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2,128,184

FEED FOR SPINNING MACHINES

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Fig. 1.

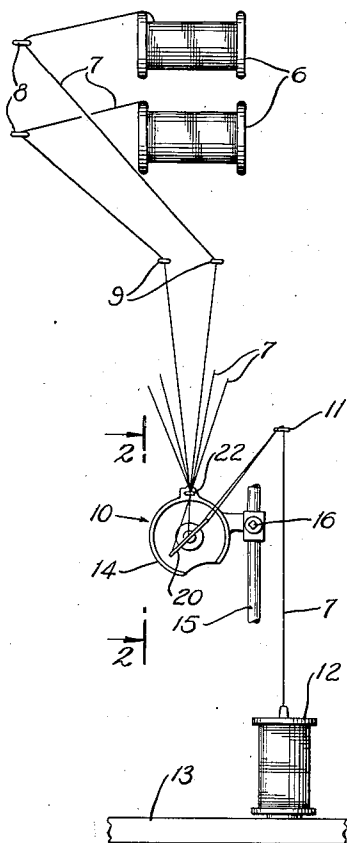


Fig. 2.

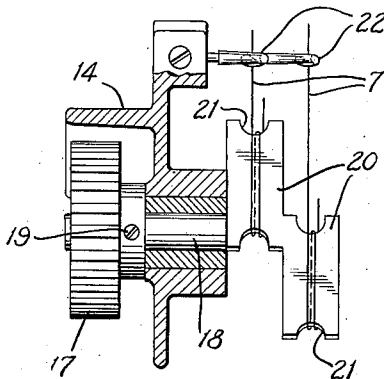


Fig. 3.

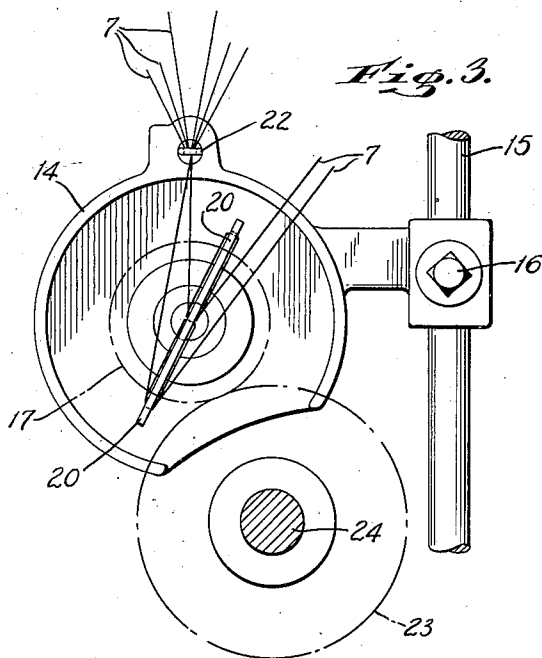


Fig. 4.

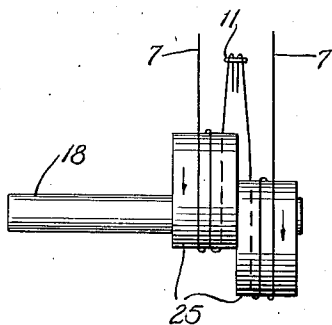
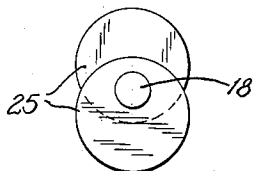


Fig. 5.



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FEED FOR SPINNING MACHINES

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17 Claims. (Cl. 117—22)

This invention relates to a feed for spinning or twisting machines.

In the art of spinning it is frequently desirable to produce novelty yarns or thread. A novelty yarn is produced where one strand is wrapped around the other for a given distance and then the operation modified so as to produce an unevenness in the finished yarn. This unevenness may take the form of spaced knots or rough portions at intervals along the length of the yarn. Usually, the number of turns per inch is uniform as to each of the strands, but more material is fed on one strand so as to produce the effect of having one strand completely envelop the other and then reversing or modifying the effect along the length of the yarn. A novelty yarn is produced wherever there is an unevenness in the rate of feed of the individual strands which are twisted together. The broad object of this invention is to provide a feed to produce a novelty yarn.

In standard spinning or twisting machines great care is used to insure that all of the strands which are to be twisted are fed at a uniform rate of speed. When it has been desired to produce a novelty or fancy yarn it has been necessary to use machinery adapted only to produce such yarn. This involves a double investment for both standard and novelty machinery. Therefore, a further object of this invention is to produce a simple, inexpensive feed means for producing novelty yarns, which feed means may readily be applied to standard, uniform feed machines. In this way the duplication of expensive machinery is eliminated.

The invention herein is particularly suitable for use with silk handling machinery, but may be used on machines adapted for handling other materials.

Novelty or fancy yarns in the past have been produced by various means. However, the disadvantages of the methods and means heretofore employed have offset the advantages obtained. It has been known to utilize friction rolls with interrupted surfaces to produce an uneven feed of individual strands. However, where this method is used the individual strand is left entirely uncontrolled with the consequence that there is no certainty as to the result to be produced.

Where an uneven, but nevertheless controlled feed has been employed it has involved the use of a plurality of separately geared and operated feed means. This is objectionable from the standpoint of cost of machinery and complication of operation. Therefore, a further object of this invention is to produce a feed means which will overcome the disadvantages of the prior art, and

to produce a means with which each strand will be controlled at all times from a single device.

The novelty or fancy effect is produced by providing an unequal feed of the individual strands to be twisted. Therefore, a further object of the invention is to provide a multi-phase feed means eccentrically mounted on a single shaft and adapted to be used in the place and stead of the ordinary feed roll on a standard spinning machine.

The invention consists of the construction, combination and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawing, forming part hereof, is illustrated one form of embodiment of the invention, in which drawing similar reference characters designate corresponding parts, and in which:

Figure 1 is a diagrammatic view in side elevation;

Figure 2 is a front elevation, partly in section, showing the feed means and taken approximately on line 2—2 of Figure 1, looking in the direction indicated by the arrows;

Figure 3 is an enlarged side elevation of the right-hand end of Figure 2;

Figure 4 is a front elevation of a modified form of feeding means; and,

Figure 5 is an end elevation of the right-hand end of Figure 4.

Referring to the drawing, 6 designates the bobbins on which the individual strands are carried. In the manufacture of the thread or yarn, two or several strands may be twisted into a single thread. The individual strands 7 are fed over the ends of the bobbin 6 through eyes 8, and thence through eyes 9 of a common form of stop motion. The strands 7 are fed through the eyes 8 which are spaced axially from the bobbin 6 in order to prevent breakage of the strands. Since the feed is eccentric there is a jerk on the individual strands, and if the strands were fed straight downwardly from the bobbin 6 there would be a likelihood of breakage. By feeding the strands 7 through the eyes 8 the strands 7 can feed over the ends of the bobbin 6 without danger of breakage even though the pull on the strands 7 is intermittent.

From the stop motions 9 the strands 7 are led to the feed means designated generally as 10 in Figure 1. From the feed means the strands 7 are led upward, to an eye 11 and thence downward to a spinning bobbin 12 carried on a bed 13. The strands 7 are led upward to an eye 11 rather than downward to prevent the possibility of an over-

lap and breakage through binding of the strands one against another. Ordinarily, two turns of a strand around a feed means is sufficient to insure a proper grip. By placing the eye 11 above the feed means it is necessary to use only one and a half turns on the feed means and at the same time there is no possibility of slippage.

The feed means 10 comprises a support 14 which is adjustably held on a rod 15 by means of a set screw 16. The rod 15 is a part of the spinning machine. On one side of the support 14 is disposed a pinion 17 to which is connected a shaft 18 by means of a set screw 19 or by any other appropriate means. Formed with or carried by the shaft 18 is a plurality of flat members or flags 20. The flags 20 are provided with grooves 21 at their respective extremities to prevent the strands 7 from slipping off the edges of the flags 20. A plurality of eyes 22, one for each flag 20, is provided to feed the strands 7 to the flags 20. The flags 20 are rotated upon rotation of the pinion 17, which rotates the shaft 18. The pinion 17 is rotated by a gear 23 carried by a shaft 24, the speed of which is constant and in any desired ratio to the speed of the spinning bobbin 12.

The operation of the feed means is as follows: Where only two strands 7 are being twisted, one strand 7 is fed through each eye 22 and one and a half turns of each strand 7 are taken around the respective flags 20. The two strands 7 are then brought together and fed through the eye 11 and thence to the spinning bobbin 12 in the usual manner. Where several strands 7 are to be twisted, the strands are grouped and divided between the two flags 20, or a device may be used in which a number of flags 20 are utilized.

When the parts are in the position shown in Figure 2 it will be clear that during a half revolution of the shaft 18 a length of strand 7 will be drawn from one bobbin 6 by the left-hand flag 20. The length of strand 7 will be equal to the length of the left-hand flag 20 plus the thickness of the flag. During this same one-half revolution of the shaft 18 none of the strands 7 will be fed from the left-hand flag 20 to the spinning bobbin 12. Since the groove 21 on the shaft end of the left-hand flag 20 is in alignment with the center of the shaft, there will be no movement of the strands 7 toward the eye 11, except a length equal to the thickness of the flag 20. This length is so slight as to be negligible. During this same one-half revolution of the shaft 18 the right-hand flag 20 will feed off a length of strand 7 equal to the length of the flag plus its thickness. At the same time, the right hand flag 20 will not draw any of the strand 7 from the bobbin 6 except a length equal to the thickness of the flag 20.

On the next half-revolution of the shaft 18 the condition will be reversed and the left-hand flag 20 will feed but not draw from the bobbin 6, while the right-hand flag 20 will draw from the bobbin 6 but not feed to the bobbin 12. If the inner ends of the flags 20 extended past the center line of the shaft 18 a different condition would exist. With such a construction there would be a continuous drawing of the strands 7 from the bobbin 6, and a continuous feed to the bobbin 12, but the rate of draw and feed would vary in proportion to the spacing of the flags 20 with relation to the shaft 18. By changing the length of the flags 20 or the angle of the flags with relation to one another, many different results can be obtained. Where various colored strands are used the effect is more readily perceived.

Referring to Figures 4 and 5, instead of the flags 20 the shaft 18 is provided with a plurality of circular rolls 25. The rolls 25 are mounted eccentrically on the shaft 18 and are mounted out of alignment with one another. The rolls 25 may be circular in contour as shown, or they may have any other desired contour. The strands 7 are applied to the individual rolls 25 in the same manner as heretofore described, and the effect produced is an uneven feed of the various strands.

From the foregoing it will be seen that the device may be applied to a standard spinning or twisting machine which employs either a single or double feed roll. In some standard machines the feed rolls are removably carried on a central shaft. In order to adapt a standard, uniform feed machine, it is necessary to remove only the feed roll and instal the shaft 18 with the feed means carried thereby. Furthermore, it will be clear that the individual strands 7 are under positive control at all times, and particularly between the feed means 10 and the spinning bobbin 12. This is necessary if the desired results are to be accomplished, since even in a novelty yarn wherein a non-uniform feed is desired, it is desirable to have a uniform lack of uniformity.

It will also be clear that many modifications may be made to produce varying effects in the finished yarn. The principle involved would be the same, to wit, a feed means eccentrically mounted with relation to the operating shaft, so as to produce an ununiform feed of the individual strands. For example, a number of flags 20 or rolls 25 could be provided where several strands 7 were to be twisted. Each of these members could be mounted differently to the others. It is not necessary that the flags 20 or the rolls 25 be mounted in exact position as shown. One flag 20 can readily be made longer than the other and a different result will be produced. One flag 20 or one roll 25 can be mounted so as to be concentric with relation to the shaft 18. If one roll 25 is mounted concentrically, it will produce a uniform feed as to one strand 7, and a non-uniform feed as to another strand 7, thus producing the desired effect. It is not necessary that the flags 20 be made flat as shown. The flags 20 may be made rounded on one side or on both sides to produce an elliptical shape in end elevation. It is not necessary that the inner ends of the flags 20 be in alignment with the center of the shaft 18. If the inner ends of the flags 20 be extended past the center line of the shaft 18, a still different novelty effect will be produced. Since any number of flags 20 or rolls 25 may be used in any combination, there is practically no limit to the variations in the effects that can be produced in the finished yarn.

If it is desired to apply the device to a standard spinning or twisting machine which employs double feed rolls carried on independent shafts, it is only necessary to apply a shaft 18 with one or more flags 20 or eccentric rolls 25 to each roll-carrying shaft on a standard machine. Of course, if two separate shafts are used, it is not necessary to have more than a single flag 20 or roll 25 on each shaft 18. As pointed out above, it is necessary that only one strand be fed un-uniformly to produce a novelty effect. Therefore, on a two-roll standard feed it would be necessary to replace only one roll with the device herein described in order to change the machine from a standard to a novelty twister.

In the particular embodiment shown in the drawing, the inner ends of the flags 20 are in

alignment with the center of the shaft 18. If these inner ends did not extend to the center line of the shaft 18 a different result would be produced. If the entire body of either flag 20 is located entirely on one side of the center line of the shaft 18, there will be an intermittent feed and retraction of the strand 7. During the one-half revolution the strand 7 will be fed to the bobbin 12. Where the inner end of the flag 20 does not extend to the center line of the shaft 18, there will be a retraction of the strand 7 during the next half revolution of the shaft 18. In this way a still different effect may be produced.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A strand feeding device comprising a plurality of strand receiving and feeding elements carried by a single, continuously rotatable shaft, said elements being both rotatable and positioned off center with relation to the axis of the shaft to vary the rate of feed of the strands to a spinning device.

2. A strand feeding device comprising a plurality of strand receiving and feeding elements carried by a single, continuously rotatable shaft, said elements being positioned off center with relation to the axis of the shaft to alternate the feed of the individual strands to a spinning device.

3. A strand feeding device comprising a plurality of strand receiving and feeding elements carried by a single, continuously rotatable shaft, said elements being both rotatable and adapted to receive independent strands of material and to feed the strands under positive control at varying rates and in varying sequence to a spinning device.

4. A strand feeding device comprising a continuously rotatable operating means and rotatable strands receiving and feeding elements mounted eccentrically with relation to the axis of the operating means to provide a non-uniform feed of the strands to a spinning device.

5. A strand feeding device comprising a continuously rotatable operating means and rotatable strand receiving and feeding elements mounted eccentrically with relation to the axis of the operating means to provide a non-uniform feed of the strands to a spinning device, said elements being so mounted as to provide a varying feed as between strands carried on different strand receiving elements.

6. A strand feeding device comprising a continuously rotatable shaft and a plurality of rotatable strand receiving and feeding elements carried by the shaft, at least one of the elements being eccentrically mounted with relation to the axis of the shaft.

7. A strand feeding device comprising a continuously rotatable shaft and a plurality of flat rotatable strand-receiving flags carried by the shaft, said flags being so positioned with relation to one another as to provide a non-uniform feed of the strands to a spinning device.

8. A strand feeding device comprising a continuously rotatable shaft and a plurality of flat rotatable strand receiving flags carried by the shaft, at least one of said flags being mounted

eccentrically with relation to the shaft, said flags being so positioned with relation to one another as to provide a non-uniform feed of the strands to a spinning device.

9. A strand feeding device comprising a rotatable shaft and a plurality of feed rolls carried by the shaft, said rolls receiving turns of strand thereon and at least one of said rolls being mounted eccentrically on the shaft.

10. A strand feeding device adapted to be applied to a standard spinning or twisting machine to produce a novelty thread by providing an uneven feed of the strands which form the thread comprising a shaft adapted for continuous rotation and a plurality of eccentric feed members operated by the shaft.

11. A strand feeding device comprising a rotatable shaft and a plurality of feed rolls to receive one or more turns of strand operated by the shaft, at least one of said rolls being mounted eccentrically with relation to the axis of the shaft.

12. In combination with a twisting machine having supply bobbins and a spinning bobbin, a feed means to receive strands from the supply bobbins and feed the strands to the spinning bobbin comprising a rotatable shaft and a plurality of feed rolls to receive one or more turns of strand eccentrically mounted with relation to the axis of the shaft.

13. In combination with a twisting machine having supply bobbins and a spinning bobbin, a feed means to receive turns of strands from the supply bobbins and feed the strands to the spinning bobbin comprising a rotatable shaft and a plurality of strand receiving and feeding elements eccentrically mounted with relation to the axis of the shaft.

14. In combination with a twisting machine having supply bobbins and a spinning bobbin, a feed means to receive turns of strands from the supply bobbins and feed the strands to the spinning bobbin comprising a rotatable shaft and a plurality of strand receiving and feeding elements, at least one of said elements being eccentrically mounted with relation to the axis of the shaft.

15. In combination with a thread making machine having supply bobbins and a spinning bobbin, a feed means comprising a rotatable shaft, a plurality of strand receiving and feeding elements mounted for rotation on said shaft and means to continuously rotate the shaft to produce a continuous variation in the feed of a strand to the spinning bobbin.

16. In combination with a thread making machine having supply bobbins and a spinning bobbin, a feed means comprising a rotatable shaft, a plurality of strand receiving and feeding elements eccentrically mounted on said shaft and means to continuously rotate the shaft.

17. In combination with a thread making machine having supply bobbins with a spinning bobbin, a feed means comprising a rotatable shaft, a plurality of strand receiving and feeding elements mounted for rotation on said shaft and means to rotate the shaft to feed strands intermittently to the spinning bobbin under positive control during the entire operation.

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