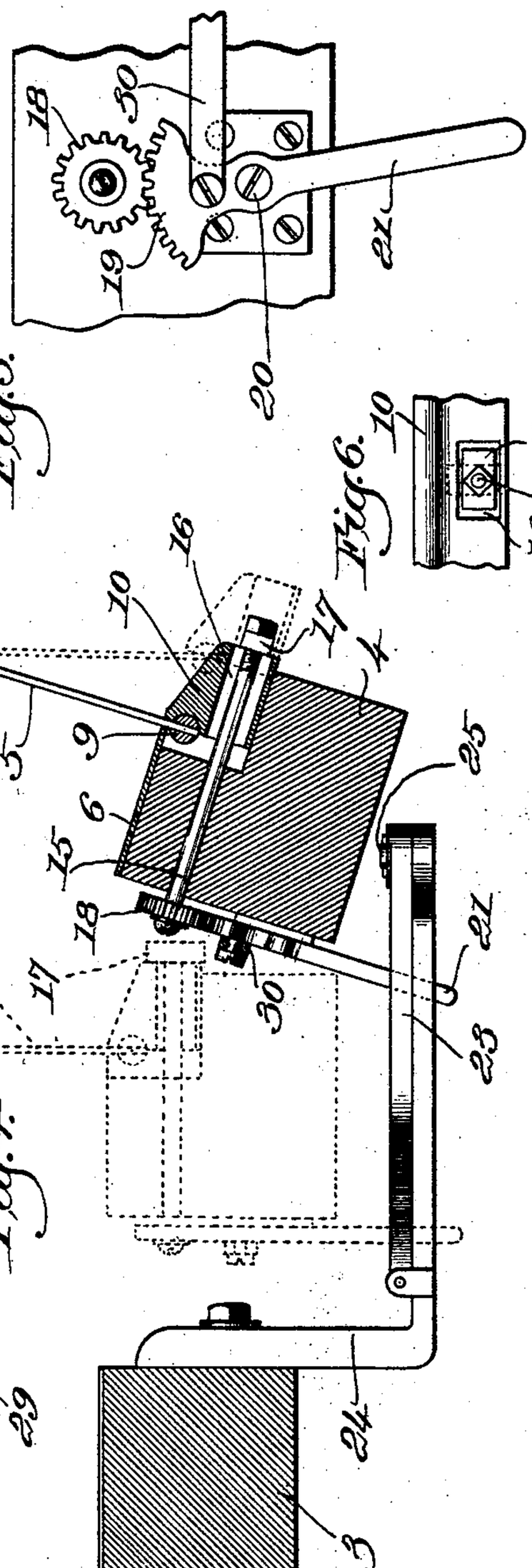

Fig. 6.

Fig. 2.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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LOOSE-REED MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 696,212, dated March 25, 1902.

Application filed September 16, 1901. Serial No. 75,484. (No model.)

To all whom it may concern:

Be it known that I, ALDEN B. TAPLIN, a citizen of the United States, residing at Keene, in the county of Cheshire and State of New Hampshire, have invented an Improvement in Loose-Reed Motions for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like figures on the drawings representing like parts.

This invention relates to what are commonly known as "loose-reed motions" for looms—*i. e.*, contrivances which permit the reed to yield whenever a shuttle fails to be thrown clear across the lay and becomes lodged in the shed to prevent a "smash;" and it is the object of my invention to provide a simple and effective device of this character.

My invention comprises, in combination with the lay and other usual parts of the loom, a reed loosely mounted upon the lay and a suitable locking mechanism which is operated by the movement of the lay, said locking mechanism becoming inactive or inoperative when the lay is in its backward position, but becoming operative when the lay beats up to lock the reed firmly in its normal or operative position.

The locking mechanism I preferably employ comprises a rotary locking member mounted in the lay, the said locking member being rotated to turn the same from its operative to its inoperative position, or vice versa, by means of an operating-lever which engages a suitable yieldingly-mounted cam.

Under normal conditions the locking mechanism is inactive or is in its inoperative position when the lay is in its backward position, but as the lay moves forward the cam, acting on the operating-lever, serves to turn the locking device into its operative position to thereby lock the reed in its normal or operative position when the lay beats up.

In case the shuttle or shuttles should become lodged in the shed the reed will yield during the forward movement of the lay sufficiently to prevent the locking device from operating, in which case the yieldingly-mounted cam gives sufficiently to prevent any injury to the parts of the mechanism, the yielding of the reed being sufficient to prevent a smash.

In the drawings, Figure 1 illustrates in front view a portion of a lay having my invention applied thereto. Fig. 2 is a plan view of the cam for operating the locking device. Fig. 3 is a section of the line *x x*, Fig. 1. Fig. 4 is a section on the line *y y*, Fig. 1. Fig. 5 is a detail of the operating-lever for the locking mechanism, and Fig. 6 is a detail hereinafter described.

In the drawings I have illustrated only sufficient portions of the loom to show how my invention is applied and the manner in which it works, and 3 indicates the breast-beam of the loom. 4 indicates the lay, having the usual race-plate 6 thereon. 5 indicates the usual reed, which is pivotally mounted at its upper end in the reed-cap 7. These parts are of any usual or ordinary construction, and further description thereof and of their operation is not necessary, as my invention relates solely to the mechanism for yieldingly holding the reed 5 in its operative position.

The bar 8, at the upper end of the reed 5, is pivotally mounted in a suitable groove in the under side of the reed-cap 7, as usual, while the bar 9, at the lower side of the reed, rests in a suitable groove formed in the front of the backstay or holder 10 for the reed, which backstay is slidably mounted upon the lay 4 in any suitable way.

The backstay 10 is normally held in the full-line position, Figs. 3 and 4, thereby maintaining the reed 5 in its operative position by any suitable means, such as bolts 11, passed through the backstay 10 and slidably through the lay 4, as shown in Fig. 3, a suitable coiled spring 13 being confined between the head of each bolt and the front of the lay and operating to yieldingly hold the backstay and reed 5 in the normal position.

In order that the loom may perfectly perform the weaving operation, it is necessary that the reed 5 be unyieldingly held in its normal position—that shown in full lines, Figs. 3 and 4—when the lay beats up, and to accomplish this I provide a suitable rotary locking device which is rendered operative as the lay moves forward to lock and hold the reed in its normal or operative position.

As illustrated, the locking device comprises the rotary locking-bolt 15, carried by the lay and passing through a suitable aperture 16

in the backstay 10, the end of the bolt 15 having thereon a head or button 17, as seen in Figs. 4 and 6. The aperture 16, through which the bolt 15 passes, has its horizontal diameter longer than its vertical diameter, as shown in Fig. 6, and the head 17 is substantially rectangular in shape, the longer dimension of said head being less than the longer diameter of the aperture 16, but longer than the shorter diameter of said aperture 16, whereby when the head 17 is in the horizontal position the backstay 10 may be moved backward relative to the lay and locking-bolt, while when the said locking-bolt is turned to bring the head 17 in the vertical position and across the aperture, as seen in dotted lines, Fig. 6, the backstay 10 is securely locked against any movement relative to the lay, and the reed is held in its operative position, it being understood, of course, that the locking-bolt has no longitudinal movement relative to the lay.

To turn the locking-bolt and the head 17 from the full-line to the dotted-line position, Fig. 4, as the lay moves forward, I preferably rigidly mount upon the front end of said locking-bolt a pinion 18, which meshes with a segmental rack 19, carried by an operating-lever 21, pivotally mounted on the front of the lay, as at 20, the said operating-lever playing in the groove 22 in the pivotally-mounted yielding cam 23. For convenience the cam 23 is carried by the breast-beam 3 of the loom, and for this purpose a suitable bracket 24 is secured in any usual way to the said breast-beam and has pivoted to one end thereof, as at 25, one end of the cam 23, the other end of said cam engaging a suitable stop 26 and being yieldingly held against said stop by means of the coiled spring 27, which surrounds an arm 28, connected to the cam and loosely passing through an eye 29 on the bracket 24. The cam-groove 22 in the cam 23 has the straight portion 22^a, in which the operating-lever 21 plays during the first part of the forward movement of the lay, and the inclined portion 22^b, in which the said operating-lever plays during the latter part of the said forward movement of the lay, as will be readily understood.

With this construction the operation of the parts is as follows: Under normal conditions the springs 13 operate to hold the reed 5 in the full-line position, Figs. 3 and 4, and assuming that the lay is in its backward position, as shown in full lines, Fig. 4, it will be seen that as the lay beats up the operating-lever will engage the inclined portion of the slot 22 during the latter part of the forward movement of the lay, thereby turning said operating-lever about the pivot 20 and through the rack 19 and pinion 18 rotating the locking-bolt 15 from the full-line position, Fig. 4, to the dotted-line position, thereby swinging said head across the elongated aperture 16 and securely locking the reed 5 in its operative position. As the lay moves backward the inclined portion of the slot 22 swings the operating-lever into its initial position again, thereby rendering the locking device inactive. It will be understood, of course, that the spring 27 is strong enough to overcome the resistance due to the turning of the locking-bolt from its operative to its inoperative position under normal conditions. If, however, the shuttle or shuttles fail to be thrown clear across the lay and become lodged in the shed, the reed 5 during the first portion of the stroke and while the operating-lever is moved in the straight portion of the slot 22 yields backwardly and assumes the dotted-line position, Fig. 4, thereby preventing a smash. When the reed 5 and the backstay 10 has thus moved backwardly, the said backstay has passed over and incloses the head 17, thereby preventing the said head from turning into the dotted-line position, Fig. 4, during the last part of the forward movement of the stroke, as above described. Since, however, the cam 23 is yieldingly held in its operative position, the parts are prevented from becoming injured when the backstay is in its dotted-line position, Fig. 4, for as the lay completes its forward stroke the operating-lever, which is locked against movement, engages the inclined portion of the slot 22, and thereby causes the cam 23 to yield against the action of the spring 27. Upon the backward stroke of the lay the parts are restored to their normal position again, as will be obvious.

I preferably employ a series of locking-bolts in order that the reed 5 may be firmly held in its operative position throughout its entire length, and that the said locking-bolts may be operated in unison I provide each of them with the pinion 18, as seen in Fig. 1, and pivot to the front of the lay segmental racks 19′, coöperating with said pinions. The racks are connected together and to the rack 19 by means of links 30, whereby as the operating-lever 21 is turned such motion is communicated to all of the racks 19′, whereby all the locking-bolts operate in synchronism.

It will thus be seen that I have provided a rotary locking device which has no longitudinal movement relative to the lay and which operates under normal conditions to rigidly lock the reed in its operative position during the latter part of the forward movement of the lay, but which allows the reed to yield if for any reason the shuttle becomes lodged in the shed.

I desire to have it understood that various changes may be made in the construction of my device without departing from the spirit of my invention as expressed in the appended claims.

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

1. In a loom, a lay, a reed yieldingly mounted thereon, a rotary locking mechanism acting normally to lock the reed in operative po-

sition during the latter portion of the forward movement of said lay, and a yielding cam for operating said locking mechanism.

2. In a loom, a lay, a reed yieldingly mounted thereon, a rotary locking device for the reed, and means operated by the movements of the lay to operate said locking device, the construction being such that when the lay beats up, the reed is locked against movement relative to said lay.

3. In a loom, a lay, a reed yieldingly mounted thereon, a rotary locking device carried by the lay, means operated by the movement of the lay to render said locking device operative when the lay is in its forward position, the construction being such that when the lay is in its backward position the locking device is inoperative.

4. In a loom, a lay, a reed yieldingly mounted thereon, locking mechanism for the reed, an operating-lever for actuating said locking mechanism, and a yielding cam mounted on a fixed part of the loom and adapted to engage said operating-lever when the lay approaches its forward position, whereby the locking device is rendered operative and the reed locked in place during the last part of the forward movement of the lay.

5. In a loom, a lay, a reed yieldingly mounted thereon, a rotary locking device for the reed, an operating-lever carried by the lay, and a cam mounted on a fixed part of the loom and adapted to engage said operating-lever when the lay approaches its forward position, whereby the locking device is rendered inoperative during the last part of the forward movement of the lay.

6. In a loom, a lay, a reed yieldingly mounted thereon, a rotary locking-bolt mounted on the lay and adapted when turned to lock the reed in its operative position, a cam carried by a fixed part of the loom, and means adapted to engage said cam during the latter part of the forward stroke of the lay to turn said locking means.

7. In a loom, a lay, a reed yieldingly mounted thereon, locking devices for said reed, and means operated by the vibrating movement of the lay in each direction to positively operate said locking device, the construction being such that during the latter part of the forward stroke of the lay the locking device is positively operated to lock the reed to the lay, and during the first part of the return stroke, the said locking device is positively operated to unlock the reed.

8. In a loom, the lay, a reed loosely mounted thereon, a backstay extending back of the reed and movable relative to the lay, locking mechanism adapted to engage the backstay to lock the same to the lay, and means operated by the vibrating movements of the lay to operate said locking mechanism, the construction being such that during the latter part of the forward stroke of the lay the locking device is rendered operative, and during the first part of the backward movement of the lay, said locking device is rendered inoperative.

9. In a loom, a lay, a reed loosely mounted thereon, a backstay extending back of the reed and movable relative to the lay, rotary locking-bolts carried by the lay and extending through apertures in the backstay, said bolts having heads thereon which may either be brought into line with or across said apertures, and means to turn said bolts in unison during the last portion of the forward movement of the lay to bring said heads across the apertures, whereby the reed is locked in position.

10. In a loom, a lay, a reed yieldingly mounted thereon, a backstay extending back of the reed and movable relative to the lay, rotary locking-bolts carried by said lay, and having heads thereon adapted to engage the back side of the backstay, as said bolts are turned, and means operated by the movement of the lay to turn said bolts in unison, the construction being such that during the last portion of the forward movement of the lay, said bolts are turned to cause the heads to engage the backstay, and during the first part of the return stroke, said bolts are restored to their initial position.

11. In a loom, a lay, a reed yieldingly mounted thereon, a backstay movable relative to the lay and engaging the back of the reed, a series of rotary locking-bolts carried by the lay and extending through apertures in the backstay, said bolts having heads thereon which may either be brought into line with the apertures, or extended across said apertures, an operating-lever having connections to turn all the said bolts in unison, and a yielding cam carried by the fixed part of the lay and adapted to operate said lever during the last portion of the forward movement of the lay, and during the first portion of the return stroke of the lay.

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

ALDEN B. TAPLIN.

Witnesses:
IRVING A. WHITE,
DOLOR. J. LOISELLE.