Nov. 23, 1948. C. F. POWELL 2,454,405

YARN FEED FOR TWISTING MACHINES

Filed April 19, 1946 3 Sheets-Sheet 1

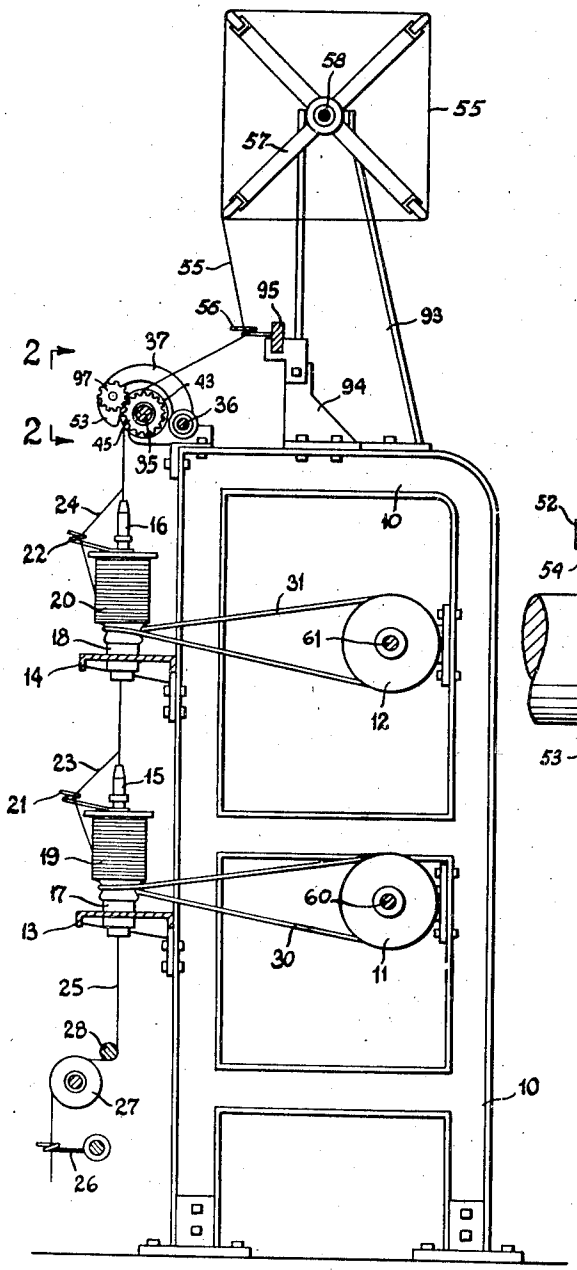


Fig-1

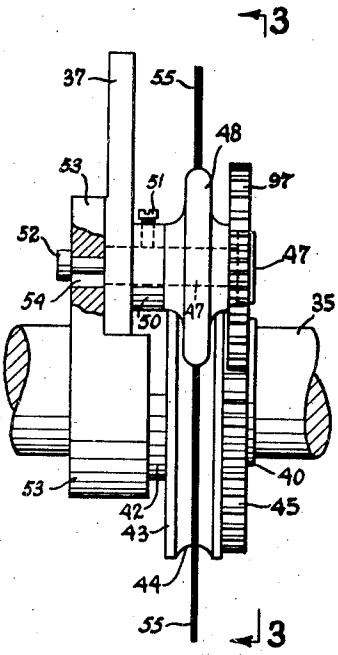


Fig-2

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3 Sheets-Sheet 2

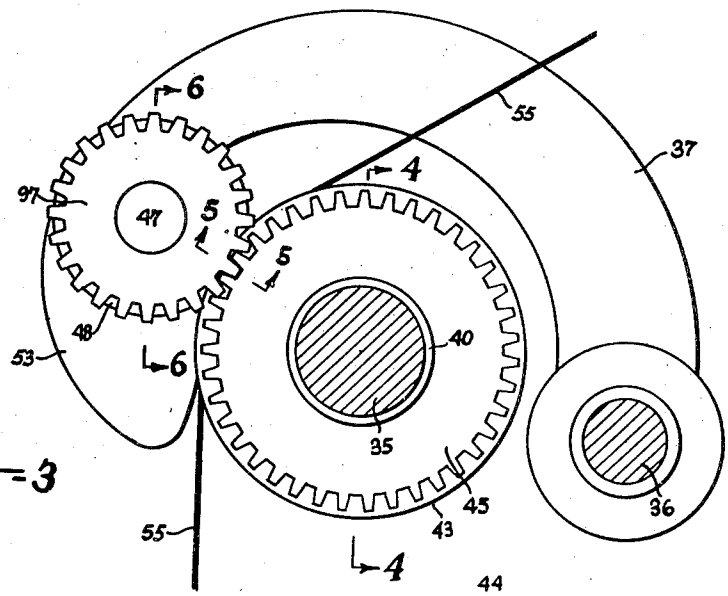


Fig-3

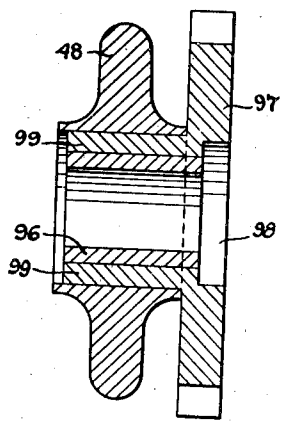


Fig-6

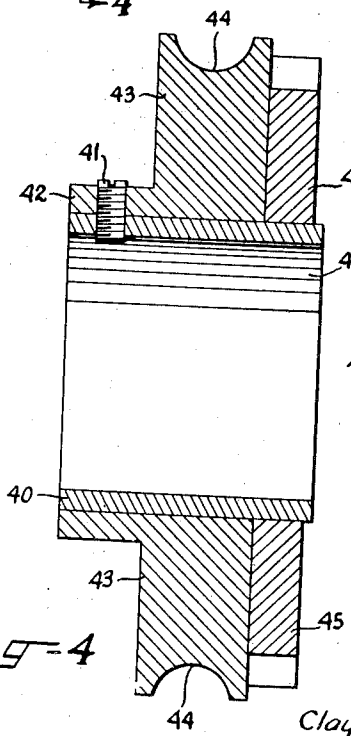


Fig-4

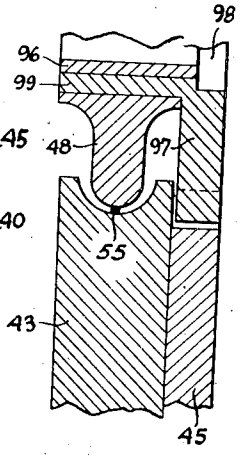


Fig-5

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YARN FEED FOR TWISTING MACHINES

Filed April 19, 1946 3 Sheets-Sheet 3

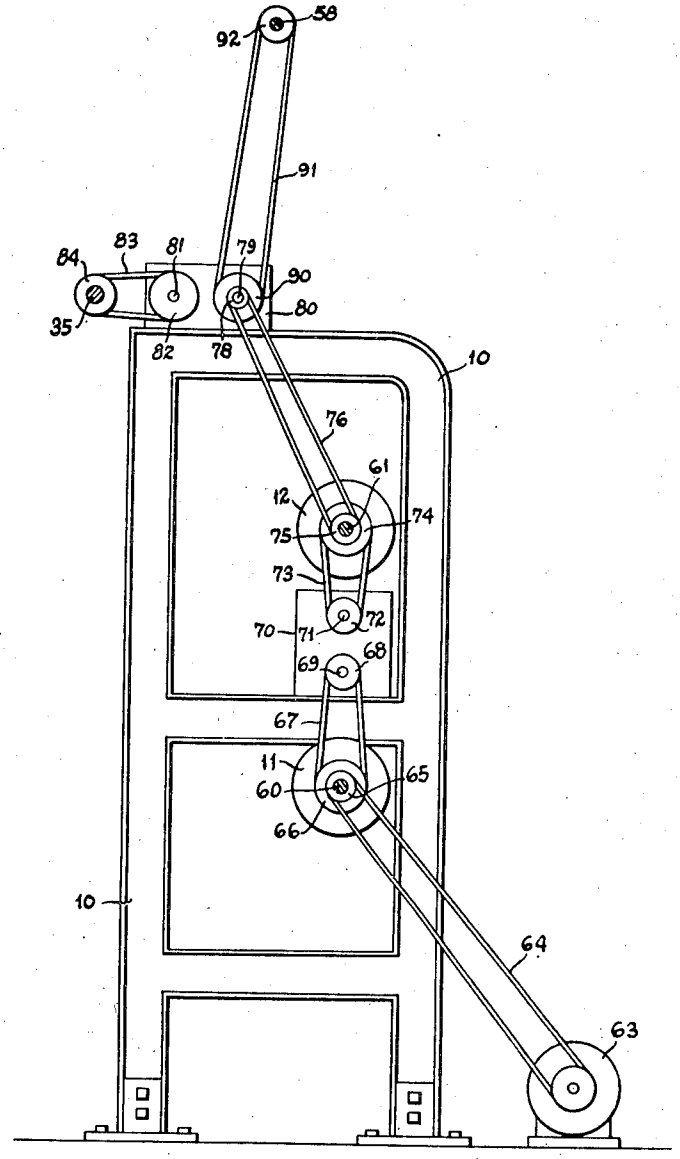


Fig-7

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Patented Nov. 23, 1948

2,454,405

UNITED STATES PATENT OFFICE

2,454,405

YARN FEED FOR TWISTING MACHINES

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Application April 19, 1946, Serial No. 663,590

1 Claim. (Cl. 57—16)

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This invention relates to a wrapping machine, and more especially to a positive and proved feeding apparatus for moving a core member through one or more spindles, while yarn is wrapped around the core member and feeding it onto a take up package by a positive feeding action, which will prevent slippage and give a uniform tension to the finished product, as it is being manufactured and passed onto a receiving package.

It is an object of this invention to provide a feeding mechanism associated with a wrapping machine, wherein a core member is passed through a plurality of spindles and onto which one or more strands of yarn is twisted as the core member passes through the spindles, and in which a positive feeding means is provided for giving a uniform tension and rate of travel to the core, while the yarn is being wound thereon and while the core with the yarn wrapped therearound is being deposited onto a suitable take up apparatus.

It is another object of this invention to provide feeding apparatus for a strand being manufactured in a wrapping machine comprising a peripherally grooved wheel and a peripherally convex wheel, fitting into said groove and between which two wheels, the finished strand is passed so that the proper tension is applied to the strand at all times while it is being wrapped with a yarn and it is delivered to a receiving package at a uniform rate of travel.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which:

Figure 1 is a vertical sectional view through a conventional wrapping machine and showing my invention applied thereto;

Figure 2 is an enlarged elevation with parts in section and taken along the line 2—2 in Figure 1;

Figure 3 is a vertical sectional view taken along the line 3—3 in Figure 2;

Figure 4 is a vertical sectional view taken along the line 4—4 in Figure 3;

Figure 5 is a sectional view taken along the line 5—5 in Figure 3;

Figure 6 is a sectional view taken along the line 6—6 in Figure 3, and omitting the shaft on which its associated gear rotates and omitting the weight associated with said gear and also omitting the arm on which the gear is mounted for rotation;

Figure 7 is a schematic diagram of the wrapping machine and showing the drive mechanism for the various portions thereof.

Referring more specifically to the drawings, the numeral 10 indicates one of the Samsons or frame members of the wrapping machine, which has a plurality of cylinders, such as 11 and 12,

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mounted for rotation therein and driven by suitable means to be later described. This conventional machine also has a plurality of bolster rails 13 and 14, in which hollow spindles 15 and 16 are mounted on bolsters 17 and 18 disposed on said bolster rail.

Each spindle carries a package of yarn, such as 19 and 20, and has extending therefrom pigtails 21 and 22 through which strands of yarn 23 and 24 extend for being wrapped around the travelling core, which is usually a rubber core 25. This rubber core comes from any suitable source through a pigtail 26 over a roller 27 and beneath a shaft 28 and passes through the hollow bolsters 17 and 18 and through the hollow spindles 15 and 16.

The spindles 15 and 16 are driven by any suitable means, such as belts 30 and 31, being mounted on the cylinders 11 and 12, and also the whorl portion of the spindles 15 and 16.

There is also mounted in said machine, a shaft 35 which is supported in suitable bearings, and there is also a shaft 36 on which a plurality of arms 37 are mounted, there being an arm 37 for each set of spindles 15 and 16. The shaft 35 has suitably secured thereon a sleeve 40 by any suitable means, such as a set screw 41, penetrating a hub portion 42 of a grooved wheel 43, having a peripheral groove 44. Also secured on the sleeve 40 by a pressed fit or the like is a pinion or gear 45.

Each of the arms 37 has fixedly secured therein a bearing bolt 47 on which a wheel 48, having a convex periphery, is mounted for rotation, each arm 37 having a hub portion 50, in which a set screw 51 is threadably mounted for engaging the bolt or shaft 47, and confining it in the hub portion 50. Threadably or otherwise secured in the left hand end of bolt 47, as in Figure 2, is a bolt 52 onto which is adapted to be hung a weight member 53, by means of an enlarged hole 54, which is large enough to be inserted over the head of bolt 52 and to apply the proper amount of weight onto the convex wheel 48. This weight 53 may be dispensed with, if desired.

Rotatably mounted on the stub shaft 47 is a sleeve 96 onto which is secured by a pressed fit, or any other suitable means, a pinion 97, having a countersunk portion 98 into which the enlarged head of the stub shaft 47 is adapted to loosely fit. This sleeve 96 receives a sleeve portion 99 integral with the pinion 97, and the wheel 48 having the convex periphery is secured on the sleeve portion 99, by any suitable means, such as a pressed fit.

The core 25, as heretofore described, has the strands of yarn 23 and 24 wound therearound, one in one direction and the other in the other as is conventional in this type of machine, to thus provide what is known as rubber yarn or

elastic yarn after the textile filaments 23 and 24 have been wrapped spirally onto the exterior of the rubber core 25. The finished product is indicated by reference character 55 and passes through the groove 44 and is pressed into the groove 44 by the periphery of convex wheel 46. After the finished product 55 passes out of the upper side of the two wheels 43 and 46, it goes through a conventional pigtail 56 and is wound onto a suitable reel 57, disposed on a driven shaft 58.

The shaft 58 is supported by a plurality of brackets 93 rising upwardly from the frame of the machine and there is also a plurality of brackets 94, which house a reciprocating bar 95 containing the pigtails 56 for traversing the finished product 55 onto the reels 57.

The cylinders 11 and 12 are mounted on suitable shafts 60 and 61 and any conventional means can be employed for driving all parts of the machine in unison. In Figure 7, I show means for driving all parts of the machine comprising an electric motor 63, having a belt 64 extending therefrom, which is mounted on a suitable pulley 65, secured on shaft 60 and a second pulley 66 is secured on shaft 60 and has a belt 67, which is mounted on a pulley 68 of a shaft 69 extending into a suitable gear box 70 which has an output shaft 71, extending to the exterior thereof on which a pulley 72 is mounted, which has a belt 73 thereon, which is also mounted on a suitable pulley 74, secured on shaft 61. Shaft 61 also has another pulley 75 thereon on which a belt 76 is mounted, which belt is also mounted on a pulley 78 secured on a shaft 79 extending into a gear box 88 and an output shaft 81 extends from the gear box and has a pulley 82 thereon, on which a belt 83 is mounted, which is also mounted on a pulley 84 secured on shaft 35. Shaft 79 also has a pulley 90 thereon, on which a belt 91 is mounted, which is also disposed on a pulley 92 secured on shaft 58 for driving the take-up reels 57 of the machine.

It is thus seen that a positive drive is imparted to the shaft 35 along with the positive drive to the spindles 15 and 16 and also a positive drive is applied to the take-up reels 57. By means of this positive drive, the pinion 45 is rotated in timed relation to the machine, which rotates its companion or grooved wheel 43 and the wheel 46 having the convex periphery is adapted to loosely

slip down into the groove 44 and press the finished yarn 55 into the groove so that when wheel 43 is rotated by the driving mechanism of the machine, the finished yarn 55 will be pulled through the hollow spindles 15 and 16 and fed to the take-up mechanism at a uniform rate and there will be a minimum of slippage and thus a more perfect finished product will be provided by this improved feeding means.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claim:

I claim:

In a wrapping machine having upper and lower hollow spindles through which a core is drawn and from which spindles the yarn is wrapped around the core, said machine having means for advancing the core through the spindles while the yarn is being wrapped thereon, comprising a wheel having a smooth concave periphery disposed above the uppermost spindle and having a second wheel provided with a smooth convex periphery resting by gravity in the smooth concave periphery of the first wheel and between which the finished product is passed after leaving the spindles, said first wheel having a pinion fixedly mounted on one side thereof and the second wheel having a pinion fixedly mounted on one side thereof and meshing with the first-named pinion and means driven by the machine for driving the first wheel which in turn drives the second wheel to positively draw the yarn through the spindles and to feed it from the two wheels to suitable take-up means.

CLAYBORN F. POWELL.

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