

Sept. 28, 1926.

1,601,351

J. DIEHL

SPINNING MACHINE

Filed Feb. 2, 1926

2 Sheets-Sheet 1

FIG. 1

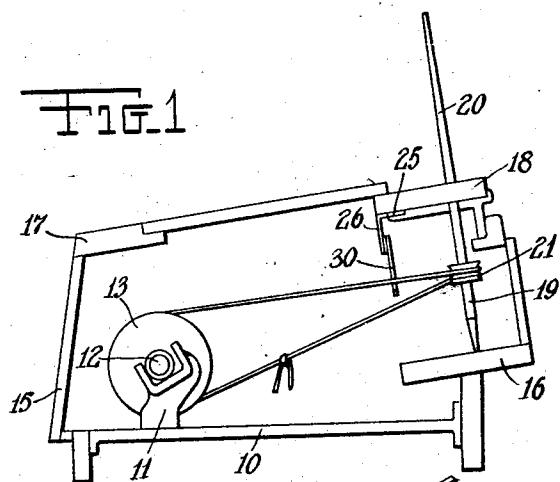


FIG. 2

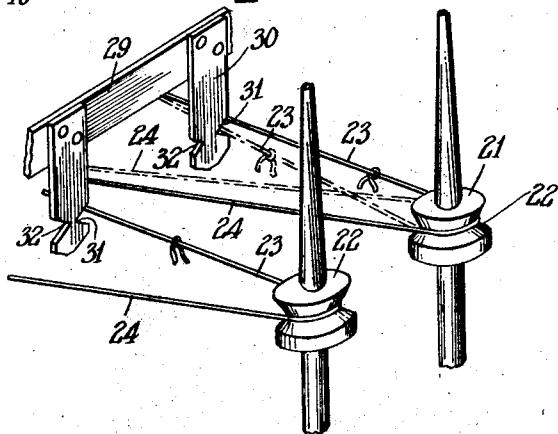
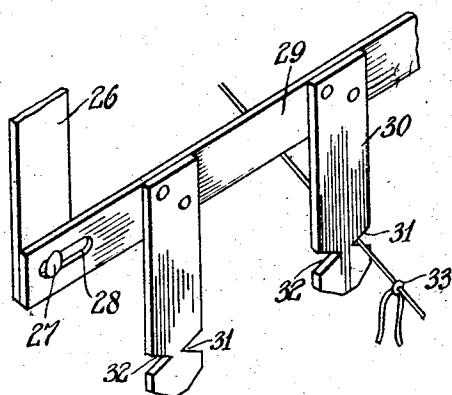


FIG. 3



INVENTOR

J. Diehl

BY

J. Federmann

ATTORNEY

Sept. 28, 1926.

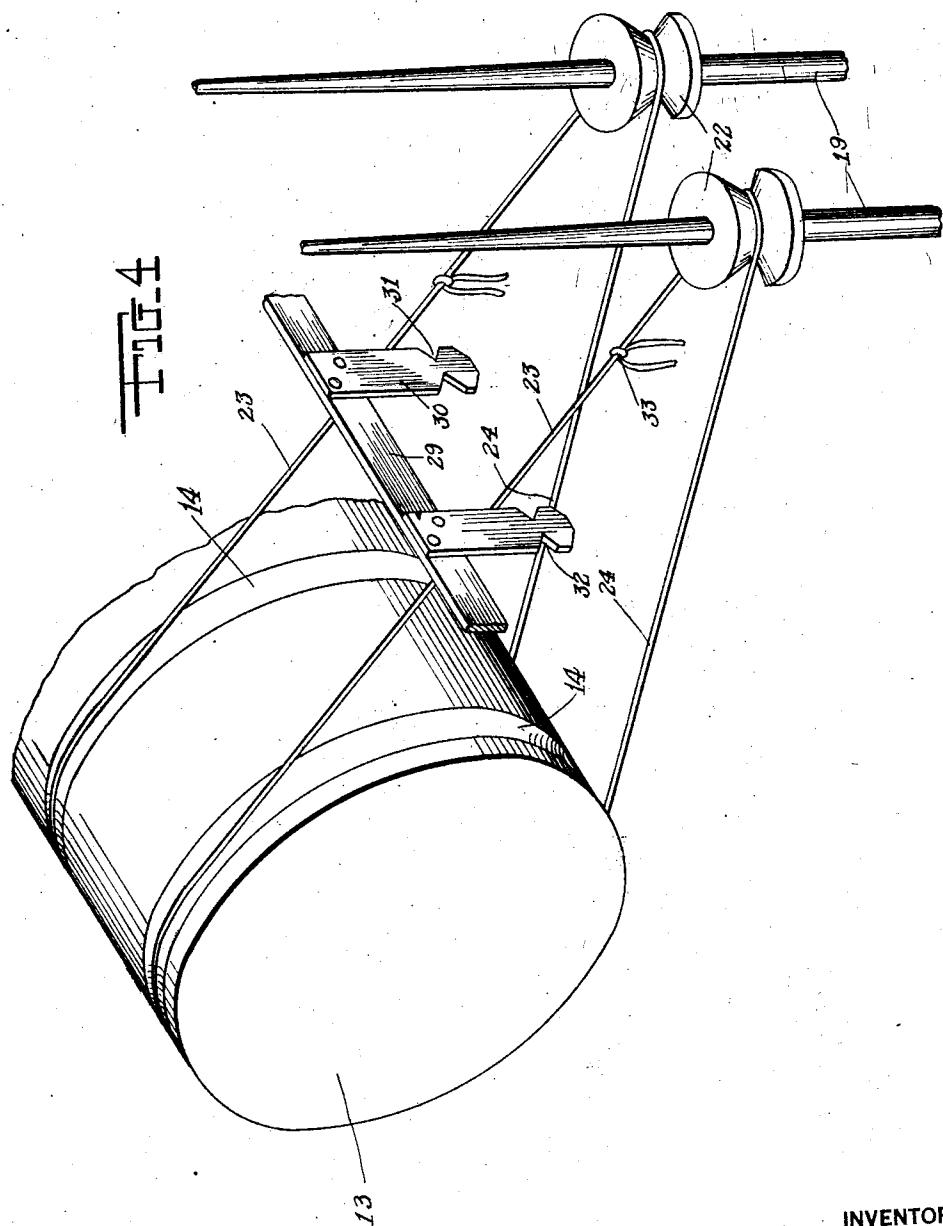
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INVENTOR  
*J. Diehl*  
BY *J. Ledermann*  
ATTORNEY

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# UNITED STATES PATENT OFFICE.

JULIUS DIEHL, OF GARFIELD, NEW JERSEY.

## SPINNING MACHINE.

Application filed February 2, 1926. Serial No. 85,443.

This invention relates to spinning machines and the main object is to provide a device which indicates that a bobbin is rotating in the wrong direction, and at the same time prevents such rotation. It frequently occurs that as a spool of yarn is half completed or spun upon the spindle of the spinning machine, the belt, usually a knotted cord, breaks. The operator of the machine has difficulty in reknitting the belt which drives the spool spindles, as the belt is partly concealed behind and beneath panels. Thru this concealment, it often happens that the operator strains the belt in the reverse position with the result that when the spinning machine is again started, the spool spindle will rotate in a reverse direction, causing the yarn which has been spun on the spool to be again un wound. This invention provides a guard which cooperates with the belts rotating the spool spindles in such manner that when the belts are given the wrong turn about the pulleys of the spool spindles, the knot on the belt will cooperate with the device in stopping movement of that belt and will prevent reverse rotation of the spool spindle.

The above and other objects will become apparent in the description below, in which characters of reference refer to like-named parts in the drawing.

Referring briefly to the drawing, Figure 1 is a sectional elevational view thru the body of a so-called mule spinning machine, showing the location of the indicator and guard which is to be described.

Figure 2 is a perspective view, showing the cooperation of the guard and indicator device illustrating its method of permitting free movement of the belt when moving in the proper direction and illustrating its engagement when moving in the wrong direction.

Figure 3 is a perspective view of the guard, showing the moving belt about to be stopped.

Figure 4 is an enlarged perspective view, showing the device more completely.

Referring in detail to the drawing, the numeral 10 indicates a platform forming part of a mule spinning machine. This platform has bearing brackets 11 mounted thereon in which a shaft 12 is supported. On the shaft, a relatively long drum 13 is fixed which is provided with a number of concave grooves 14. The platform 10 is

bounded by a rear wall 15 and a wall structure at the front. At the front of the spinning machine, an inclined support 16 is provided, which is raised about the surface 60 of the platform 10. The walls and structure at the front of the spinning machine support a roof frame 17 and 18, the latter of which is used as an anchor to which the guard 29 is attached. A spool spindle 19 has its lower end journaled in bearings located in the support 16 and extends upwardly at a slight angle of inclination. Said spindle passes thru the roof frame member 18 and its upper tapering end 20 is adapted 70 to have spools of yarn wound thereon. Intermediate the length of the spindle between the support 16 of the roof frame member 18, a pulley 21 having a groove 22 therein is secured. The drum is a continuous relatively long member having a great number of grooves 14 thereon and one spindle for each groove, the number of spindles used generally in the usual type of spinning machines being over four hundred. These 80 spindles rotate at high speed, 3000 R. P. M. Rotation of the spindles is accomplished by training belts consisting of knotted cords about the pulleys 21 and the grooved drum 13. These belts comprise lengths 23 and 24 which may be used either crossed when spinning a spool in one direction, the crossed belt being shown in broken lines in Figure 2, or may be used in the opposite direction as indicated by the full lines in Figure 2.

The device is adapted to stop linear movement of this belt when the same is inadvertently crossed or twisted as it is being readjusted to position on the pulleys and drum 95 during the spinning operation. The guard consists of a pair of plates 25 attached to the underside of the roof frame member 18 on opposite ends thereof. These plates 25 have arms 26 depending therefrom and at 100 the lower ends of the arms, pins 27 are provided which register in slots 28 formed in a horizontally positioned slide bar 29. Tongues 30 extend downwardly from the slide bar 29 at spaced-apart positions, one 105 tongue being provided for each spool spindle. Near the lower ends of these tongues, triangular notches 31 and 32 are formed. These notches are exactly in line with the side 23 of the belts.

Preparatory to operating the machine, the guard 29 is adjusted thru its slots 28 on the

pins 27 so that the notches 31 and 32 be adjacent but at a slight distance from the belts 23, allowing the knots 33 to clear the guards, yet near enough to cause said knots 5 to engage the notches when the belts are twisted about the pulleys, as shown dotted in Figure 2.

In operation, the drum 13 is rotated thru a source of power, with the belts trained 10 about the drum and the pulleys 21. When rotating in one direction, the belts are in the position indicated by the full lines in Figures 2 and 4. When in this position, the threads of the spool are rotated on the 15 spool in one direction. Should the belt break, a new knotted belt must be provided. These belts are partly concealed in a housing so that the operator of the machine finds it necessary to manipulate a hook or 20 wire to again place the belts upon the pulley 21, after the spindles 20 have been pulled upwardly. It frequently occurs that the operator, thru not being able to see the adjustment, twists the belts as indicated by 25 the broken lines in Figure 2. If this occurs when a spool is only partly wound, were 30 the power of the machine turned on. Such inadvertent twisting of the belt would be indicated and unravelling of the spool would be prevented by the device illustrated in 35 Figure 3. When the belt is inadvertently crossed, the length 23 thereof will be guided into the notch 31 and if the power of the machine is then turned on, the belt will move until the knot 33 wedges itself in the notch 31, preventing further rotation of this 40 belt and thus preventing the partly completed spool from being unwound. When the operator observes this, he shuts off the power and reverses the belt.

I claim:—

1. In a spinning machine, means for preventing wrong rotation of a spool spindle 45 comprising a knotted cord trained about a drum and a pulley, and means between said belt engageable with the knot on said belt for stopping rotation of the spool spindle when said belt is crossed.

50 2. In a spinning machine, means for pre-

venting wrong rotation of a spool spindle comprising a knotted cord trained about a drum and a pulley, means between said belt engageable with the knot on said belt for stopping rotation of the spool spindle when 55 said belt is crossed comprising a tongue extending downwardly between the belt normally spaced from the length of belt which is engaged by the tongue when said belt is crossed, and means for adjusting the position of said tongue.

3. In a spinning machine, means for preventing wrong rotation of a spool spindle comprising a knotted cord trained about a drum and a pulley, means between said belt 60 engageable with the knot on said belt for stopping rotation of the spool spindle when said belt is crossed comprising a tongue extending downwardly between the belt normally spaced from the length of belt which 65 is engaged by the tongue when said belt is crossed, means for adjusting the position of said tongue comprising a horizontal slide bar, means supporting said slide bar, said slide bar having slots at its ends, and pins 70 on said support means registering in said slots.

4. In a spinning machine, means for preventing wrong rotation of a spool spindle comprising a knotted cord trained about a 75 drum and a pulley, means between said belt engageable with the knot on said belt for stopping rotation of the spool spindle when said belt is crossed comprising a tongue extending downwardly between the belt normally spaced from the length of belt which 80 is engaged by the tongue when said belt is crossed, means for adjusting the position of said tongue comprising a horizontal slide bar, said slide bar having slots at its ends, pins on 85 said support means registering in said slots, said tongue having triangular notches therein, the belt when crossed being adapted to 90 register in any of said notches causing the knot of said belt to shoulder in one of said notches to prevent movement of said belt.

In testimony whereof I affix my signature.

JULIUS DIEHL.