

J. R. FITTON.
MACHINE FOR WINDING BOBBINS.
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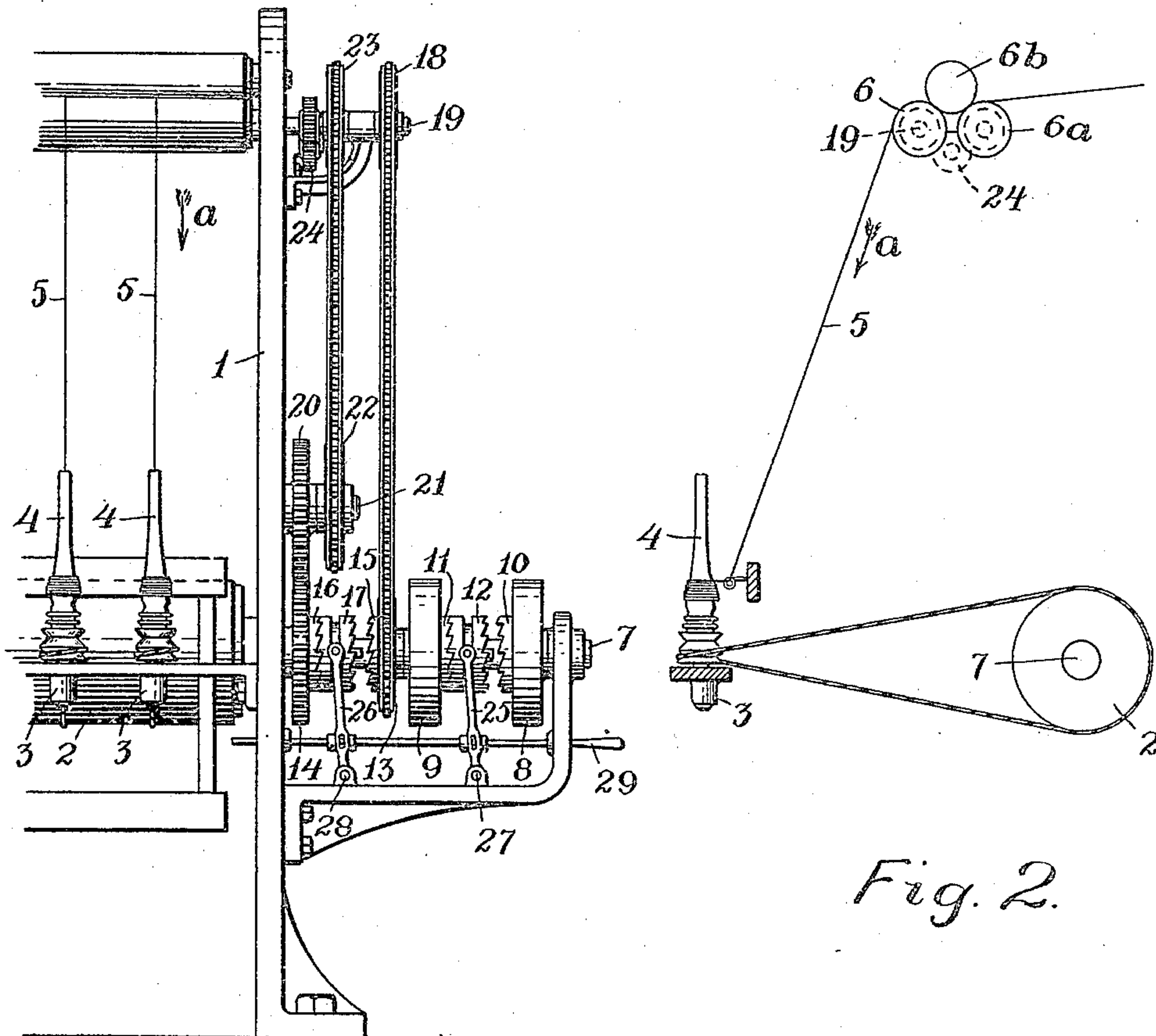


Fig. 1.

Fig. 2.

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To all whom it may concern:

Be it known that I, JOHN R. FITTON, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Machines for Winding Bobbins, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a front elevation of a bobbin winding machine embodying my invention, showing such parts as are directly concerned in carrying my invention into effect. Fig. 2 is a diagrammatic view showing the relative position of the revolving bobbin, its driving cylinder, and feed rolls.

Similar reference letters and figures refer to similar parts in the different views.

The object of my present invention is to provide a means by which the yarn may be wound in opposite directions upon the bobbin at will, to enable such bobbin to be used in connection with shuttles provided with a cutting device, arranged to be engaged by the yarn when the reverse twist is reached in unwinding the yarn from the bobbin. To accomplish this purpose I provide means for rotating the bobbin first in one direction and then in the opposite direction in order to reverse the wind of the yarn and at the same time maintain a uniform direction of the strand to be wound as it is delivered to the bobbin.

My invention is applicable to any style of quiller or spooler and also to a spinning frame by which the yarn strand is twisted and wound upon the bobbin.

My invention comprises means for rotating the bobbin, means for feeding the strand to the bobbin, means for reversing the bobbin at will and at the same time maintaining a uniform feeding of the yarn to the bobbin.

In the accompanying drawings I have illustrated portions of a bobbin winding machine which show a rotating bobbin, a cylinder for driving the same, rolls for feeding the yarn strand to the bobbin, which may be the drawing rolls of a spinning frame, and a controlling mechanism operated by a single shipper whereby the direction of motion of the bobbin is changed without changing the direction in the rotation

of the feed rolls, leaving out all other mechanism which are usually employed in a spooler or spinning frame, such as twisting mechanism and mechanism for laying the yarn upon the bobbin, as these are not directly concerned in my present invention.

Referring to the accompanying drawings, 1 denotes a portion of the framework, 2 a revolving cylinder having a belt connection with a spindle mounted in a step 3, and carrying a bobbin 4, on which the yarn strand 5 is wound. Above the bobbin are rolls 6, 6^a and 6^b between which the yarn strand passes, said rolls being rotated to impart a feeding movement to the strand 5 in the direction of the arrow *a*. The cylinder 2 is carried upon a shaft 7 on which the pulleys 8 and 9 turn loosely, and are driven in opposite directions by open and twist belts from a convenient countershaft. The pulleys are provided with hubs having teeth and forming clutching members 10 and 11 which are alternately engaged by a sliding clutch collar 12 having a spline connection with the shaft 7. Turning loosely upon the shaft 7 is a sprocket wheel 13 and a gear 14, provided with toothed hubs forming clutching members 15 and 16, which are alternately engaged by a sliding clutch collar 17 having a spline connection with the shaft 7. The sprocket 13 has a direct chain connection with a sprocket 18 attached to the shaft 19 of the roll 6. The gear 14 engages a gear 20 turning loosely upon a stud 21, and to the hub of the gear 20 is attached a sprocket 22 having a chain connection with a sprocket 23 attached to the shaft 19 of the drawing roll 6. The rolls 6 and 6^a are geared together through an intermediate gear 24 to cause both rolls to turn in the same direction, and the roll 6^b rests upon the yarn strand. The sliding clutch collars 12 and 17 are operated by shipping levers 25 and 26, pivoted at 27 and 28 and moved simultaneously by a pivotally connected sliding shipper rod 29. By sliding the shipper rod to the right the shaft 7 is connected with the pulley 8, causing the cylinder to be rotated in one direction and by sliding the rod 29 to the left, the shaft is connected to the pulley 9 and the cylinder 2 will be rotated in the opposite direction. As the clutch collars 12 and 17 slide simultaneously the sprocket 13 will be connected with the shaft 7 together

with the pulley 8, and the gear 14 together with the pulley 9. The sprocket 13 drives the shaft 19 in one direction, while the gear 14 is turned loosely on the shaft 7 owing to its connection with the shaft 19. When the shaft 7 is turned in the opposite direction the shaft 19 is still rotated in the same direction as before, by means of the gears 14 and 20, the sprockets 22 and 23, while the sprocket 13 is then rotated loosely on the shaft 7.

The machines to which my invention is especially designed, comprise means for rotating the bobbins for the purpose of winding yarn thereon, embodying a common shaft with which the bobbins are connected, and means for feeding the yarn strands toward the bobbin.

I do not confine myself to the precise construction and arrangement of the driving mechanism for rotating the bobbin and the feed rolls, or to the specific construction of the shipping or clutching mechanisms. The object of my invention will be attained by providing means for reversing the direction of the bobbin driving shaft or cylinder by which all the bobbins are simultaneously reversed, and also by providing means for reversing the bobbins and maintaining the feeding movement of the yarn strand in the same direction.

I claim,

1. In a machine for winding bobbins, the combination with means for rotating the bobbins and means for feeding a yarn strand to the bobbins, of means for reversing the rotation of the bobbins, and means for maintaining the feed motion of the strand in the same direction during the reverse motion of the bobbins.

2. In a yarn winding mechanism, the combination of means for winding a yarn strand, means for feeding the yarn strand to the winding mechanism, means for reversing the winding mechanism, and means for maintaining the direction of movement of the yarn strand during said reversal.

3. In a bobbin winding machine, the combination with rolls for feeding a yarn strand and a common driving shaft for rotating the bobbins, of means for reversing the motion of said driving shaft, and means for simultaneously controlling the motion of said rolls relatively to said shaft.

4. In a yarn winding machine, a rotating winding member, mechanism for imparting a longitudinal feeding motion to a yarn strand toward said winding member, a common driving shaft operatively connected with the rotating member and with the feeding mechanism, and means for reversing the direction of motion of the winding member without changing the direction of motion imparted to the yarn strand.

5. In a yarn winding machine, a winding mechanism, a yarn feeding mechanism, means for reversing the direction of motion of the winding mechanism, and means for imparting motion to the feeding mechanism in the same direction independently of the direction of motion of the winding mechanism.

6. In a yarn winding machine, a driving shaft, means for rotating said shaft in opposite directions, rotating bobbins operatively connected with said driving shaft, feed rolls for feeding yarn to said bobbins, connecting mechanism between said driving shaft and said feed rolls to rotate the feed rolls in one direction while the driving shaft is being rotated in one direction, a second connecting mechanism between said feed rolls and said driving shaft to rotate the feed rolls in the same direction during the reverse movement of the driving shaft.

7. In a yarn winding machine, a driving shaft, means for rotating said driving shaft in opposite directions, rotating bobbins operatively connected with said driving shaft, feed rolls for feeding yarn to said bobbins, connecting mechanism between said driving shaft and said feed rolls to rotate the feed rolls in one direction while the driving shaft is being rotated in one direction, a second connecting mechanism between said feed rolls and said driving shaft to rotate the feed rolls in the same direction during the reverse movement of the driving shaft, and a clutching mechanism between said driving shaft and each end of said roll connecting mechanisms.

8. In a yarn winding machine, the combination with a common driving shaft, a series of winding bobbins and feed rolls for feeding yarn strands to said bobbins, of connecting mechanism between said bobbins and the driving shaft, means for reversing the motion of said driving shaft and connected bobbins, connecting mechanism between the driving shaft and the feed rolls for rotating the feed rolls in one direction during the rotation of the driving shaft in one direction, connecting mechanism between the feed rolls and the driving shaft for rotating the feed rolls in the same direction during the reverse motion of the driving shaft, and means for bringing either of said connecting mechanisms into operation at will.

9. In a yarn winding machine, the combination of a driving shaft, a series of rotating bobbins operatively connected with said shaft, means for reversing the motion of said shaft and connected bobbins, rotating rolls for imparting a feeding movement to the yarn strands toward said bobbins, connecting mechanism between the feed rolls and said driving shaft whereby said feed rolls are rotated in one direction relatively

to the motion of said shaft, a second connecting mechanism between said feed rolls and said shaft whereby the motion of said shaft may be reversed without reversing the motion of said feed rolls, and means for simultaneously reversing said shaft and for disengaging one and engaging the second of said connecting mechanisms between the shaft and feed rolls at will.

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Witnesses:

PENELOPE COMBERBACH,
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