

P. B. WHITEHEAD.
 MULE AND TWINER FOR SPINNING YARN.
 APPLICATION FILED NOV. 9, 1907.

921,770.

Patented May 18, 1909.
 3 SHEETS—SHEET 1.

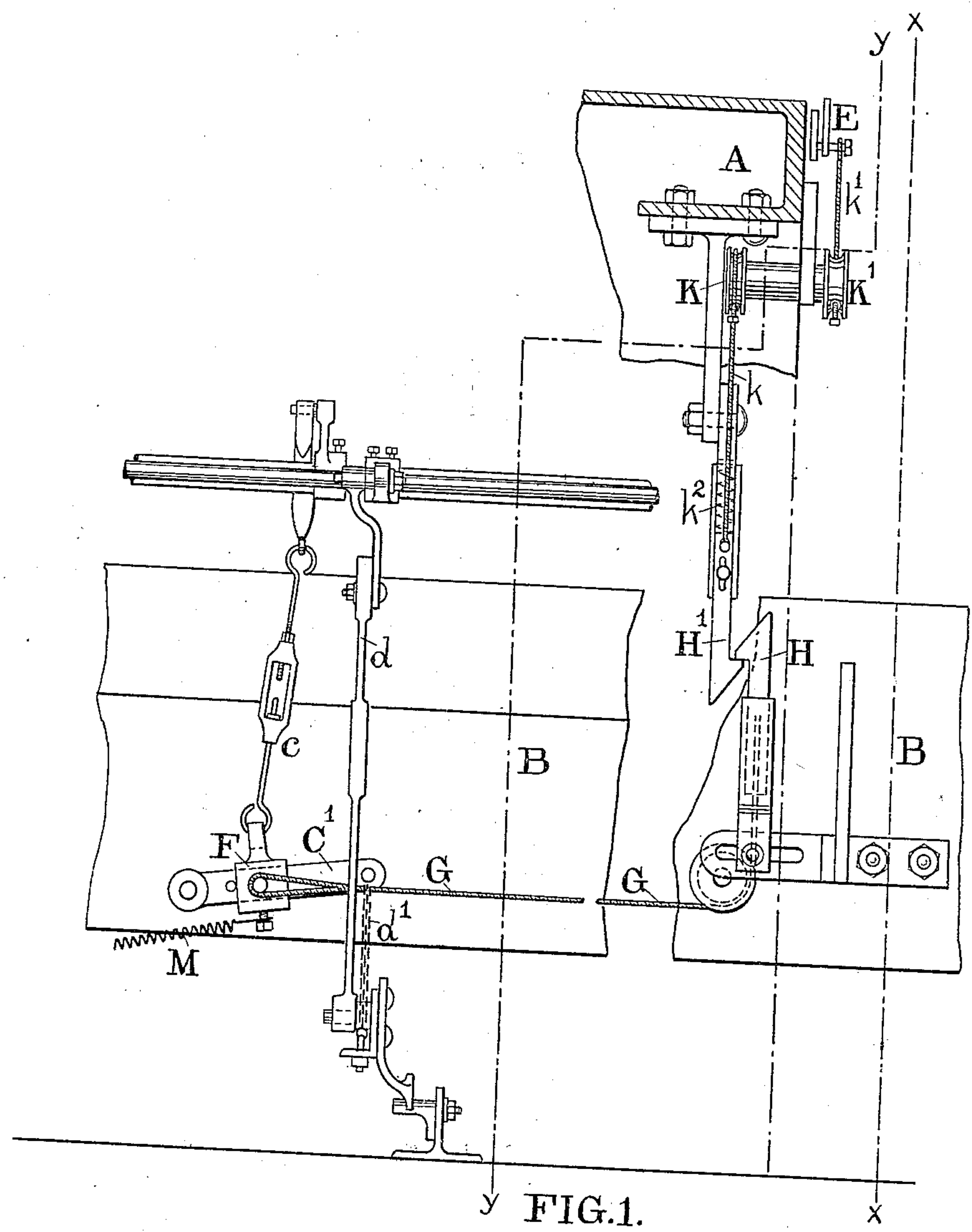


FIG. 1.

WITNESSES.
William Cheney.
Joseph Bates.

INVENTOR.
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att.

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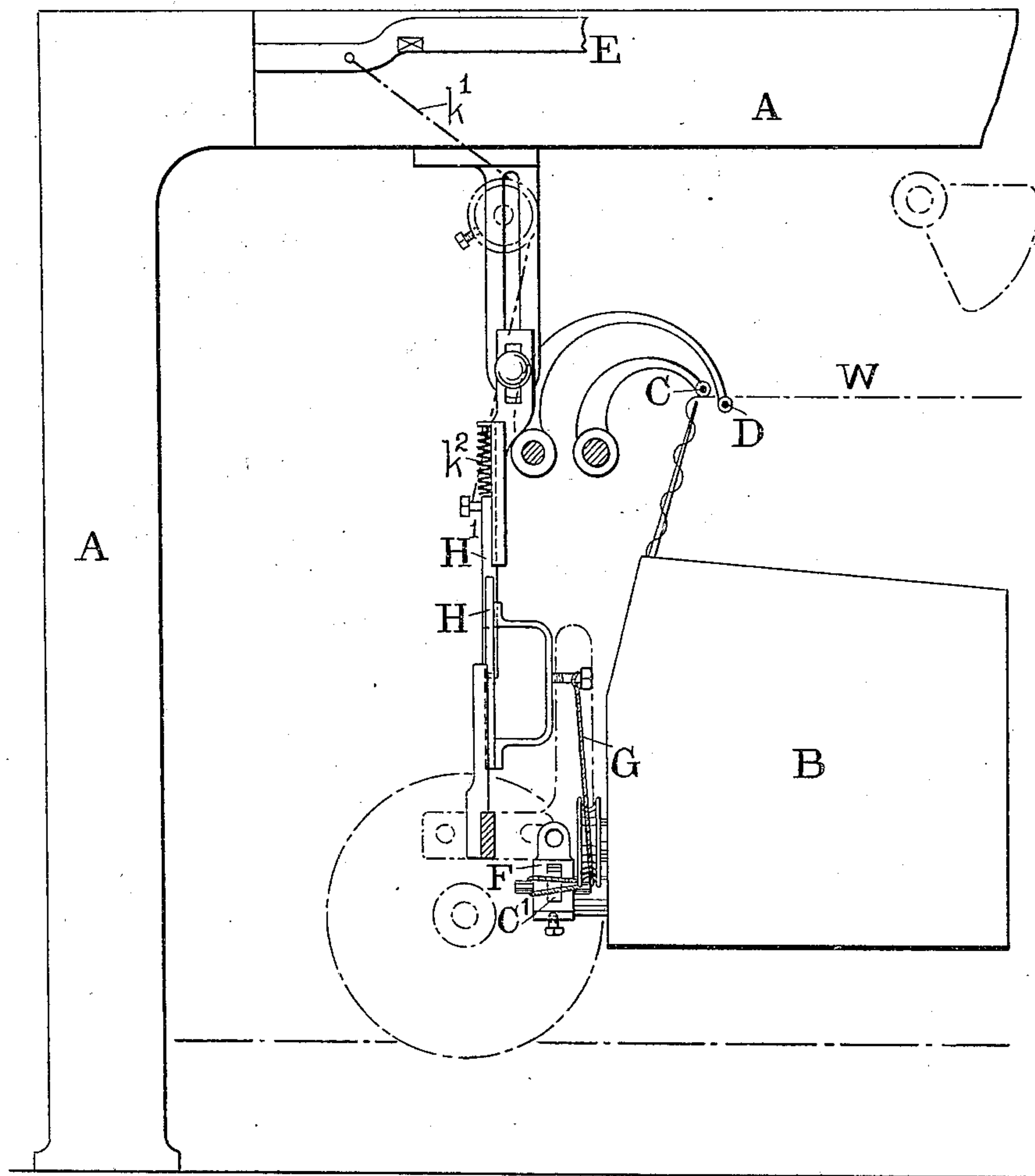


FIG. 2.

WITNESSES.

William Cheney.
Joseph Bates.

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UNITED STATES PATENT OFFICE.

PHILIP B. WHITEHEAD, OF STOCKPORT, ENGLAND.

MULE AND TWINER FOR SPINNING YARN.

No. 921,770.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed November 9, 1907. Serial No. 401,490.

To all whom it may concern:

Be it known that I, PHILIP BRUCE WHITEHEAD, British subject, and resident of Stockport, county of Chester, England, mill manager, have invented certain new and useful Improvements in Mules and Twiners for Spinning Yarn, of which the following is a specification.

In all makes of self-acting mules when the "backing off" commences there is a moment before the faller wires get control of the thread in which the yarn is permitted to become slack allowing it to run into snarls which are a serious drawback to its quality. This arises partly owing to the backing off chain being kept a little slack for fear of the faller wire overtaking the yarn too soon and breaking the ends.

The object of the present invention is to prevent the yarn becoming slack at the moment "backing off" commences.

It consists essentially of an arrangement for connecting and working the fallers to permit the counter faller being raised against the yarn to put tension thereon immediately before "backing off" in advance of and without giving a corresponding movement to the winding faller, thereby preventing the yarn becoming slack.

The invention will be fully described with reference to the accompanying drawings forming part of the specification in which sufficient of a self acting mule is shown to illustrate the invention.

Figure 1. front elevation of part of mule carriage and head stock. Fig. 2. side elevation partly in section on line $x-x$. Fig. 3. side elevation partly in section on line $y-y$.

The headstock A the carriage B, the winding faller C, the counter faller D and the backing off rod E and the mechanism for working these parts not shown in the drawings are all of any ordinary construction and operated in the usual way.

In addition to the usual mechanism by which the winding faller C is depressed to a point just above the yarn and the counter faller D raised to a point just under the yarn when the carriage B is "at the head" or position farthest from the rollers and before the backing off movement commences (the position shown in the drawings) I employ means to give an additional movement to and further raise the counter faller wire D until it rests against the under side of threads or ends of yarn W and presses them upward

against the winding faller wire C which prevents the ends being drawn off the spindle point thereby putting a tension upon the yarn as the backing off commences. The counter faller D is connected in the usual way by the connecting link d with the weighted lever D' pivoted to the under side of the carriage B and this in turn is connected by chain d' to the lever C' and connecting link c with the winding faller C so that the movement of the one is complementary to the other. I now introduce a supplementary motion between the connecting links c and d by which the weighted lever D' which controls the counter faller D is permitted to move in advance of the winding faller C and its link c , and the counter faller D is thereby raised slightly before the movement of the winding faller C for backing off.

On the lever C', pivoted to the front of the carriage B, a sliding block F is mounted to which the connecting link c of the winding faller C is connected instead of to an eye or eye bolt made fast to the lever C'. As the lever C' is in normal position, set somewhat on an incline it follows that if the block F is moved toward the free end that the lever will fall slightly without drawing down the link c . This movement allows the counter faller lever D' to fall thereby raising the counter faller D, without giving a corresponding downward movement to the winding faller C. The counter faller is weighted and operated in the usual way during the run-in of the mule carriage. The sliding block F on the lever C' is connected with the backing off rod E by a wire rope or band G latches H H', the pulleys K K' and bands $k k'$; as soon therefore as the backing off lever E begins to move, the slide block F is moved and the desired supplementary movement given to the counter faller D. The block F is drawn back to normal position by a spring such as M.

As the head stock A to which the backing off rod E is pivoted is stationary and the carriage B runs backward and forward a sliding latch H to which the band G is connected is mounted upon the carriage and a sliding latch H' to which the band k is connected is mounted upon the headstock. The latches H H' are of hooked or other shape as to engage with one another (see Fig. 1) each time the carriage travels outward and disengages when the carriage travels inward again. A spring k^2 forces the latch downward after it has been lifted by the backing off rod E.

It will be evident that in any other make of mule the connection between the faller and counter faller levers may be made in any convenient way to permit of the counter faller lever moving downward before the backing off movement of the winding faller C begins and also that the necessary connection with a part of the mule that moves in advance of the backing off may be made in any convenient manner. The connection may be made with such parts of the mule as the strap fork, a spring or other device connected with or released by the twist wheel, or with a bowl or runner working upon an incline upon the headstock or on the floor bracket or otherwise.

What I claim as my invention and desire to protect by Letters Patent is:—

1. In a mule or twiner the combination with the headstock A, the carriage B, the winding faller C, the counter faller D, and the backing off rod E, of a sliding block on the counterfaller lever and means for moving it on the lever interposed between the winding faller and the counter faller, and connected with an operative part of the mule which moves before the backing off commences, by which the counter faller is raised against the yarn to put a tension upon it immediately before backing off and in advance of the movement of the winding faller for backing off substantially as described.

2. In a mule or twiner the combination with the headstock A, the carriage B, the winding faller C, the counter faller D, and the backing off rod E, of a sliding block on the counter faller lever and means for moving it thereon whereby the connection between the winding faller and the counter faller is lengthened when the carriage is at the "head" to raise the counter faller against

the yarn before backing off and in advance of the movement of the winding faller for backing off substantially as described.

3. In a mule or twiner the combination with the headstock A, the carriage B, the winding faller C, the counter faller D, and the backing off rod E, the winding faller lever C' and connecting link c of a block F capable of sliding on the lever C' to which the connecting link c is connected and means by which the sliding block is moved before backing off commences substantially as described.

4. In a mule or twiner the combination with the headstock A, the carriage B, the winding faller C, the counter faller D, and the backing off rod E, the connecting link c and the winding faller lever C' of a block F moving thereon, a band G connected thereto and to an operative part of the mule, substantially as described.

5. In a mule or twiner the combination with the headstock A, the carriage B, the winding faller C, the counter faller D, and the backing off rod E, the connecting link c and the winding faller lever C' of a block F moving thereon a band G connected thereto, a latch H on the mule carriage, a latch H' on the mule headstock, a band h connected to the latch H', pulleys K K' and a band k' connected to the backing off rod E by which the movement of the rod is transmitted to the sliding block F substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PHILIP B. WHITEHEAD.

Witnesses:

J. OWDEN O'BRIEN,
HARRY BARNFATHER.