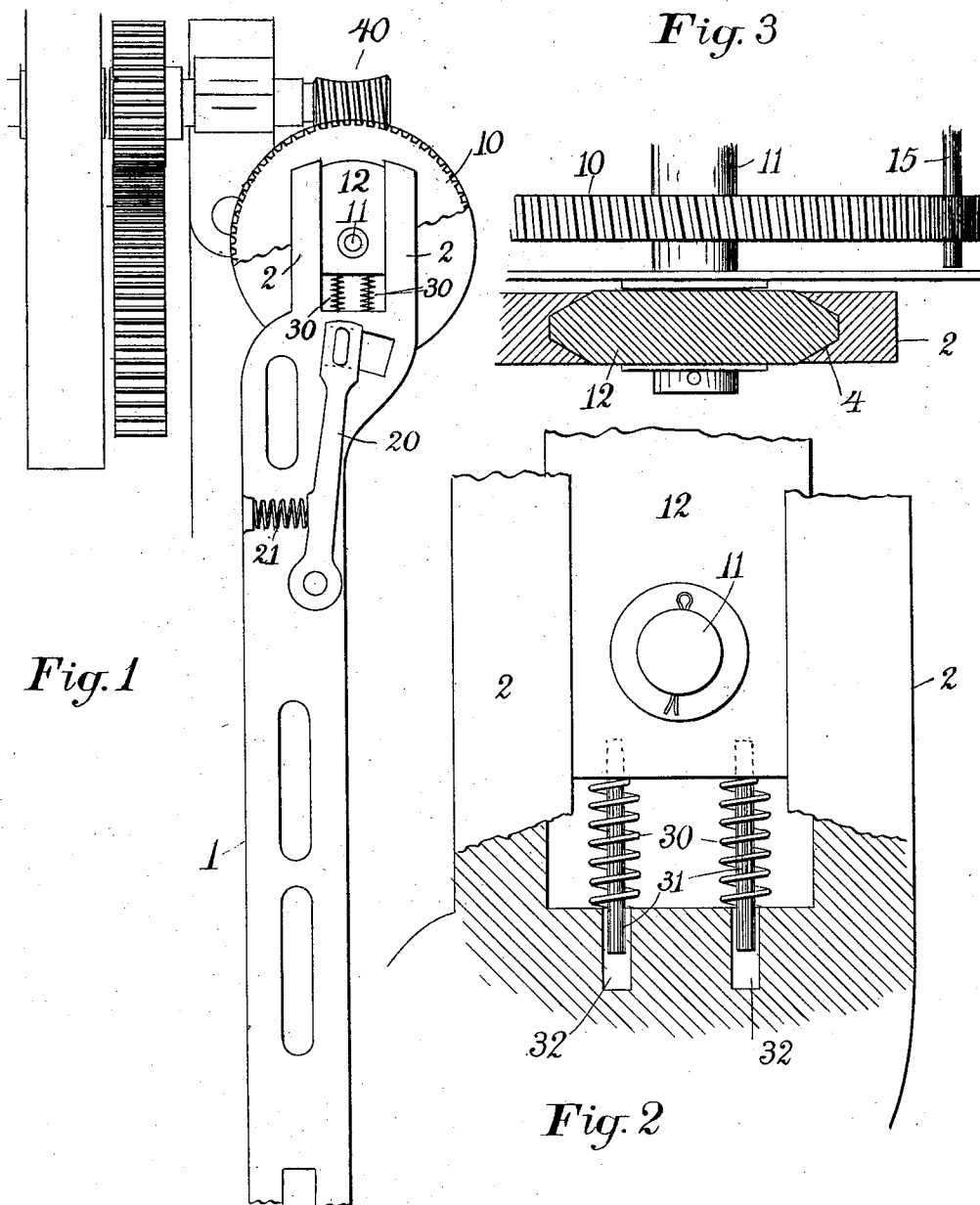


No. 758,652.

PATENTED MAY 3, 1904.

J. HOLT.  
MULE SPINNING MACHINE.  
APPLICATION FILED DEC. 12, 1903.

NO MODEL.



Witnesses;

Lowell M. Maxham

Thompson & Goodrich

Inventor,

John Holt; by

By A. B. Upsham,  
His Attorney.

# UNITED STATES PATENT OFFICE.

JOHN HOLT, OF LAWRENCE, MASSACHUSETTS.

## MULE-SPINNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 758,652, dated May 3, 1904.

Application filed December 12, 1903. Serial No. 184,887. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HOLT, a citizen of the United States, and a resident of Lawrence, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Mule-Spinning Machines, of which the following is a full, clear, and exact description.

In spinning-machines of this character it is customary to have the twist-slide drop at certain intervals and then to be raised again to its former position. This dropping is effected by what is termed the "twist-wheel," which is rotated by engagement with the twist-worm on the main drive and by the impact of a pin carried by said wheel against the twist-slide catch, such impact causing said catch to release the twist-slide and permit it to drop. The twist-wheel being carried by the twist-slide is consequently caused to leave the twist-worm on the main drive when the twist-slide drops and to be reengaged therewith when the slide returns to its normal position. The objection to this arrangement is that it is impossible to accurately adjust the catch so as to retain the twist-wheel with its worm-teeth in exact mesh with the twist-worm. During my many years' experience with these machines I have found that either the twist-wheel and worm are held so tightly together as to cause unnecessary friction and wear, with consequent loss of power, or the teeth are but partially held in engagement and the points only thereof subject to wear. Of the two extremes the latter is the more objectionable for the reason that such piecemeal wear soon renders the twist-wheel worthless and necessitates the replacement of quite an expensive part of the machine.

The object of my invention is the construction of means for enabling the twist-slide to elastically support the twist-wheel in such a manner that when forced up to its normal position it will yieldingly hold the twist-wheel in engagement with the twist-worm and always maintain a proper mesh between the same notwithstanding any wear of the parts or inaccuracy of construction.

Referring to the drawings forming part of of this specification, Figure 1 is an elevation

a portion of a mule, showing my improvement applied thereto. Fig. 2 is a detail sectional view, nearly full size, of the particular part embodying my invention; and Fig. 3 is a detail plan view of the latter with parts broken away and part in section.

The twist-slide 1 is of the usual pattern, with the exception that its upper end is formed with means for carrying my improvement, to be hereinafter described. Its catch 20 for holding the slide in its normal position is of the customary construction, being designed to hold the slide until the twist-wheel has completed its rotation and caused the said slide to be released therefrom, as already stated. The upper end of said slide instead of being made solid is formed with two uprights 2, each grooved in the surfaces facing each other, as shown in Fig. 3 at 4, and within these grooves or ways is slidably held the block 12, carrying the stud 11, upon which is mounted the twist-wheel 10, said stud, wheel, and pin 15, carried by the latter, all being of the usual construction. Projecting from the under face of the block 12 down into suitable holes 32 in the body of the slide 1 are two pins 31, each having about it a spiral spring 30; such springs being of a strength to suitably press the wheel 10 into mesh with the twist-worm 40 when the slide is in its elevated position, but to wholly release the said wheel from the twist-worm when the slide has dropped to its lowest position. Half an inch is ample resilient variation for the twist-wheel and slide. Thus constructed, when the slide 1 is forcibly raised until its catch 20 is enabled to be engaged and hold it the twist-wheel 10 is carried up against the worm 40. The latter being on the main drive and in constant motion immediately meshes with the twist-wheel teeth and sets the same in motion. As is evident, the springs 30 press the teeth of the wheel 10 wholly into engagement with the worm 40 and insure that there shall be no partial wear between such teeth and worm and consequent rapid deterioration. Further, if owing to some wrong adjustment of parts the slide should be raised too far by the operating machinery the wheel and worm are not forced together with an injurious pressure, but the springs

30 simply yield slightly more and retain substantially the same contact as before. Moreover, it sometimes happens that when the slide is forced upward the points of the teeth 5 of the wheel 10 meet squarely against the crest of the worm, and where the wheel is rigidly carried by the slide something is liable to break. With the springs 30, however, there is absolutely no danger of injury, since 10 the slide can rise and be secured in position with the worm and teeth still unmeshed. Then in a moment the rotation of the worm causes it to properly engage with the wheel's teeth.

15 What I claim as my invention, and for which I desire Letters Patent, is as follows, to wit:

1. In a mule-spinning machine, the combination with the main drive and the worm thereon, of the twist-slide, the block slidably

carried by said slide, resilient means yieldingly 20 supporting said block, and the twist-wheel carried by said block, substantially as described.

2. In a mule-spinning machine, the combination with the main drive and the worm thereon, of the twist-slide having the grooved 25 uprights, the block slidable between said uprights, the twist-wheel carried by said block, the pins projecting from the under face of said block, and the coiled springs on said pins pressing said block upward, substantially as 30 described.

In testimony that I claim the foregoing invention I have hereunto set my hand this 21st day of November, 1903.

JOHN HOLT.

Witnesses:

JOE JACKSON,  
GEORGE C. CORLESS.