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3,019,593

METHOD FOR PRODUCING VARIABLE TWIST YARN

Filed Nov. 6, 1959

2 Sheets-Sheet 1

FIG. 1.

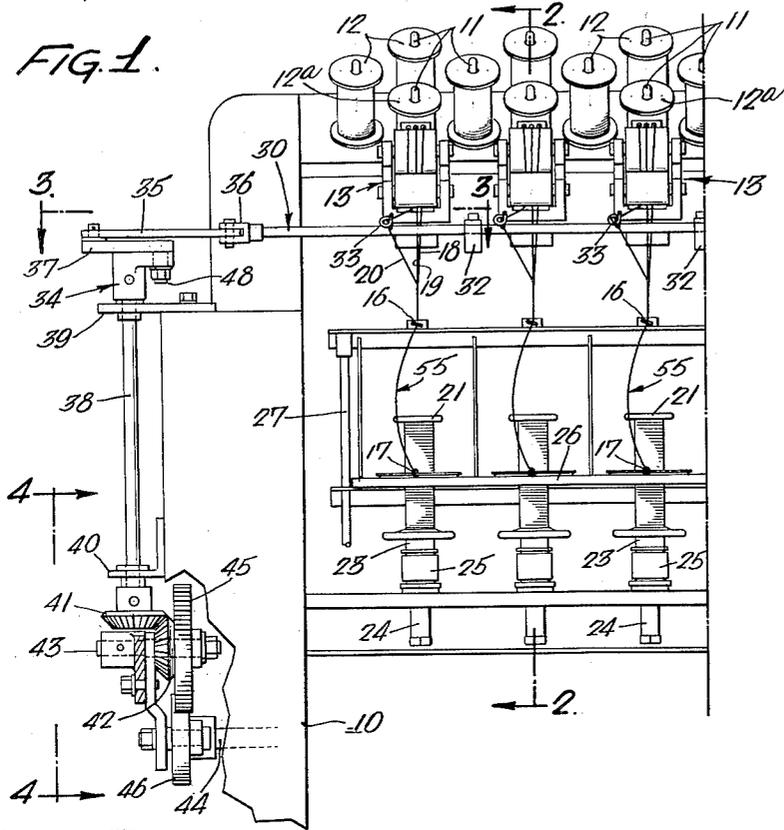


FIG. 3.

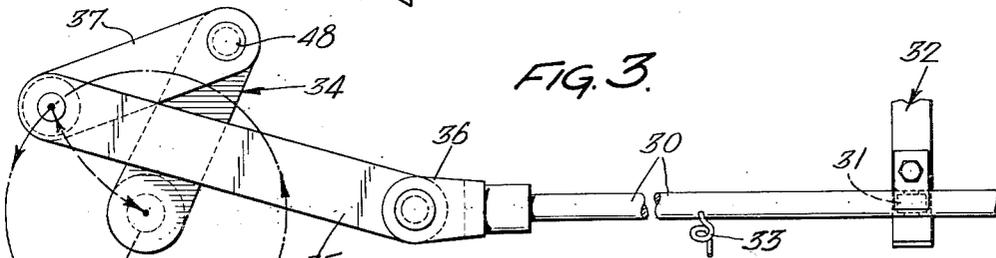
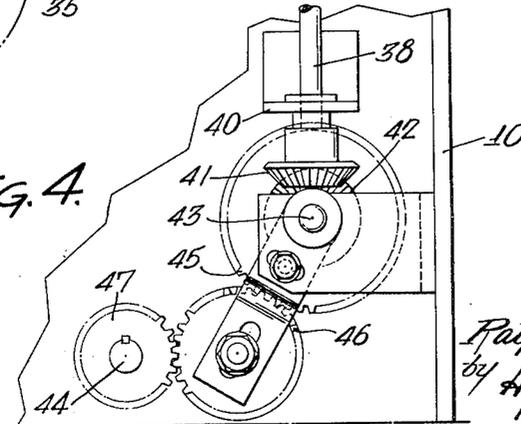


FIG. 4.



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2 Sheets-Sheet 2

FIG. 2.

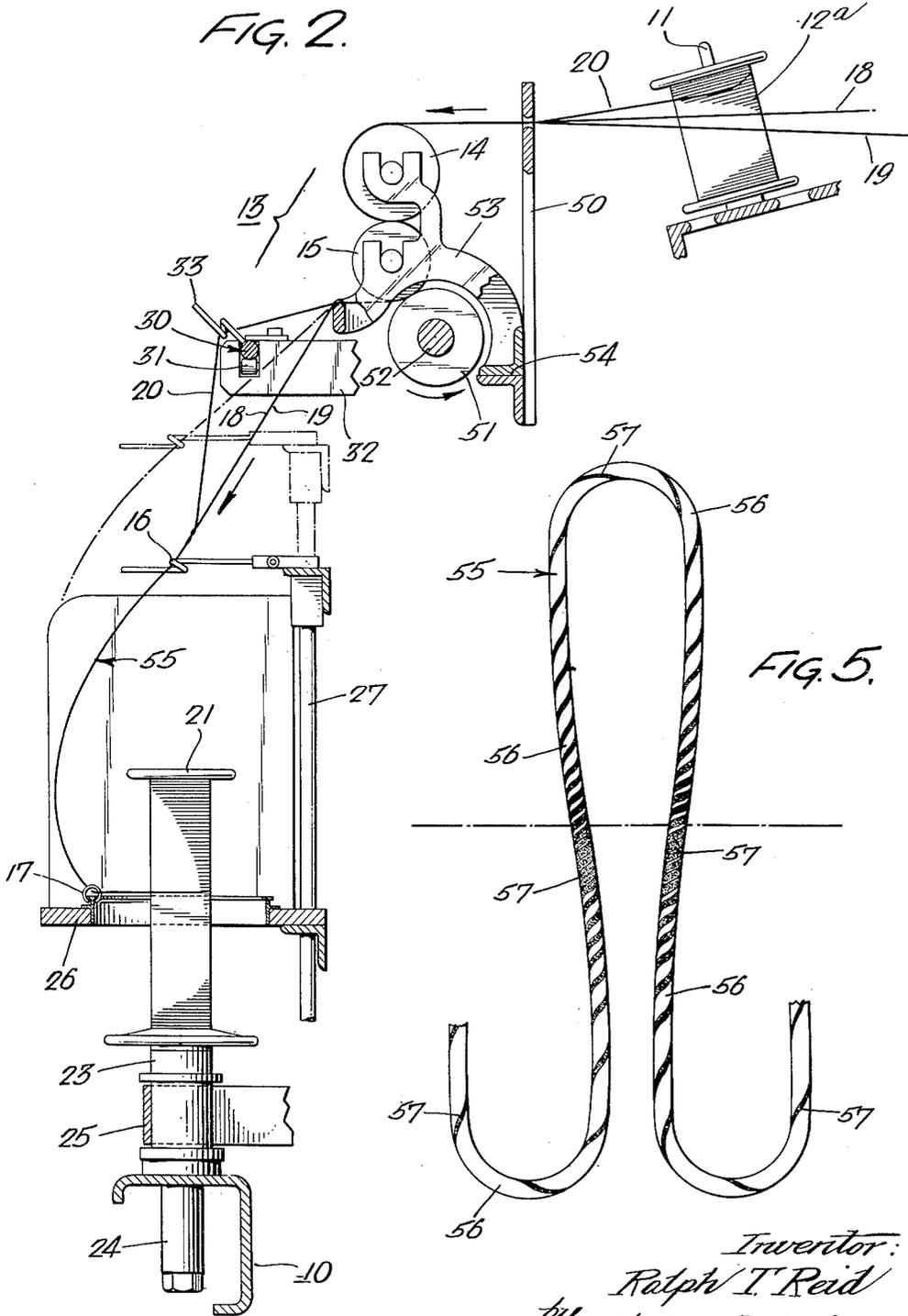
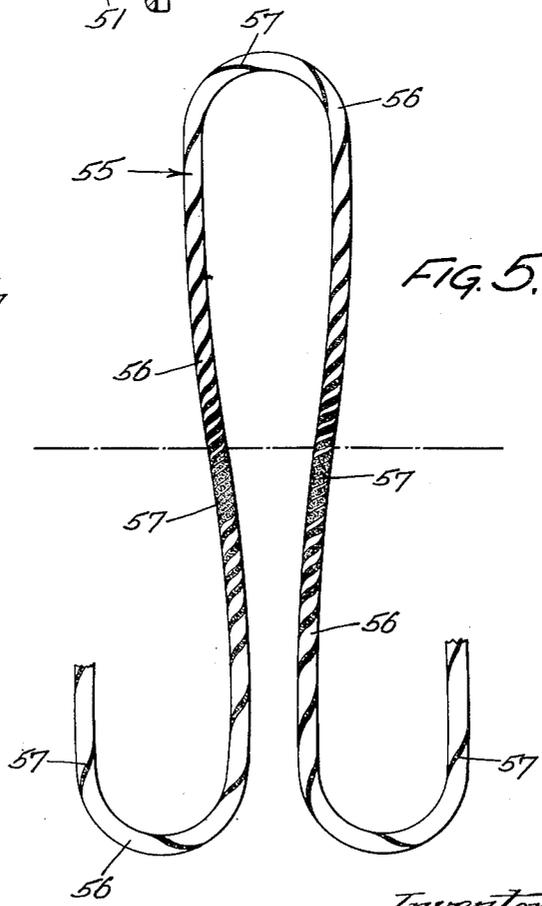


FIG. 5.



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1

3,019,593  
**METHOD FOR PRODUCING VARIABLE  
TWIST YARN**

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2 Claims. (Cl. 57—156)

This invention relates to a method of producing a novelty yarn on a twister and more particularly to means for imparting a controlled variation in the twist of one of the plies.

In the production of pile fabrics and particularly floor coverings, it is desirable to break up the regularity which sometimes is present in the surface of such fabrics. Various means for sculpturing or texturing the pile of carpets are well known. The present invention accomplishes a random textured effect in the carpet by breaking up the various colors in a plied yarn in such a way that first one color and then the other predominates. In general, such an expedient has been performed previously, but it has been impossible to produce a satisfactory Moresque-type yarn on a conventional twister at less than 11 turns per inch. It is a primary object of the present invention, therefore, to provide a method of producing a "splash"-type yarn on a conventional twister at a substantially lower twist level than was previously possible.

A further object of the invention is to provide on a twister a traverse rod and means for oscillating said traverse rod to vary one of several singles yarns with respect to other singles yarns in the twisting of a multi-ply yarn.

Further objects will be apparent from the specification and drawings in which:

FIG. 1 is a front view of a conventional twister having the present invention installed thereon,

FIG. 2 is an enlarged sectional view as seen at 2—2 of FIG. 1,

FIG. 3 is a top view of a part of the device as seen at 3—3 of FIG. 1,

FIG. 4 is a fragmentary end view as seen at 4—4 of FIG. 1, and

FIG. 5 is a view of the splash-type Moresque yarn formed in accordance with the present invention.

The invention comprises essentially the provision of means which in the preferred embodiment takes the form of a traverse rod to variably control the twisting of one of several singles with respect to the twisting of the remaining singles which are of a contrasting color.

Referring now to the drawings, a twister of the type adapted to the present invention is provided with a framework 10 having at the upper part thereof a series of spindles 11, 11 on which spools or bobbins 12, 12 may be mounted. In the present instance there are three spools 12 for each twisting unit 13 and the yarns from two of these spools are carried directly over rollers 14 and 15 through the yarn guide 16, thence to ring and traveler 17 or a flyer, whereupon the two plies 18 and 19, as well as the third ply 20, are wound on a spool 21. In accordance with conventional practice, the spools 21 are mounted on spindles 23, 23 which are journaled in the framework at 24 and driven by means of belts 25, 25.

2

The yarn control means, for example, ring and traveler 17 is mounted on a traverse bar 26 which oscillates vertically on guides 27 in accordance with conventional practice for such builder motions.

In order to vary the twisting characteristics of yarn end 20 with respect to yarn ends 18 and 19, I provide an oscillating traverse rod 30 which is journaled or supported on a series of rollers 31 mounted in brackets 32 secured to the frame 10 of the twister. The traverse rod 30 is provided with a plurality of pigtail guides 33 positioned between the roller 15 and the guides 16 for each spindle 24. Traverse rod 30 is connected to a crank 34 by means of a pitman 35, a knuckle 36, and an adjusting link 37 so that it oscillates back and forth when shaft 38 turns the crank 34. Shaft 38 is journaled in bearing brackets 39 and 40 and is provided at the opposite end with a bevel gear 41 driven by a meshing bevel gear 42 on stub shaft 43. Shaft 43 is in turn driven from main shaft 44 through a spur gear 45, idler gear 46, and pinion 47 keyed to the shaft 44. Adjustment for the relative speeds of shafts 38 and 44 is achieved by means of substituting different pitch diameter gears in place of driving gear 47 and adjustment for the stroke of traverse rod 30 is made by loosening bolt 48 and swinging link 37 to or away from the center of shaft 38 as shown by the arrow in FIG. 3.

As seen more clearly in FIG. 2, yarn ends 18 and 19 are fed through a yarn guide 50 and over the upper roller 14 and around the lower roller 15. Rollers 14 and 15 are driven to feed yard by means of a friction roller 51 which is in turn driven by a shaft 52. Rollers 14 and 15 are releasably mounted in a bracket 53 secured to the twister frame at 54. Yarns 18 and 19 feed directly to the spool 21 through the pigtail yarn guide 16 which has been lowered from its conventional higher position shown in broken lines. A third singles yarn 20 drawn from spool 12a is carried through the pigtail guide 33 on the traverse rod 30. Because of the simple harmonic motion imparted to traverse rod 30, the singles yarn 20 is wound or twisted with the other singles yarns 18 and 19 at a greater number of turns per inch when the pigtail guide 33 approaches or is at its mid-position. At either end of the travel of the guide 33 yarn that would otherwise be twisted with singles 18 and 19 is robbed or consumed in displacing singles 20 an amount necessary to run through the guide 33 in its limit position. This, in effect, provides a yarn storage which builds up when the guide 33 moves in either direction away from its center position. The stored yarn is then rapidly released as the yarn guide reverses its direction of travel and moves from either extreme position towards its mid-position. With proper adjustment and control it is possible to completely mask the other singles in the plied yarn 55 (FIG. 5). Thus a yarn such as shown in FIG. 5 can be produced. The light colored areas 56, 56 represent the singles yarns 18 and 19 whereas the darker areas 57 in FIG. 5 correspond to singles yarn 20 and show how the white or light areas 56 can be substantially or completely covered up thus entirely changing the appearance of the plied yarn 55. It will be understood that only one unit of a conventional twisting frame has been described in detail but that traverse rod 30 extends along one entire side of a twisting frame, three units of which are shown in FIGURE 1.

3

The device described herein is relatively simple and produces a novel splash-type, uniform denier yarn which is not, strictly speaking, a slub yarn since only one of the plies is varied with respect to the other plies and the same two or more plies are continuous throughout the entire length of the yarn. The variation and Moresque effect is, of course, achieved when the variable twist ply is of a contrasting color to one or more of the other plies. The invention is particularly suited to three ply yarn but is equally adapted to the twisting of any multi-ply yarn.

Having thus described my invention, I claim:

1. The method of twisting a splash-type, uniform denier yarn which comprises plying at least one singles yarn under constant and uniform twist with another singles yarn under conditions of variable twist to provide a relatively masked area in one length of the uniform denier plied yarn and an unmasked area in another area of the uniform denier plied yarn.

2. The method of twisting a non-slub, uniform denier yarn which comprises the steps feeding at constant and

4

uniform speed a singles yarn end to a yarn take-up, and variably twisting another singles yarn with said first singles yarn to provide a uniform denier plied yarn on said yarn take-up.

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