Sept. 20, 1938. N. REDMAN 2,130,599

TEXTILE MACHINERY

Filed May 12, 1938 4 Sheets-Sheet 1

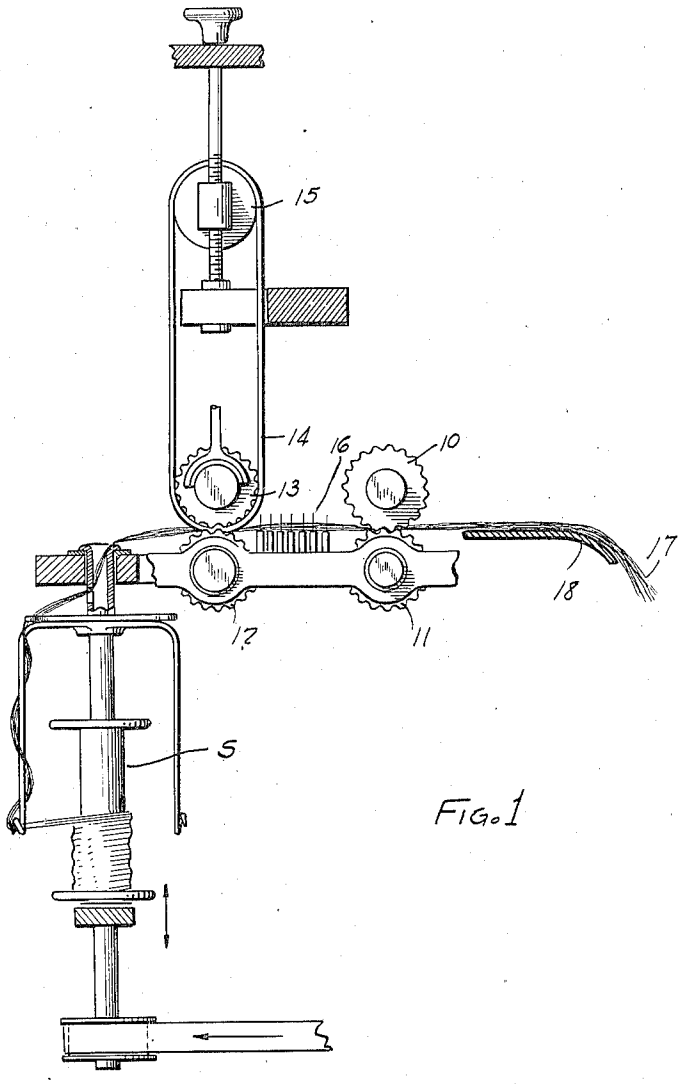


FIG. 1

INVENTOR.
NORMAN REDMAN.
BY Joshua R. H. Potts
ATTORNEY.

Sept. 20, 1938. N. REDMAN 2,130,599

TEXTILE MACHINERY

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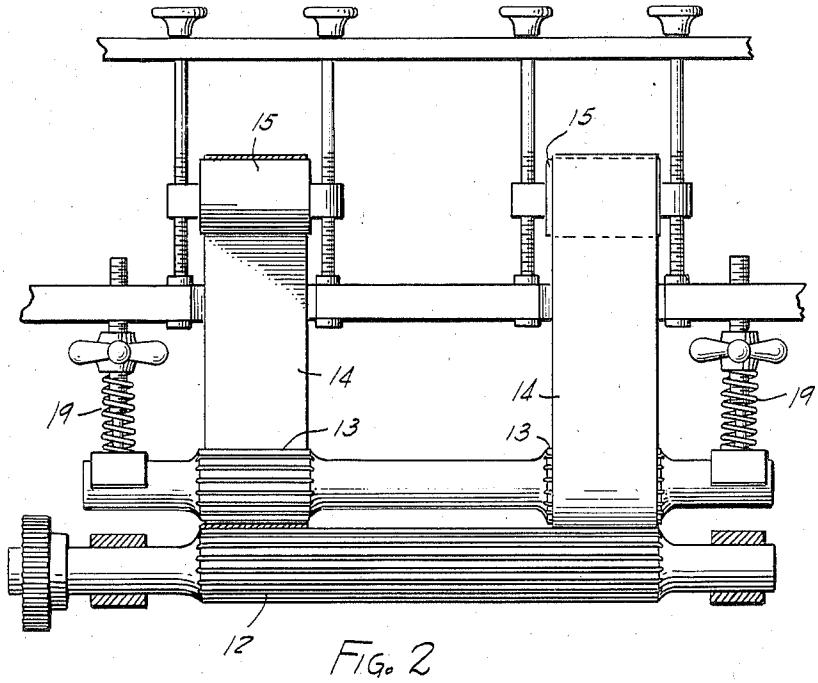


FIG. 2

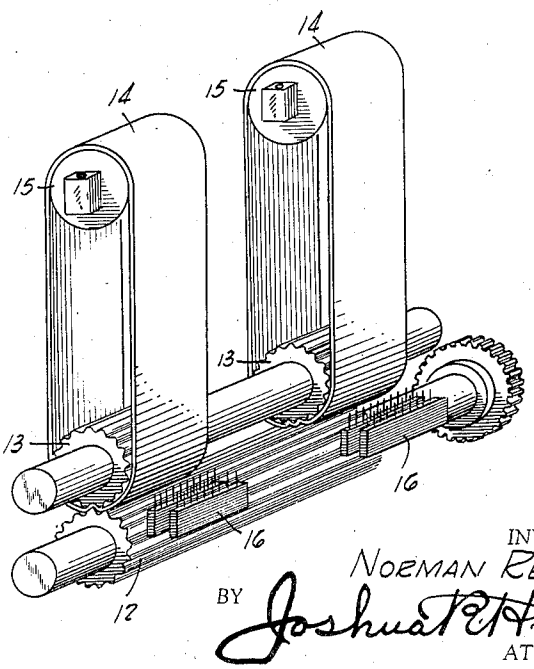


FIG. 3

INVENTOR.
NORMAN REDMAN
BY Joshua R. H. Potts
ATTORNEY.

Sept. 20, 1938. N. REDMAN 2,130,599

TEXTILE MACHINERY

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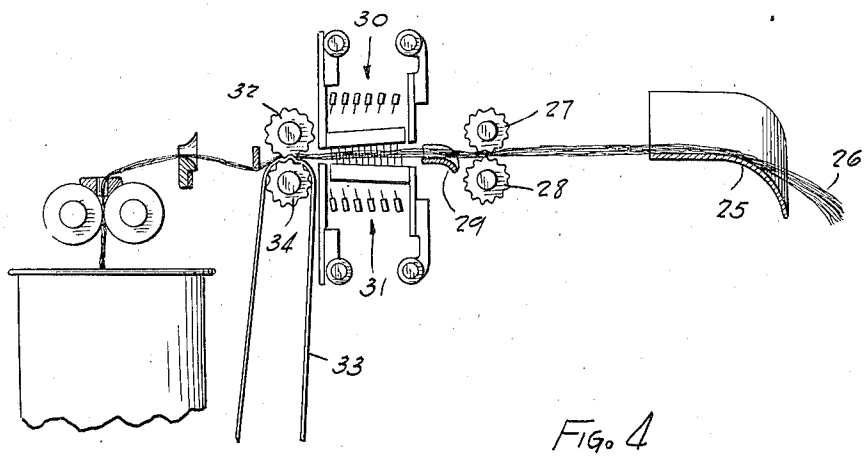


FIG. 4

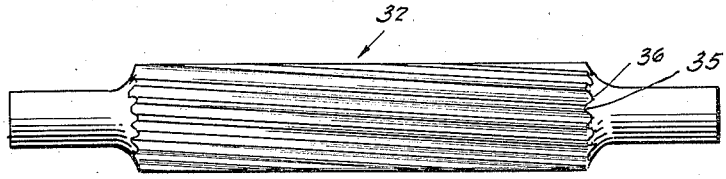


FIG. 5

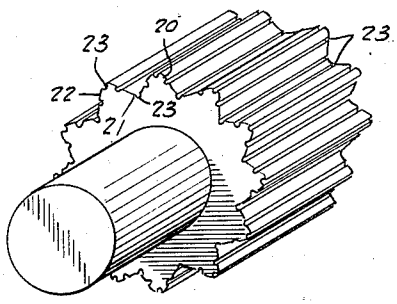


FIG. 6

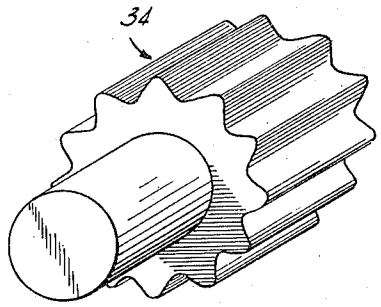


FIG. 7

INVENTOR.
NORMAN REDMAN.
BY Joshua R. H. Hopkins
ATTORNEY.

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TEXTILE MACHINERY

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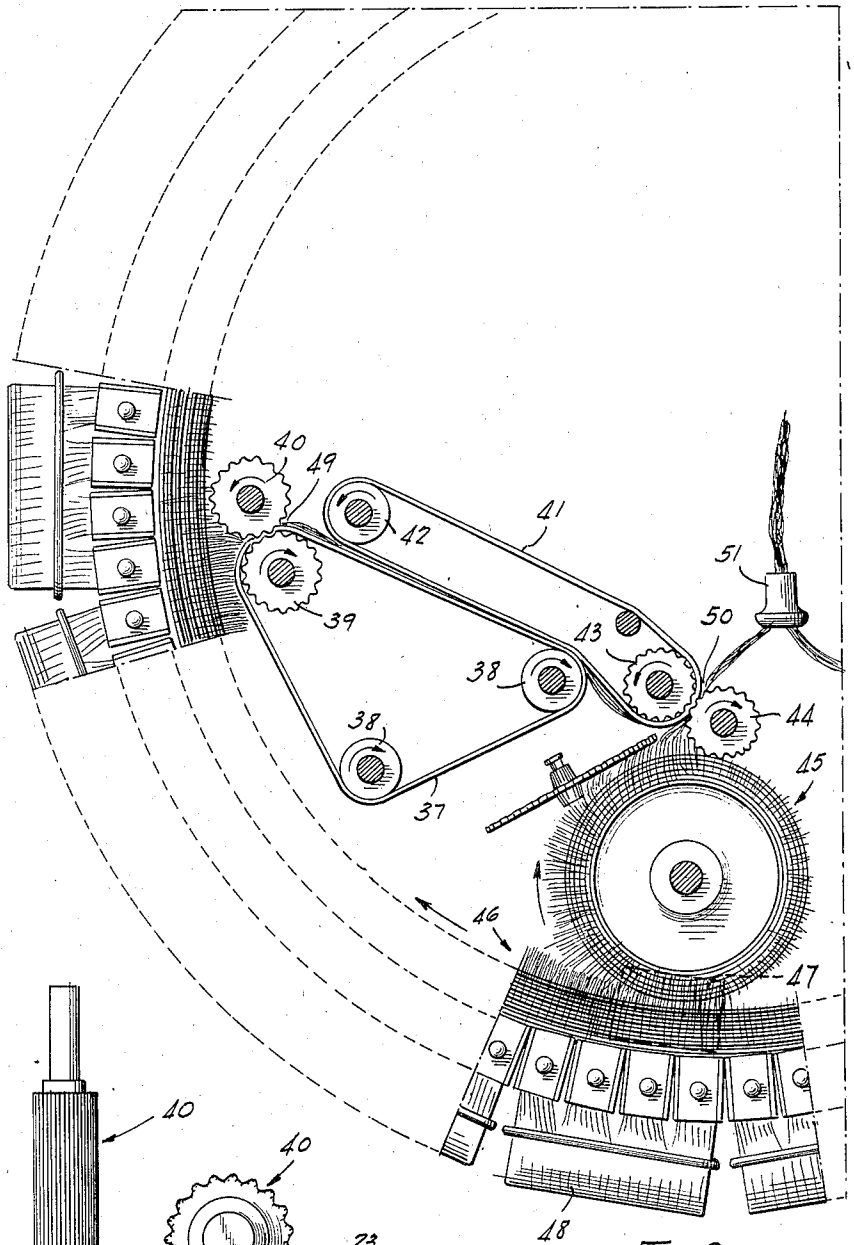


FIG. 8

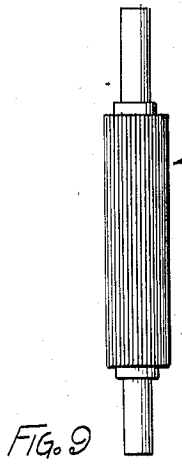


FIG. 9

FIG. 10

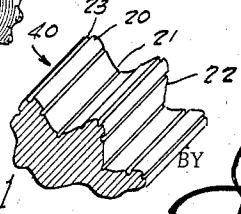


FIG. 11

INVENTOR.
NORMAN REDMAN.
BY Joshua R. H. Potts
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,130,599

TEXTILE MACHINERY

Norman Redman, Philadelphia, Pa., assignor to American Interlining & Spinning Company, Philadelphia, Pa., a corporation of Pennsylvania

Application May 12, 1938, Serial No. 207,456

11 Claims. (Cl. 19—115)

This invention has to do with textile machinery and is concerned primarily with certain mechanisms employed in the treatment of fibres preparatory to spinning.

In the preparation of the various fibres which are used in the textile industry for twisting and spinning several more or less distinct processes are carried out on characteristically different mechanisms, but there is a feature that is common to a large number of these mechanisms, and that is they all employ one or more fluted rollers in feeding fibres to the mechanism and/or in the drawing operations.

Such mechanisms as gill boxes and intersecting gill boxes employ fluted rollers in the feeding of fibres to the action of the fallers and fluted rollers in the drawing of the fibres through the fallers. Various types of combs, such as the Noble comb, utilize fluted rollers in the drawing off of fibres from the circles.

It is evident from the very nature of the use to which the fluted rollers are put that the effectiveness of the gripping engagement of the rollers with the fibres is a highly important factor, and the importance of this factor is particularly emphasized when the fibres which are handled by the mechanism are short.

Accordingly, the invention has in view, as its primary objective, the provision, in textile machinery used in the preparation of fibres for twisting and spinning, of a roller of novel construction that is peculiarly designed to provide greatly enhanced gripping effects on the fibres.

More in detail this invention has in view, as an important objective, the provision, in textile machinery of the character above noted, of a fluted roller the surfaces of which are formed with small grooves to define edges that are adapted to grip the fibres being handled by the respective mechanism.

A further particular object in view is the provision, in textile machinery of the character above noted, of a fluted roller the corrugated cylindrical surface of which is defined by top and bottom apices with the walls of the corrugation extending therebetween, and which apices are formed with small grooves presenting edges for gripping the fibres, and as a further refined object the invention has in view the provision of a fluted roller of the character above noted in which the surfaces of the walls between the apices are also formed with grooves.

Yet another specific object of the invention is the provision of a fluted roller of the character above described in which the grooves which are formed on the apices and surfaces of the corrugation are of a U-shaped cross section.

Various other more detailed objects and advantages which arise in connection with providing a roller in any particular type of mechanism in accordance with the above noted objectives will in part become apparent, and in part be hereinafter stated, as the description of the invention proceeds.

The invention, therefore, comprises a fluted roller designed for use in the textile machinery employed in the preparation of fibres for twisting and spinning, and which fluted roller presents a plurality of apices and wall surfaces which are formed with small U-shaped grooves to provide highly improved gripping effects on the fibres.

For a full and more complete understanding of the invention reference may be had to the following description and accompanying drawings, wherein

Figure 1 is a side view partly in section and partly in elevation developing certain gill box mechanism embodying the precepts of this invention,

Figure 2 is a front elevational showing of a portion of the gill box developed in Figure 1, while

Figure 3 is a detailed perspective showing of the drawing-off roller and associated mechanism,

Figure 4 is a side view somewhat diagrammatic and fragmentary developing certain parts of an intersecting gill box.

Figure 5 is an enlarged detailed plan view of a spirally fluted roller employed in the intersecting gill box of Figure 4,

Figure 6 is an enlarged detailed view in perspective of one end of a fluted roller which is grooved in accordance with the precepts of this invention, while

Figure 7 is a similar view of a roller which has not been grooved,

Figure 8 is a plan view largely fragmentary and diagrammatic bringing out certain parts of a Noble comb in which the improved roller of this invention may be employed,

Figure 9 is an elevational showing of one of the rollers employed in the comb of Figure 8,

Figure 10 is an end elevational showing of the roller of Figure 9, and

Figure 11 is a detailed view in perspective of a part of the roller shown in Figures 9 and 10.

In describing the fluted roller of this invention certain mechanisms are illustrated in the drawings and hereinafter described in part, and which mechanisms find their most widespread use in the preparation of woolen fibres. However, it is to be distinctly understood that this is not a limitation on the invention, as the fluted roller hereof is intended to be used in any processes involving the preparation of fibres prior to spinning, and in which it is important to obtain a good gripping engagement of the fluted roller with the fibres. Thus the handling of synthetic, vegetable, mineral and animal fi-

bres may be greatly improved by employing a roller of the type hereinafter described.

Referring now more particularly to Figures 1, 2 and 3, that part of a gill box mechanism with which this invention is concerned is shown as comprising a pair of back or feed rollers designated 10 and 11 respectively. A front or drawing roller is shown at 12, and in close proximity to this front or drawing roller 12, and disposed thereabove, are a pair of spaced rollers 13 about which is passed a leather 14. The leather 14 takes the form of an endless belt which may be made from an appropriate composition, and at its upper end passes around a pulley roller 15.

At this point it is well to note that there is a leather 14 employed in conjunction with each of the corrugated rollers 13, the leather being wedged in between its respective roller 13 and the drawing roller 12. Interposed between the feed or back rollers 10 and 11 and the front or drawing roller 12 are fallers designated 16.

As clearly depicted in Figure 1, a rope of fibres which is to be drawn in the gill box is designated 17, and is shown as passing over the feed plate 18 between the feed or back rollers 10 and 11. The back roller 10 will be of an improved novel construction hereinafter described in detail preferably closely simulating the drawing roller 12 in this respect.

From the back rollers 10 and 11 the fibres 17 pass through the fallers 16 over the drawing roller 12 and beneath the leather 14. The drawing roller 12 is usually driven at a higher rate of speed than the back rollers 10 and 11, the differential providing the drawing out action. After passing between the leather 14 the rope of fibres 17, in its drawn out state, is wound on a spool referred to generally at S, which is operably mounted on appropriate winding mechanism in a manner well known to those skilled in the art.

It is notable that the leathers 14 are maintained in engagement with the drawing roller 12 and the fibres therebetween under the required degree of tension by the springs shown at 19 in Figure 2.

In accordance with this invention the drawing roller 12, and preferably one of the feed rollers 10 and 11, is of the construction depicted in Figure 6, whereas the rollers 13 and the other of the feed rollers 10 and 11 will be of the plain fluted construction shown in Figure 7.

Referring more particularly to Figure 6, it will be noted that the fluted rollers are defined by corrugations having top apices 20 and bottom apices 21, between which extend the side walls of the corrugations designated 22. Extending along each of the top apices 20, lengthwise of the roller, is a groove 23, which may be of any shape which will present sharp edges for gripping the fibres. A U-shaped groove has been found to prove satisfactory, and is illustrated in the drawings.

In the valley of each of the bottom apices 21 is another of the grooves 23, while each of the side walls 22 has formed therein, preferably substantially equi-distantly between the top and bottom apices, one of the U-shaped grooves 23.

Prior to the advent of this invention it has been necessary, in gill boxes, to employ drawing rollers corresponding to the drawing rollers 12 of comparatively large diameter in order to provide the desired gripping effects on the fibres. Thus it has been impracticable to position these drawing rollers as close to the fallers as would afford the best results on the fibres. However, with the drawing roller provided by this invention the gripping effects on the fibres are such that the roller may be of a smaller diametrical dimension, and may be positioned closer to the fallers, this being a highly desirable and advantageous arrangement.

Referring now more particularly to the showing of Figure 4, certain parts of an intersecting gill box mechanism are there illustrated as including a feed plate 25 over which passes a rope of fibres designated 26 which is to be processed in the intersecting gill box.

A pair of fluted back or feed rollers are represented at 27 and 28, and in accordance with this invention one of the fluted rollers 27 or 28 will have its top and bottom apices and the side walls therebetween grooved in the manner above described.

From the feed rollers 27 and 28 the fibres 26 pass over another plate 29 between the intersecting fallers referred to generally at 30 and 31. The particular construction and operation of these intersecting fallers is well-known to those skilled in the textile arts, and need not be described here in detail. It suffices to say that the fallers intersect and move through the fibres to have the desired effects thereon. After passing through the fallers 30 and 31 the fibres 26 pass between the drawing roller shown at 32, and a leather 33 that passes over a fluted roller 34. As in the case of the usual gill box, the drawing roller 32 is driven at a higher rate of speed than the feed rollers 27 and 28, the differential drawing out the fibres in the usual manner.

Referring now more particularly to Figure 5, the drawing roller 32 for the intersecting gill box is shown as being of a slightly different construction in that the corrugations are spirally arranged. This roller 32 is shown as having corrugations defined by top apices 35 and bottom apices 36 which are disposed spirally with respect to the axis of the roller. Each of the top and bottom apices 35 and 36 is formed with the U-shaped grooves 23, as are the side walls therebetween.

The roller 34, which acts as a carrier for the leather 33, while of a fluted construction, does not have the small grooves formed therein, such a roller being shown in Figure 7.

Referring now more particularly to Figure 8, certain parts of a Noble comb are there illustrated. Without going into a detailed description of the mechanism or operation of a Noble comb, it is noted that each of these combs ordinarily includes certain mechanism at one side of the comb which is duplicated on the other side. Figure 8 depicts that mechanism on one side only, and this mechanism is shown as comprising a triangular leather 37 that passes about two plain carrying rollers 38 and a fluted roller 39. In effective engagement with the leather 37, where it passes over the fluted roller 39, is another fluted roller 40, and it is this roller 40 which takes the improved form provided by this invention.

In close juxtaposition to one side of the triangularly disposed leather 37 is a second leather 41 which passes at one end over a carrying roller 42, and at its other end over a fluted roller 43. Another drawing off roller 44 of the improved fluted construction provided by this invention engages the leather 41 at the zone where it passes over the fluted roller 43.

An inner circle of the Noble comb is repre-

sented diagrammatically at **45**, with the large circle being shown at **46**. A dabbing brush is represented diagrammatically at **47**, and this dabbing brush is effective to pass fibres from the rolls **48** on to the large circle **46**. Certain of the fibres on the large circle **46** are picked up by the leather **37** and drawing off roller **40**, such as shown at **49**, and pass down between the leathers **37** and **41**, where they are joined by fibres coming from the inner circle **45**. The rope of fibres, which is now of an enlarged character, and which is designated **50**, passes between the leather **41** and the drawing off roller **44** to the trumpet **51**, where it is joined by the rope of fibres coming from the mechanism on the other side of the comb.

Each of the drawing off rollers **40** and **44** may be of substantially the same formation which is developed in Figures 9, 10 and 11, the particular character and novel construction of these rollers being brought out in Figure 11, which develops the U-shaped grooves **23** as formed in the top apices **20**, bottom apices **21** and side walls **22** of the corrugations defining the fluted construction.

While preferred specific embodiments of the invention are hereinbefore set forth it is to be clearly understood that I am not to be limited to the exact constructions illustrated and described, because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

I claim:

1. Mechanism of the character described comprising, in combination, means for parallelizing and improving the arrangement of fibres preparatory to twisting or spinning, a fluted roller, and a second fluted roller complemental to said first fluted roller and assembled therewith to engage fibres which pass therebetween, one of said fluted rollers having corrugations defined by top and bottom apices, the top apices being formed with small grooves extending lengthwise of the roller and which grooves provide edges for grippingly engaging the fibres.

2. Mechanism of the character described comprising, in combination, means for improving the arrangement of fibres preparatory to twisting or spinning, a fluted roller, and a second fluted roller complemental to said first fluted roller and assembled therewith to engage fibres which pass therebetween, one of said fluted rollers having corrugations defined by top and bottom apices, the bottom apices being formed with small grooves extending lengthwise of the roller and which grooves provide edges for grippingly engaging the fibres.

3. Mechanism of the character described comprising, in combination, means for parallelizing and improving the arrangement of fibres preparatory to twisting or spinning, a fluted roller, and a second fluted roller complemental to said first fluted roller and assembled therewith to engage fibres which pass therebetween, one of said fluted rollers having corrugations defined by top and bottom apices, the top and bottom apices being formed with small grooves extending lengthwise of the roller and which grooves provide edges for grippingly engaging the fibres.

4. Mechanism of the character described comprising, in combination, means for improving the arrangement of fibres preparatory to twisting or spinning, a fluted roller, and a second fluted roller complemental to said first fluted roller and assembled therewith to engage fibres which pass therebetween, one of said fluted rollers having corrugations defined by top and bottom apices, the side walls between said top and bottom apices being formed with small U-shaped grooves extending lengthwise of the roller.

5. Mechanism of the character described comprising, in combination, means for improving the arrangement of fibres preparatory to twisting or spinning, a fluted roller, and a second fluted roller complemental to said first fluted roller and assembled therewith to engage fibres which pass therebetween, one of said fluted rollers having corrugations defined by top and bottom apices, each of said top and bottom apices and the side walls therebetween being formed with grooves extending lengthwise of the roller to provide edges for grippingly engaging the fibres.

6. Mechanism for treating fibres preparatory to twisting or spinning comprising, in combination, a pair of feed rollers, a fluted drawing roller, a fluted roller associated with said drawing roller and carrying a leather in operative engagement with said drawing roller, and fallers between said feed rollers and drawing rollers, said fluted drawing roller having corrugations defined by top and bottom apices with the apices and the surfaces therebetween provided with small U-shaped grooves extending lengthwise of the roller.

7. Mechanism for treating fibres preparatory to twisting or spinning comprising, in combination, a pair of feed rollers, a fluted drawing roller, a fluted roller associated with said drawing roller and carrying a leather in operative engagement with said drawing roller, and fallers between said feed rollers and drawing rollers, said drawing roller and one of the feed rollers being fluted and having corrugations defined by top and bottom apices, said apices being formed with grooves extending lengthwise of the roller.

8. Mechanism for treating fibres preparatory to twisting or spinning comprising, in combination, a pair of feed rollers, a fluted drawing roller, a fluted roller associated with said drawing roller and carrying a leather in operative engagement with said drawing roller, and fallers between said feed rollers and drawing rollers, said drawing roller and one of the feed rollers being fluted and having corrogations defined by top and bottom apices, said apices and the surfaces therebetween being formed with small U-shaped grooves extending lengthwise of the roller.

9. In mechanism of the character described, a fluted roller having corrugations defined by top and bottom apices and wall surfaces extending therebetween, said top apices being formed with small grooves extending lengthwise of said roller.

10. In mechanism of the character described, a fluted roller having corrugations defined by top and bottom apices and wall surfaces extending therebetween, said surfaces being formed with small grooves extending lengthwise of the roller.

11. In mechanism of the character described, a fluted roller having corrugations defined by top and bottom apices and wall surfaces extending therebetween, said apices and surfaces being formed with small U-shaped grooves extending lengthwise of the roller and defining edges for grippingly engaging the fibres.

NORMAN REDMAN.