

YARN GUIDE.

1,049,798.

2 SHEETS-SHEET 1.

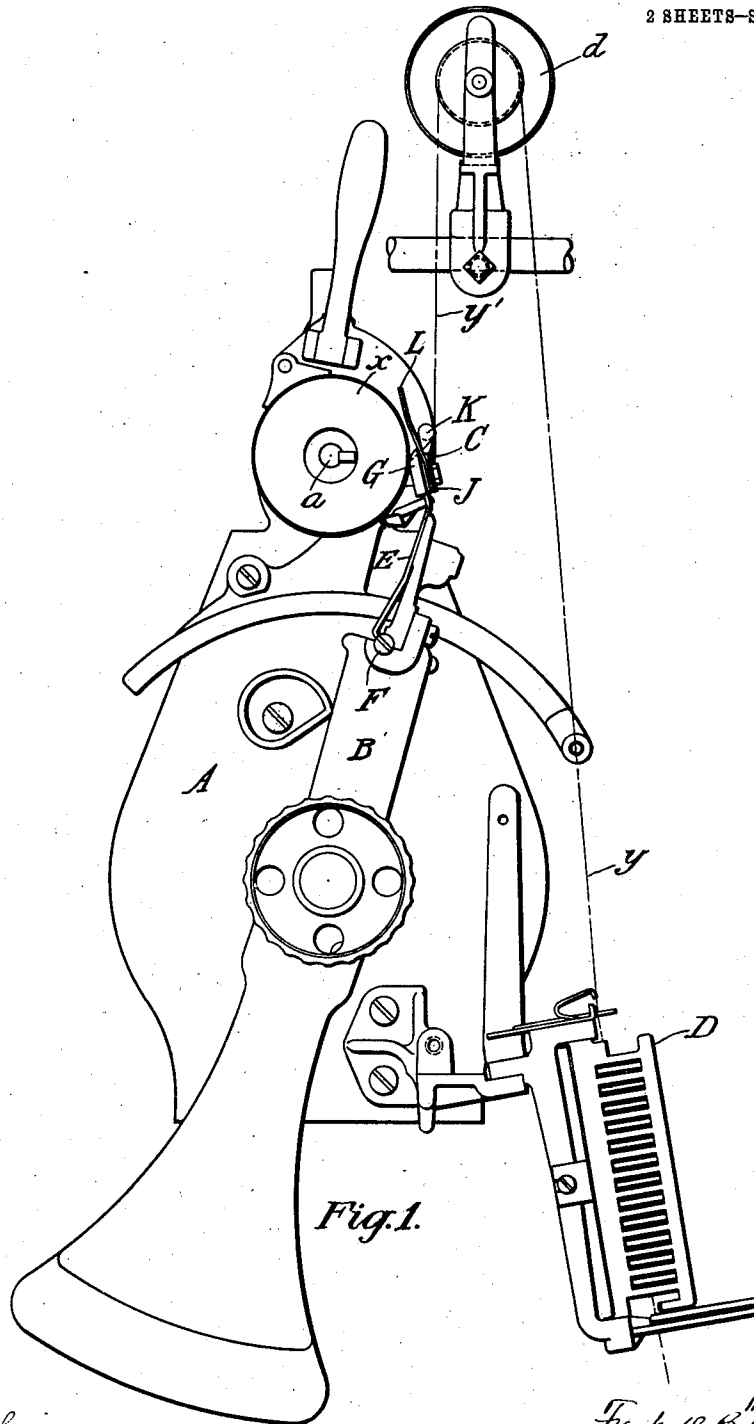


Fig.1.

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2 SHEETS—SHEET 2.

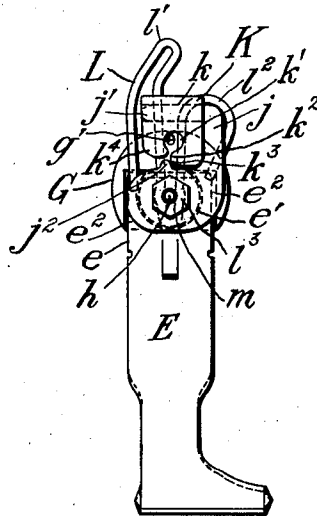


Fig. 2.

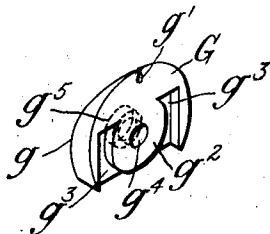


Fig. 4.

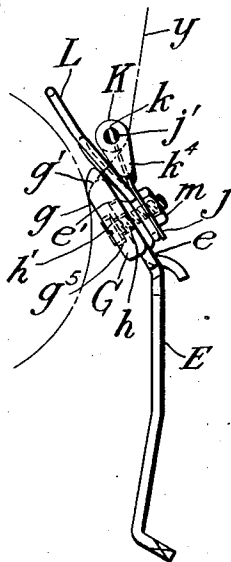


Fig. 3.

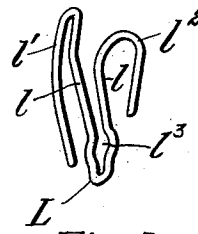


Fig. 5.

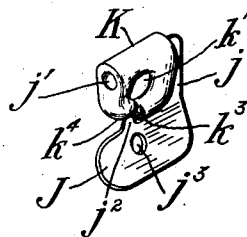


Fig. 6.

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UNITED STATES PATENT OFFICE.

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YARN-GUIDE.

1,049,798.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, FRANK D. BABCOCK, and FESTUS S. RAND, citizens of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Yarn-Guides, of which the following is a specification.

Our invention relates to improvements in thread- or yarn-guides for use on textile apparatus such as winding, spooling or other like machines.

Our invention is especially adapted for use with winding machines in which the yarn or thread leads to the thread-guide from above, and the object of our improvement is to provide a device with means to retain the yarn in the guide and to allow easy and quick threading of the guide with the use of one hand only.

The invention is fully described in the following specification, illustrated by the accompanying drawings, in which:—

Figure 1 is a front elevation of a winding machine, showing our improved thread-guide applied thereto; Fig. 2, an enlarged elevation of the guide; Fig. 3, a side elevation of the same; Figs. 4, 5 and 6, perspective views of the main parts of the guide.

Referring first to Fig. 1, A designates the main frame of a winding machine of well known construction and B represents the traverse-frame in which the thread-guide C is mounted. The thread-guide C is arranged to reciprocate in a horizontal path back and forth along the face of the tube *a* on which the thread or yarn is wound, and as the cop or package is built up thereon the traverse frame B swings back to allow the guide to recede from the winding-spindle *a*.

In winding yarns in multiple, that is to say, several "ends up", it is the preferred practice to have a considerable length of yarn between the supply-cop and the thread-guide. This insures that when a yarn breaks at or near the supply-cop the broken end will not run into the package before the operation of the machine can be arrested. In other words, with machines of this class in which the winding is discontinued automatically upon the breakage or exhaustion of any one of the supply yarns it is practically impossible to stop the machine instantaneously and, therefore, the loose end is

liable to be wound into the package if the supply-cop is placed closely adjacent to the thread-guide. To guard against this contingency, while at the same time economizing space, it has been found advantageous to lead the yarn over a pulley or guide-wheel placed some distance above the machine.

As shown in Fig. 1, the yarn *y* leads from the supply-cop (not here illustrated) to the tension-device D, placed directly above it, and thence it is drawn up over the guide-wheel *d* and then down to the thread-guide C. When a broken yarn causes the machine to stop the end of the yarn cannot reach the thread-guide before the winding spindle ceases to rotate and, therefore, the broken yarn can be easily found, usually between the guide-wheel *d* and the tension-device D, and the operator is enabled to repair the break or "piece-up" without delay.

It will be understood that with machines arranged as above described it is necessary to provide a thread-guide having means to retain the yarn in the guide-eye to prevent its pulling out from above and the preferred structure of our device whereby we gain the advantages before mentioned will now be described in detail.

Referring to Figs. 2 and 3, E designates the guide-holder which is preferably constructed of sheet metal and adapted to be secured at its base to the reciprocating traverse-bar F, see Fig. 1. Secured to the upper end of the guide-holder E is the thread-guide proper G shown in detail in Fig. 4. The guide G is preferably constructed of vitreous material, such as porcelain or glass, to adapt it to resist the abrasive action of the thread which draws through its eye and as here shown is formed substantially in the shape of a button. The front face *g* of the guide has a smooth, rounded contour adapted to bear on the surface of the package or cop without causing abrasion of the yarn as it rubs against it, and at its top is a small notch or opening *g'* which serves as an eye for the yarn. The opposite face of the guide G is molded with a central boss *g*² flanked by two slots or indentations *g*³, *g*³. The upper portion *e* of the thread-guide holder E is bent forward from the main portion and struck-up or formed with a circular depression *e'* adapted to receive the boss *g*² of the guide

G with the sides or ribs e^2 , e^2 fitting snugly in the slots g^3 , g^3 . A screw h extends through a hole g^4 in the center of the boss g^2 with its head countersunk in the hole g^5 , and its end is screwed into the thread-guide holder E. A small washer h' of leather, rubber, or other yielding material, intervenes between the screw head and the guide to prevent the latter from being cracked or broken by the pressure of the screw as it is set up against the guide.

Secured to the back of the guide-holder E is a thin, metal plate J formed with an upwardly extending portion j terminating in the horizontally projecting arm or prong j' , see Fig. 2. Mounted on this prong j' is an auxiliary guide-member K which acts to retain the yarn from drawing up out of the guide-eye g' . The auxiliary guide K is also preferably constructed of porcelain or glass and is formed with a transverse hole k through which the prong j extends, the two members being secured together by filling the hole with cement or shellac. The guide K is also formed with a guide-eye k' for the yarn with a contracted opening k^2 leading into the eye. Preferably the plate J is formed with a small lug or ear j^2 which extends upward from the main portion of the plate and abuts the end of the prong k^3 of the member K. The ear j^2 is provided to cover the joint between the bottom of the member K and the edge of the plate J and acts to direct the yarn up into the eye k' and to prevent it from catching in the crack between the guide K and plate J.

Between the back of the guide-holder E and the plate J is secured a bifurcated, wire loop-member L which acts as a threading guide to direct the yarn into the guide-eyes of the members G and K. The loop-member L is formed with substantially parallel sides l , l , which are bent back in the loops l' and l^2 . At l^3 the sides l , l are bowed out to form an opening for the screw h which projects from the back of the guide-holder E and extends through a hole j^3 in the plate J. A nut m is screwed on to the end of the screw h and binds the plate J against the member L which, in turn is clamped tightly against the guide-member E. The loop l' of the member L extends some distance above the top of the auxiliary guide K and is crooked over toward the loop l^2 . The loop l^2 is bent in the form of a shepherd's crook with a rounded top reaching just above the top of the guide K.

It will be noted that the several parts of my improved guide are all secured together by a single screw and, furthermore, the arrangement is such that the guide G is held firmly in place against side play. This is of utmost importance since the friction of the guide bearing against the surface of the cop is liable to cause side strain as the guide

is reciprocated at a high rate of speed and the present arrangement prevents it from working loose and becoming displaced. The auxiliary guide K prevents the yarn from pulling up out of the guide-notch g' and the loop-member L provides for quick and easy threading of the guide as now described.

In practice the operator draws the yarn or yarns up from the tension device and secures the ends to the tube x , or, in repairing a break in the yarn the end is tied to the loose end on the package. The yarn is then led up over the guide-pulley d and the portion y' leading to the package is drawn into the thread-guide by a single movement of one hand. The operator simply gathers the several yarns over his fingers and draws them across the rounded top of the guiding loop l^2 against the loop l' . The loop l' deflects the yarns down back of the auxiliary guide-member K and upon reaching the bottom of the rounded prong k^4 they will enter the opening into the guide-eye k' . The guiding of the yarns into the eye k' serves also to seat them in the notch g' of the guide G so that they will lead therefrom directly on to the surface of the package and consequently the coils of winding are accurately controlled during the reciprocation of the guide.

It will be observed that our improved guide can be threaded with ease and despatch without particular care or skill on the part of the operator; and, furthermore, only one hand is required for threading it so that the other can be employed in starting the machine through manipulation of the starting lever usually provided.

It will be obvious that various modifications might be made in the structure and arrangement of the parts of our new device without departing from the spirit or scope of the invention.

Therefore, without limiting ourselves to the exact construction shown, what we claim is:

1. In a yarn-guide, the combination with a main guide-member having a notch for the yarn, of an auxiliary guide-member formed with a guide-eye arranged above said notch and adapted to retain the yarn from drawing up out of the notch, and a bifurcated guiding-member arranged between the two aforesaid guide-members and adapted to direct the yarn into the notch and guide-eye.

2. In a yarn-guide, the combination with the main guide-member having a notch for the yarn, of an auxiliary guide-member formed with a guide-eye having a contracted opening at its lower end, said member arranged above and in back of the notch in the main guide, and a bifurcated guiding member arranged between the two first named guide-members and adapted to direct the yarn into the notch and guide-eye.

3. In a yarn-guide, the combination with the main guide-member formed with a notch for the yarn, of an auxiliary guide-member formed with a guide-eye and arranged above and in back of the notch in the main guide, and a bifurcated guiding-member arranged between the two first named members, said guiding-member having one side rounded to lead the yarn into the notch and the other side extending upward above the auxiliary guide-member and adapted to direct the yarn down into its guide-eye.

4. In a yarn-guide, the combination with the main guide-member formed with a notch for the yarn, of an auxiliary guide-member formed with a guide-eye having a contracted opening and arranged above and in back of the notch in the main guide, and a third guiding-member cooperating therewith to direct the yarn into the opening of the auxiliary guide-member to seat it in the notch of the main guide.

5. In a yarn-guide, the combination with the main guide-member having a notch for the yarn, of an auxiliary guide-member arranged in back of the main guide and formed with a guide-eye having a contracted opening at its bottom, and a third guiding-member formed with cooperating sides arranged to direct the yarn down around the auxiliary guide-member and into its guide-eye.

6. A yarn-guide having a smooth face adapted to bear on the winding with a notch at the top for guiding the yarn, an auxiliary guide-member above and in back of the notch to retain the yarn from lifting out of the latter, and a bifurcated guiding-member to direct the yarn down into the notch and under the auxiliary guide-member substantially as shown and described.

7. In a yarn-guide, the combination with a guide-holder E, of a guide-member G formed with a thread notch g' mounted thereon, an auxiliary guide-member K also

mounted on the guide-holder and having a guide-eye k' arranged in back of the guide-notch g' , and a bifurcated guiding-member L arranged between the members G and K with its opening leading down adjacent the guide-eye k' .

8. In a yarn-guide, the combination with a guide-holder E, of a guide-member G having a guide-notch g' for the yarn, an auxiliary guide-member K having a guide-eye k' arranged to prevent the yarn from pulling out of the guide-notch, a guiding-member L having cooperating sides adapted to direct the yarn into the guide-eye k' , and a screw extending through all of said members to secure them together.

9. In a yarn-guide, the combination with a guide-holder E, of a main guide-member G formed of vitreous material, a plate J, an auxiliary guide-member K of vitreous material mounted on said plate, a screw h extending through the guide G, guide-holder E and plate J to secure them together, and a guiding-member L clamped between the plate J and guide-holder E.

10. In a yarn-guide, the combination with a guide-holder E having a portion of its face recessed at e' and said recess flanked by projecting ribs e^2 , a button-shaped member G of vitreous material mounted on said guide-holder and formed with a boss g^2 adapted to fit the recessed portion e' of the guide-holder and having slots g^3 adapted to receive the ribs e^2 to prevent side play of the guide G on the holder, and a screw h extending through the guide G and the recessed portion of the guide-holder E.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK D. BABCOCK.
FESTUS S. RAND.

Witnesses:

ARTHUR A. ARMINGTON,
GRACE B. HOOKER.