

Oct. 31, 1950

A. PEHLIVANIAN
TWIST CONTROLLER FOR THREAD

2,528,171

Filed May 21, 1949

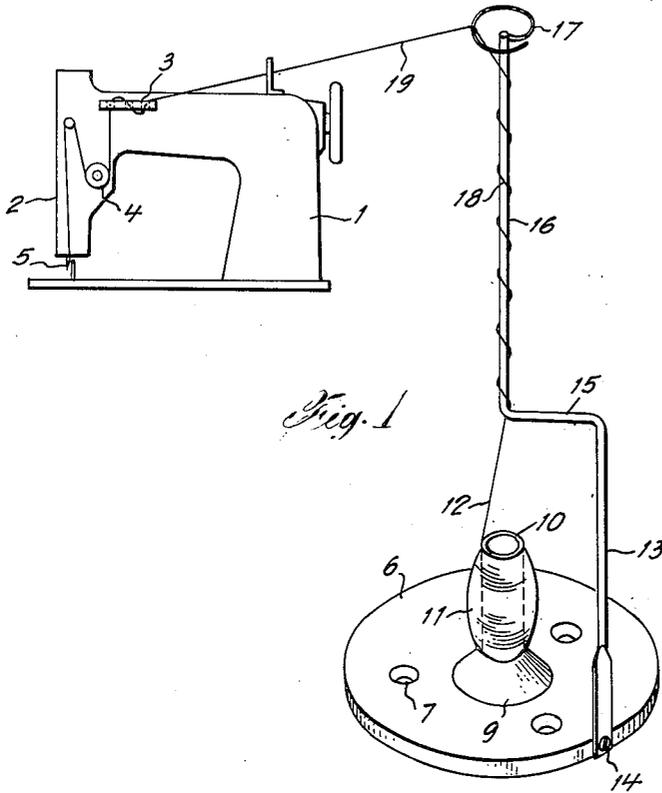


Fig. 1

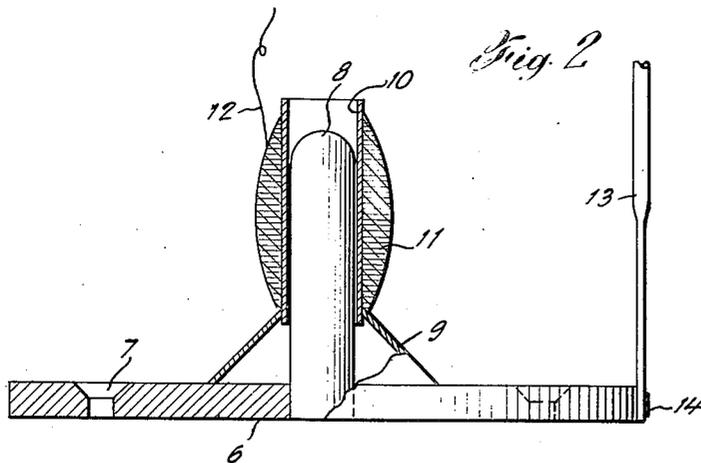


Fig. 2

INVENTOR.
ANTHONY PEHLIVANIAN

BY
McBrien
ATTORNEY

UNITED STATES PATENT OFFICE

2,528,171

TWIST CONTROLLER FOR THREAD

Anthony Pehlivanian, Boonton, N. J.

Application May 21, 1949, Serial No. 94,561

2 Claims. (Cl. 112—218)

1

The present invention is directed to a mechanism for controlling the twist in thread being fed to a sewing machine, and is more particularly adapted for use in connection with artificial threads such as nylon, rayon, and the like.

In the sewing industry, there have been used various means for feeding and guiding thread from a spool to the sewing machine. Most of such devices consisted in a plurality of eyes through which the thread passed, changing direction at each passage, and also passing through a tension device, which in modern sewing machines in commercial operation provided a tension of five pounds or more on the thread. Such a high degree of tension caused serious wear in the tension device, which was usually in the form of a disk with spring pressure thereon so that such disk wore out rather rapidly, caused difficulties in the sewing operation and required frequent replacement.

Also because of the change of direction of the thread in being guided to the needle, combined with the tension in said disk, the thread, which is made up of a series of fibers twisted, often opened up and tore because of the relative weakness of the individual fibers. Also, in the sewing operation, the hook of the sewing machine caught the thread between the fibers and as a result cut the thread and interrupted the sewing operation.

The present invention is intended and adapted to overcome the difficulties and disadvantages inherent in prior devices for feeding thread, it being among the objects thereof to provide a mechanical arrangement which acts to control the twist in the thread and which prevents the untwisting thereof while being fed to the needle.

It is also among the objects of the present invention to provide a device for controlling the twist of thread and feeding the same under such conditions that the tension on the tension disk or device is lessened or even eliminated.

It is further among the objects of the present invention to provide a simple and effective arrangement which will prevent the formation of knots or snarls in the thread during the feeding thereof.

In practicing the present invention, there is provided a rod which is located directly above a spool of thread and the thread is fed directly from the spool onto the rod, being twisted about the same. The thread extends freely upward from the spool and does not pass through an eye, hook, loop or tension device. At the upper end of the rod is a loop or the like through which the

2

thread passes on its way to the sewing machine. Because the thread is directly wound on the rod without any change in direction, there is no tendency for the twist in the thread to be moved along and to become concentrated as in prior devices and thereby the tendency to become knotted is substantially completely eliminated.

The number of turns or twists in the thread which is spirally wound on the rod may be varied in accordance with the type of the thread and the conditions of the sewing operation. By the formation of the spiral winding, there is provided a gradually increasing tension in the thread so that the differential of tension between two adjacent points is relatively low. Therefore, there is no tendency for the twist of the thread to be shifted, taken out or opened up. The final tension produced on the rod may be that required by the sewing machine and, therefore, the tension device usually provided may be omitted. If the tension produced on the rod is insufficient for the sewing operation, then a tension device is provided in which the amount of tension produced is relatively small so that it does not tend to open up or take out the twist in the thread. Also, by reason of the relatively low spring pressure on the tension device, it has a relatively long life.

In the accompanying drawing constituting a part hereof, in which like reference characters indicate like parts,

Fig. 1 is a side elevational view of a device made in accordance with the present invention, shown in association with a sewing machine and considerably enlarged in order to more clearly illustrate the ideas involved, and

Fig. 2 is a vertical cross-sectional view taken through the base member and the spool mounted thereon and showing a portion of the rod.

The usual sewing machine has an arm 1, a sewing head 2 and a thread guide 3. A tension disk 4 spring-pressed is provided on the head 2, which contains needle 5 and other sewing elements. All this is standard in the art.

The device of the invention consists of a base 6 of any suitable type having a number of countersunk openings 7 therein through which screws, nails or the like may be passed in order to fix the base against relative movement. A post 8 fixed centrally in base 6 extends upwardly and forms a support for a spool. The latter consists of a conical base 9 and a tube 10 mounted thereon and, said base and tube being secured together. Thread 11 is wound on tube 10. The spool of thread is placed on post 8 and is held thereon

without any rotary motion during the sewing operation. Thread 12 extends from the mass 11 of thread upwardly and freely without passing through any eyes or the like. While conical base 9 is not fixed to spindle 8 or base 6, it is held in its position by the force of gravity without being raised axially and without rotation of spool 19, during the feeding of thread.

A vertical rod 13 is secured at one side to base 6 by a screw 14. At a point above the top of the spool 9 there is a bend or offset 15 in the rod so as to bring it directly above post 8. The rod is further bent as shown at 16 to extend vertically upward and terminates in a loop 17, so that controller portion 16 is disposed directly above and substantially axially of the spool 9.

The thread 12 is wound spirally as shown at 18 on the controller portion 16 of the rod and is then passed through loop 17. The guide bar forming loop 17 is substantially horizontal, the controller portion 16 is substantially vertical and loop 17 is substantially axial of the spool 9 and at the upper end of controller portion 16. The thread extends downwardly, as shown at 19, directly to the sewing machine and usually through guide 3, being threaded through holes therein, guide 3 being at a level below loop 17. The thread then passes through the tension disk, adjusted at a relatively low tension, and then through the needle 5.

As the sewing machine operates, it exerts a pull on the thread against the relatively low tension of device 4 and pulls the thread into the machine. During this operation, the spiral windings 18 are placed under tension and the tension increases gradually and by small amounts from the bottom of controller portion 16 to the top thereof. The windings 18 are maintained substantially uniformly spaced over portion 16 during the operation. Therefore, the increase in tension over any unit length is relatively small, and in any case, is so small that it does not tend to untwist the fibers of the thread. Even though the thread thereafter passes through tension 4, it is not subjected to sufficient additional tension in said device to cause any untwisting of the fibers of the thread. This is due to the fact that the thread is already under a relatively high tension and the relatively small increase of tension caused by device 4 does not disturb the balance.

In actual use, the device of the present invention has been found to be highly advantageous, and a sewing machine operating at high speed for hours at a time does not show any tendency for knotting or snarling of the thread. This is in direct contrast to prior feeding devices wherein with a thread such as nylon, in a relatively few minutes knots began to form in the thread, eventually causing breakage and defective sewing. The device of the present invention is simple and is relatively inexpensive to manufacture. It may be placed in a position convenient to the operator and without any interference with the sewing operation.

Although the invention has been described setting forth a single specific embodiment thereof, various changes in the details of construction may be made within the spirit thereof. For instance, the device may be placed on the floor on a special stand or on the bed of the sewing machine, or even be mounted on the arm 1 thereof. The rod may be of different form than shown in the drawing and may be secured to the base in a different manner. In some cases the base may be omitted

and the rod attached directly to the sewing machine or the bed thereof. The controller portion of the rod need not be exactly vertical but it may also be in an inclined position, it being essential that the thread be fed directly to the rod without any intermediate devices through which the thread passes.

The spool may be of a different type than that described and the means for mounting the same on the base may be of different arrangement than the post which was shown and described herein. The base need not have the holes 7 and need not necessarily be fixed to another element but the weight of the base itself may in some cases be sufficient to hold it in its proper position.

These and other changes in the details of the invention may be made within the principles herein set forth and the invention is, therefore, to be broadly construed and not to be limited except by the character of the claims appended hereto.

I claim:

1. Mechanism for feeding twisted multifilament thread to a sewing machine to prevent untwisting and knotting thereof comprising a base having means for mounting an open ended spool having said thread thereon, a fixed rod extending upwardly from said base and bent to form a substantially horizontal guide bar and a vertical controller rod portion directly above said spool, a loop at the upper end of said controller portion, said spool being mounted on said base, said thread extending freely directly upward from said spool into the angle between said controller and bar, said thread being twisted about said controller a plurality of turns and then passing through said loop, a sewing machine having a thread guide thereon at a level below said loop, said thread passing downwardly at an acute angle from said loop through said guide.

2. Mechanism for feeding twisted multifilament thread to a sewing machine to prevent untwisting and knotting thereof comprising a base having means for mounting an open ended spool having said thread thereon, a fixed rod extending upwardly from said base and bent to form a substantially horizontal guide bar and a vertical controller rod portion directly above said spool, a loop at the upper end of said controller portion, said spool being mounted on said base, said thread extending freely directly upward from said spool into the angle between said controller and bar, said thread being twisted about said controller a plurality of turns and then passing through said loop, a sewing machine having a thread guide thereon at a level below said loop, said thread passing downwardly at an acute angle from said loop through said guide, a tension device adapted to exert a low degree of tension on said thread, the latter passing from said guide through said tension device.

ANTHONY PEHLIVANIAN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,105,969	Donnelly	Aug. 4, 1914
1,126,158	Darley	Jan. 26, 1915
1,151,535	Hayes	Aug. 31, 1915
1,254,761	Bailey	Jan. 29, 1918
1,260,662	Goldsmith	Mar. 26, 1918