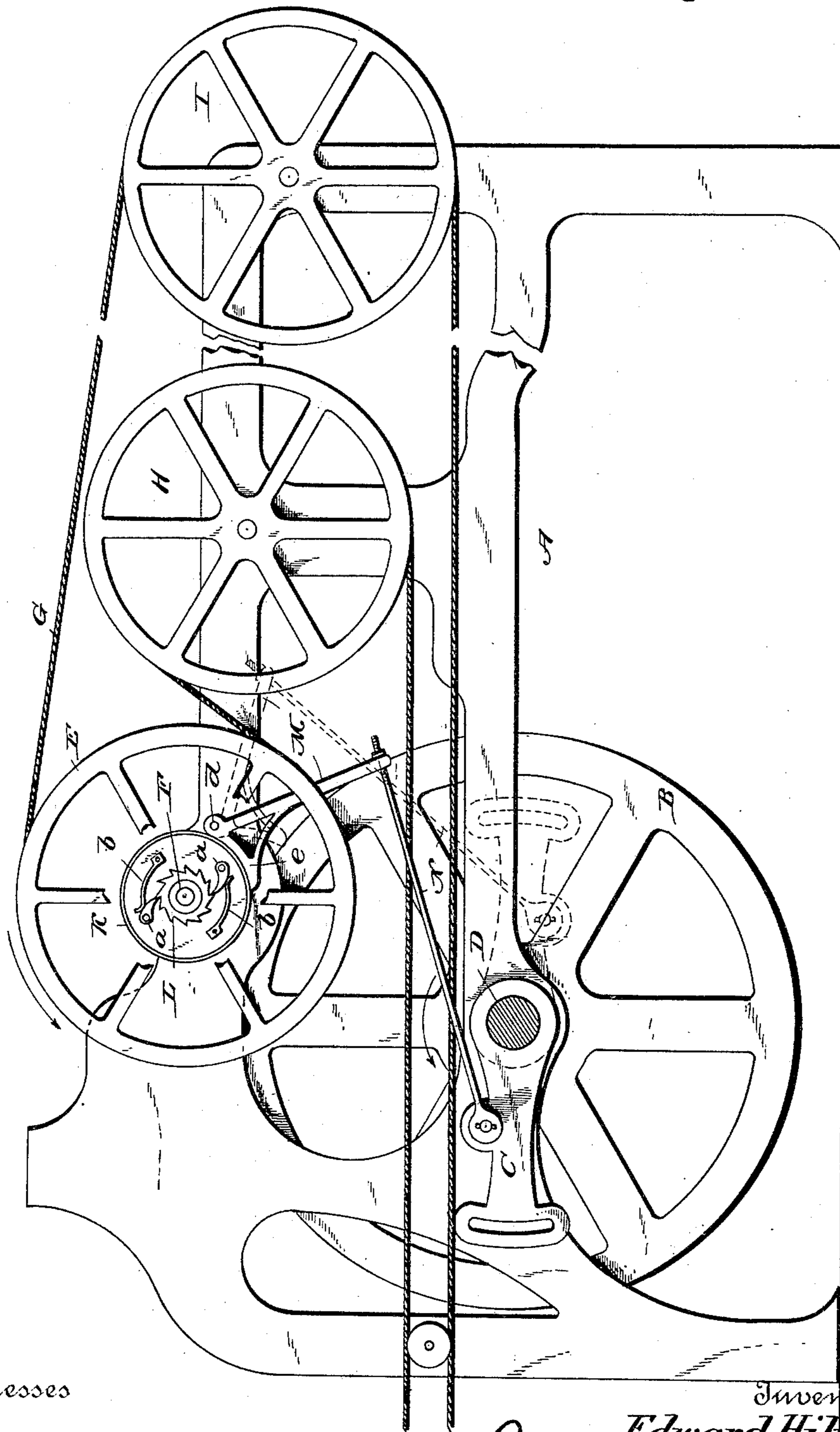


(No Model.)

E. HILTON.  
SPINNING MULE.

No. 409,286.

Patented Aug. 20, 1889.



Witnesses

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# UNITED STATES PATENT OFFICE.

EDWARD HILTON, OF WOONSOCKET, RHODE ISLAND.

## SPINNING-MULE.

SPECIFICATION forming part of Letters Patent No. 409,286, dated August 20, 1889.

Application filed June 5, 1889. Serial No. 313,114. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD HILTON, a citizen of the United States, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Spinning-Mules; and I do 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.

This invention relates to an improvement in cotton-spinning mules; and it has for its object to provide a brake mechanism which will overcome the momentum and reduce to a minimum the time heretofore lost by the dwell or stoppage in the spindles and machinery caused at the reversing of the carriage after the drawing, stretching, and twisting of the yarn. This object I accomplish by the mechanism shown and illustrated in the accompanying drawing, in which the figure is a representation of a side elevation of a cotton-mule frame or head with my improvements applied.

My improvements are designed to be used in connection with a spinning-mule of the type shown in the Letters Patent granted to W. Mason, October 3, 1846, No. 4,779.

Referring by letter to the said drawing, A indicates the frame of the mule-head, which may be of any ordinary or approved construction.

B indicates the main sweep-gear secured to the shaft D, supported in the main frame.

C indicates the roller clutch-arm, which is keyed to the main sweep-gear shaft D.

E indicates a score-pulley which is keyed to the drive-shaft F, and G indicates the band that drives the spindle-drum on the carriage of the mule and passes over the pulleys H and I in the main frame, as shown.

K indicates a brake-pulley which is arranged loosely on the drive-shaft F, and L indicates a ratchet-wheel which is fixed to the hub of the score-pulley E. Pivoted to the web of the brake-pulley are two pawls *h*, which are backed by springs *b* and are normally held in engagement with the teeth of the ratchet L.

M indicates a brake-bar which is journaled in the upper horizontal portion of the main frame and in close proximity to the periphery

of the brake-pulley, as shown at *d*. The upper end of this brake-bar is curved to conform to the curvature of the brake-pulley, so as to provide a shoe *e* for the frictional contact on the periphery of said pulley. The opposite or lower end of this brake-bar is connected with the roller clutch-arm C by means of a rod N. This rod is provided at one end with a thread adapted to receive a nut, whereby the connection may be adjustable, so as to increase the braking power of the brake mechanism.

When the carriage is traveling away from the rollers and the thread is being twisted, the pulley E is going in the direction of the arrow, pulley K at this time being in clutch with the ratchet L by the pawls *a a*, and is also carried in the same direction. The roller clutch-arm C at this time is in the position shown in dotted lines and the brake E is released from the pulley K. When the carriage is about to return, the sweep-gear shaft B reverses its motion and travels in the direction of the arrow one-half of a revolution, thereby acting on the rod N and applying the brake *e* to the pulley K, thus overcoming the momentum in all parts of the machine that are driven by the band G.

The shaft F by other actions of the machine is reversed, which turns the spindles in an opposite direction and unwinds the thread on the spindle or slackens it sufficiently so that the faller can carry the thread to the cop for building up the same. The brake not being released at this time and the pulley E being reversed and the pulley K being loose on the shaft, the pawls *a a* ride over the ratchet-teeth, thus making the pulley K independent of pulley E, and by the time the shaft F is again reversed the brake has been released and the pulley K by the action of the pawls *a a* becomes a part of the pulley E again. As the cop on the spindle is built up the action of the ratchet becomes less, or, in other words, when the cop is first commenced, the thread when backing off has to travel farther and the pawls ride over several teeth of the ratchet before the shaft F is reversed, and as the cop is built up the backing off becomes less and less teeth are used on the ratchet.

By the employment of the ratchet-wheel as

soon as the shaft F is reversed, the pulley K being loose on said shaft, the pawls *a* will ride over the ratchet-teeth, thus making the brake-pulley independent of the score-pulley E, and  
5 by the time the shaft F is reversed again the brake will be released, and the pulley K by the action of the pawls will again become a part or be fixed to the score-pulley E and the carriage be again ready for a forward move-  
10 ment.

Having described my invention, what I claim is—

In a cotton-mule, the combination, with the roller clutch-arm and the score-pulley, of a

brake-pulley on the drive-shaft, a ratchet- 15 wheel on the hub of the score-pulley, a spring-backed pawl or pawls on the web of the brake-pulley, a brake having one end adapted to engage the periphery of the brake-pulley, and a rod connecting the opposite end of the brake 20 with the roller clutch-arm, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD HILTON.

Witnesses:

SAML. P. COOK,  
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