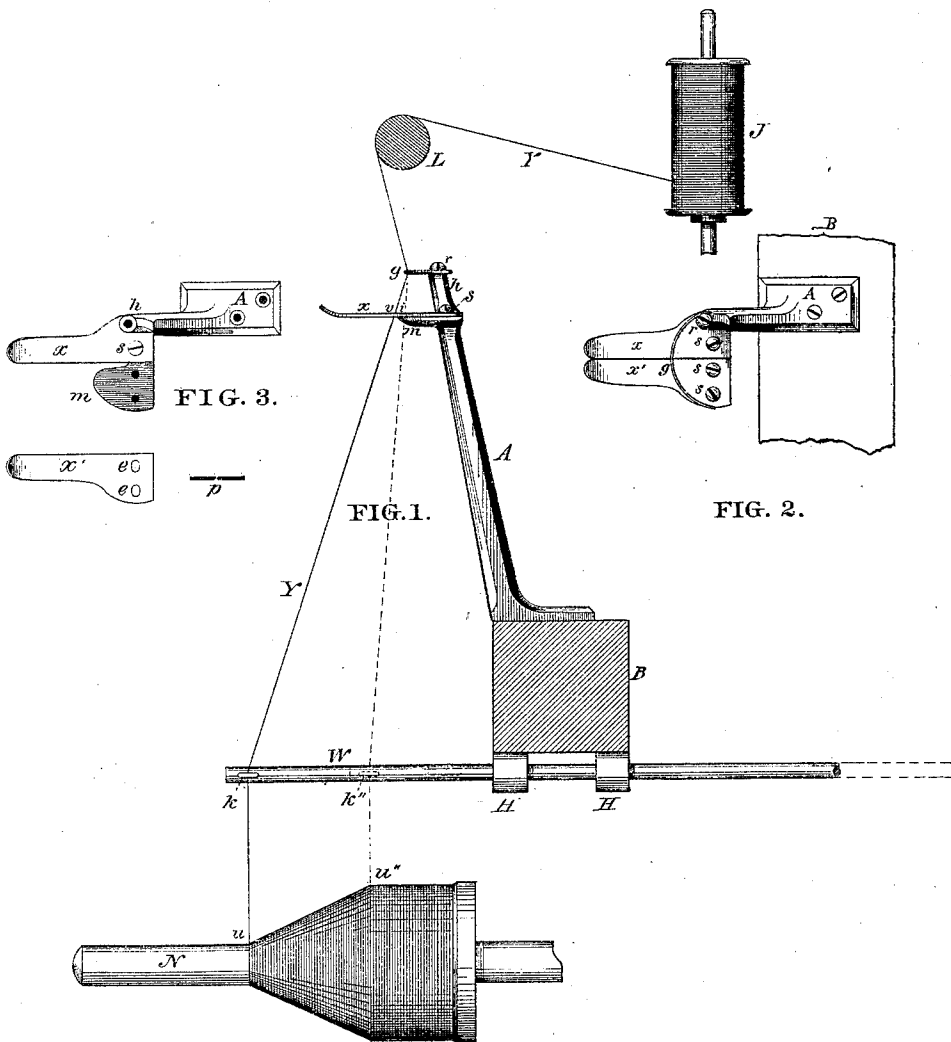


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MECHANISM FOR REMOVING BUNCHES FROM YARN.

No. 176,154.

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IMPROVEMENT IN MECHANISMS FOR REMOVING BUNCHES FROM YARN.

Specification forming part of Letters Patent No. **176,154**, dated April 18, 1876; application filed February 25, 1875.

To all whom it may concern:

Be it known that I, EDWARD E. VALENTINE, of the town of Bennington, in the county of Bennington and State of Vermont, have invented a new and Improved Mechanism for Dressing Yarn preparatory to its being knit or woven by machinery; and I do hereby declare that the following is a full, clear, and exact description of the working of such process, and of the construction and operation of the mechanism, reference being had to the drawings accompanying this specification and forming a part thereof, and to the letters of reference marked thereon:

Figure 1 is an elevation of my invention, which I have denominated a "yarn-stripper," and such parts of a yarn-winder connected therewith as illustrate one adaptation of my yarn stripper to a winder. Fig. 2 is a plan of my yarn-stripper as viewed from above. Fig. 3 is a similar view of the same with portions thereof detached in order to exhibit more clearly its construction.

I will premise the description and working of my mechanism by saying that, as shown in the drawings, and herein described, the stripper is adapted to the preparation of yarn for knitting; although in principle and construction it is equally well adapted to preparing yarn for weaving by simply changing the position, adjustment, and arrangement of the several parts thereof, to accommodate the same to different kinds of yarn-winders in ordinary use. So much of my invention as is shown in Figs. 2 and 3 may be applied to all ordinary winders independent of the movements hereinafter described as designed to co-operate therewith.

It is essential in the preparation of yarn, either for knitting or weaving, to preserve a uniformity in the size of the thread, to remove therefrom all bunches, snarls, adhering fiber, or other extraneous matter, and to detect, remove, and repair all weak places therein, before the same is wound on the spool-beam, or other receptacle therefor, prior to its introduction to the knitting-frame or loom. This is important, in view of avoiding frequent stoppages of the frame or loom, and of producing a fabric uniform in its texture, and free from the defects and blemishes which

the presence of such imperfections in the yarn always produces.

The essential features of my invention consist in drawing or passing the yarn through a slot formed by adjusting, with reference to each other, the parallel shearing-knife edges of two elastic metallic blades, preferably made of steel, sufficiently apart to admit the passage of yarn of any desired size, and during its passage through, of giving to the yarn a reciprocating motion from one end of the slot toward the other and back again, thus communicating to the yarn between the edges of these blades a constant vibratory motion the effect of which is to shear, cut, or scrape off all adhering bits of yarn, seeds, dust, fiber, or other foreign matter, and in case of an enlargement in or bunch upon the filament the same is either cut, scraped, or sheared off, or by accumulating on top of the blades the yarn is broken and thus remains until the attendant repairs the same. If the thread is so weak and attenuated in spots as not to have the desired tensile strength, the operation of the shear-blades is to so weaken the yarn in its passage through that it will break in the process of winding, or will shear it in twain altogether, either of which results precludes the possibility of the subsequent incorporation of the defective part into the body of the fabric.

Like letters in the drawings refer to corresponding parts.

I construct a standard, A, provided with a foot or base by which the same is screwed down or fastened to some permanent part, B, of the winding-frame. Just below the top of this standard are two outwardly-projecting lips or supports, *m m*, upon or to which are screwed or otherwise fastened the shear-blades *x x'*. A portion of the standard projects above the shear-blades to receive the wire guard *g*, and is marked *h*. The guard *g* is attached and held by a screw, *r*. The shear-blades are provided with transverse screw-slots *e e*, Fig. 3, which render them laterally adjustable to each other. The efficacy of this mechanism is due in a great degree to the proper shape, adjustment, and temper of these blades, and especially to the proper fitting up of their interior adjacent parallel edges. Their thickness is adapted to the size and character

of the yarn being manufactured, but in all cases being made sufficiently thin to be slightly elastic or yielding, absolute rigidity not being desirable.

The edges of the shear-blades adjacent to each other are beveled on the under side, and ground to a knife-edge, or to the form seen in cross-section at *p*, Fig. 3, and are adjusted so as to present the shearing-edge on the top of the blade, leaving the under side open.

That portion of the standard *A* between the pivot and the lips *m m* is not an essential feature of the mechanism, as that portion thereof consisting of the lips *m* and standard *h* could be made with a backwardly-projecting ledge, by which the same could be attached to a cross-beam of the frame of the winder, or a cross-beam provided with the projections *m m* cast thereon could be substituted.

The function of the guard *g* is to prevent the yarn from running too far forward toward the outer extremity of the slot when so inclined from any cause.

I have shown attached to the under side of the portion *B* of the frame of a winder a sliding yarn-guide, *W*, which has a reciprocating travel, through the ways *H H*, from the point *K* to *K''*, and is provided with a thread-guide, *K*, through which the yarn passes from the stripper to the spool *N*. This means, or some of its equivalents, of guiding the yarn in process of winding onto the spool is in common use upon almost all winders, and in this case I have availed myself of this traveling movement of the yarn-guide *W* to provide the movement sought for of the yarn while passing through between the shear-blades *x x'*, thus avoiding the construction of an additional device to accomplish the same result. Without such reciprocating motion of the yarn in its passage through the stripper the result of the process, and the operation of the mechanism, are wholly abortive, as experience has demonstrated.

The functional efficiency of the shear-blades *x* and *x'* depends upon their attachment to the yarn-winder in such a position and at such an angle, with reference to the line of travel of the yarn through the same, as shall be found, by experiment upon the various kinds of yarn, to be best adapted to secure the desired results previously enumerated, and, furthermore, be so attached and adjusted as to utilize, without constructing additional mechanism therefor, the reciprocating or traveling movement of the yarn-guide usually found in all yarn-winders, by which the yarn is uniformly laid or wound from base to apex, and inversely, upon the cone of the spool.

In the drawing I have shown the yarn passing over the beam *L*, thence to the shear-blades, and through the same in a line nearly perpendicular thereto; but I do not restrict

myself to this particular line of travel for the yarn, inasmuch as the shear-blades, in reference to their arrangement and position upon the winder between the cop or bobbin and the spool, should be so placed as to give the edges thereof the benefit of their most efficacious adjustment with reference to such line of travel of the yarn, at the same time combining with and rendering the aforesaid reciprocating movement of the yarn-guide usually found on all modern winders tributary to the desired result—to wit, the cutting, scraping, or shearing off all adhering foreign matter.

From the foregoing, and by reference to the drawing, the operation of preparing the yarn is easily traced. *J* is a bobbin containing the yarn as it comes from the spinning frame or jack. Thence it passes over a bar or beam, *L*, down under the guard *g*; thence between the shear-blades *x x'* to the yarn-guide *W*, and through the thread-guide *K* to the spool *N*. During its passage the guide *W* is constantly traversing back and forth, through the ways *H H*, from the position at *K* to that at *K''*, thus communicating to the yarn a corresponding motion between the edges of the blades *x x'* from *v* to *i*, and inversely.

As fast as filled, the spool, by appropriate mechanism, recedes, so as always to present the conical winding surface or portion between *u* and *u''* opposite the path of travel of the thread-guide *K* on the rod *W*.

I am aware that yarn in process of preparation has been passed through slots in metallic plates; but wherein I claim that my mechanism is different in construction and operation from any heretofore in use is, in giving to my plates the beveled shearing knife-edges, as distinguished from slots or blades having their adjacent edges square, the elongated screw-slots for lateral adjustment, and in constructing them so as to be yielding or elastic, and in maintaining in adjustment, at all times, the absolute parallelism of their adjacent edges. These features, in combination with the vibratory movement of the yarn before described, embrace and cover the latitude of my invention; therefore

I claim as new and desire to secure by Letters Patent—

The adjustable elastic metallic shear-blades *x x'*, guard *g*, and sliding yarn-guide, *W*, combined in the manner and for the purposes set forth.

In testimony whereof I have hereto affixed my signature this 18th day of February, 1875.

EDWARD E. VALENTINE.

Witnesses:

E. A. COBB,
GEO. F. GRAVES.