Aug. 10, 1926. 1,595,818

H. J. W. BLISS

MACHINE FOR WINDING YARNS, CORDS, ROPES, SLIVERS AND THE LIKE

Filed Sept. 15, 1924 2 Sheets-Sheet 1

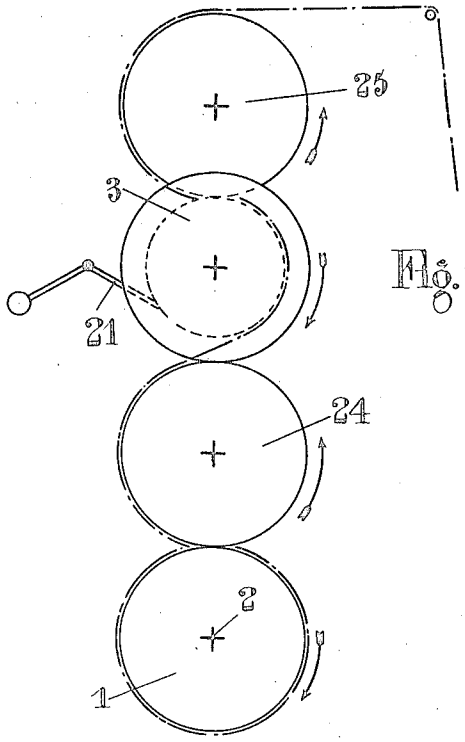


Fig. 5.

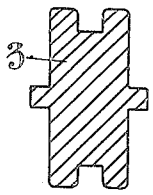


Fig. 2

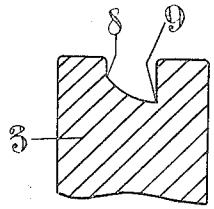


Fig. 3.

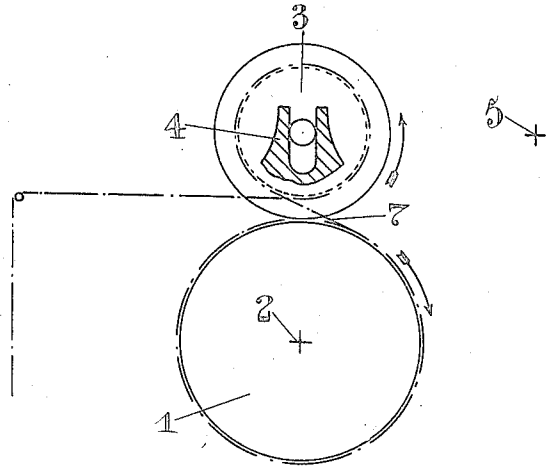


Fig. 1.

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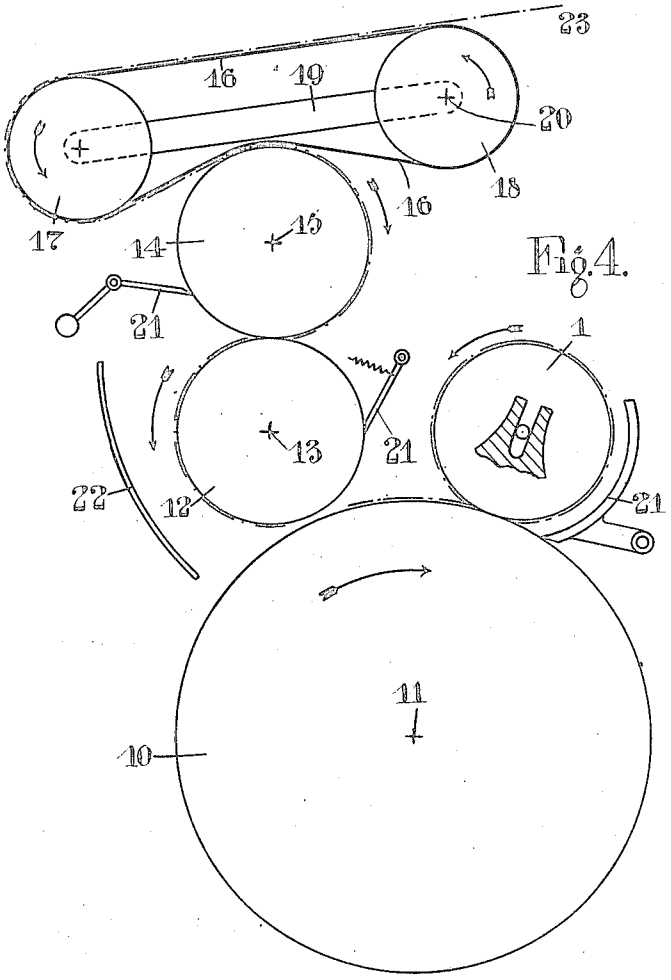


Fig. 4.

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Patented Aug. 10, 1926. 1,595,818

UNITED STATES PATENT OFFICE.

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MACHINE FOR WINDING YARNS, CORDS, ROPES, SLIVERS, AND THE LIKE.

Application filed September 15, 1924, Serial No. 737,745, and in Great Britain October 23, 1923.

This invention relates to machines for winding yarns, cords, ropes, slivers and the like (hereinafter termed "yarn") under tension or extension upon a core, centre or spindle (hereinafter termed "core").

Hitherto in these machines, the yarn has been subjected to retardation by some frictional device on its way to the core so as to cause it to be wound thereon under tension; which means that the stretch or extension of the yarn is dependent upon the friction and tension applied, a difficult matter to control exactly.

Now the object of this present invention is to provide an improved winding machine, as hereinafter described, by which a definite stretch or extension is applied to the yarn being wound upon the core, while the tension, measured say in ounces or pounds, is of secondary effect.

Three examples of construction are shown diagrammatically in the accompanying drawings; wherein:—Figs. 1, 2 and 3 show one example, Fig. 4 another example, and Fig. 5 a further example.

Referring to the example shown at Figs. 1, 2 and 3 of the drawings, the core 1 upon which the yarn is wound has its centre at 2 and is rotated in the direction indicated by an arrow, and upon the said core 1 rests a roller 3 (shown separately in cross-section at Fig. 2) having two principal diameters, i. e. the bottom of the central groove and the top of the flanges, while the said two-diameter roller 3 is so mounted as to be free to approach or recede from the core 1 according to the amount of yarn wound thereon. The two-diameter roller 3 may be provided with trunnions mounted in slots in the frame 4 (of which a portion only is shown), or the said roller 3 may be mounted on an arm or arms pivoted to the frame say at about a point 5.

The yarn supplied say from a cop or other convenient source is given some initial tension by being passed through an ordinary tensioning device say of the ball or ladder type (not shown), whence it passes over a yarn guide at a convenient point say at 6 to the two-diameter roller 3 and once round its smaller diameter prior to passing on to the core 1 at a point 7. Should the yarn be passed more than once round the roller 3, the bottom of the central groove of the said roller 3 may be sloped or curved as shown in enlarged section at Fig. 3, the yarn guide being then arranged so that the yarn feeds on to the higher part of the bottom of the groove at 8 and then slips down to the lower part at 9 so as to avoid the riding of one turn on the next.

In order to build the yarn regularly upon the core 1, a traverse motion must be provided so as to reciprocate the roller 3 relatively to the core 1 in a direction parallel to its axis.

Referring to the example shown at Fig. 4 of the drawings, 10 is a cylinder mounted on a shaft at centre 11 and driven in the direction indicated by an arrow, the core 1 upon which the yarn is wound being mounted in like manner to that of the two-diameter roller 3 in Fig. 1 so as to be free to approach or recede from said cylinder 10 and be frictionally driven thereby. A roller 12 is mounted on an axis at 13 so that it is near the cylinder 10 but not actually contacting therewith, and a roller 14 mounted on an axis 15 rests upon the roller 12, while a belt 16 passed around pulleys 17, 18 carried on arms 19 pivoted at 20 makes contact with the roller 14. The system 12, 14, 17, 18 is driven in the direction indicated by arrows so that the surface speed of the roller 12 is less than the surface speed of the cylinder 10 by an amount determined according to the tension or stretch desired, for instance, either the roller 12 or the pulley 18 may be driven or both, in which latter case the roller 14, pulley 17 and belt 16 would be driven by friction. The cylinder 10 and the rollers 12, 14 are each provided with a pivoted scraper 21, while a guard 22 is employed for directing the loose end of the yarn when starting on to the cylinder 10.

The yarn is fed from say a cop holder at 23 round the pulley 17 and the roller 14 to between said roller 14 and the roller 12, when the machine is started and the yarn carried round the roller 12 and round the core 1. The yarn is thus wound on to the core 1 under the desired stretch or tension applied between the roller 12 and the said core 1, and it only remains to "build" or distribute the yarn from end to end thereof.

Referring to the example shown at Fig. 5 of the drawings, the core 1 upon which

the yarn is wound has its centre at 2 and is rotated in the direction indicated by an arrow, and upon the core 1 rests a roller 24 which is free to rise and fall, while upon said roller 24 rests a similarly mounted two-diameter roller 3 upon whose smaller diameter rests another similarly mounted roller 25.

The yarn is led between each pair of rollers 25, 3, 24 and finally wound upon the core 1, the principal tension or stretch being effected between the two-diameter roller 3 and the roller 24, and it only remains to "build" or distribute the yarn upon said core 1.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a machine for winding yarn under tension, wherein the yarn is admitted at a given rate to the admission side of the machine and wound upon a core at a greater rate on the receiving side of the machine, a roller having two diameters whereof the smaller diameter controls the grip of the incoming yarn and the larger diameter controls the speed of winding.

2. In a machine for stretching yarn, a roller upon which the yarn is to be wound and a feeding roller, means for maintaining a fixed ratio between the surface speed of said feeding roller and the surface speed of the yarn in laying on the receiving roller and means for engaging the yarn with the feeding roller and means for guiding the yarn from the feeder roller to the receiving roller in case of breakage.

3. In a machine for stretching yarn, a roller upon which the yarn is to be wound and a double diameter feeding roller, one of said rollers mounted in slidable bearings and driven by surface engagement with the other.

4. In a machine for stretching yarn, a roller upon which the yarn is to be wound and a double diameter feeding roller, one of said rollers mounted in slidable bearings and driven by surface engagement with the other, means for holding the yarn in engagement with the feeding roller and means for guiding the yarn from the feeding roller to the receiving roller in cases of breakage.

In witness whereof I have hereunto set my hand.

HENRY JAMES WHEELER BLISS.