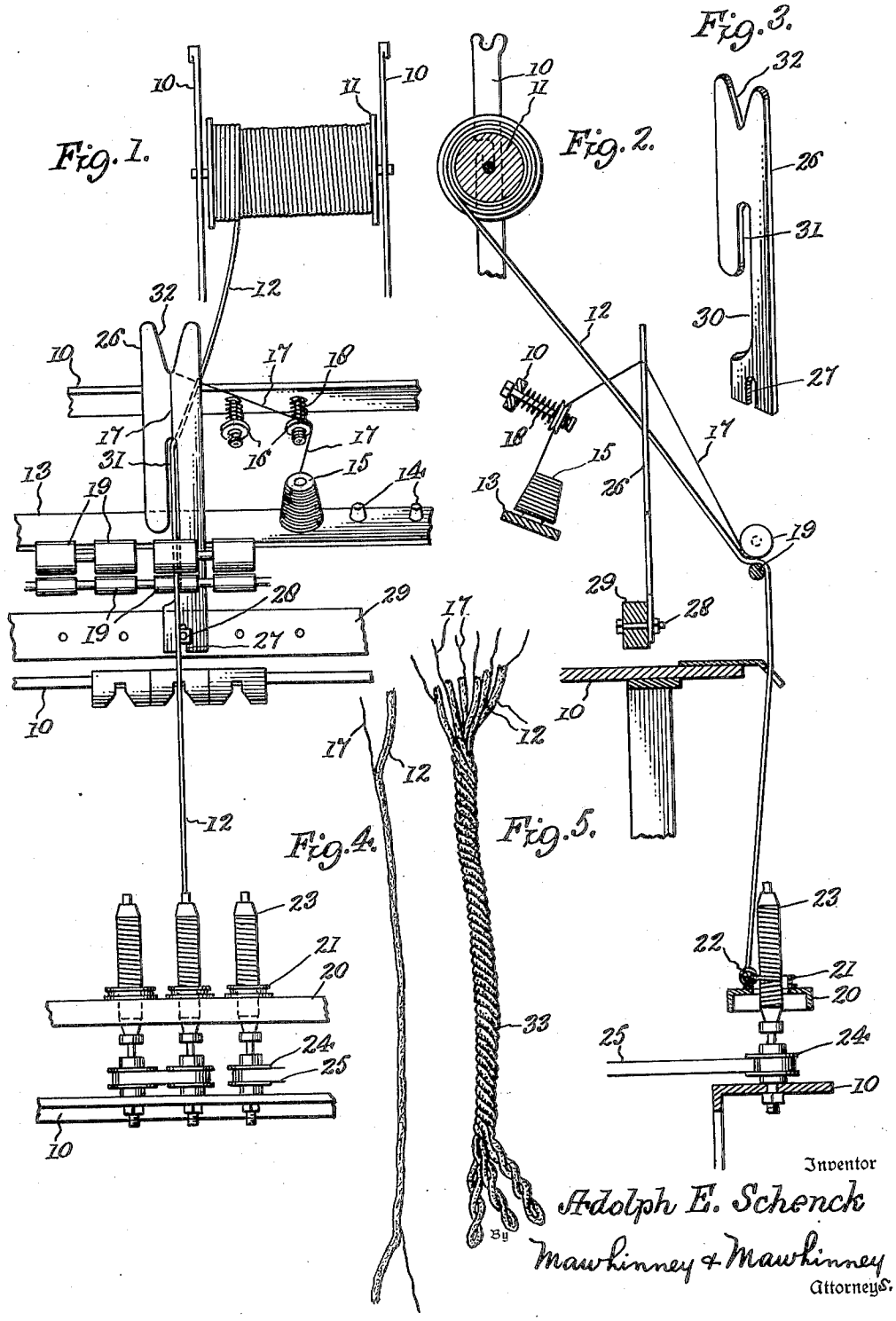
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HIDING CORE THREAD IN YARN

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HIDING CORE THREAD IN YARN

Adolph E. Schenck, Esmond, R. I.

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2 Claims. (Cl. 117—27)

The present invention relates to the strengthening of yarn for filling or the like and which utilizes a reinforcing or core thread which is wholly covered or hidden so that a wide thread may be used of the desired strength and which will not be seen in the strengthened or reinforced yarn but which will hold the yarn against pulling out or separating when subjected to tension.

Another object of the invention is to provide a device for attachment to a twister, such as of the ring frame type, for feeding or directing a strand of yarn and a strand of thread into the twister with greater tension upon the thread than upon the yarn so as to hold the thread relatively taut and straight during the twisting action so that the yarn will be twisted to a greater extent about the thread and consequently will completely enclose it.

A further object of the invention is to provide an attachment for twisters to take the place of the usual eyes or guides and which may be adjusted to suit conditions of the strand feed, the devices being so constructed that they may be nested closely together for use with one device over each of the positive drive bobbins or ring frames.

The invention also provides an improved yarn filling and an improved method of making the same from a core thread and a strand of covering or enclosing yarn.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a diagrammatic fragmentary front elevation of a twister of the ring frame type showing one of the devices mounted thereon and constructed according to the present invention.

Figure 2 is a vertical section taken through the same substantially in the path of the strands of yarn and thread.

Figure 3 is a detail perspective view of one of the guides and tension devices constructed according to the present invention.

Figure 4 is a fragmentary view of a length of filling yarn constructed according to the present invention, and showing the core thread at opposite ends thereof, and

Figure 5 is a fragmentary view of a length of rope constructed of yarn filling made according to the present invention, the core threads of the filling being shown extended at one end.

Referring now to the drawing the invention is shown as applied to a twister of the ring frame type, although it may be applied to various types of machines or devices for producing the twisting result. In the present instance the twister has a main frame 10 in the upper part of which is mounted a spool 11 for each strand 12 of yarn to be twisted into the filling. The frame also has a rail 13 provided with a spindle 14 for each spool 11, the spindles 14 adapted to carry spools 15 of thread serving as the reinforcing or strengthening core for the yarn filling. For each spool 15 the frame 10 is provided with a friction device 16 of usual construction having a pair of discs between which the thread 17 passes from the spool 15, the discs being held yieldingly toward each other and in clamping engagement with the threads 17 by a spring 18, as shown.

The twister is provided with idler rollers 19 of conventional form, a pair of the same being provided for each filling, and the yarn strand 12 and the thread 17 are directed into the rollers 19 which serve as holding or anchoring means for one end of the composite strand while the opposite or lower end thereof is subjected to the twisting action.

The main frame 10 of the twister is provided with a ring frame rail 20 having the usual ring frame 21 for each pair of rollers 19 and upon which is mounted a ring traveler 22 through which the composite strand leading from the rollers 19 is threaded. From the ring traveler the composite strand is wound upon a positively driven bobbin 23 disposed within the ring frame 21. The positive means for driving the bobbin 23 may be of any conventional type, such as the pulley 24 and belt 25, shown in Figures 1 and 2.

Spinning of the bobbin 23 effects the twisting of the composite yarn incident to the operation of the ring traveler in the ordinary manner, and to effect the desired result of completely enclosing the core thread 17 within the filling, the present invention provides a combined tension device and guide 26, shown in detail in Figure 3. The device in the present form comprises a plate having a vertical slot 27 in its lower end for adjustable engagement with a clamping bolt 28 which is mounted on the adjusting rod 29 of the frame, as shown in Figures 1 and 2.

On one edge portion of the plate 26, a short distance above the slot 27 which provides a shank at the lower end of the plate, the latter has a relatively large recess or opening 30 through which the strand 12 of yarn may be introduced to the center portion of the plate 26, and at the upper end of the opening or recess 30 the plate 26 has a

longitudinally and centrally disposed guide slot 31 for receiving the strand of yarn 12 therein. The slot 31 is of sufficient width and so constructed as to offer substantially slight resistance to the passage of the yarn 12 therethrough as the yarn is fed to the idler rollers 19. The function of the guide slot 31 is to substantially center the yarn strand 12 in the rollers 19. The guide plate 26 when mounted on the frame is disposed slightly above and behind the idler rollers 19 so that the strand 12 of yarn may take a relatively natural course or path between its spool 11 and its corresponding idler rollers.

This combined guide and tension plate 26 is provided in its upper end with a substantially V-shaped guide notch or slot 32 which is of sufficient depth to not only receive and hold the threads 17 in the plate 26, but to also maintain the thread against accidental release from the guide incident to any slack or uneven drawing of the thread.

It will be noted that the throat or inner end of the guide slot 32 is in longitudinal alinement with the guide slot 31 so that when the guide plate 26 is adjusted into position with reference to the adjacent pair of idler rolls 19, the strand 12 of yarn and also the thread 17 are held in line with the rollers 19 and with each other so that as the thread and the strand are held together by the rollers 19 they may be twisted together by the action of the machine beyond the rollers 19.

From Figure 1, particularly, it will be noted that the guide slot 32 in the top of the guide plate receives a thread 17 from the spool 15 which is located at one side and in offset relation to the guide plate 26 so that the thread will be drawn at an angle through the slot 32 and considerable tension will thus be exerted upon the thread as it it is drawn to the rollers 19. This tension is not exerted on the yarn 12, however, as the guide slot merely holds the yarn lightly in line with the rollers. The result is that the thread 17 will merely be twisted about its axis and strengthened, whereas the yarn 12 during the twisting action will be carried about the thread as a core and will completely enclose the thread so that the latter will adequately support the yarn, and after the twisting action the two elements will be intertwined in close relation and the core thread will take up resistance to lengthwise pulling of the composite yarn to prevent breakage or damage to the yarn strand 12.

The tension device 16 is additionally used upon the thread 17 so that the tension may be varied in accordance with the degree desired.

The yarn thus produced is a filling with a substantial center core completely enclosed or encased in the outer yarn strand, the core thread being relatively taut so that when lengthwise pulling upon the filling takes place the thread will take up the stretching and the yarn will not be subjected to pulling out or breakage.

As shown in Figure 4, the thread core or reinforcement is completely enclosed within the yarn 12, and incident to the twisting action of both the core 17 and the covering 12, the two will be intimately associated into a considerably strengthened yarn filling. This filling may be incorporated in a rope structure 33, as shown in Figure 5, and wherein the core threads 17 are completely hidden in the structure.

In the practical manufacture and use of this invention the new method will save considerable core thread to the foot in the making of blankets, it being shorter than the yarn, which, under the old method, was the same length as the yarn; the core thread, being enclosed in the center of the yarn, requires less care and saves time in the napping of the blanket as it allows the napper to go closer without breaking the thread, which under the old method could be seen on the surface of the twisted yarn; and the breaking of a thread under the old method would leave a hole in the blanket must like that left by a moth, while under the new method the thread is not apt to be so broken, being as aforesaid in the center of the yarn.

Referring to the drawing, Figure 1 has a plurality of yarn ends or strands. A knot, slug or lump forming in any one of the yarn strands may, and often, causes a break in some, and sometimes in all, such yarn strands under the old method. Under the new method, a knot so forming is caught in the slot 31, Figure 3, and thus only breaks the strand passing through the particular guide 26. This saves time in splicing ends of yarn as only one strand has to be spliced, while under the old method it is rare that the breaking of one strand does not destroy or break others.

The number of "picks" to the inch with the new guide 26 will be lessened without taking from the quality of the blanket which is made on this twisting machine. When the traveler 22 is worn under old method, it will break the yarn, allowing same to wrap around the lap roll, not shown. This breaking causes the thread to run separately on the bobbin 23 causing waste, but according to this invention as the tension is upon the thread more than upon the yarn this break is not apt to occur.

What is claimed is:

1. A combined guide and tension device for use on twisters comprising a plate having a slotted attaching shank at its lower end for mounting on the twister, said plate having a recess in one edge above the shank with a longitudinally and centrally disposed slot leading from the top of the recess for the reception of a strand of yarn loosely therethrough, said plate also having a V-shaped slot in its upper end for the reception of a core thread therethrough, the bight of the recess adapted to frictionally hold the thread taut during passage through the plate.

2. A combined guide and tension for use on twisters having yarn and thread carrying spools, comprising an individual guide member for mounting on a twister in line with a respective pair of idler rollers thereof and having yarn and thread slots disposed in relative alinement and in alinement with said rollers, said thread slot being disposed in angular relation with respect to the thread supporting spool of the twister, and adjustable tension means carried by the twister for engaging the thread to maintain the same taut relatively to a strand of yarn during the twisting action.

ADOLPH E. SCHENCK.