Feb. 9, 1932. W. O. ALDRICH ET AL 1,844,307

SPINDLE DRIVING MECHANISM

Filed Feb. 11, 1931

Fig. 1.

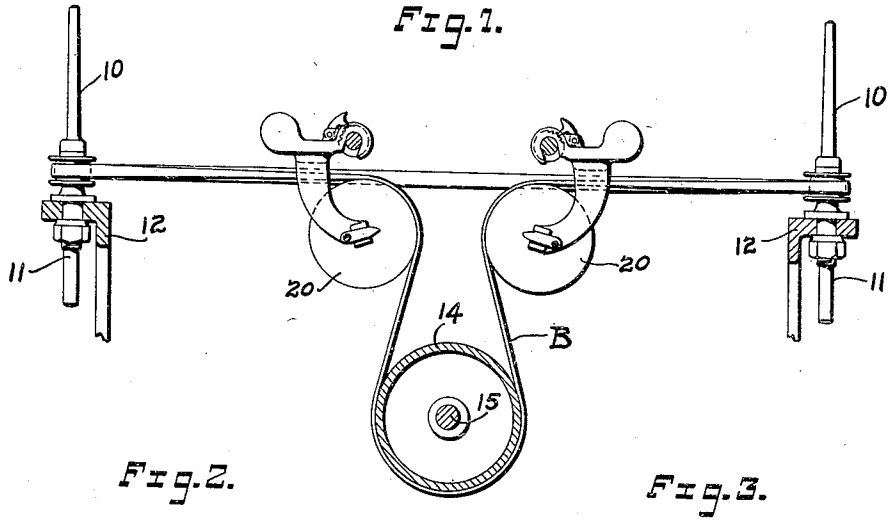


Fig. 2.

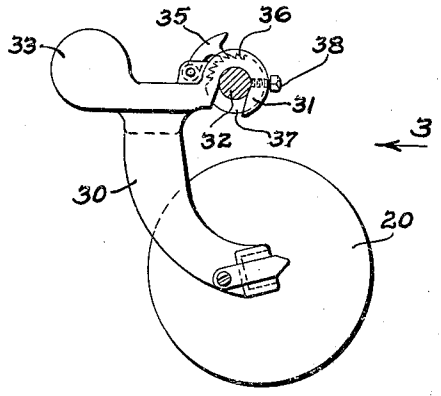


Fig. 3.

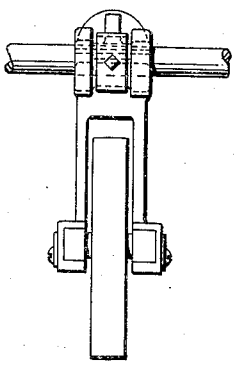


Fig. 4.

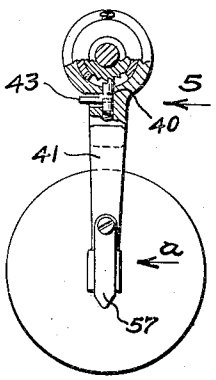


Fig. 5.

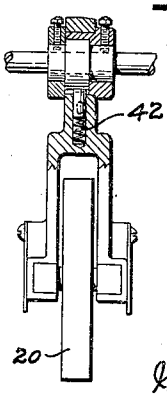


Fig. 6.

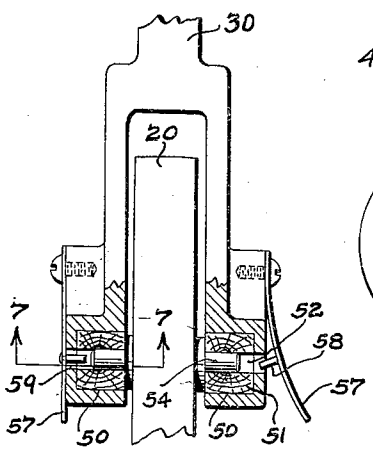
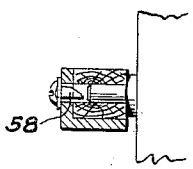


Fig. 7.



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UNITED STATES PATENT OFFICE

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SPINDLE DRIVING MECHANISM

Application filed February 11, 1931. Serial No. 515,046.

This invention relates to spinning or twisting machines in which one or more spindles at both sides of the machine are driven by a single continuous belt.

It is the general object of our invention to provide improved driving mechanism for such purposes, so designed that it will be equally effective and satisfactory when the spindles are rotated in either of two opposite directions.

A further object is to provide means for automatically taking up slack in the belt as the belt stretches, and particularly for taking up such slack in the belt runs at both sides of the driving cylinder.

With these objects in view, we have provided improved supports for the take-up pulleys, freely movable in one direction to take up the slack of the belt but held from return movement in the opposite direction.

Our invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

Two forms of our invention are shown in the drawings, in which

Fig. 1 is a sectional end elevation of parts of a spinning or twisting machine embodying our improvements;

Fig. 2 is a front elevation of one of the take-up pulleys and its movable support;

Fig. 3 is a side elevation, looking in the direction of the arrow 3 in Fig. 2;

Fig. 4 is a front view, partly in section, showing a modified construction;

Fig. 5 is a side elevation, partly in section, looking in the direction of the arrow 5 in Fig. 4;

Fig. 6 is a partial enlarged side elevation, partly in section, and showing the bearings for the take-up pulleys, and

Fig. 7 is a detail sectional view, taken along the line 7—7 in Fig. 6.

Referring to the drawings, we have shown parts of a spinning or twisting machine including spindles 10 mounted in bases 11 secured in fixed spindle rails 12. The spindles are rotated by a belt B driven by a cylinder or drum 14 mounted on a shaft 15 which is rotatable in fixed bearings in the frame of the machine.

A pair of take-up pulleys 20 are provided for each belt B and the belt is mounted as indicated in Fig. 11. The belt passes under the driving cylinder 14, over a take-up pulley 20, around one or more spindles 10 at one side of the machine and across to the opposite side of the machine, where it passes around one or more additional spindles 10, and then returns over the second take-up pulley 20 to the driving cylinder 14. The cylinder 14 may be rotated in either direction, according to whether a right hand or a left hand twist is desired.

This is a usual commercial way of driving spindles in a spinning or twisting machine. Our invention relates particularly to the manner of supporting the take-up pulleys 20.

In the form shown in Figs. 1 to 3, each take-up pulley 20 is mounted in bearings in the lower end of a supporting member 30 having a hook-like extension 31 adapted to be hooked over a cross bar 32 fixed in the frame of the machine. Each supporting member 30 is provided with a weight 33 adapted to press its pulley 20 against the belt B. Each supporting member 30 is also provided with a latch or pawl 35, adapted to engage ratchet teeth 36 on a collar 37 adjustably secured to the cross rod 32 by a set screw 38.

With this construction, it will be evident that each member 30 and take-up pulley 20 is free to swing toward the adjacent run of the belt B but that swinging movement of the member 30 in the opposite direction will be prevented by the latch or pawl 35. The supports for the two sets of pulleys 20 are identical, except that they are mounted for swinging movement in opposite directions, being freely movable toward each other and being held from movement away from each other.

When the machine is at rest, both pulleys are movable inward by gravity to take up any slack in the belt B. When the machine is in operation, the pulley on the slack side of the belt B will move inward to take up any stretch or slackness in the belt and when the direction of movement of the belt is re-

versed, the first pulley will retain its position and the second pulley will be free to move inward to take up any additional stretch or slackness.

We thus obtain important advantages over the constructions previously used, such as that shown in the patent to Nelson No. 1,709,145, in which either pulley could move inward to take up slack but was returned to its initial position when the direction of belt drive was reversed. Consequently all of the slack at a given time had to be taken up by a single take-up pulley, which sometimes occasioned movement of the single pulley beyond the point at which its weight could be effectively applied.

With our improvements, both pulleys are available for taking up the stretch or slack, and substantially twice the amount of belt stretch can thus be provided for.

In Figs. 4 and 5 we have shown a slightly modified construction, in which a plunger 40 is mounted in a socket in a supporting member 41 and is pressed yieldingly upward by a spring 42. A stud 43 extends outward through a slot in the side of the member 41, furnishing means by which the plunger may be withdrawn from the ratchet teeth to permit return movement of the member 41 when desired. The stud 43 also prevents angular displacement of the plunger 40. The operation of this form of the device is substantially similar to the form previously described.

We have provided a special and improved bearing construction for the take-up pulleys 20, the details of which are shown in Figs. 6 and 7. The supporting members 30 or 41 are forked to receive the pulleys 20 and are provided with pockets 50 in their forked end portions to slidably receive bearing blocks 51. These blocks 51 are preferably formed of specially treated wood and have bearing openings 52 extending therethrough.

The pockets 50 are open on their inner faces toward the pulleys 20 and are also open at one end face, as indicated in Figs. 5 and 7. This permits assembly of the pulley and bearings by placing the blocks 51 on the gudgeons 54 of a pulley 20 and then inserting the entire assembly into the supporting member 30 or 41 by a sidewise movement in the direction of the arrow *a* in Fig. 4.

Spring plates 57 are secured to the outer sides of the forked end portions of the supporting member 30 or 41, and these plates are each provided with a stud or latch 58, extending through an opening 59 in a forked end portion of the supporting member and into the outer end of an opening 52 in a bearing block 51. The stud or latch 58 thus prevents displacement of the bearing block sidewise in the pocket 50. Displacement of the blocks inward or toward each other is prevented by the interposed hub of the pulley 20.

Having thus described our invention and the advantages thereof, we do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what we claim is:—

1. In a spinning or twisting machine, spindles mounted at each side of said machine, a driving cylinder, a continuous belt connecting said cylinder and a plurality of spindles mounted at opposite sides of the machine, a pair of take-up pulleys engaging runs of said belt at opposite sides of the driving cylinder, each take-up pulley being freely movable in a direction to take up slack in said belt, and means to prevent movement of each take-up pulley in the opposite direction.

2. In a spinning or twisting machine, spindles mounted at each side of said machine, a driving cylinder, a continuous belt connecting said cylinder and a plurality of spindles mounted at opposite sides of the machine, a pair of take-up pulleys engaging runs of said belt at opposite sides of the driving cyylinder, supporting members for said pulleys, bearings for said supporting members, each member being freely movable about its bearing in one direction, and means to prevent substantial movement of each supporting member in the opposite direction.

3. In a spinning or twisting machine, spindles mounted at each side of said machine, a driving cylinder, a continuous belt connecting said cylinder and a plurality of spindles mounted at opposite sides of the machine, a pair of take-up pulleys engaging runs of said belt at opposite sides of the driving cylinder, supporting members for said take-up pulleys, bearings for said supporting members, each member being freely movable by gravity about its bearing in one direction, and means to prevent substantial movement of each supporting member in the opposite direction.

4. In a spinning or twisting machine, spindles mounted at each side of said machine, a driving cylinder, a continuous belt connecting said cylinder and a plurality of spindles mounted at opposite sides of the machine, a pair of take-up pulleys engaging runs of said belt at opposite sides of the driving cyinder, supporting members for said take-up pulleys, bearings for said supporting members, each member being freely movable about its bearing in one direction, and pawl and ratchet mechanism for each supporting member, effective to prevent substantial movement of said member in the opposite direction.

5. In a spinning or twisting machine, spindles mounted at each side of said machine, a driving cylinder, a continuous belt connecting said cylinder and a plurality of spindles mounted at opposite sides of the machine, a pair of take-up pulleys engaging runs of said belt at opposite sides of the driving cylinder, supporting members for said take-up pulleys, bearings for said supporting members, each member being freely movable

about its bearing in one direction, and pawl and ratchet machanism for each supporting member, effective to prevent movement of said member in the opposite direction, said pawl and ratchet mechanism being manually releasable for return of the take-up pulleys to extreme separated position.

6. In a spinning or twisting machine, spindles mounted at each side of said machine, a driving cylinder, a continuous belt connecting said cylinder and a plurality of spindles mounted at opposite sides of the machine, a pair of take-up pulleys engaging runs of said belt at opposite sides of the driving cylinder, gravity-actuated supports for said pulleys permitting movement of each pulley toward the other pulley to take up slack in said belt, and means to prevent substantial reverse movements of said supports.

7. In a spinning or twisting machine, spindles mounted at each side of said machine, a driving cylinder, a continuous belt connecting said cylinder and a plurality of spindles mounted at opposite sides of the machine, a pair of take-up pulleys engaging runs of said belt at opposite sides of the driving cylinder, gravity-actuated supports for said pulleys permitting movement of each pulley toward the other pulley to take up slack in said belt, and automatic means to prevent substantial reverse movements of said supports, said automatic means being manually releasable.

In testimony whereof we have hereunto affixed our signatures.

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JOHN A. KOOISTRA.