

April 7, 1931.

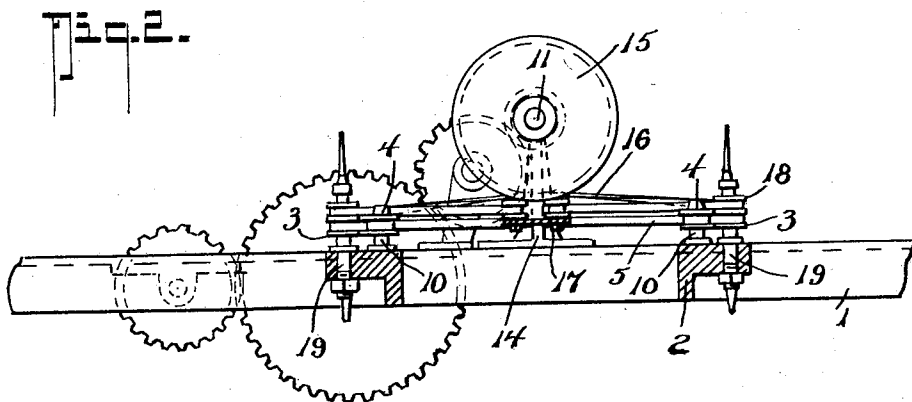
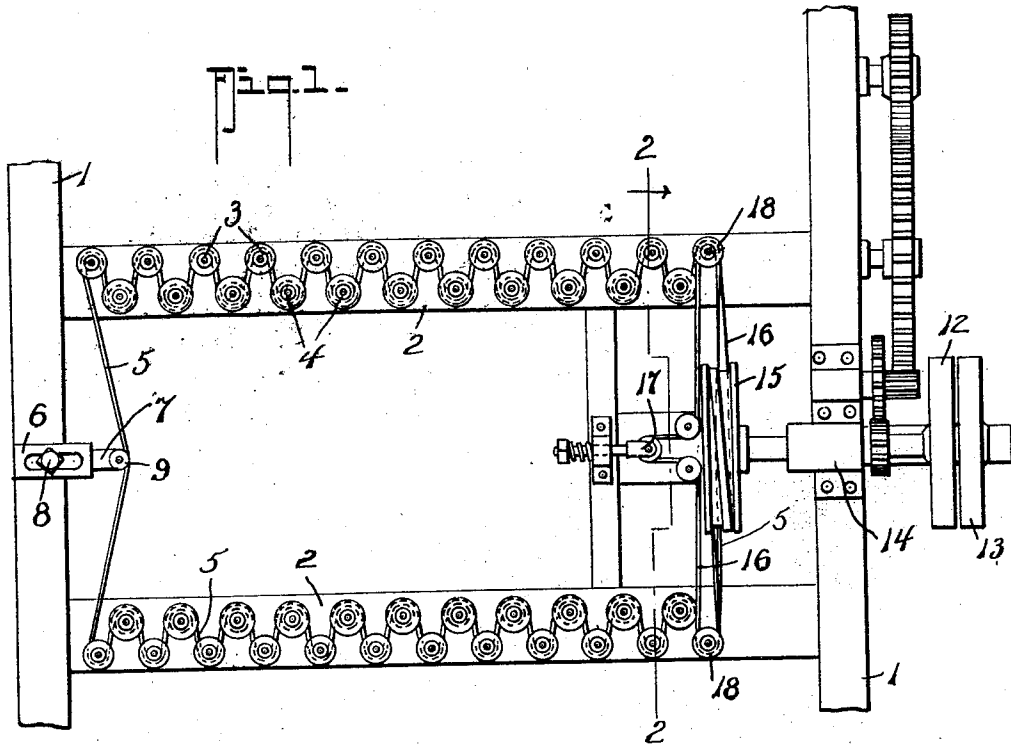
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SPINNING FRAME AND SPINDLE DRIVE MECHANISM

Filed July 30, 1930

2 Sheets-Sheet 1



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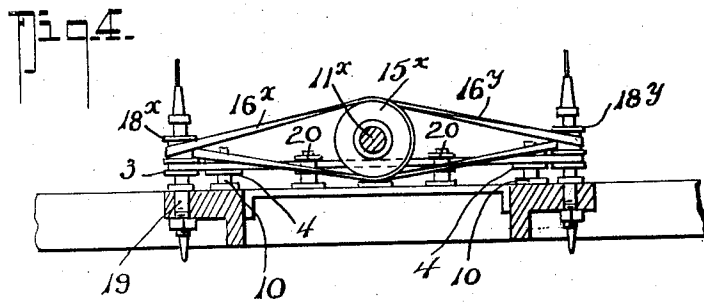
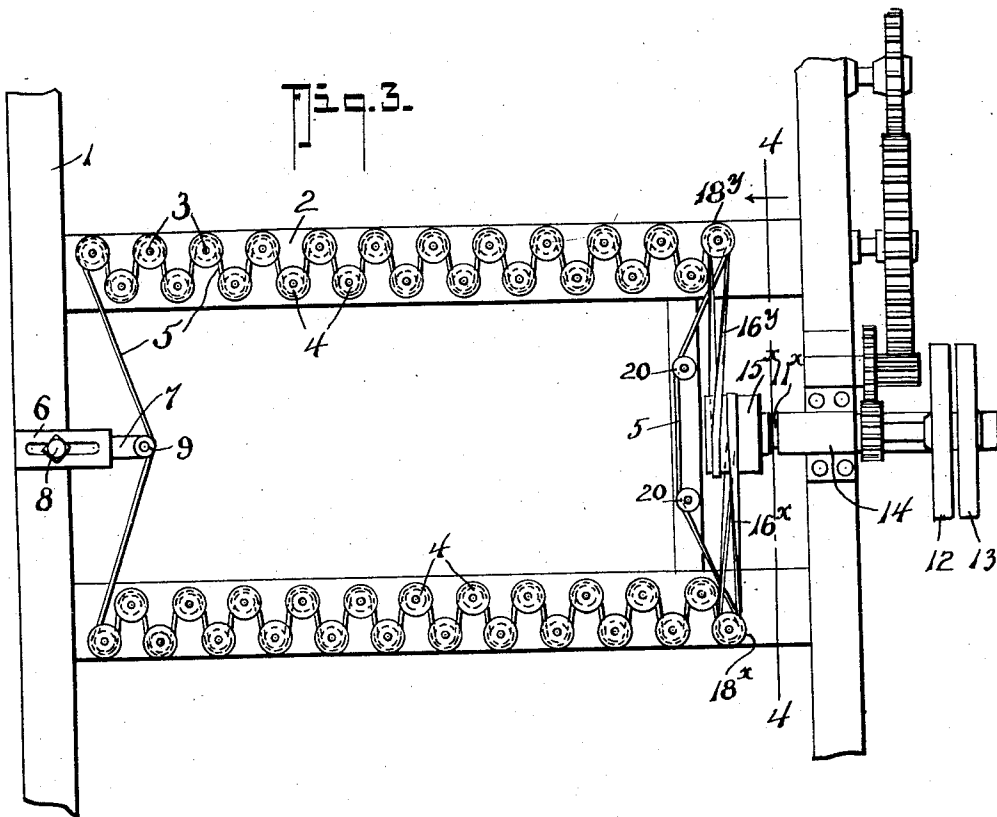
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SPINNING FRAME AND SPINDLE DRIVE MECHANISM

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2 Sheets-Sheet 2



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SPINNING FRAME AND SPINDLE-DRIVE MECHANISM

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My invention relates to the art of textile machinery and it particularly has for its object to simplify the construction, reduce up-keep or maintenance expenses to a minimum, and to eliminate the usual drive cylinder over which the tapes from the several spindles take.

Generally the invention resides in providing an improved spindle arrangement and driving means therefor whereby all of the spindles will be driven at the same speed, means being provided for connecting all spindles by a common tape having, in cooperation therewith, an effective simple tension adjuster whereby the common tape may be tightened to prevent any of the spindles slipping.

Further, it is an object of the invention to provide a short tape drive direct to the two adjacent end spindles, such end spindles in turn driving the remainder of the spindles through the common tape.

Again, it is an object to provide a suitable tension means in cooperation with the primary driving tape whereby it may be prevented from slipping on the two end spindles and the driving pulley.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends, the invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, then be particularly pointed out in the appended claims, reference being had to the accompanying drawing, in which:—

Figure 1 is a plan view of a portion of a spinning and twisting machine with my invention applied.

Figure 2 is a cross section on the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a plan view of a portion of a spinning and twisting machine illustrating another embodiment or modification of my invention.

Figure 4 is a cross section on the line 4—4 of Figure 3.

In the drawing in which like numerals of reference designate like parts in all of the figures, 1 represents the frame of the machine on which is mounted the parallel spindle bars 2. On these bars are mounted the spindle bases 19 which carry the outer spindles 3 having the usual whorls, there being a staggered set of idler bases 10 that carry the inner rows of idler whorls 4.

Taking around the whorls of the spindles 3 and idlers 4 alternately in a zigzag fashion is the endless common drive tape 5, the tension of which is adjusted by means of the tension device 6 whose tension bar 7 is held in place by a bolt and nut device 8 and carries a whorl 9 for engaging with the tape 5.

11 designates the driving shaft which is mounted at one end of the machine and carries fast and loose pulleys 12 and 13 respectively, the shaft being mounted in suitable bearings 14 as shown. The shaft 11 carries the spindle drive pulley 15.

It is to be noted that the end spindles 3 have a second set of whorls 18 around which and around the spindle drive pulley 15 the primary driving tape 16 is passed, the tape 16 having in cooperation with it (preferably) a suitable tension take-up 17.

When the shaft 11 is driven to impart rotation to the driving pulley 15, it will in turn drive the adjacent end spindles and they in turn, through the common driving tape 5, will drive all of the other spindles.

Instead of the primary driving arrangement shown in Figures 1 and 2 that shown in Figures 3 and 4 may be used. By reference to Figures 3 and 4 it will be seen that the driving shaft 11 α lies in substantially the horizontal plane of the whorls which it drives and two short primary drive tapes 16 α —16 γ are employed, each being passed around the drive pulley or drum 15 α and one of the whorls 18 α —18 γ respectively. Also the tape 5 is passed around idlers 20 in order to hold the tape clear of the pulley 15 α and enable the operator to have enough space so that he can remove the tapes 16 α —16 γ from the pulley 15 α and reverse them on the pulley for the purpose of reversing the direction of the driven tape 5 when so desired.

By having all of the spindles connected by a common driving tape it is obvious that they will be all driven at the same speed and by zigzagging the tape around the idlers and spindles, all of the spindles may be driven by the single tape in one direction.

Furthermore by providing the independent or primary driving tapes, which take around the driving pulley 15, the expense for tape replacement is considerably reduced as the greatest wear takes place in the primary driving tape.

It will be seen from the foregoing that it becomes a very simple matter to reverse the rotation of the spindles, for with my invention it is only necessary to reverse the primary driving tape or tapes in order to effect a reverse drive of all the spindles whereas in the machines now in use the drive tape for each spindle must be reversed individually. Also when it is necessary to change the speed of the machine this can easily be done by changing the ratio in the gear train, it being unnecessary to change the driving pulley, as in machines now in common use.

What I claim is:

1. In a machine of the class described, a frame having spindle bars, a plurality of spindles having whorls mounted on said bars, a common endless driving tape engaging all said spindle whorls, a set of idler whorls with which said common driving tape also engages, a spindle driving pulley, certain of said spindles having a second whorl, and a primary driving tape taking around at least one of said second whorls and said driving pulley.

2. In a machine of the class described, a frame having spindle bars, a plurality of spindles having whorls mounted on said bars, a common endless driving tape engaging all said spindle whorls, a set of idler whorls with which said common driving tape also engages, a spindle driving pulley, certain of said spindles having a second whorl, and a primary drive tape taking around at least one of said second whorls and said driving pulley, tension means cooperating with said common drive tape.

3. In a machine of the class described, a frame having spindle bars, a plurality of spindles having whorls mounted on said bars, a common endless driving tape engaging all said spindle whorls, a set of idler whorls with which said common driving tape also engages, a spindle driving pulley, at least one of said spindles having a second whorl, and a primary drive tape taking around said second whorl and said driving pulley, and tension means cooperating with said primary drive tape.

4. In a machine of the class described, a frame having spindle bars, a plurality of spindles having whorls mounted on said bars, a common endless driving tape engag-

ing all said spindle whorls, a set of idler whorls with which said common driving tape also engages, a spindle driving pulley, one of said spindles on each spindle bar having a second whorl, primary drive tapes taking around said second whorls and said driving pulley, and tension means cooperating with said common drive tapes.

5. In machines of the class described, a pair of parallel spindle bars each carrying a row of spindle bases and a row of idler bases, a set of spindles with whorls on said spindle bases and a set of idler whorls on said idler bases, a common drive tape taking around said whorls alternately whereby to drive all spindles on a bar in the same direction, said tape extending across from bar to bar, and a tape tensioning means located between said bars and cooperating with said tape, at least one of said spindles on each bar having a second whorl, a driving pulley, and a primary driving tape taking around said pulley and said second whorls for the purpose described.

6. In machines of the class described, a pair of parallel spindle bars each carrying a row of spindle bases and a row of idler bases, a set of spindles with whorls on said spindle bases and a set of idler whorls on said idler bases, a common drive tape taking around said whorls alternately whereby to drive all spindles on a bar in the same direction, said tape extending across from bar to bar, and a tape tensioning means located between said bars and cooperating with said tape, at least one of said spindles on each bar having a second whorl, a driving pulley, and a primary driving tape taking around said pulley and said second whorls, and tension means cooperating with said second tape.

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