Aug. 7, 1945. Y. H. KURKJIAN 2,381,670

AUTOMATIC TENSION CONTROL FOR LET-OFF MECHANISM OF LOOMS

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Fig. 1.

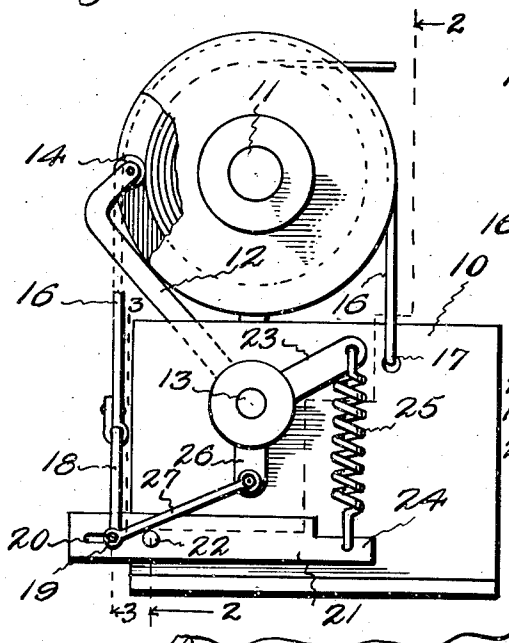


Fig. 2.

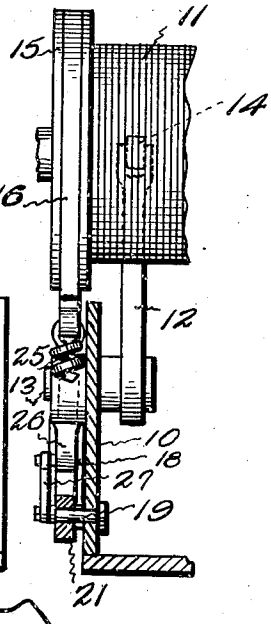


Fig. 3.

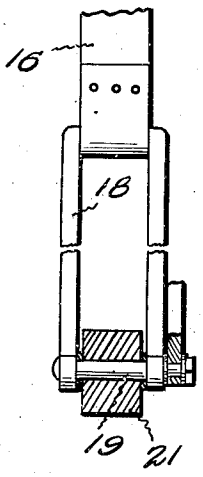


Fig. 4.

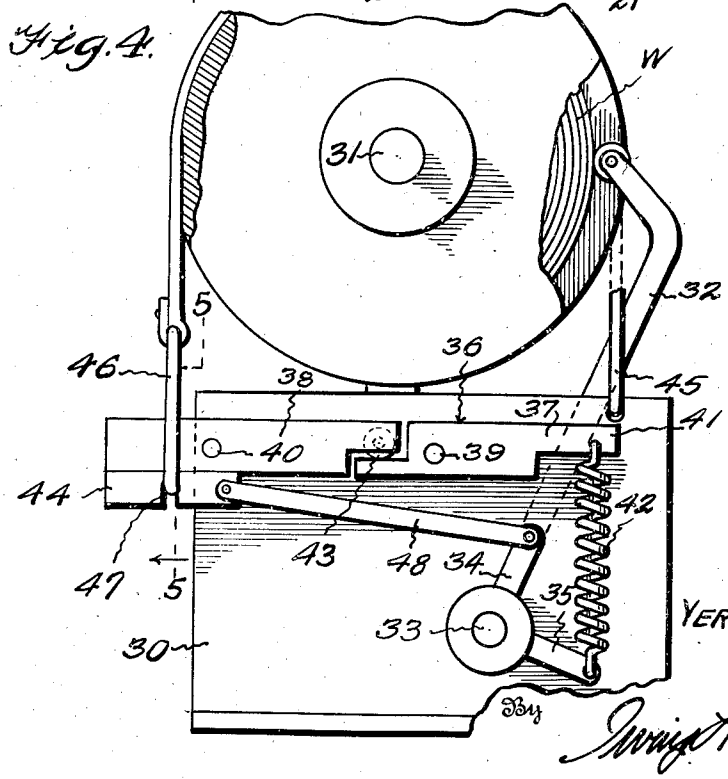
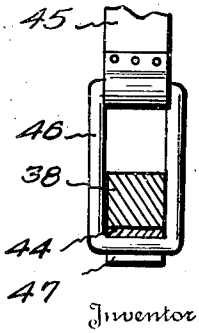


Fig. 5.



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AUTOMATIC TENSION CONTROL FOR LETOFF MECHANISM OF LOOMS

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6 Claims. (Cl. 139—107)

This invention relates to an automatic control for the let-off mechanism of looms, and the like, and has for one of its objects the production of a simple and efficient mechanism which will control the tension of the brake band of the warp beam in a proper manner to maintain a uniform tension of the warp threads carried by the warp beam.

A further object of this invention is the production of a simple and efficient means for shifting the position of the connection of the brake band with respect to the tension control means in a manner to maintain a uniform tension upon the warp threads which are carried by the warp beam of a loom.

Other objects and advantages of the present invention will appear throughout the following specification and claims.

In the drawing:

Figure 1 is a side elevational view showing one form of my device;

Figure 2 is an irregular sectional view taken on line 2—2 of Figure 1;

Figure 3 is an enlarged vertical sectional view taken on line 3—3 of Figure 1;

Figure 4 is a side elevational view of a modified form of my device;

Figure 5 is a vertical sectional view taken on line 5—5 of Figure 4.

By referring to the drawing, it will be seen that 10 designates the frame of the loom of a conventional type, which carries the warp beam 11 of the conventional type. Since the present invention relates to the automatic let-off control mechanism, and not to the general loom construction, no effort is made to illustrate the detail construction of the loom itself, and only those parts vital to the invention are illustrated and described.

A tension control arm 12 is carried by a shaft 13 rotatably mounted on the frame 10, as shown in Figures 1 and 2. This arm 12 carries a warp contact roller 14, at its upper or outer end for direct contact with the warp threads which are wound upon the warp beam 11. A brake drum 15 is carried by the beam 11, and a brake band 16 passes over the drum 15, and is anchored at one end 17 to the frame 10. The opposite end of the brake band 16 is secured to a brake band connecting link 18. The lower end of the link 18 carries a journal pin 19 which is slidably mounted through a horizontal slot 20 formed in one end of the tension lever 21. This lever 21 is pivoted to the frame 10, as at 22.

The tension control arm 12 is carried by a suitable shaft 13, as stated, which shaft also carries a tension arm 23 which is located just above the inner end 24 of the tension lever 21. A tension spring 25 connects the tension arm 23 and the inner end 24 of the tension lever 21, as shown in Figure 1. The shaft 13 also carries a depending finger 26 to which is pivotally connected a shifting rod 27 and this rod 27 is connected at its opposite end to the pin 19 which forms the lower end of the brake band connecting link 18.

By considering Figures 1, 2 and 3, it will be noted that as the warp is unwound from the beam 11, the control arm 12 will swing inwardly toward the warp to continue to contact the warp. As the arm 12 swings inwardly, the tension arm 23 will swing downwardly thereby adjusting the tension upon the spring 25 and allowing the tension lever 21 to slightly release pressure upon the brake band 16. At the same time the depending finger 26 swings toward the link 18 and the shifting rod 27 will shift the journal pin 19 of the link 18 longitudinally of the slot 20 and increase the distance of the link 18 from the pivot 22 and thereby decrease the leverage exerted by the tension lever 21 upon the brake band 16.

In Figures 4 and 5 there is shown a modified form of automatic control wherein 30 designates the frame of the loom above which is supported the beam 31. The warp W is wound upon the beam 31 and this warp is engaged by a tension control arm 32 which is carried by a shaft 33 rotatably supported upon the frame 30. The arm 32 is carried inside of the frame 30 in a position to contact the warp. This shaft 33 carries an upwardly extending finger 34 and a laterally extending tension arm 35, both of which are located outside of one end of the frame 30, as shown in Figure 4.

A compound leverage assembly 36 is carried by the frame just above the finger 34 and this leverage assembly 36 comprises a primary lever 37 and a secondary lever 38. The lever 37 is pivoted, as at 39, to the frame 30 and the lever 38 is pivoted at 40 to the frame 30. These levers are arranged in longitudinal alignment as shown. The outer end 41 of lever 37 is connected to one end of a tension spring 42 and the opposite end of the spring 42 is connected to the tension arm 35. The levers 37 and 38 are provided with overlapping adjoining ends, one lever carrying a roller 43 which engages the adjoining overlapping end of the adjoining lever. A sliding shoe 44 frictionally engages the under face of the lever 38 near

its outer end beyond and under the pivot **40**. A brake band **45** is anchored at one end to the frame **30** and the opposite end of the band **45** engages a link **46**. This link **46** detachably fits into the notch **47** of the shoe **44**. This shoe **44** is engaged by one end of the shifting rod or link **48**, the opposite end of the link **48** being pivotally connected to the finger **34**.

As the warp **32** is unwound from the beam **31**, the arm **32** swings inwardly thereby swinging the tension arm **35** upwardly and releasing tension of the spring **42** and also releasing tension upon the compound leverage assembly **36**. At the same time the shoe **44** is moved outwardly of the outer end of the lever **38** increasing the lever arm beyond the pivot **40** and further releasing tension upon the brake band **46**.

Having described the invention, what is claimed is:

1. An automatic let-off control of the class described comprising a beam, a warp carried by the beam, a tension control arm contacting and controlled by the amount of warp carried by the beam, a brake means for said beam, a lever means controlling the brake, tension means connecting the lever means with the arm to hold the arm at all times in contact with the warp, the movement of the arm being adapted to automatically control the pressure upon said brake control lever means to maintain a uniform tension upon the warp, connecting means between the brake and the lever means, and means linking said arm with said connecting means for automatically shifting the connecting means relative to the lever means to automatically adjust the leverage of said lever means as said arm is swung.

2. An automatic let-off control of the class described comprising a beam, a warp carried by the beam, a tension control arm contacting and controlled by the amount of warp carried by the beam, a brake means for said beam, lever means controlling the brake, tension means connecting the lever means with the arm to hold the arm at all times in contact with the warp, the movement of the arm being adapted to automatically control the pressure upon said brake control lever means to maintain a uniform tension upon the warp, a substantially horizontally slidable connection for attaching the brake means with said lever means, and a connection between said arm and said slidable connection for adjusting the slidable connection longitudinally of said lever means as said arm is moved for regulating the tension upon said brake means.

3. An automatic let-off control of the class described comprising a beam, a warp carried by the beam, a tension control arm contacting and controlled by the amount of warp carried by the beam, a brake means for said beam, lever means controlling the brake, tension means connecting the lever means with the arm to hold the arm at all times in contact with the warp, the movement of the arm being adapted to automatically control the pressure upon said brake control lever means to maintain a uniform tension upon the warp, a substantially horizontally slidable releasable connection for attaching the brake means with said lever means, and a connection between said arm and said slidable connection for adjusting the slidable connection longitudinally of said lever means as said arm is moved for regulating the tension upon said brake means.

4. An automatic let-off control of the class described comprising a beam, a warp carried by the beam, a tension control arm contacting and controlled by the amount of warp carried by the beam, a brake means for said beam, lever means controlling the brake, tension means connecting the lever means with the arm to hold the arm at all times in contact with the warp, the movement of the arm being adapted to automatically control the pressure upon said brake control lever means to maintain a uniform tension upon the warp, a substantially horizontally slidable connection for attaching the brake means with said lever means, a connection between said arm and said slidable connection for adjusting the slidable connection longitudinally of said lever means as said arm is moved for regulating the tension upon said brake means, and a link connected to the brake means and engaging said slidable connection.

5. An automatic let-off control of the class described comprising a beam, a warp carried by the beam, a tension control arm contacting and controlled by the amount of warp carried by the beam, a brake means for said beam, lever means controlling the brake, tension means connecting the lever means with the arm to hold the arm at all times in contact with the warp, the movement of the arm being adapted to automatically control the pressure upon said brake control lever means to maintain a uniform tension upon the warp, a substantially horizontally slidable connection for attaching the brake means with said lever means, a connection between said arm and said slidable connection for adjusting the slidable connection longitudinally of said lever means as said arm is moved for regulating the tension upon said brake means, a link connected to the brake means and engaging said slidable connection, and said slidable connection comprising a longitudinal slot formed in one end of said lever means and said link fitting in said slot.

6. An automatic let-off control of the class described comprising a beam, a warp carried by the beam, a tension control arm contacting and controlled by the amount of warp carried by the beam, a brake means for said beam, lever means controlling the brake, tension means connecting the lever means with the arm to hold the arm at all times in contact with the warp, the movement of the arm being adapted to automatically control the pressure upon said brake control lever means to maintain a uniform tension upon the warp, a substantially horizontally slidable connetcion for attaching the brake means with said lever means, a connection between said arm and said slidable connection for adjusting the slidable connection longitudinally of said lever means as said arm is moved for regulating the tension upon said brake means, a link connected to the brake means and engaging said slidable connection, and said slidable connection comprising a slidable shoe fitting against the under side of said lever means near the outer end thereof, and a link carried by the brake means for engaging a receiving means carried by the shoe.

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