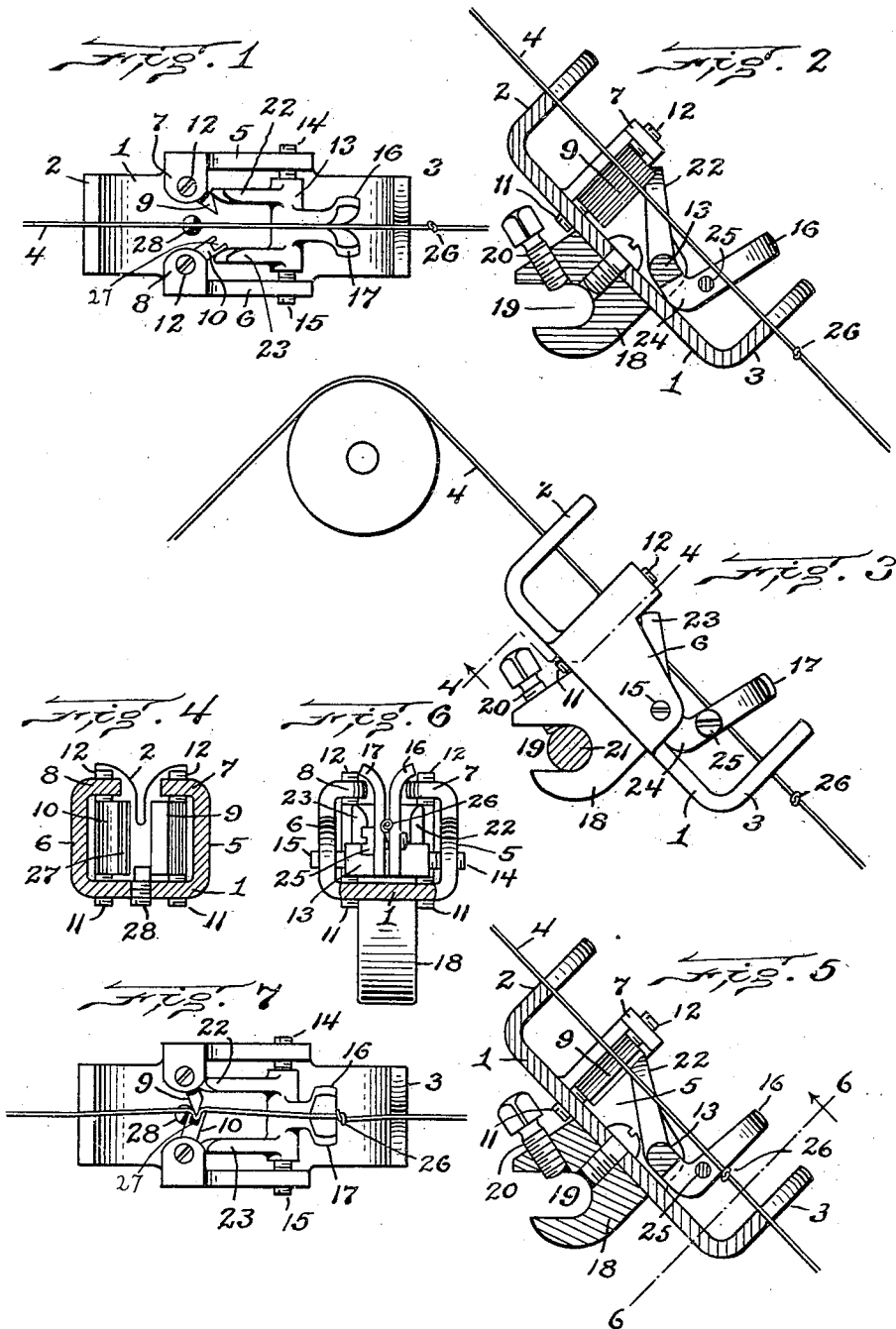


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 THREAD OR YARN CLEARING DEVICE.
 APPLICATION FILED SEPT. 9, 1908.

945,447.

Patented Jan. 4, 1910.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RICHARD H. COOK, of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Thread or Yarn Clearing Devices, of which the following is a specification.

This invention relates to devices employed by thread or yarn makers to insure substantial uniformity in the thickness of the finished product, and in particular, to guard against the presence of knots, snarls or slugs of great enough size to interfere with the use of the yarn in knitting or weaving, and to produce defects in the fabric made from the yarn. Devices used for this purpose hitherto have usually been defective in that they would either permit soft fluffy irregularities in the yarn to pass by them, or would weaken the yarn by cutting or wearing away the fibers.

The usual type of yarn clearer includes a guide for the yarn consisting of a fork or a pair of blades set close to one another, but yet leaving a channel of sufficient width to permit passage of yarn of the normal size, but to catch and obstruct the passage of knots and slugs. When such forks or blades have sufficiently blunt edges as not to injure the fibers when coming in contact with them, they are ineffective to prevent passage between them of soft loosely twisted thickened portions of the yarn, for such portions would be liable to flatten and pass between them without removal or detection. On the other hand, where the blades between which the yarn passes are sharp enough to cut, they have the defect of scraping and breaking the fibers, and therefore damaging the yarn.

It is the object of the present invention to insure the cutting or breaking of the yarn whenever excrescences or irregularities occur, even where the same are of so soft and yielding a character as to pass between the formerly employed blunt blades, provided that the thickness of such irregularities is sufficient to cause an appreciable resistance to the passage of the yarn through the guide. Accordingly I have constructed a device including a pair of fingers which may be set in accordance with the character of the yarn so that the yarn may pass between them, and are mounted in such a way as to be movable when encountered by knots or thickened parts of the yarn, together with a cutter which normally lies wholly out of contact

with the yarn, but is forced against the yarn by such movement of the guide fingers so as to insure the arrest of the thickened parts of the yarn or knots, by severing the yarn in advance of such irregularities.

One form of the device embodying my invention is illustrated in the drawings, in which,—

Figure 1 represents a plan view of the device. Fig. 2 represents a longitudinal section. Fig. 3 represents a side elevation. Fig. 4 represents a cross-sectional view on line 4—4 of Fig. 3. Fig. 5 represents a view similar to Fig. 2, but showing the parts in the position which they are caused to assume when preventing the passage through the device of a knot or other excrescence. Fig. 6 represents a section on line 6—6 of Fig. 5. Fig. 7 represents a plan view showing the device with the parts in the position illustrated in Fig. 5.

The same reference characters indicate the same parts in all the figures.

The device consists of a body portion 1 having its ends 2 and 3 bent up and slotted to form guides for the thread or yarn 4 which is laid between them. These guides are sufficiently wide to receive yarn of all the sizes in connection with which the device is intended to be used, and perform no function themselves in the arrest or detection of knots, slugs and the like. The sides 5 6 of the body 1 are also bent up and have lugs 7 8 extending over the base of the body. Pivoted between the base and the lugs are blades or grippers 9 10, the pivots of which are screws or pins 11 12 projecting upwardly and downwardly through the base and lugs respectively. Between the sides 5 and 6 is a trip member 13 pivotally mounted between screws or pins 14 15 so as to turn about an axis at right angles to the axes on which the blades 9 and 10 turn. This member 13 has two fingers 16 and 17 between which the yarn passes.

The device as a whole is furnished with a member 18 having a slot 19 and a set screw 20 which is clamped upon a rod 21 by which the device is held. When mounted on the rod or rail 21, the device is inclined at such an angle that gravity will cause the blades 9 and 10 to swing apart and leave a wide space for the passage of the yarn between their adjacent ends.

On the member 13 besides the fingers 16 and 17, are projecting arms 22 and 23 which

lie outside of the blades 9 and 10 and are tilted upward. The center of gravity of this member is so arranged with respect to its pivotal axis that it normally lies in the position shown in Figs. 1, 2 and 3, with its arms 22 and 23 elevated, and the angular abutment 24 resting upon the base of the device. The arms 16 and 17 are resilient and the distance between them is governed by an adjusting screw 25 which passes through them, being threaded into one, and its head bearing against the outside of the other. This screw is adjusted so that the channel between the fingers is of such a width as to allow free passage through it of yarn of the normal thickness. In case a knot 26 in the yarn or a snarl, slug or other excrescence too thick to pass through the channel occurs, such irregularity is drawn against the forward side of the fingers and causes the member 13 to tilt, thereby moving the arms 22 and 23 downward and causing the blades 9 and 10 to swing toward one another. One of these blades, as 9, is sharp edged, and constitutes a knife, while the other preferably has a groove 27 in its edge and constitutes an abutment into which the edge of the knife may extend, or, if desired, both blades may be sharp-edged. The movement which the actuator 13 gives the blades is sufficient to cause the knife to enter the groove of the abutment and to press against the rear limit thereof, sharply deflecting the yarn and gripping it. As the yarn is drawn through the device with a considerable velocity, this has the effect of causing it to be cut or broken short off.

The device is operative to sever the yarn even in cases where the knot or other excessively thick part is soft enough to be compressed and passed through the channel between the fingers 16 and 17, for if the thickness is great enough to produce any appreciable friction on the channel, the actuator 13 will be swung about its axis and the blades caused to close in upon the yarn. When thus closed, it is impossible for any excrescence to pass them, even if they do not sever the yarn immediately upon gripping it.

A stop 28 is provided back of the blades to prevent them from swinging beyond the line of centers and opening to let the thread pass by. That is, the stop arrests the blades when they are in the position to grip the thread, and prevents them from releasing the thread.

I claim:—

1. A yarn or thread clearer, comprising an actuator having a channel for the yarn of sufficient width to permit free passage of yarn of the normal size, movable by engagement therewith of enlargements on the yarn, and a blade past and out of engagement with which the yarn is led, said blade being compelled by said actuator, when the latter is moved by enlargements on the yarn, to arrest such enlargements.

2. A device for clearing yarn or thread of irregularities, including a cutter, and a device acted upon by the thread or yarn for causing said cutter to sever the thread or yarn when a knot or excrescence thereon appears, said cutter-actuating device, where most closely adjacent to the thread or yarn, being blunt to avoid scraping and injury to the fibers thereof.

3. A yarn or thread clearer, consisting of a cutter past which the yarn or thread is led, normally at a sufficiently remote distance therefrom so as not to be injured thereby, and means arranged so as to be moved by excrescences on the yarn or thread for causing said cutter to sever the yarn or thread.

4. A yarn or thread clearer consisting of a gripper past which the yarn or thread is led, normally at a sufficiently remote distance to avoid injury to its fibers thereby, and a gripper actuating device arranged so as to be engaged and moved by excrescences in the yarn or thread to bring such gripper into contact with the yarn or thread.

5. A yarn or thread clearer, consisting of a cutter past which the yarn or thread is led, normally at a sufficiently remote distance to avoid injury to the fibers of the yarn, and means operated by excrescences on the yarn to move said cutter against the yarn.

6. A thread or yarn clearer consisting of a cutter and an abutment between which the yarn is led, said abutment and cutter being normally separated sufficiently to avoid abrasion of the yarn, and an actuator arranged to be engaged and moved by knots, slugs, burls or other excrescences in the yarn for moving the cutter and abutment together and thereby gripping the yarn and severing the same.

7. A thread or yarn clearer consisting of a pair of grippers between, and out of contact with, which the yarn is led, and an actuator thread to be engaged and moved by portions of the yarn of excessive thickness arranged to engage and move said grippers when so actuated for bringing said grippers together and thereby severing the yarn.

8. A thread or yarn clearer consisting of a movably mounted member having a channel of sufficient width to permit the passage through it of yarn of the normal thickness, but to obstruct portions of excessive thickness, and arranged to be moved by such excessively thick portions, and a cutter normally out of contact with the yarn, located adjacent to said member and actuated by such movement thereof to bear against and sever the yarn.

9. A thread or yarn clearer consisting of a movably mounted member having a channel of sufficient width to permit the passage through it of yarn of the normal thickness, but to obstruct portions of excessive thickness, and arranged to be moved by such ex-

cessively thick portions, having a projecting arm, and a cutter yieldingly held out of contact with the yarn and located so as to be engaged by said arm during such movement of the member, and brought against the yarn.

10. A thread or yarn clearer consisting of a member having a channel for the yarn, with means for adjusting the width of the channel to permit passage of yarn of various thicknesses and obstruct the passage of enlargements thereof, and a cutter normally held away from the yarn, said member being so mounted as to be moved when encountered by an enlargement of the yarn, and having a portion constructed and arranged to engage the cutter when so moved, and bring it to bear against the yarn.

11. A thread or yarn clearer consisting of a cutter and an abutment between which the yarn is led, said abutment and cutter being normally separated sufficiently to avoid abrasion of the yarn, and a trip actuated by knots, slugs, burls, or other excrescences in the yarn for bringing the cutter up to the abutment, the latter having a narrow recess in which the edge of the cutter enters, whereby the yarn is sharply bent around the edge of the cutter and its severance insured.

12. A thread or yarn clearer consisting of a base having guides for the yarn, a pair of blades, one of which is a cutter, pivotally mounted on said base and arranged so as to swing apart by gravity, between, and out of contact with, which the yarn is led, and a pivoted trip having an arm in which is a channel through which the yarn is led, and fingers arranged near said blades, said trip being adapted for actuation by enlargements

on the yarn so as to swing about its pivot and press on the blades by its fingers so as to bring the edges of the latter together and nip the yarn.

13. A yarn or thread clearer, consisting of grippers between, and out of contact with, which the yarn is drawn, and a trip having a channel through which the yarn passes before reaching said grippers, such channel being of a width such as to permit free passage of the perfect yarn and to resist passage of enlargements thereof, and said trip being so mounted as to be moved by slight friction exerted by such enlargements on the walls of the channel, and having a portion arranged to bring the grippers into contact with the yarn, when so moved.

14. A yarn or thread clearer, consisting of grippers between, and out of contact with, which the yarn is drawn, and a trip pivoted in advance of said grippers, and having a channel of such size as to permit free passage of the perfect yarn and impede enlargements thereon, through which the yarn passes before reaching the grippers, said trip having a portion to engage said grippers and bring them against the yarn, and being balanced so that such portion is normally inoperative but so that very slight friction of the yarn will be sufficient to cause its displacement and cause operation of the grippers.

In testimony whereof I have affixed my signature, in presence of two witnesses.

RICHARD H. COOK.

Witnesses:

WM. L. CANFIELD,
WILLIAM P. SHAW.