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H. A. DAVIS

LET-OFF MECHANISM FOR LOOMS

Filed Aug. 17, 1926

Fig. 1

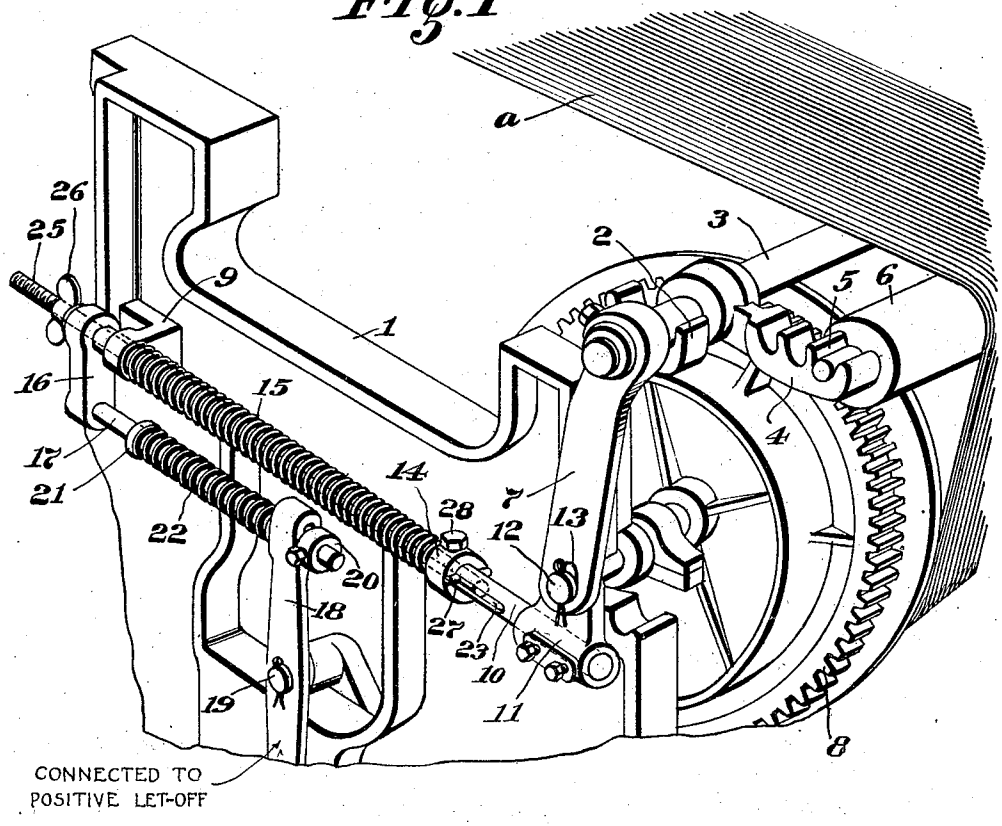


Fig. 2

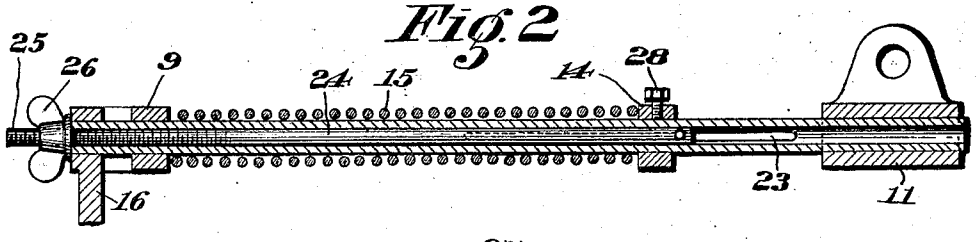
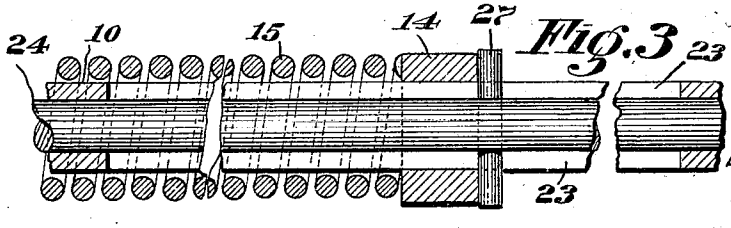


Fig. 3



INVENTOR:
Harry A. Davis
BY Robert A. Harris
ATTORNEY

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UNITED STATES PATENT OFFICE.

HARRY A. DAVIS, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO DRAPER CORPORATION, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

LET-OFF MECHANISM FOR LOOMS.

Application filed August 17, 1926. Serial No. 129,671.

This invention relates to let-off mechanisms for looms and is more particularly directed to that type of let-off mechanism which is positively controlled to gradually let off the warp threads as the weaving progresses, an example of which is found in the patent to Northrop, No. 618,363, dated January 24, 1899. In this type of let-off mechanism the whip roll carrier is connected to a tension bar or rod which is under the influence of a spring, and the tension of the warp depends upon the tension of such spring which is compressed when the warp depresses the whip roll. The tension bar is itself associated by a train of mechanism to a positive let-off and the degree of let-off is dependent upon the amplitude of movement of the tension bar.

It is desirable at times to vary the tension of the spring because the tension of the warp leading over the whip roll is dependent upon such tension. While it is a relatively easy matter to ascertain whether or not the warp is subjected to the desired tension while the loom is running, it is difficult to vary the tension of the spring to accommodate the desired tension of the warp under these conditions, and one of the objects of the present invention is to provide simple and effective means for varying the tension of the spring and its consequent effect upon the warp and let-off control while the loom is running.

The invention and new combination of parts will best be made clear from the following description and the accompanying drawings of one good form thereof.

In the drawings:

Fig. 1 is a perspective view of portions of the let-off mechanism provided with the present invention;

Fig. 2 is a section through the tension rod or bar and showing the details of the spring tension control; and

Fig. 3 is an enlarged sectional view showing more particularly details of the spring tension control.

The loom frame 1 may be of usual construction and provided with suitable bearings 2 in which is mounted the whip roll carrier, which in the present instance of the invention comprises the rocker 3 which extends transversely of the loom, and at its opposite side portions is provided with a whip roll support 4 having bearings 5 in which is mounted the usual whip roll 6.

Secured to and extending downwardly from the rocker 3 is the arm 7 which at its lower end is connected to the tension bar or rod.

In positive let-off mechanisms of the type herein shown, which are generally known as the "Bartlett" let-off mechanism, the warp beam has associated therewith a toothed wheel or pinion 8 which is engaged by a small gear actuated from a going part of the loom by a train of mechanism, such, for instance, as shown in the Tomlinson and Muldowney patent, No. 747,273, dated December 15, 1903, and such train of mechanism in its amplitude of operation on the warp beam is controlled by the tension of the warp through the tension spring.

The loom frame 1 has mounted thereon a fixed bearing 9 through which, in accordance with the present invention, passes the tubular tension rod 10, which is provided on its rear portion with an adjustable member 11 connected by a pin 12 to the arm 7 which is itself provided with a slot 13 through which the pin passes.

Mounted upon the tubular tension rod 10 is an abutment or collar 14 between which and the bearing 9 is interposed the tension spring 15, the varying tension of which will determine the tension of the warp passing over the whip roll.

Secured to the tubular tension rod 10 is an arm 16 located frontward of the bearing 9, and to the arm 16 is secured the rod 17, the rear end portion of which passes through the link 18 preferably mounted at 19 upon the loom frame and having its lower end 18× connected to a train of mechanism, such, for instance, as shown in the Tomlinson et al. patent, for controlling the amount of let-off on the warp from the warp beam. Since the details of this train of mechanism form no essential part of the present invention and may be substantially the same as in the Tomlinson et al. patent, a description thereof is unnecessary. The rod 17 passes through an opening in the link 18 at its upper end and is provided with an adjustable collar 20, the effect being that upon tension being exerted on the warp threads *a* the whip roll 6 will be moved downwardly against the tension of the spring 15, thereby controlling the

amount of let-off under control of the tension of the warp. The rod 17 has a collar 21 between which and the upper end of the link 18 is a spring 22.

As hereinbefore stated, the tension rod 10 is tubular and is provided with a longitudinally extending opening 23. Within the tubular tension rod 10 is the spring tension adjusting rod 24 which projects frontwardly beyond the end of the tubular tension rod and is provided with screw threads 25 which are engaged by a wing nut 26, the construction being such that upon manipulation of the wing nut 26 the spring tension adjusting rod 24 may be moved longitudinally within the tubular tension rod 10.

The rear end portion of the spring tension adjusting rod 24 is provided with a pin 27 which extends through the longitudinal opening 23 in the tubular tension rod and bears upon the rear face of the abutment or collar 14, against the front face of which rests the tension spring 15, the construction being such that by longitudinal adjustment of the spring tension adjusting rod 24 by means of the wing nut 26, as hereinbefore described, the tension of the spring 15 may be nicely and accurately adjusted to the desired tension of the warp.

When the abutment or collar 14 has been moved to possition to impart the desired tension to the spring 15 and consequently the warp threads, it may be secured in adjusted position by means of a set screw 28.

From the construction described, it will be apparent that during the loom operation, the weaver may inspect the tension of the warp threads and bring the tension thereof into proper or desired condition by simple manipulation of the wing nut 26, and thereafter the positive let-off mechanism will be actuated to let off the warp from the warp beam under the desired tension.

Where the spring tension adjusting rod 24 is provided with a transversely extending pin 27, as herein shown as a good practical form of the present invention, the tubular tension rod 10 may have a slot 23 at each side thereof, as indicated more clearly in Fig. 3, for the passage of the pin 27, so that the latter may have a bearing at diametrically opposite sides of the tension rod upon the abutment or collar 14.

The invention is not restricted to the precise construction and arrangement herein shown and described, nor to the particular form of let-off mechanism, as changes and modifications may be made without departing from the true scope of the real invention as defined by the claims.

What is claimed is:

Claims.

1. In a positive let-off mechanism for looms, the combination of a rocking whip roll carrier having an arm, and means between said arm and the let-off mechanism for controlling the rate of let-off, comprising, a tubular tension rod connected thereto, a movable abutment on the tension rod, a tension spring for said tension rod, a spring tension adjusting rod within the tubular tension rod having a part engaging the movable abutment, and means for adjusting the spring tension adjusting rod.

2. In a positive let-off mechanism for looms, the combination of a rocking whip roll carrier having an arm, and means between said arm and the let-off mechanism for controlling the rate of let-off comprising, a tubular tension rod connected thereto, a movable abutment on the tension rod, a tension spring for said tension rod, a spring tension adjusting rod within the tubular tension rod having a part extending from within the tubular tension rod for engaging the movable abutment, and means for adjusting the spring tension adjusting rod.

3. In a let-off mechanism for looms, the combination of a rocking carrier for the whip roll having an attached rocker arm, and means between said arm and the let-off mechanism for controlling the rate of let-off, comprising, a tubular tension rod connected thereto, a fixed guide through which the rod extends, a movable abutment on the tubular rod, a spring interposed between the fixed guide and abutment, a spring tension adjusting rod within the tubular tension rod having a part engaging the abutment, and means for adjusting the spring tension adjusting rod within the tubular tension rod to vary the spring tension.

4. In a let-off mechanism for looms, the combination of a whip roll carrier having an arm, and means between said arm and the let-off mechanism for controlling the rate of let-off, comprising, a tubular tension rod connected to the said arm and having a tension spring, a collar bearing against the spring, and a spring tension adjusting rod within the tubular tension rod for adjusting the collar to vary the tension of the spring.

5. In a let-off mechanism for looms, the combination of a rocking whip roll carrier, and means between the whip roll carrier and let-off mechanism for controlling the let-off in accordance with the tension on the warp, comprising, a tubular tension rod connected to the whip roll carrier and having a longitudinally extending opening, a movable collar on the tension rod, a fixed bearing for the rod, a spring between the collar and fixed bearing, a spring tension adjusting rod within the tubular tension rod and having a part extending through the opening of the tension rod to engage the movable collar, and means for adjusting the spring tension adjusting rod.

6. In a let-off mechanism for looms, the combination of a rocking whip roll carrier,

and means between the whip roll carrier and let-off mechanism for controlling the rate of let-off, comprising, a tubular tension rod connected to the whip roll carrier and having a movable collar, a tension spring on the movable rod, a spring tension adjusting rod extending within the tubular tension rod and having a pin engaging said collar, and means for adjusting the spring tension adjusting rod within the tubular tension rod to move the collar and vary the spring tension.

7. In a let-off mechanism for looms, the combination of a rocking whip roll carrier, and means between the whip roll carrier and let-off mechanism for controlling the let-off, comprising, a tubular tension rod connected to the whip roll carrier and having a movable collar, a tension spring on the tubular rod, a spring tension adjusting rod extending within the tubular tension rod and having a pin engaging said collar, a nut threaded on the forwardly extending end of the spring tension adjusting rod for moving the latter within the tension rod to vary the position of the collar and adjust the spring tension.

In testimony whereof, I have signed my name to this specification.

HARRY A. DAVIS.