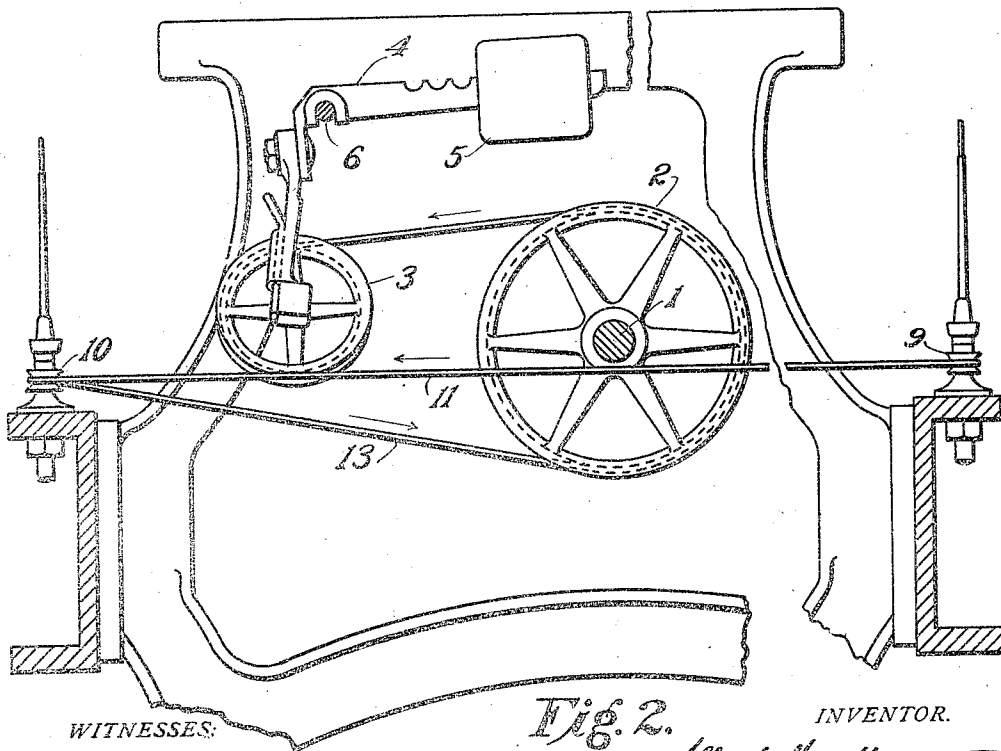
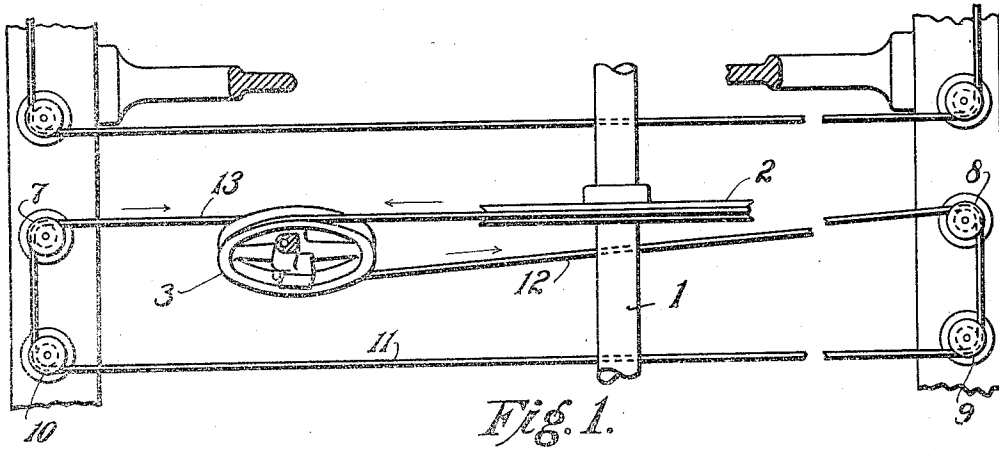


A. H. MORTON.
SPINDLE DRIVING MECHANISM.
APPLICATION FILED MAY 31, 1912.

Patented Feb. 11, 1913.

1,052,612.



WITNESSES:

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ALBERT H. MORTON, OF LOWELL, MASSACHUSETTS.

SPINDLE-DRIVING MECHANISM.

1,052,612.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed May 31, 1912. Serial No. 700,552.

To all whom it may concern:

Be it known that I, ALBERT H. MORTON, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Spindle-Driving Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to an improvement in spindle driving mechanism.

The object of the present invention is to produce an improved spindle driving mechanism for use in spinning, twisting and the like machines.

The invention consists in the spindle driving mechanism hereinafter described and particularly defined in the claim.

In the accompanying drawing illustrating the preferred form of the invention, Figure 1 is a plan of a portion of the frame, and Fig. 2 is a sectional elevation of the same.

In driving spinning spindles with independent belts the tightness of the belts for the different spindles varies and as a consequence in many cases unnecessary friction is caused, and an undue amount of power consumed in driving the spindles, while in other cases an insufficient friction is secured to drive the spindle at full speed, resulting in defects in the yarn. In order to overcome these objections, it has been proposed to drive the spindles with a belt, usually running around four spindles and maintained at a constant tension by an idler pulley. The desirability of the tension drive is so great that, for this and other reasons well known to those skilled in the art, mill men have considered it highly desirable to change over old frames so as to adapt them to use the tension drive. An insuperable impediment to changing over the greater number of old frames has been found to exist in the fact that the tin cylinder from which the spindle belts were driven is generally located with its axis in the plane of the spindle whirls so that in order to adapt the machine to the tension drive it would be necessary to lower (or raise) the tin cylinder a distance equal approximately to one-half of its diameter in order to allow the cross belts to clear the cylinder. So great a shift as this of the tin cylinder would be inhibited by the construc-

tion of the frame. The tension drive, or its equivalent, being a great desideratum, some device for securing the advantages in old frames is so peremptorily required as to demand the production of some contrivance or arrangement for securing the result without shifting the position of the tin cylinder bearings more than the small distance permissible by the usual range of adjustment furnished. This result the present invention has secured in spinning and twisting frames, or the like, without changing the location of the bearings of the tin cylinder a greater distance than the fraction of an inch which equals substantially one-half the diameter of the shaft substituted for the tin cylinder, and at the same time securing all of the advantages of the tension drive without any substantial alteration of the heads or bearing supports of the frame.

Referring to the drawing, the main drive shaft 1 of the frame is located near the axis of the removed tin cylinder and within a distance therefrom approximately equal to one-half the diameter of such shaft; it carries a series of driving pulleys or sheaves 2, one for each four spindles in the frame. Such sheaves are located in planes substantially tangent to the pitch circles of two opposite spindle whirls. The idler pulley or sheave 3 is supported upon the lever 4 and pressed in the direction to exert tension upon the belt by a counterweight 5. The bell crank lever 4 is mounted upon the supporting rod 6. The belt for driving each four spindles is an endless round belt, as it takes the place of the belt which has been used in driving the spindles. The lead of the belt is from one of the spindles, as 7, to the lower side of the sheave 2, around it and over and around the idler sheave 3, which is arranged with its belt-receiving portion in the plane of the periphery of the sheave 2 and with its belt-delivering portion in (or below) the plane of the spindle whirls. From the lower side of the idler sheave 3 the belt runs to the spindle 8 opposite the spindle 7, thence around the spindle 9 and straight across the frame to the spindle 10, from which it passes onto the spindle 7, where the description of the lead was begun. The transverse belt 11, being the portion of the belt between the spindle 9 and the spindle 10, and the portion 12 of the belt between the idler sheave 3 and the spin-

dle 8, lie in the plane of the spindle whirls and slightly below (or above) the drive shaft 1. It is to be observed that the portion 13 of the belt running from the spindle 7 to the drive sheave 2 extends downward from the spindle to the surface of the sheave, so that the pull of the belt upon the spindle has a tendency to hold it in its bearing rather than to lift it up. It is apparent that the location of the main drive shaft 1 could as well be immediately below as immediately above the plane of the transverse belt, the requisite being that the drive shaft shall be located close to the old position of the axis of the tin cylinder, but a little above or a little below it, in order to give clearance to the transverse belt.

The principal advantage of this construction resides in the substitution of a shaft for the tin cylinder, in substantially the location of the tin cylinder, without changing the location of the bearings of the tin cylinder beyond the range of adjustment provided in the machine, the transverse belt passing across the frame between the driving pulleys and through the space formerly occupied by the tin cylinder, no reorganization of the heads being required nor new bearing supports for the bearings of the drive shaft. A round belt may be used, if desired, thus avoiding the necessity for changing the spindle whirls, and at the

same time securing the advantages of the tension drive.

It has not been deemed necessary to illustrate the details of construction of the head and bearings for the drive shaft, as they are well known and familiar to those skilled in the art.

The invention is not limited to the remodeling of old frames nor to the specific embodiment illustrated in the drawing, as the invention may be embodied in other forms within the scope of the claim.

I claim—

Spindle driving mechanism for spinning, twisting and the like machines having, in combination, a drive shaft located close to the plane of the spindle whirls, driving pulleys on said shaft, a tension pulley associated with each driving pulley, and a belt for each driving pulley running around a spindle or spindles on one side of the frame, to the driving pulley, around the tension pulley, around a spindle or spindles on the other side of the frame, and thence across the frame between the driving pulleys to the spindle or spindles first mentioned, substantially as described.

ALBERT H. MORTON.

Witnesses:

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