(No Model.)

A. W. MATHEWSON.

THREAD TENSION DEVICE.

No. 387,984. Patented Aug. 14, 1888.

Fig. 1.

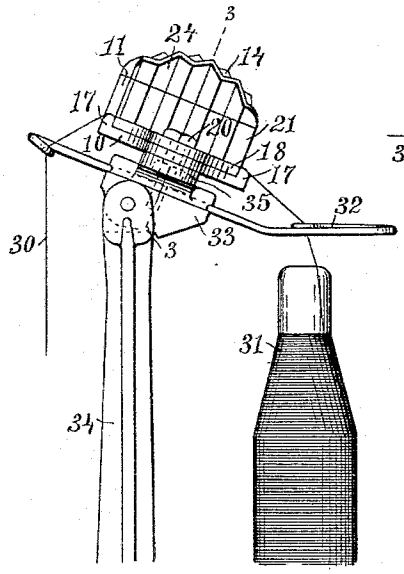


Fig. 2.

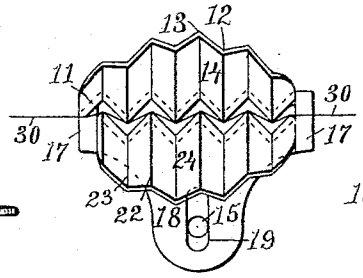


Fig. 3.

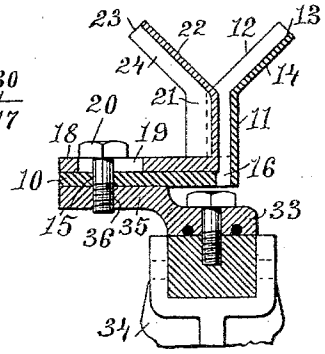


Fig. 4.

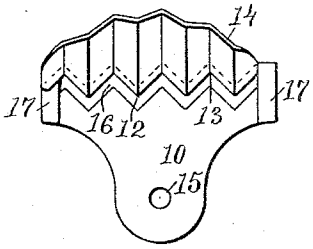


Fig. 5.

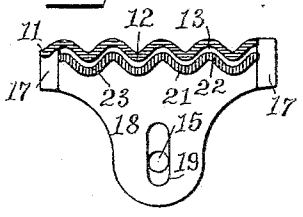


Fig. 6.

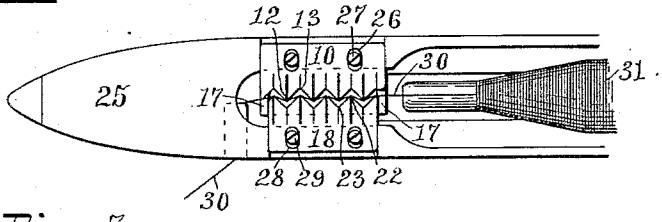


Fig. 7.

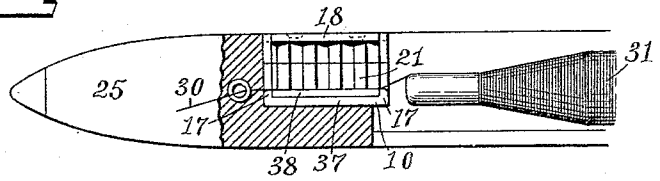
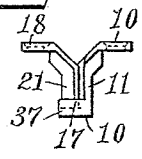


Fig. 8.



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UNITED STATES PATENT OFFICE.

ARTHUR W. MATHEWSON, OF FALL RIVER, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO WILLIAM H. GOLDSMITH, OF SAME PLACE.

THREAD-TENSION DEVICE.

SPECIFICATION forming part of Letters Patent No. 387,984, dated August 14, 1888.

Application filed April 13, 1887. Serial No. 234,561. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. MATHEWSON, of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Thread-Tension Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a device or mechanism for exerting a pressure upon a thread, so as to impart to the thread a certain degree of tension, in order to prevent the same from being delivered or fed too easily or loosely from the bobbin or spool.

In spinning yarns on the various kinds of spinning-frames it is customary to use a frictional device for the yarn as it is unwound from its bobbin or cop, in order to give to the yarn the necessary degree of tightness to rewind the yarn onto a spool. The different grades of spinning-frames require that different tensions be imparted to the unwinding yarn, and it therefore becomes an advantage to have an adjustable tension device whereby the amount of friction may be regulated and thereby regulate the tension on the yarn, so that the same kind of tension device may be used upon the different grades of frames and numbers of yarn, and at the same time be adjusted to produce the desired tension on the yarn.

In loom-shuttles some kind of a thread-tension device is necessary to maintain the filling or weft thread under proper tension while the shuttle interweaves the thread. With the same shuttle fine and coarse threads or yarn are used at different times, and it therefore required that an adjustable tension device be used in the shuttle, so that the degree of tension may be regulated for the different grades of yarns.

One object of my invention is to provide a tension device whereby the presser-ribs or members thereof may be relatively adjustable, so as to regulate the tension on the thread passing between the presser-ribs.

Another object of my invention is to provide the tension device with a suitable discharge-opening for discharging the lint from the device.

Another object of my invention is to construct the device so that the yarn may be easily introduced or entered in the same.

To the above purposes my invention consists, essentially, in the certain combinations set forth in the claims at the end of the specification, and which comprise the following mechanical features, namely: two or more presser ribs or plates adjustable relatively to each other and across the path of the thread or yarn, means for supporting said presser ribs or plates, a discharge-opening formed in one of the supporting-frames of one of the presser ribs or plates, and a thread-guide holder having a supporting-arm for the tension device.

In order that my invention may be fully understood, I have illustrated in the accompanying drawings, and will proceed to describe, the best forms of the device so far devised by me, with the knowledge that there may be various modifications made in the same, without, however, making a substantial departure from the spirit of the invention. For instance, the presser-ribs may be separately-formed ribs instead of being the ribs or elevations of a corrugated plate, as I have here shown.

In the accompanying drawings, Figure 1 represents a side view of my improved tension device, shown as used with a thread-guide which is mounted on a holder secured to a stand, shown in part. There is also shown a part of a bobbin from which the thread runs through the thread-guide and through the tension device. Fig. 2 represents an enlarged top plan view of the tension device shown in Fig. 1, and with the yarn passing through the same. Fig. 3 is an enlarged vertical sectional view taken on line 3 3 in Fig. 1, and showing part of said Fig. 1. Fig. 4 represents a top plan view of the lower frame with the attached presser-plate, as shown in Figs. 2 and 3, and clearly shows the discharge-opening in the frame. Fig. 5 represents a transverse sectional view of a tension device having presser-ribs or elevations of the corrugated presser-plates slightly rounded, in contradistinction to the angular ribs shown in the other views. Fig. 6 represents a portion of a loom-shuttle provided with my improved tension device, which is shown in plan view.

Fig. 7 represents another and different view of the loom-shuttle shown in Fig. 6, part of the shuttle being in section and the tension device shown in a side view. Fig. 8 represents an end view of part of the tension device shown in Figs. 6 and 7.

In the said drawings like numbers of reference designate corresponding parts throughout.

Referring to the drawings, the number 10 designates a flat frame, which may be made in any preferred form. At the broad end of frame 10 is disposed the upright presser-plate, 11, which is corrugated and formed with the elevations or ribs 12 and the depressions 13. The upper end of the presser-plate is bent over flaringly into a lip, 14. The body of the frame 10 is provided with a perforation, 15, for the reception of a securing screw or pin, and the zigzag-shaped discharge-opening 16 is cut through the frame and follows the basal line of the presser-plate 11 and extends to the guides 17, which are located one at each side of the frame.

The other part of the tension device is in general formed similarly to the part just described, with the exception of having a smaller frame-piece, 18, which is constructed with the slot 19, designed to receive the shank of the set-screw 20. (Shown in Figs. 1 and 3.) The presser-plate 21 is formed with the presser-ribs 22 and the depressions 23, and also with a lip, 25. The presser-plate 21 is not so wide as plate 11, and is arranged perpendicular to the frame 18, which is adapted to rest upon the upper face of the frame 10 and to slide thereon, so that the presser-plate may take in between the guides 17, and the presser ribs or members 22 may lie diagonally opposite the presser-ribs 12 of the plate 11. The construction is like an adjustable clamp having the clamping-faces thereof corrugated and with the corrugations intermeshing, as clearly indicated by the views in Figs. 2, 5, and 6.

The corrugated presser-plates shown in Fig. 5 have the elevations or ribe 12 and 22 rounded, instead of being angular, as shown in the other views.

In Figs. 6, 7, and 8 the device is shown as slightly modified in form merely in order to adapt it for use with the loom-shuttle 25. The presser-plate 11 depends from the frame 10 and is in part flat and is part corrugated, and the frame is formed with the two guide-slots 26 for the set-screws 27 to take through for adjustment. The lower end of the plate 11 is provided with an extension, 37, projecting at right angles therefrom and provided with the guides 17 at each side.

The presser-plate 21 depends from the frame 18, which is provided with the guide-slots 28, designed to receive the set-screws 29. From the lower end of the presser-plate 21 projects the extension 38, which extends parallel to the frame 18 and in the same direction, and is designed to slide over the upper face of the extension 37 of the frame 10. The two parts of this form of the device are readily adjusted toward or away from each other by means of the set-screws and the slots in the frames.

In Fig. 1 the thread or yarn 30 runs from the bobbin 31 through an eye in the thread-guide 32, thence through the tension device, and through another eye of the thread-guide. The thread-guide 32 is mounted in the table or holder 33, which is supported on the stand 34. The holder 33 is provided with an arm, 35, which is perforated at 36 to receive the lower end of the set-screw 20. By virtue of this construction the device may be readily secured in operative position, as shown in Figs. 1 and 3.

The yarn or thread 30 is placed within the device by being fed in between the flaring lips of the presser-plates, and drops down between the plates, which may be adjusted so that their presser-ribs lie in the same plane, and then the yarn will be pressed upon by the several ribs and will be under slight tension. In order to increase the tension upon the yarn, the presser-plates are moved nearer together, so that the planes of the ribs are parallel and the ribs press the yarn into a zigzag line, as shown in Figs. 2 and 6, thereby increasing the friction upon the yarn and imparting thereto a greater tension. It will be seen that by the use of my presser-plates the yarn or thread may have any degree of tension given it by adjusting the plates to decrease the space between their corrugated surfaces, which may, if desired, be brought so close together as to allow the yarn to be in contact with the surfaces of the depressions as well as with the surfaces of the ribs.

In order to discharge the lint which will be likely to accumulate in the device between the plates and frames, I have provided the discharge-opening 16, which is formed in the frame 10, so as to allow the lint to gravitate out from between the presser-plates and not lodge therebetween, as it would otherwise be likely to do.

The frames and their respective presser-plates I have shown as cast in one piece, so that the entire device is composed of two castings, which are secured together by the adjusting set-screw.

My tension device forms a very efficient and an adjustable frictional bite for the yarn, and it may be readily used with any form of spinning machinery or other machinery wherein it is necessary to maintain the yarn or thread under tension.

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

1. The combination, as hereinbefore set forth, with a pair of corrugated presser-plates having capacity of relative adjustment and each formed with a flaring lip, the device for holding the plates in adjustment, the said plates disposed with the ribs or elevations of one opposite the depressions of the other plate, means for sup-

porting said presser-plates in operative positions, substantially as described.

2. The combination, as hereinbefore set forth, with a frame provided with an upright corrugated presser-plate and formed with a transverse slot near the basal line of the presser-plate for the lint to fall through, of a frame provided with a similar upright corrugated presser-plate and mounted upon the said first frame and having capacity of adjustment thereon, and provided with the device for holding the movable plate in adjusted position, substantially as herein described.

3. The combination, with the swiveled thread-guide holder 33, provided with an arm, 35, of the frame 10, formed with the perforation 15 and provided with the presser-plate 11, the frame 18, formed with slot 19 and provided with the presser-plate 21, the bolt 20, for holding the said frames in adjustment, substantially as and for the purpose herein described.

4. The combination, with the frame 10, provided with the corrugated presser-plate 11, of the frame 18, provided with the presser-plate 21 and having capacity of adjustment, and means for holding the same when adjusted, substantially as herein described.

5. The combination, with the frame 10, formed with the discharge-opening 16 and provided with the corrugated presser-plate 11, of the frame 18, provided with the corrugated presser-plate 21 and having capacity of adjustment and provided with the device for retaining it in adjustment, substantially as herein described.

6. The combination, with the frame 10, formed with the perforation 15 and provided with the presser-plate 11, of the frame 18, formed with the slot 19 and provided with the presser-plate 21, the set-screw 20, for holding the frames together, substantially as herein described.

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