No. 624,672. Patented May 9, 1899.

E. E. ORRELL.

THREAD TYING DEVICE.

(Application filed Oct. 13, 1898.)

(No Model.)

Fig. 1.

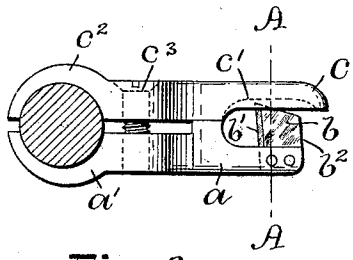


Fig. 2.

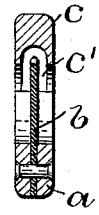


Fig. 3.

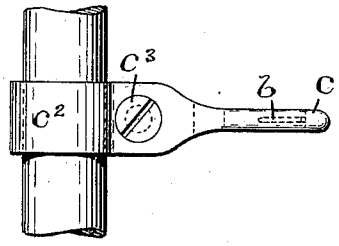


Fig. 4.

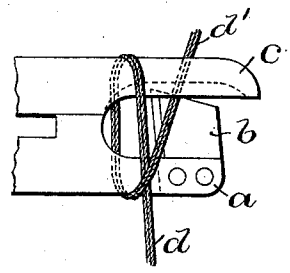


Fig. 5.

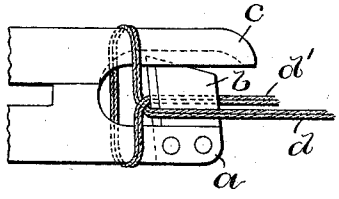


Fig. 6.

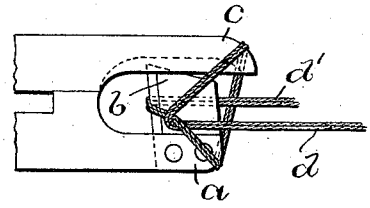


Fig. 7.

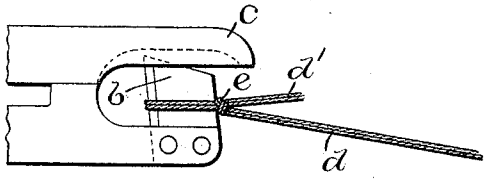


Fig. 8.

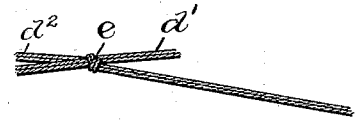
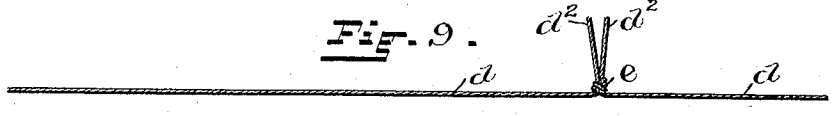


Fig. 9.



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UNITED STATES PATENT OFFICE.

EPHRAIM E. ORRELL, OF WARE, MASSACHUSETTS.

THREAD-TYING DEVICE.

SPECIFICATION forming part of Letters Patent No. 624,672, dated May 9, 1899.

Application filed October 13, 1898. Serial No. 693,446. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM E. ORRELL, of Ware, in the county of Hampshire and State of Massachusetts, have invented a new and useful Improvement in Thread-Tying Devices; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

In the manufacture of thread and yarn it becomes necessary to tie the ends together. In doubling, twisting, spooling, winding, and other machines the ends of the yarn or thread require to be thus tied together. In tying two ends together two loose ends extend from the knot. These two loose ends vary greatly in length, even when the attendant takes the time and pains to trim the ends after the knot is tied. The variation in the loose lengths of the tie materially interferes with the manipulation of the yarn, and in some of the subsequent steps, particularly in weaving, the loose ends cause frequent stoppage of the work and imperfection in the goods.

I have invented and produced a simple device by which in the act of tying the knot the ends will all be cut off short and of uniform lengths, so that one tie will be exactly as every other tie, and I have so constructed the device that by its use the tying together of yarn or thread is greatly facilitated.

The invention consists in the peculiar and novel construction and combination of parts in a thread-tying device, as will be more fully set forth hereinafter.

Figure 1 is a side view of my device constructed to be secured to a rod. Fig. 2 is a vertical sectional view of the same on the line A A, Fig. 1. Fig. 3 is a top view of the device. Fig. 4 is a side view of part of the device, showing the first position of two ends of yarn or thread in the act of tying them together. Fig. 5 is a side view showing the second position of the yarn or thread. Fig. 6 is a side view illustrating the third position as the loop is stripped off from the device. Fig. 7 is a side view of the device, showing the knot bearing on the blunt edge of the knife with the loop on the cutting edge of the knife. Fig. 8 is a side view of the yarn or thread as it leaves the device. Fig. 9 is a side view showing two threads tied together with the ends of a length equal to the width of the knife.

Similar marks of reference indicate corresponding parts in all the figures.

In the drawings, a indicates a bracket, which may be of any desired form, adapted to be secured in any suitable manner to any convenient part of the machine, and b a knife-blade secured in the bracket a. The knife has the cutting edge b' and the blunt edge or back b^2. The width of the knife-blade b is equal to the desired ends of the threads when the same are tied together. The upper end of the knife-blade is beveled, the highest point being at the cutting edge.

The bracket a and the knife-blade so far described are sufficient to produce all the results desired if the operative will use two fingers on which to form the loop and place it over the knife, so that the knot will bear on the blunt edge of the knife-blade and in tightening the knot separate the loop.

To facilitate the forming of the loop and the tying of the yarn or thread, as also to protect the cutting edge of the knife, I secure the bar c, provided with the groove c', to the bracket a and extend it over the pointed cutting edge of the knife-blade b and bevel the upper end of the knife-blade b, so as to facilitate the passage of the thread over the knife-blade. To secure the device to the machine, I provide the bracket a with the extension a' and the bar c with the extension c^2 and shape these extensions so as to conform to the part of the machine to which the device is to be secured and clamp them, by means of the screw c^3, together and to the machine. In practice I find it convenient in twisting and spooling machines to secure the devices to the rod usually extending along the front and convenient to the spools in the manner shown in Figs. 1 and 3.

The operation of the device is clearly shown in Figs. 4 to 9 of the drawings, and I will now proceed to describe the same more fully. Take the thread from two spools or bobbins and lay them side by side to form the threads d, of which d' is the doubled end. Pass the doubled threads around the bracket a and bar c, as is shown in Fig. 4. Next pass the ends d' by the cutting edge and to the rear of the knife-blade b, as shown in Fig. 5. Now

strip the thread off from the bar *c* and the end of the bracket *a*, as is shown in Fig. 6. Then pull on the ends *d'* and on the threads *d* to form the knot *e* against the back of the knife-blade, and a pull will separate the loop extending around the knife-blade, forming the tied thread. (Shown in Fig. 8.) The two ends *d'* may be readily drawn out of the knot *e*, and the united threads present the appearance shown in Fig. 9, forming a small firmly-tied knot and ends d^2 d^2 of uniform length.

It is evident that two fingers of one hand may take the place of the bracket *a* and bar *c* in forming the loop, which may be passed over a fixed knife-blade and the tie made in the same manner as when the completed device is used.

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

1. In a thread-tying device for textile machines, the combination with a knife-blade secured at its lower end to a fixed part of the machine the upper end of the knife being beveled, of a grooved bar extending over and protecting the pointed end of the cutting edge of the knife-blade, whereby in tying together two threads in the manner herein described the knot may be tied against the blunt edge of the knife and the loop separated to produce uniform lengths in the ends, as described.

2. In a thread-tying device, the combination with the bracket *a* having the extension *a'*, the knife-blade *b* secured at its lower end to the bracket *a* having the beveled upper end, the blunt edge of the knife-blade being near the outer end of the bracket and the cutting edge extending in the opposite direction, of the bar *c* having the extension c^2 and means for securing the device to a fixed part of the machine; whereby in tying two threads together in the manner herein described the loop may be cut to secure uniform lengths of the ends, as described.

3. In a thread-tying device, the combination with the bracket *a*, the knife-blade *b* secured at its lower end to the bracket *a*, the blunt edge of the knife-blade being near the outer end of the bracket and the cutting edge extending in the opposite direction, of the grooved bar *c* extending over and beyond the blunt edge of the knife-blade *b*, and means for securing the device to a fixed part of the machine; whereby, in tying two threads together in the manner herein described, the loop may be cut to secure uniform lengths of the ends, as described.

In witness whereof I have hereunto set my hand.

EPHRAIM E. ORRELL.

Witnesses:
OSSIAN N. MOORE,
GEORGE G. HALL.