

(Model.)

L. B. SANFORD.

REGULATOR FOR SPINNING MULES.

No. 250,584.

Patented Dec. 6, 1881.

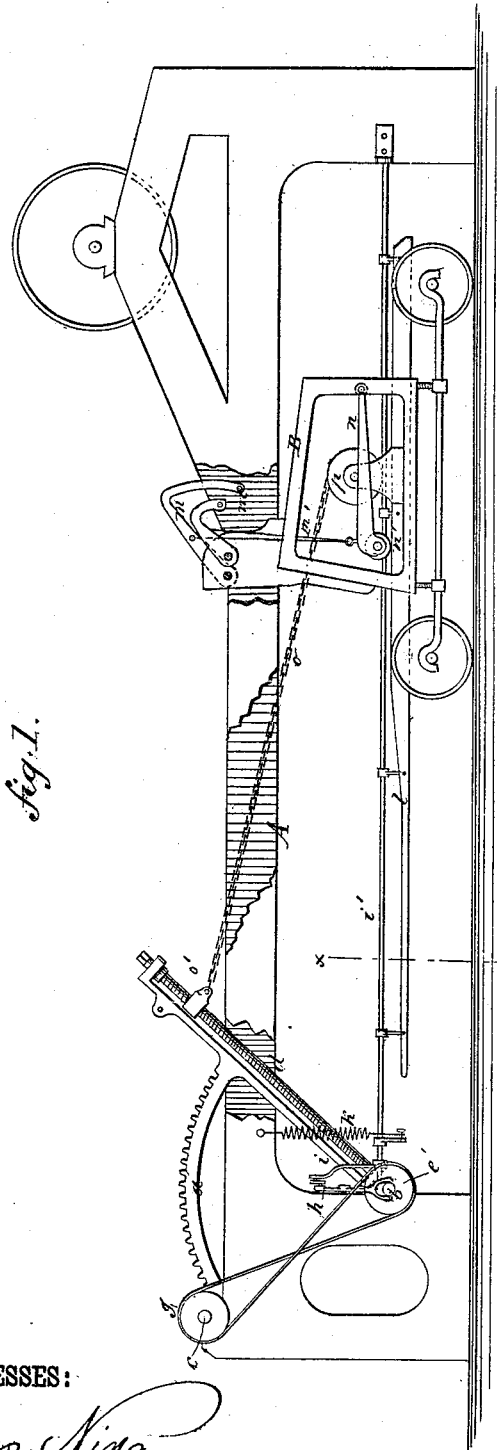


Fig. 4.

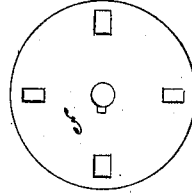


Fig. 3.

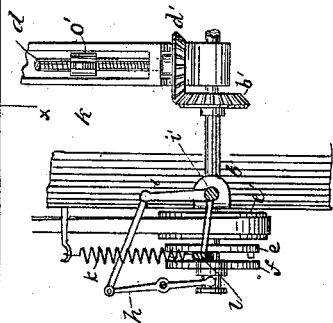
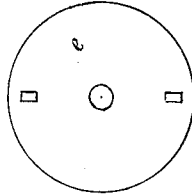


Fig. 2.

WITNESSES:

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REGULATOR FOR SPINNING-MULES.

SPECIFICATION forming part of Letters Patent No. 250,584, dated December 6, 1881.

Application filed November 19, 1880. (Model.)

To all whom it may concern:

Be it known that I, LAZARUS B. SANFORD, of Greenville, in the county of Greenville and State of South Carolina, have invented certain new and useful Improvements in Spinning-Mules, of which the following is a specification.

My invention has reference more particularly to improvements in mechanism for regulating the rising movement of the quadrant-nut.

The object of my invention is to provide improved means for automatically regulating the tension of the yarn while the cop is being wound.

My invention consists in improved means for regulating the rising movement of the quadrant-nut, as will be hereinafter fully described.

In the drawings, Figure 1 represents a side view of my improved mechanism for regulating the tension of the yarn. Fig. 2 is a sectional view of the clutch mechanism and parts immediately connected therewith, taken on line *x x* of Fig. 1; Figs. 3 and 4, face views of the clutches.

Similar letters of reference indicate corresponding parts.

A represents the mule-head or main frame; B, the carriage, which runs upon rails in the ordinary manner, and carries the fallers *m m*, the upper of which is the tension and the lower the winding-on faller. These fallers are carried by rods, and have wires extending from their extremities in the ordinary manner. Attached to the axle-rod of the winding-on faller *m* is the usual mechanism for regulating the movement of the said winding-faller as the carriage is moved toward the feed-rolls to wind up the yarn and form the cop. The two fallers *m* are connected by a strap, *m'*, upon which is hung a weighted lever, *n*, said lever bearing upon its free extremity a roller, *n'*, which rests upon a beveled rack, *l*, extending nearly the whole length of the mule-frame. This track is securely attached to a rocking bar, *l'*, journaled in the ends of the frame, and held in position by a spiral spring, *k*. To one end of the bar *l'* is attached an elbow-lever, *i*, connecting the said bar with a second lever, *h*, having one of its extremities bifurcated. The latter presses upon a sliding disk, *f*, held upon the shaft by a feather, and having free lateral play, the other half, *e*, of the clutch-box being

loose upon said shaft, so that when the rack *l* is depressed the clutch is locked, and when freed the spring *k* draws up the rack and unlocks the clutch. There is also formed upon disk *l* a band-wheel, *e'*, connected with and driven by a second band-wheel, *g*, borne by a shaft, *c*. Upon the same shaft *b* there is secured a bevel-pinion, *b'*, meshing with a second pinion, *d'*, secured to the end of the quadrant-screw *d*. The screw bears a nut, *o'*, having longitudinal freedom of action, and connected by a chain, *o*, with a chain-drum, *p*. *a* is the quadrant, whose toothed sector gears with teeth formed upon the shaft *c*. The spindles (not shown) are set in the ordinary manner upon the mule-carriage, and the feed-rolls (not shown) journaled in the mule-head.

The operation of my invention is as follows: The yarn or threads pass from the feed-rolls over the tension-faller wire, under the winding-faller wire, and are secured to the spindles upon the carriage. The machinery is then put in motion, the spindle revolves, and the carriage runs out from the feed-rolls. At the starting-point the tension-faller is depressed and the winding-faller elevated, and the yarn is twisted and stretched as the carriage runs out. When the carriage begins its return the relative positions of the fallers have been reversed. The spindle therefore winds the yarn upon the cop, the usual means (not shown) being employed to properly regulate the movement of the winding-faller to cause it to lay the yarn upon the spindle in proper order to form the cop. All of this part of the operation is old; but as the carriage proceeds on its inward run the movement of the winding-faller, above referred to, causes a slackening of the strap *m'* and allows the weighted lever *n* to bear upon the track *l*, which, descending, rocks the bar *l'* and causes the two parts of the clutch to lock. By this operation the shaft *b* is turned through the belt on pulleys from the shaft *c*, and through the medium of the pinions the screw *d* is revolved. This in turn elevates the nut *o'*, the amount of the ascent of the nut, and consequently the tension of the yarn, being regulated by the strain of the yarn on fallers. The weighted lever is attached (as has been said) to both fallers, and as the cop fills up the

winding-faller rises each time the mule-carriage runs in.

What I claim is—

The combination of the track *l*, rock-shaft *i*, and clutch mechanism fitted for movement by the rock-shaft, with the shaft *b*, quadrant *a*, screw *d*, nut *o*, chain *o*, chain-drum *p*, lever

n, strap *m'*, fallers *m*, gears *b'* *d'*, pulley *e'*, and mechanism for operating pulley *e'*, substantially as and for the purposes described.

LAZARUS B. SANFORD.

Witnesses:

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JOHN A. SANFORD.