B. A. CLARK.

YARN FEEDING MECHANISM FOR LOOMS.

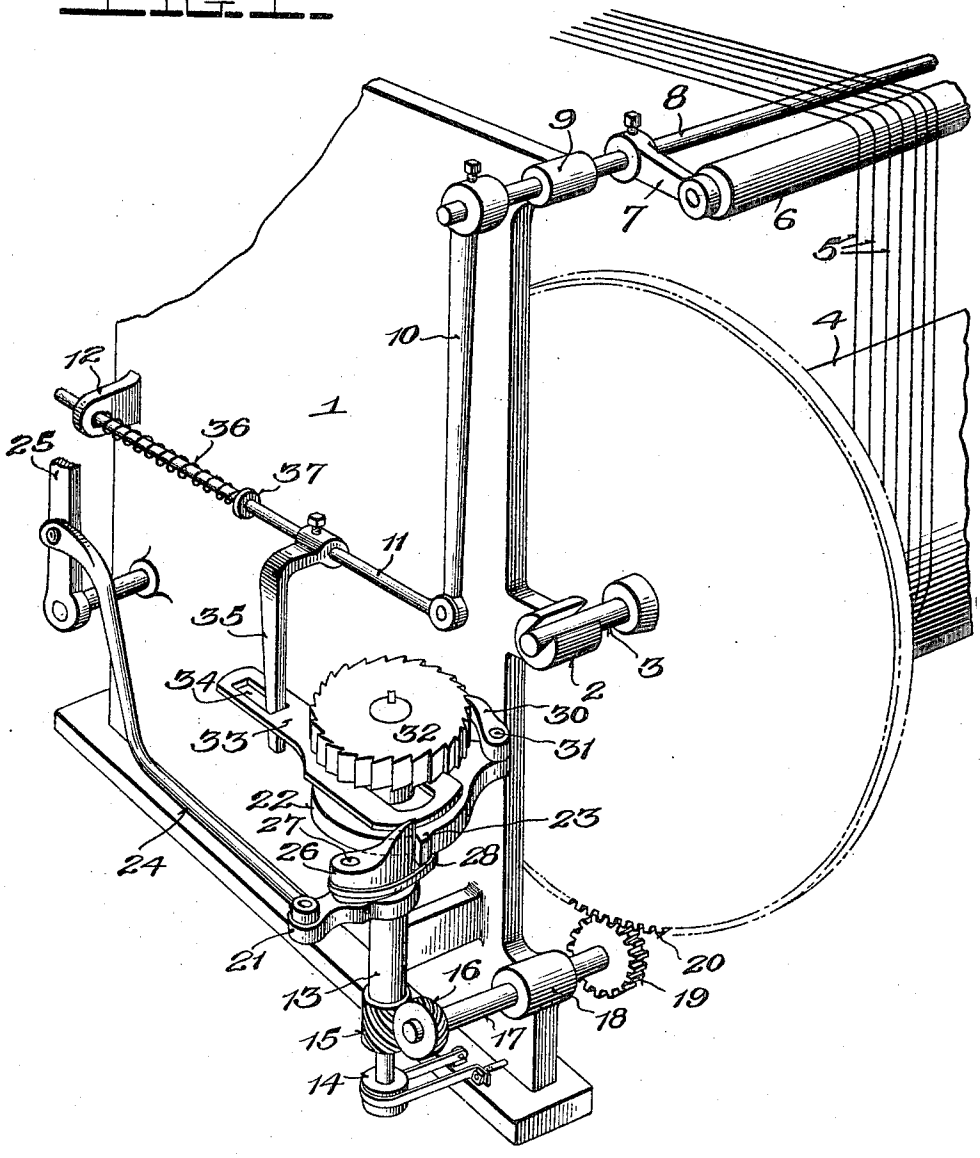
APPLICATION FILED DEC. 28, 1918.

1,307,241.

Patented June 17, 1919.

2 SHEETS—SHEET 1.

FIG. 1.



Inventor

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2 SHEETS—SHEET 2.

Fig. 2.

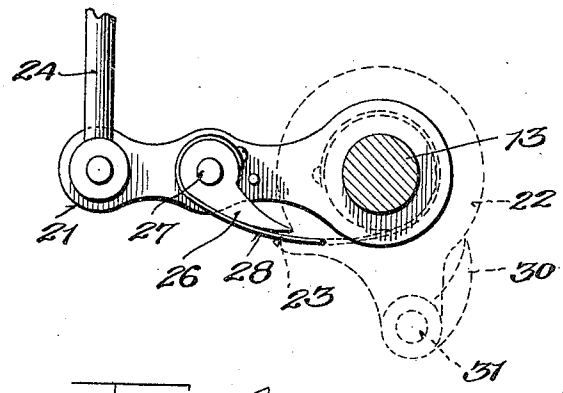


Fig. 3.

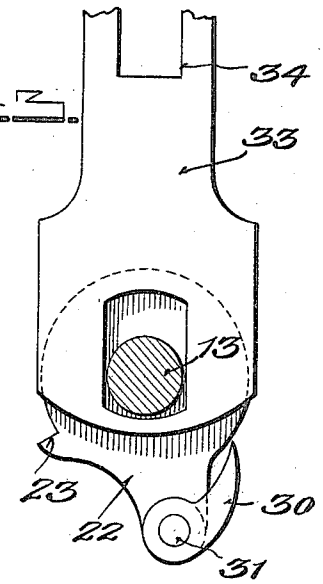


Fig. 4.

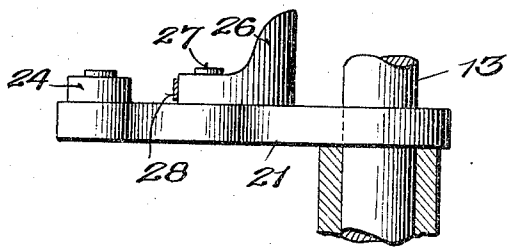
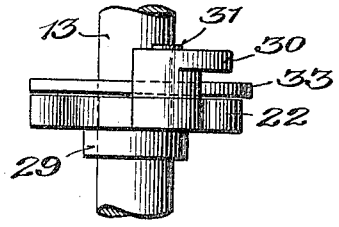


Fig. 5.



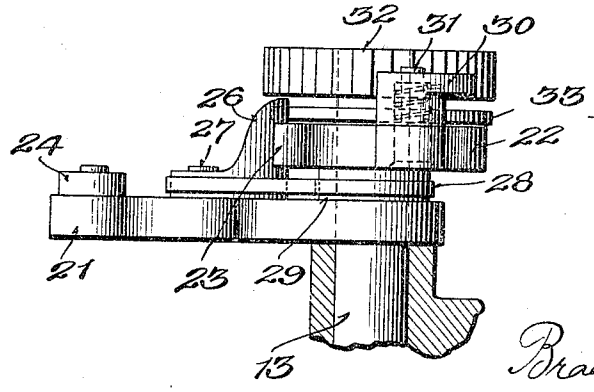


Fig. 6.

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UNITED STATES PATENT OFFICE.

BRADFORD A. CLARK, OF SLOCUM, RHODE ISLAND.

YARN-FEEDING MECHANISM FOR LOOMS.

1,307,241. Specification of Letters Patent. Patented June 17, 1919.

Application filed December 28, 1918. Serial No. 268,620.

To all whom it may concern:

Be it known that I, BRADFORD A. CLARK, a citizen of the United States, and a resident of Slocum, in the county of Washington and State of Rhode Island, have invented a new and useful Improvement in Yarn-Feeding Mechanism for Looms, of which the following is a specification.

This invention relates to certain new and useful improvements in a yarn feeding mechanism for looms and it has for its principal object to provide a mechanism for letting off or feeding the yarn in weaving so as to preserve proper tension thereon as the diameter of the roll of yarn on the beam decreases.

Further, the invention resides in improved means for arresting the feeding mechanism when there is an excess of delivery of yarn, said feeding and regulating mechanisms being under the control of the tension of the yarn.

In the drawings—

Figure 1 is a fragmentary perspective view of the back of a loom equipped with the present invention.

Fig. 2 is a horizontal section immediately below the pawl-carrying disk.

Fig. 3 is a similar section immediately below the ratchet.

Fig. 4 is a fragmental side view of the construction illustrated in Fig. 2.

Fig. 5 is a side elevation of the arrangement disclosed in Fig. 3.

Fig. 6 is a similar view of the intermittent feed mechanism.

Referring more in detail to the drawings, the frame 1 is provided with bearings 2 for the journals 3 of the beam 4 which carries the roll of yarn 5, the latter being guided over the whip roll 6 having journal bearing in the rocker arms 7. These arms are fixed on a shaft 8 which is journaled above the beam 4 in bearings 9 and carries on one projecting end a fixed downwardly extending arm 10, and to the lower end of this arm is pivoted a rod 11 having slidable support in a bearing 12 on the frame.

Journaled in an upright bracket 13 is a vertical shaft 14 having a worm gear 15 fixed on its lower end in mesh with another worm gear 16 carried on the outer end of a horizontal shaft 17 which is journaled in a frame bearing 18 and supports a gear 19 having meshing relation with a larger gear 20 fixed to the beam 4.

Loose on the shaft 14 above the vertical bracket 13 is a lever or arm 21 and above this is a loosely mounted pawl-carrying disk 22 having a peripheral tooth 23. The arm 21 is connected at its outer end by a link 24 to the sword 25 of the lay (not shown). A pawl 26 is pivoted to the arm 21 at 27 and is held against the periphery of the disk 22 for engagement with its tooth 23 by means of a flat coiled spring 28 which is fixed to the hub 29 of disk 22 and passed outwardly of the pawl with its free end hooked about the pivot end thereof whereby the spring will function in a dual capacity, namely, to hold the pawl operative against the periphery of the disk and to tend to rotate the disk in a reverse direction to retain the tooth 23 in engagement with the pawl. A second yieldable pawl 30 is pivoted at 31 on the loosely mounted disk 22 to coact with a ratchet 32, fixed to the upper end of shaft 13, for rotating the latter.

A pawl releasing slide 33 is slotted to receive and be guided by the vertical shaft and has sliding support on the disk 22 toward the pawl 26 to push it away from the disk and out of the path of the tooth against the tension of spring 28 so that further oscillation of the arm 21 will have no effect on the shaft. The outer end of the releasing slide or pusher is provided with a longitudinal slot 54 in which projects the lower end of a depending dog or stop lug 35 having adjustable securement on the rod 11. An encircling spring 36 about the rod is compressed between the bearing 12 and a fixed collar 27 for normally influencing the rod in the direction of the beam whereby the whip roll 6 will be swung upwardly.

In the operation of a loom, the lay beats up the filling which has been laid by action of the shuttle (not shown) in a manner obvious to those skilled in the weaving art. This beating action causes intermittent tightening on the yarn and consequent downward vibration of the whip roll 6 which swings the lever 10 and slides the rod 11 forwardly against the tension of spring 36. When the strain on the yarn is relieved the spring returns the whip roll to normal position in which the dog 35 is

not disposed for actuating the releasing slide. Therefore, the shaft 14 and the beam 4 will be rotated in a step-by-step manner as the sword 25 continues to oscillate the arm 21 and disk 22.

Now, should the delivery of yarn be in excess, *i. e.* if the yarn is slack, the spring 36 will be free to swing the whip roll upwardly which movement will cause the dog 35 to engage the rear end of slot 34 and effect shippage of the releasing slide 33 to push the pawl from operative position. Thus, the continued oscillation of the arm 21 by the sword 25 will fail to oscillate the disk 32 and thereby arrest the feeding of the yarn until such time that the slack has been taken up when the tightening of the yarn on the whip roll will depress the latter, slide the rod 11 forwardly and permit the flat spring 28 to return the pawl 26 to operative and the slide 33 to inoperative positions. The yarn feeding will then be automatically resumed.

The simplicity of construction and the sureness and efficiency of operation are very evident in the improved take-up motion which is automatic both as to the resuming and the arresting of the feeding operation whether with a full or partly used beam. The sensitiveness of the whip roll may be varied by adjustment of the dog 35 on the rod 11 whereby it may be made to operate under varying degrees of slackness of yarn.

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

1. In a loom the combination with the sword of a lay and the yarn carrying beam, of a gear fixed on the latter, a drive gear meshing therewith, a shaft carrying the gear, a second shaft angularly disposed relative to the first shaft, worm gearing connecting the shafts, a ratchet fixed on the second shaft, a disk rotatable on the latter, and formed with a tooth, a pawl pivoted on the disk to engage the ratchet, an arm pivoted on the second shaft, a pawl carried by the arm to engage the tooth of the disk, means connecting the arm to the sword, and means for rendering one of said pawls inoperative.

2. In a loom, the combination with the sword of a lay and the yarn carrying beam, of a gear fixed on the latter, a drive gear meshing therewith, a shaft carrying the gear, a second shaft angularly disposed relative to the first shaft, worm gearing connecting the shafts, a ratchet fixed on the second shaft, a disk rotatable on the latter and formed with a tooth, a pawl pivoted on the disk to engage the ratchet, an arm pivoted on the second shaft, a pawl carried by the arm to engage the tooth of the disk, means connecting the arm to the sword, a releasing member engageable with the arm carried pawl to inoperatively dispose it, a whip roll over which the yarn is guided, a shaft supporting the whip roll for vibration, a crank arm fixed to the roll supporting shaft, a slidable spring pressed rod connected to the crank arm, and a dog carried by the rod to operate the releasing member.

3. In combination with the sword-actuated, yarn letting-off mechanism of a loom, of means under the control of the whip element of the loom for operatively disconnecting the sword from said mechanism.

4. In combination with the sword-actuated, yarn letting-off mechanism of a loom including a rotatably mounted toothed member and a coöperating pawl, of means under the control of the whip element of the loom for removing the pawl from the path of movement of the tooth of said member so as to be ineffective relative thereto.

5. In a loom, the combination with the sword of a lay and the yarn carrying beam, of means operable by the sword for feeding and controlling the feeding of the yarn from the beam, said means including a pawl and a coöperating toothed member, a releasing member engageable with the arm carried pawl to inoperatively dispose it, a whip roll over which the yarn is guided, a shaft supporting the whip roll for vibration, a crank arm fixed to the roll supporting shaft, a slidable spring pressed rod connected to the crank arm, and a dog carried by the rod to operate the releasing member.

6. In combination with the sword-actuated, yarn letting-off mechanism of a loom including a rotatably mounted toothed member, and a coöperating pawl, of means controlled by the whip element of the loom for disengaging the pawl from said member and including a member having a pawl guiding edge movable from a normal position within the arc of movement of the tooth of the first member to a pawl-disengaging position without the arcuate path of the tooth.

7. In a yarn feeding mechanism, an intermittently operating mechanism including an oscillatory pawl and a coöperable toothed member movable thereby, a whip member movably mounted, and means operable by movement of the whip member to disengage the pawl from the toothed member to render the mechanism inoperable.

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

BRADFORD A. CLARK.

Witnesses:
ADA E. HAGERTY,
J. A. MILLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."