

April 14, 1942.

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2,279,537

SPINNING AND TWISTING FRAME

Filed Feb. 11, 1941

2 Sheets-Sheet 1

Fig. 1.

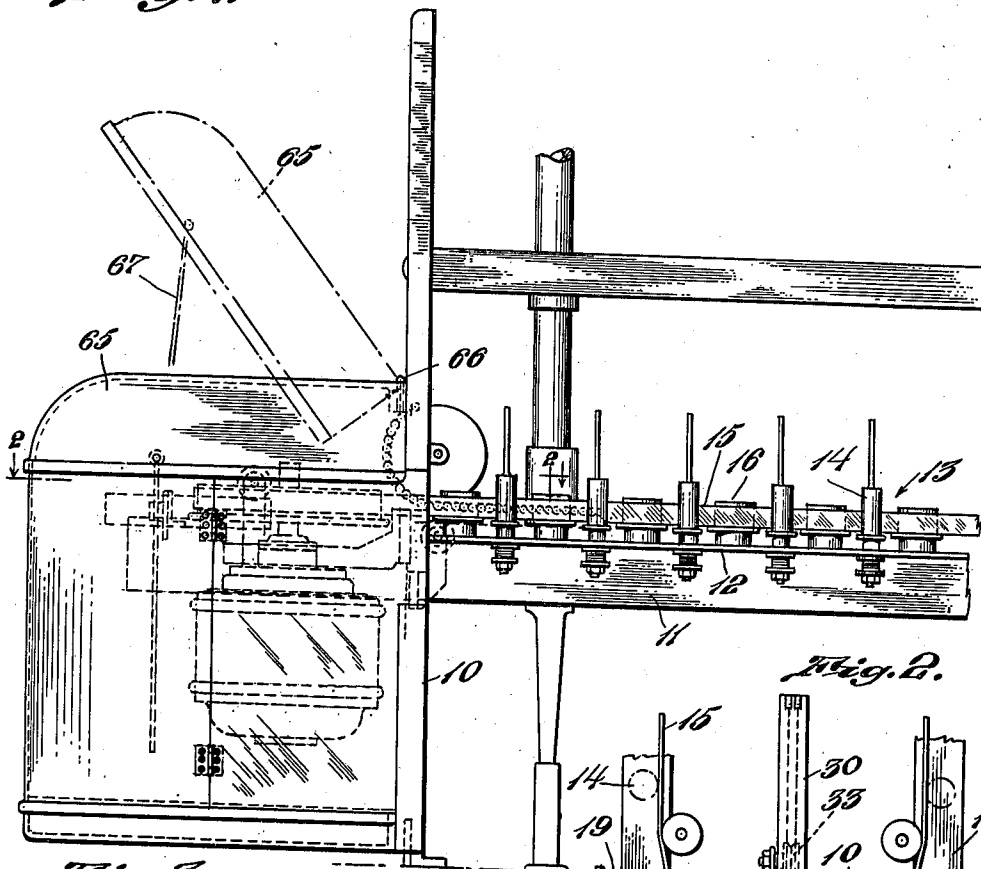


Fig. 2.

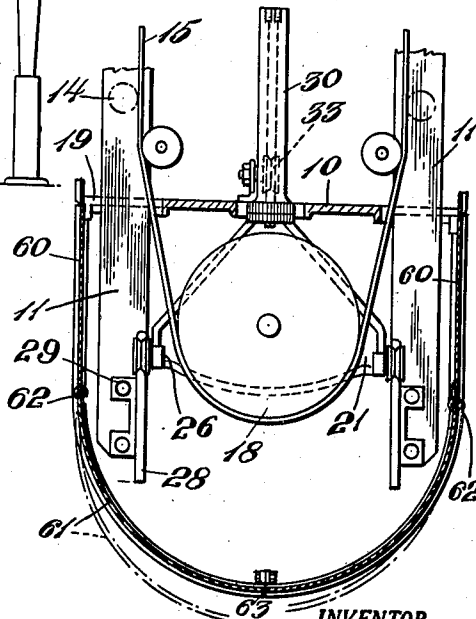
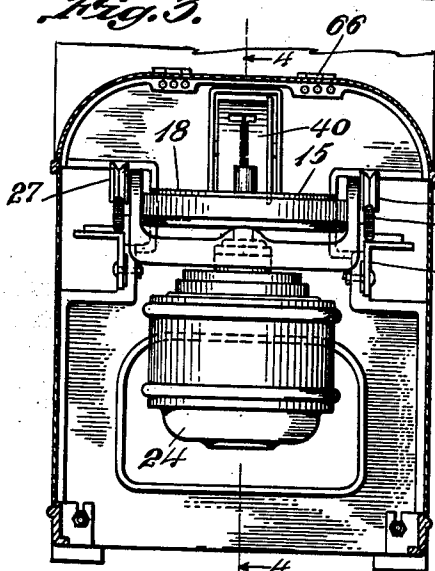


Fig. 3.



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Fig. 4.

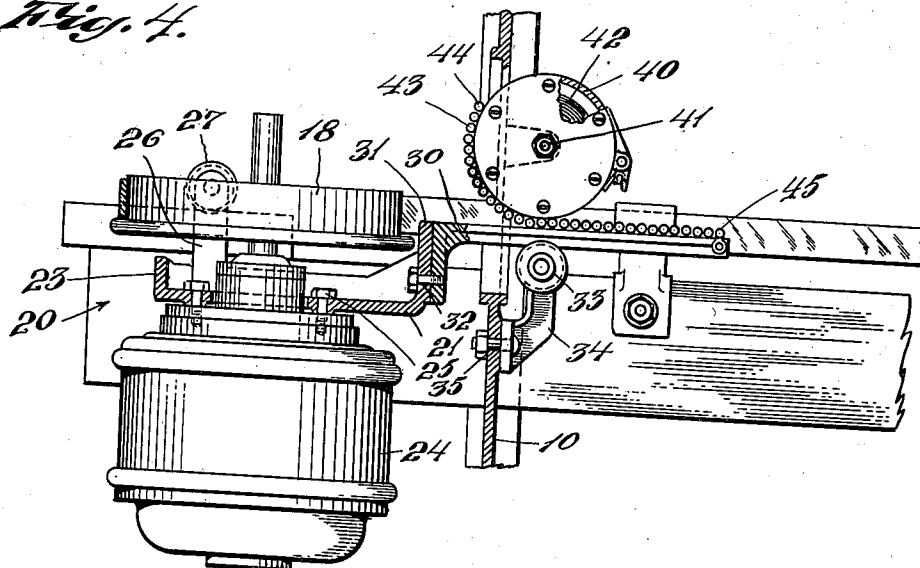
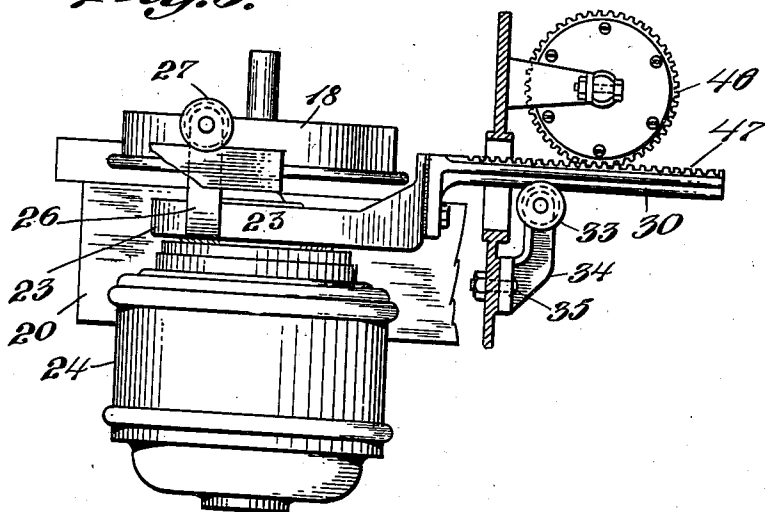


Fig. 5.



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UNITED STATES PATENT OFFICE

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SPINNING AND TWISTING FRAME

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Application February 11, 1941, Serial No. 378,403

7 Claims. (Cl. 57—105)

This invention relates to a textile machine having a belt for driving a plurality of units, one example of which may be a spinning or twisting frame.

Where an extended length of belt is used for driving a plurality of different units such, for instance, as spindles in a spinning or twisting frame, some means must be utilized for tensioning the belt so that the drive of the different units will be performed. Such tensioning usually is done by means of an idler pulley or some separate means other than the movement of the drive pulley on the motor itself. This sort of tensioning requires frequent adjustments and due to stretching of the belt usually does not make for uniform tension and thus uneven twist occurs in the yarn. In other cases where weights are used for tension, the length through which the weights must operate is so restricted that frequently the weights are found to have taken up the slack permitted, and other more difficult arrangements must be provided for.

One of the objects of this invention is to improve on the usual practice.

Another object of the invention is to provide yarn with a more uniform twist.

Another object of the invention is to provide an arrangement whereby a uniform and constant tension is applied to the spindle driving belt at all times.

Another object of the invention is to provide for the maintaining of a uniform tension on the drive belt regardless of the stretch of the belt, also to maintain a uniform tension even though one belt be removed and replaced with another.

A further object of the invention is to provide an arrangement whereby the tension on the drive belt may be easily adjusted.

A more specific object of the invention is to provide for a change in tension on the drive belt by reason of a change in the tension of the spring.

The invention further consists in providing a three-point suspension so that the motor always rides uniformly upon its supporting wheels when spring-loading the motor to move it bodily to cause its drive pulley to tension the belt.

Another object of the invention is to improve the housing for the motor and movement of the housing for access to the motor.

With these and other objects in view, the invention consists in certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is an elevation of one end portion of a spinning frame, illustrating certain parts of the framework and certain spindles with which the invention in this application is associated;

Fig. 2 is a top plan view of the motor mounting, showing the casing in section on line 2—2 of Fig. 1;

Fig. 3 is an end view of the motor mounting, showing the casing in section;

Fig. 4 is a sectional view through the motor mounting, showing certain of the related parts; and

Fig. 5 is an elevation of the motor mounting shown in Fig. 4 but illustrating a modified means of transmission of the spring-loading to the motor.

With reference to the drawings, I have illustrated the end supporting section 10 of a spinning or twisting frame which has a spindle rail 11 of angle iron construction providing a horizontal shelf portion 12 on which the spindles designated generally 13 are mounted. The whorl or driven portion 14 of each spindle is engaged by the traveling belt 15 which is moved toward the whorl by pulleys 16 positioned at suitable locations to urge the belt 15 outwardly in directing its path of travel in the machine. The belt passes about and is driven by pulley 18 from whence the belt obtains its motion.

Broadly, the inventive thought involved in this application is to take up the slack in the drive belt by bodily moving the driving motor and driving pulley in a generally U-shaped bight of the belt 15, as shown in Fig. 2, so as to tension the belt instead of providing a self-tensioning pulley. This is done by moving a carriage on which the motor is hung and by uniformly spring-loading the carriage.

The usual spinning frame is modified to the extent that the spindle rails 11 extend completely through openings 19 in the end frame 10 by which arrangement I utilize this portion of the spindle rail for the mounting of the carriage which is to support the motor which drives the pulley 18.

The carriage for the motor is designated generally 20 (see Fig. 4) and consists of a generally triangular floor portion 21 (see Fig. 2) with an upstanding rim or side wall 23 which strengthens and supports the same. The motor 24 is hung on this floor portion, and beneath it, by means of a suitable number of bolts 25 extending through the floor portion and into some part fixed to the motor. This motor is electrically energized and obtains its electrical energy through a flexible cable

which may move with the motor to the short extent that the motor moves.

The opposite side walls near the corner at the locations of the carriage are provided with upwardly-extending arms 26 which have outwardly-extending trunnions on which wheels 27 are supported. These wheels have V-shaped peripheries and engage rounded tracks 28 supported as at 29 on the extending spindle rails 11. The arms 26 are located adjacent one end of the carriage, while the opposite end of the carriage has an arm 30 bolted to the wall portion 31 as at 32, which rests upon an anti-friction wheel 33 supported on a bracket 34, mounted as at 35 on the end support 10. The arm 30, as shown in Fig. 2 in plan view, is located midway between spindle rails 11 and moves in about the same horizontal plane as these rails, although location out of this plane might be provided. By this arrangement, a three-point support for the motor carriage is provided that it may move in a generally horizontal direction with the three anti-friction points of support always making an isosceles triangle between the anti-friction supports with the roller 33 at the apex thereof.

To spring-load this carriage to tend to so move it that the pulley 18 will tension the belt 15, I provide a drum 40 which is rotatably mounted about the axis 41 and which contains a clock spring 42, the clock spring being attached to the drum 40 at one end and to a revoluble shaft at its other end, which shaft forms the axis of the drum. This drum may be rotated to adjust the tension desired on the spring. The outer surface of the drum is attached to the arm 30 by means of a flexible chain 43 attached as at 44 to the drum and as at 45 to the end of arm 30. The action of spring 42 will tend to rotate the drum 40, and the movement of the drum will be transmitted to the arm 30 through the flexible chain 43 which will tend to move the carriage and consequently its pulley 18 carried thereby to tension the belt 15.

In some instances, instead of transmitting motion of the drum to the carriage by chain 43, I may provide a series of teeth 46 in the drum 40 which teeth will engage the teeth 47 of the rack provided on the arm 30 for transmission of rotary movement of the drum into linear movement of the carriage.

The motor which I have provided is mounted outside of or beyond the end frame 10, and to house this motor I have provided vertical side walls 60 with curved entrance sections 61 hinged as at 62 and meeting each other as at 63 when in closed position, or these end sections, when swung about their hinges 62, completely expose the end of the driving motor. Thus, the vertical walls may be open. To cover the top of the motor, I have provided a lid 65 which is hinged as at 66 adjacent the end section 10, the hinge 66 having its pivot about a horizontal axis. Thus, when the cover 65 is lifted, as shown at 65 in Fig. 1, the entire top of the motor is exposed that this may be easily worked upon. A suitable support 67 may be provided for retaining this cover 65 in its uppermost position.

From the above it will be seen that I have provided a uniform means of tensioning the driving belt from which the spindles will be uniformly rotated and a uniform twist provided, and thus better yarn will be produced.

I claim:

1. In a textile machine, a belt traveling in generally a horizontal path and having a U-shaped

bight, a motor having a pulley in said bight for driving said belt, a carriage for the motor, a pair of spaced fixed tracks, wheels on the carriage engaging said track to roll thereon, a fixed anti-friction support and an arm on said carriage engaging said anti-friction support to roll thereon, said wheels and anti-friction support forming an isosceles triangle with said support as the apex and with the apex of the triangle formed positioned to be in a plane extending generally lengthwise of the machine and passing substantially midway between the sides of said belt, and means for spring-loading said carriage positioned intermediate the end extremity of said arm and said pulley.

2. In a textile machine, a belt traveling in generally a horizontal path and having an U-shaped bight, a motor having a pulley in said bight for driving the belt, a carriage for the motor, means for hanging the motor from said carriage, tracks for the carriage, wheels at one end of the carriage engaging said tracks, an arm at the other end of the carriage of substantially short extent with respect to the length of said machine, a wheel for supporting said arm, and means for spring-loading the carriage through said arm including a single spring positioned intermediate the end extremity of said arm and said pulley and at a location with respect to said arm to exert a force on said carriage in a plane passing substantially centrally through said arm and pulley.

3. In a textile machine, a belt traveling in generally a horizontal path and having a U-shaped bight, a motor having a pulley in said bight for driving the belt, means for movably mounting the motor for movement of the pulley to tension the belt comprising a carriage for mounting the motor, an arm extending from said carriage, anti-friction wheels for mounting the carriage, means for spring-loading the carriage comprising a rotary drum mounted at a location intermediate the end extremity of said arm and said pulley, a clock spring within said drum for actuating the same, and means connecting the drum to said arm.

4. In a textile machine, a belt traveling in generally a horizontal path and having a U-shaped bight, a motor having a pulley in said bight for driving the belt, means for movably mounting the motor for movement of the pulley to tension the belt comprising a carriage for mounting the motor, a three-point anti-friction support for said carriage and means for spring-loading said carriage for exerting a force on said carriage in a plane passing substantially centrally through one of said three-point supports midway between the other two of said points of support.

5. In a textile machine, a belt traveling in generally a horizontal path and having a U-shaped bight, a motor having a pulley in said bight for driving the belt, means for movably mounting the motor for movement of the pulley to tension the belt comprising a carriage for mounting the motor, an arm extending from said carriage, a three-point, anti-friction support for said carriage symmetrically arranged in the form of an isosceles triangle, with the apex of the triangle positioned in a plane extending lengthwise of the machine and passing substantially midway between the extending lengths of said belt, and means for spring-loading said carriage, including a single spring positioned intermediate the end extremity of said arm and said pulley and at a location with respect to said arm to exert a

force on said carriage in a plane passing substantially centrally through said arm and pulley.

6. In a textile machine, a belt traveling in generally a horizontal path and having a U-shaped bight, a motor having a pulley in said bight for driving the belt, means for movably mounting the motor for movement of the pulley to tension the belt comprising a carriage for mounting the motor, an arm extending from said carriage and provided with teeth thereon, wheels for mounting the carriage, means for spring-loading the carriage comprising a rotary drum having teeth thereon and mounted at a location intermediate the end extremity of said arm and said pulley and with the teeth of said drum and said arm engaging each other and a spring for actuating said drum to move said arm.

7. In a textile machine, a belt traveling in generally a horizontal path and having a U-shaped bight, a motor having a pulley in said bight for driving the belt, means for movably mounting the motor for movement of the pulley to tension the belt comprising a carriage for mounting the motor, an arm extending from said carriage, wheels for mounting the carriage, means for spring loading the carriage comprising a rotary drum mounted at a location intermediate the end extremity of said arm and said pulley, a spring for actuating said drum to move said arm, and flexible means for connecting said drum to said arm.

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