No. 776,274. PATENTED NOV. 29, 1904.

J. TURNER.

QUILLING MACHINE.

APPLICATION FILED APR. 7, 1904.

NO MODEL.

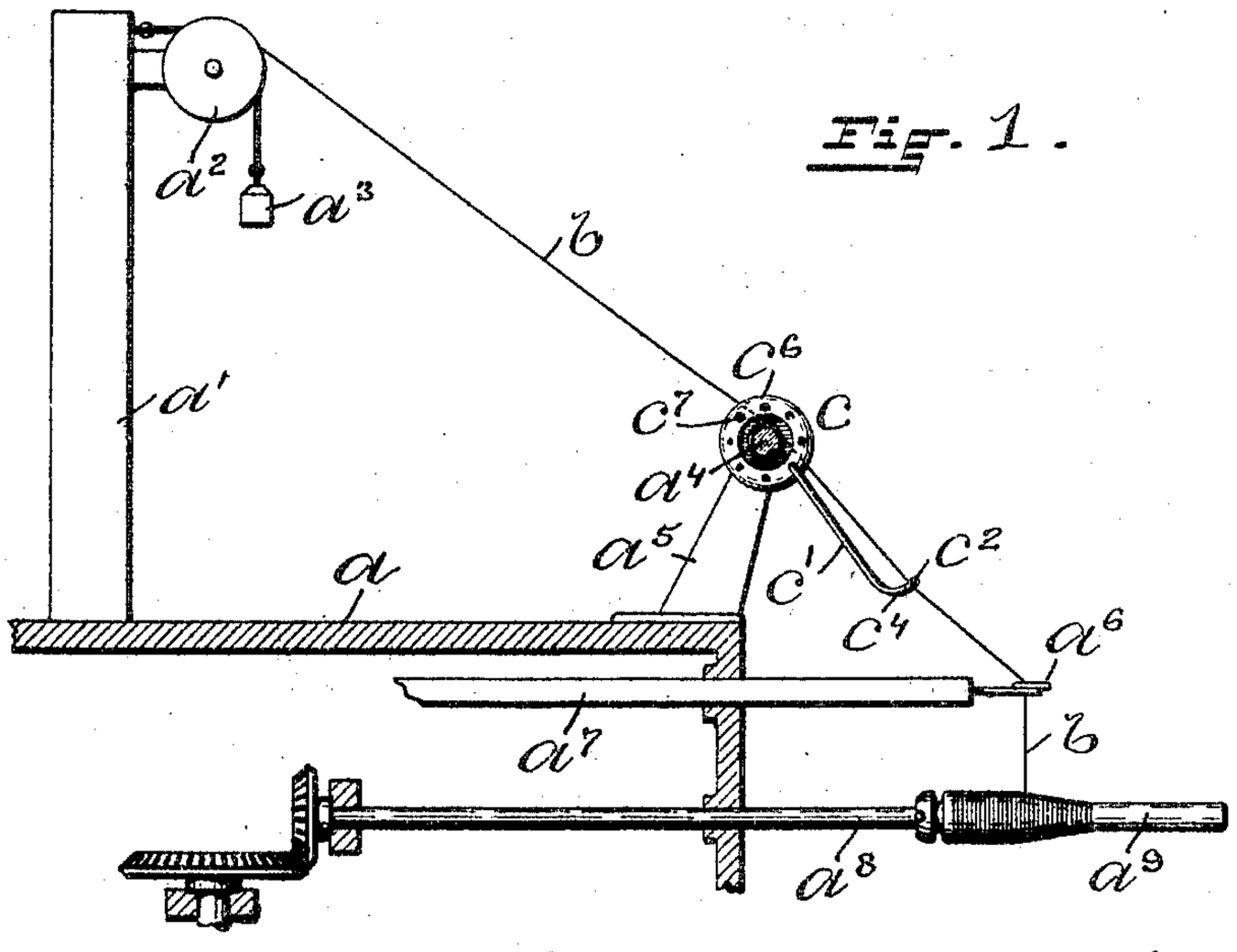


Fig. 1.

Fig. 2.

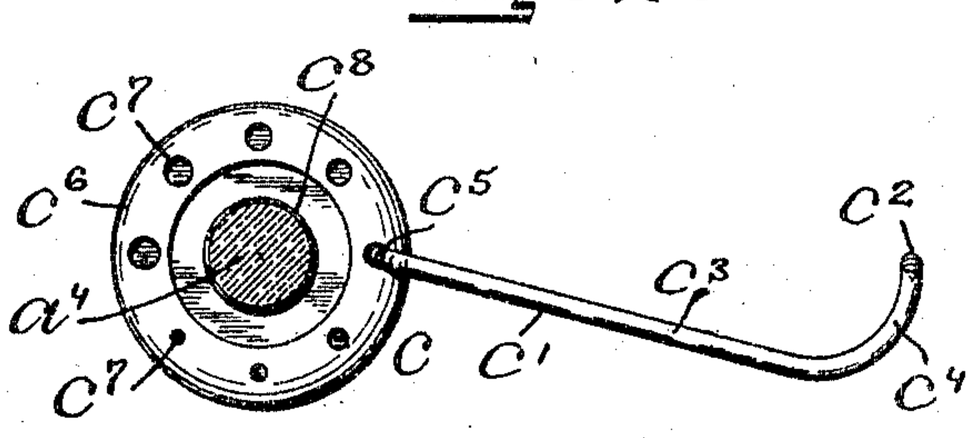


Fig. 3.

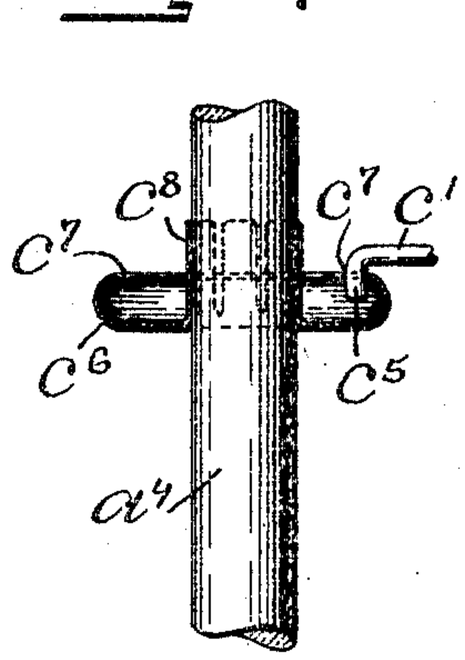
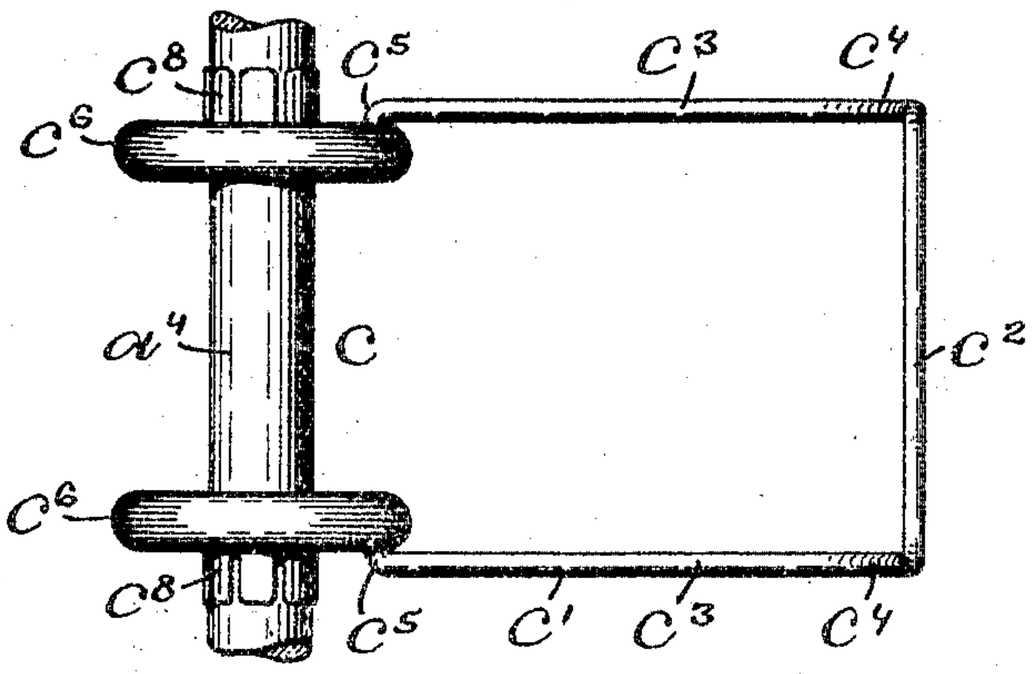


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN TURNER, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR TO ZEPHYR TEXTILE COMPANY INCORPORATED, OF PAWTUCKET, RHODE ISLAND.

QUILLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 776,274, dated November 29, 1904.

Application filed April 7, 1904. Serial No. 202,020. (No model.)

To all whom it may concern:

Be it known that I, JOHN TURNER, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Quilling-Machines, of which the following is a specification.

This invention has reference to an improvement in quilling-machines, and more particularly to an improvement in slack-thread-take-up attachments for quilling-machines.

My improved slack-thread-take-up attachment for quilling or similar machines is adapted for coarse or fine counts of thread, and is particularly adapted for fine counts in silk quilling.

In silk-quilling machines as heretofore constructed the fine thread of twisted silk comes from the spool downward over a glass guide-rod through a guide-eye on the guide-eye bar to the quill or bobbin on the spindle, which is revolved in the usual way at a constant ratio of speed. A friction device on the spool gives a certain tension to the thread, and the guide-eye bar is operated by a builder motion to guide the thread on the quill or bobbin to build up the thread on the quill or bobbin in the usual cone layers as used in weaving. The thread as it comes from the spool increases in speed as it winds from the small end of the cone layer to the large end on the quill or bobbin. In practice I find that if the friction device on the spool is set to give the right tension for the small end of the cone layer the thread is liable to stretch or break under the increased speed when it reaches the large end of the cone layer, and if set for the large end of the cone layer it will become slack or loose when it reaches the small end of the layer, causing it to snarl or knot upon itself, thus forming an uneven quill or bobbin with a thread having stretched, knotted, or tied places, with consequent loss in the weaving.

The object of my invention is to improve the product of a quilling or similar machine, and I accomplish this object by an automatic attachment or attachments which deliver the thread to the quill or bobbin under a tension controlled by the attachment through the peripheral speed of the quill or bobbin, said attachment taking up the slack of the thread as the speed decreases in the thread traveling from the large end to the small end of the cone layer, thereby delivering the thread to the quill or bobbin under a uniform tension at all times.

My invention consists in the peculiar and novel construction of a slack-thread-take-up attachment, said attachment consisting of an approximately U-shaped wire arm pivotally secured to circular flanges, which in turn are adjustably secured to the glass guide-rod of the quilling-machine by friction. When in operation, the free end of the wire arm, represented by the closed end of the U, rests on the thread between the glass guide-rod and the guide-eye and by its weight takes up the slack of the thread as the thread travels from the large end to the small end of the cone layer on the quill or bobbin, as will be more fully set forth hereinafter.

Figure 1 is a vertical transverse sectional view through part of a quilling-machine, showing the adaptation of my slack-thread-take-up attachment. Fig. 2 is an enlarged side view of the attachment, showing the means for pivotally securing different sizes and weights of wire arms to the glass guide-rod of the machine. Fig. 3 is a plan view of the attachment, showing the means for adjustably securing the pivot-flanges of the attachment to the glass guide-rod by friction; and Fig. 4 is a detail sectional view taken lengthwise through one of the sheet-metal pivot-flanges of the attachment.

In the drawings, a indicates part of the frame of a quilling-machine; a', a support extending upward from the frame and rotatably supporting the spool a^2; a^3, the tension device, consisting of a weighted cord bearing on the peripheral end of the spool a^2; a^4, the glass guide-rod, supported on the standard a^5, secured to the frame a; a^6, the guide-eye on the end of the guide-eye bar a^7, which is reciprocated by the usual builder motion of the machine; a^8, the spindle having the quill a^9, revolved by the mechanism of the quilling-machine at a constant ratio of speed; b, the thread

formed by twisting two or more strands together, and c the slack-thread-take-up attachment, which consists of the wire arm c', bent approximately U-shaped to form the straight cross-bar c^2, the side bars c^3 c^3, having the upwardly-curved portions c^4 c^4, merging into the cross-bar c^2, and the L-shaped ends c^5 c^5 and the circular pivot-flanges c^6 c^6, formed from sheet metal to have the holes c^7 c^7 in the outer face varying in size for different sizes and weights of wire arms, and the split spring-collars c^8 c^8, adapted to surround the glass guide-rod a^4 and adjustably secure the flanges to the rod by friction, as shown in Figs. 3 and 4. The pivot-flanges c^6 c^6 may be constructed in any well-known way, but are preferably stamped or spun-up from the split spring-collar c^8 to form a hollow semicircular rim with an inwardly-extending lip on the outer face in which are the holes c^7 c^7, as shown in Figs. 2 and 4, thus giving a smooth inner face to the flanges for the thread, which runs over the glass guide-rod a^4 between the inner faces of the flanges.

In attaching my slack-thread-take-up attachment to the quilling-machine the two pivot-flanges c^6 c^6, having the split spring-collars c^8 c^8, are forced over the glass guide-rod a^4, and the L-shaped ends c^5 c^5 of the wire arms c' are sprung into their corresponding holes c^7 c^7 in the flanges, pivotally securing the wire arms to the flanges. The attachment is now adjusted lengthwise on the guide-rod a^4 to coincide with the spool a^2 and the spindle a^8. These operations are continued until there is one attachment for each spool and spindle in the machine.

In the operation of my slack-thread-take-up attachment the bar c^2 of the pivoted wire arm c' rests on the thread b between the guide-rod a^4 and the guide-eye a^6, as shown in Fig. 1, the weight of the wire arm giving the required tension on the thread under the variable peripheral speed of the quill or bobbin, and this tension on the thread by the wire arm may be varied by using arms of heavier or lighter wire or by turning the flanges c^6 c^6 on the guide-rod a^4 to bring the bar c^2 of the wire arm nearer the guide-rod a^4. As the thread unwinds from the spool a^2 it travels back and forth on the guide-rod a^4 and under the bar c^2 of the wire arm c' between the flanges c^6 c^6 and the side arms c^3 c^3 of the wire arm, thus preventing wear on the bar c^2 of the arm.

By the use of my slack-thread-take-up attachment an additional finish is given to the thread, and a more perfect winding is attained on the quill or bobbin than has heretofore been done.

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

1. In a quilling or similar machine, an automatic slack-thread-take-up attachment consisting of a wire arm bent approximately U-shaped to form a straight bar adapted to rest on the thread and side arms with L-shaped ends, flanges in which are holes adapted to pivotally secure the L-shaped ends of the wire arm to the flanges, and split spring-collars on the flanges adapted to adjustably secure the flanges to the glass guide-rod of the machine by friction, as described.

2. In a quilling or similar machine, the attachment c consisting of the wire arm c' bent approximately U-shaped to form the straight cross-bar c^2, the side bars c^3 c^3 having the upwardly-curved portions c^4 c^4 merging into the bar c^2 and the L-shaped ends c^5 c^5, and the pivot-flanges c^6 c^6 in which are the holes c^7 c^7 varying in size, and the split spring-collars c^8 c^8 on the flanges, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN TURNER.

Witnesses:
J. A. MILLER, Jr.,
ADA E. HAGERTY.