W. Rouse.
Spinning Mule.

No. 11,755. Patented Oct. 3, 1854.

Fig: 1.

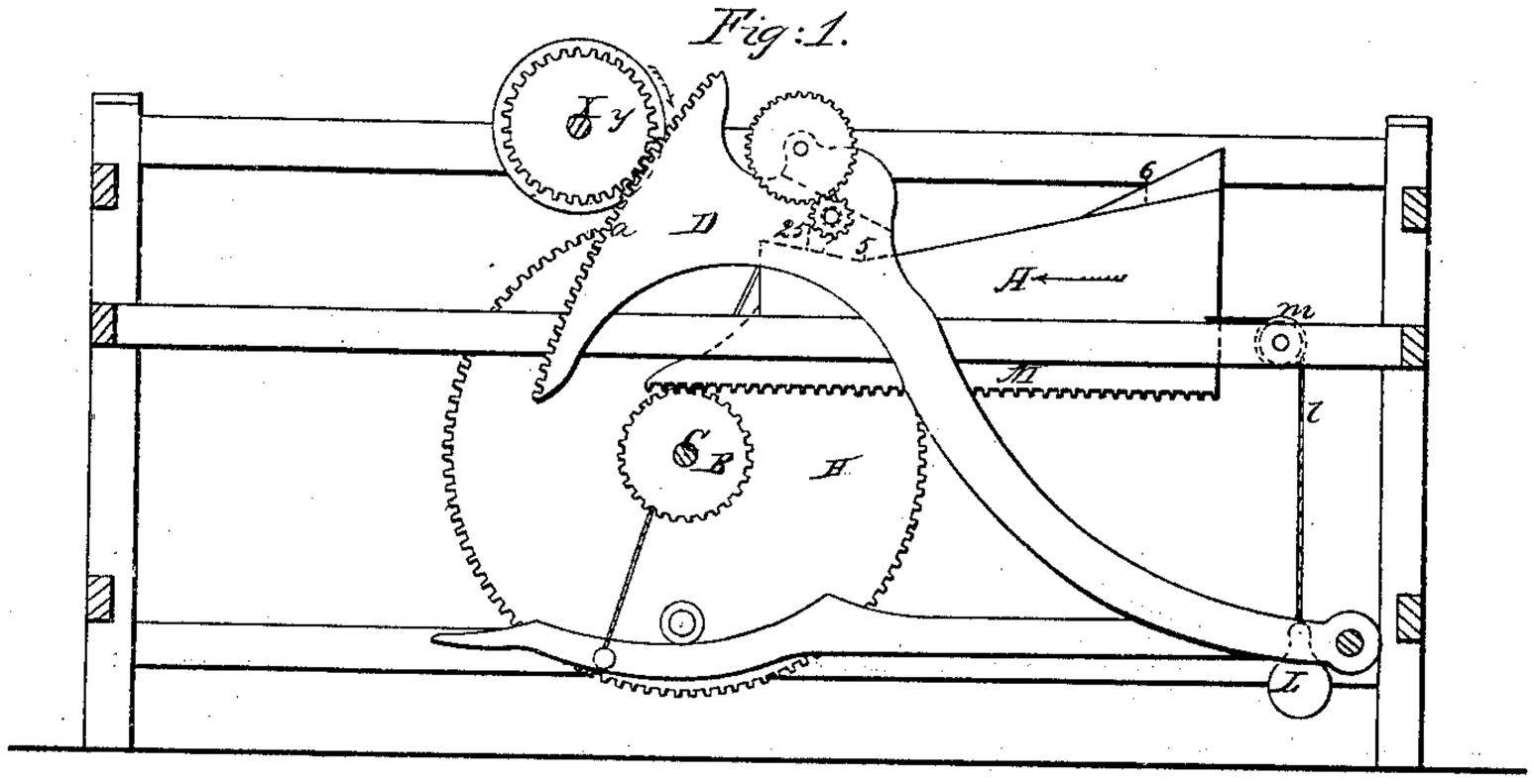


Fig: 2.

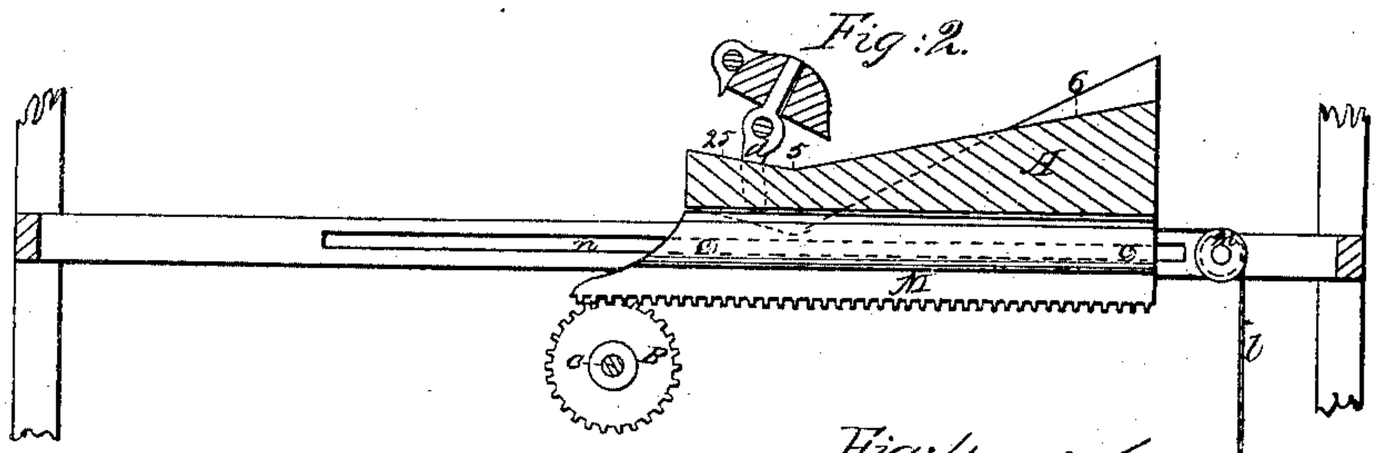


Fig: 4.

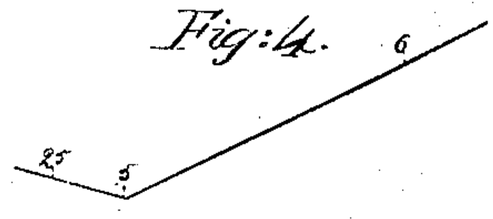


Fig: 3.

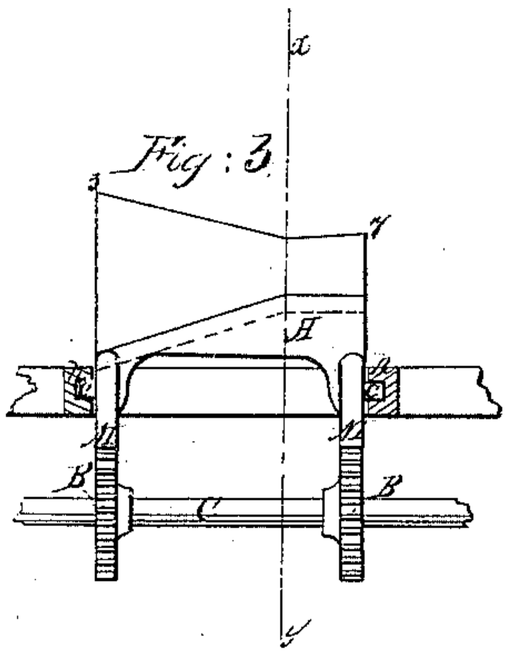
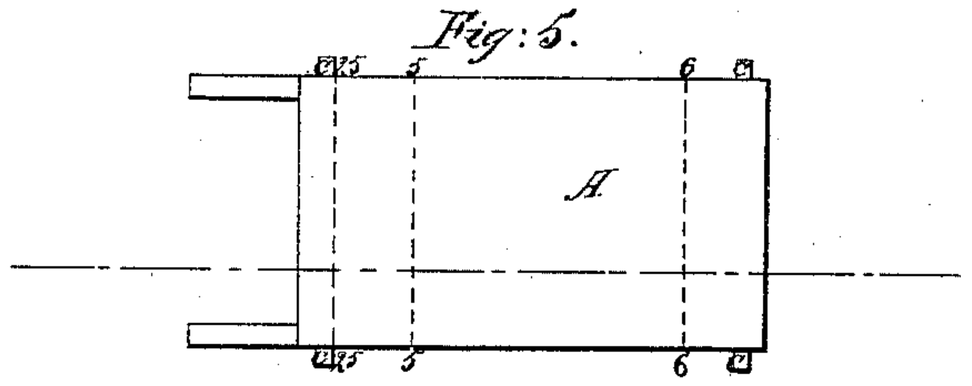


Fig: 5.



UNITED STATES PATENT OFFICE.

WANTON ROUSE, OF TAUNTON, MASSACHUSETTS.

SELF-ACTING MULE.

Specification of Letters Patent No. 11,755, dated October 3, 1854.

To all whom it may concern:

Be it known that I, WANTON ROUSE, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in the Self-Acting Mule for Spinning Cotton and other Fibrous Materials; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

In order to explain the nature of this invention, it is necessary to refer briefly to the invention of improvements in the self acting mule which forms the subject of Letters Patent granted to me on the 2nd of November 1852, and re-issued under an amended specification on the 2d of March 1853. The principal feature of that invention consists in a cam, by which the motion of the spindles in backing off, and winding on, the yarn, is produced and governed. Since putting this invention in operation, I have substituted for the cam, a variable inclined table. The principal reasons for this change are, that the inclined plane is more easily constructed, and that its operation is more accurate, in consequence of its motion being positive, while the cam is dependent for its stoppage, after each winding on operation, in the right position to commence the next backing off operation, upon the action of a friction brake, which is a device not at all times certain in its producing and governing the motion of the spindles for backing off and winding on the yarn by means of a double inclined table, the degree of whose inclinations varies transversely to the direction of its motion, which may be either in a rectilinear direction, or in a circular direction with every point moving in a plane.

Figure 1, in the accompanying drawing, is a side elevation of the principal parts of a mule, constructed according to my invention, one side of the framing being removed to show the working parts more distinctly. Fig. 2, is a longitudinal vertical section of the inclined table, and certain other parts bearing intimate relation thereto, in the line *x*, *y*, of Figs. 3 and 5. Fig. 3, is an end view of the same parts, shown in Fig. 2, looking from the left hand of said figure. Fig. 4, is a longitudinal profile of that side of the table, which is farthest removed from view in Fig. 1. Fig. 5, is a top view of the table.

Similar letters of reference indicate corresponding parts in the several figures.

All the parts of my improved mule which I have not now represented, correspond precisely with my former patented mule. The inclined table A, which I have represented supported by studs *c*, *c*, fitting to horizontal ways *n*, *n*, in the framing, is intended to receive a rectilinear motion, in the direction of the arrow shown on it in Fig. 1, during the whole of the time when the backing off and winding on of the yarn is to be performed. This motion is derived from two toothed pinions B, B, on a shaft C, which corresponds with the shaft of the cam in my former mule, the said pinions gearing with two toothed racks M, M, on the under side of the table. The shaft C, carries a large spur wheel H, similar to the spur wheel on the cam shaft in my former mule, which gears with a small spur wheel, (not represented) which is set in motion at the time the backing off is intended to commence, at which time, the finger *d*, of the swinging frame, is on some point on the line 25, which is shown in Fig. 5, and has its position indicated in Figs. 1, 2, and 4. The finger *d*, supports the swinging frame D, which is precisely like that in my former mule, and during the time the table A, is moving so far as to bring the transverse line 5 (which intersects the least prominent part of any line drawn longitudinally upon the table) in contact with the finger, the swinging frame descends and its toothed segments *a*, give motion to the toothed wheels *y*, *y*, and their shaft, X, in the direction of the black arrow shown in Fig. 1. The shaft X, is geared to drive the spindles at the time of backing off and winding on the yarn, and when moving in the direction of the black arrow drives them in the proper direction to back off. The carriage, during the above motion, has been running out, but when the finger arrives on the line 5, its motion is reversed to run up, and as the motion of the table progresses, the finger *d*, rises, causing the swinging frame D, to rise also, and the toothed segments *a*, to reverse the motion of the wheels *y*, and the shaft X, and thus to reverse the motion of the spindles, and whirl them in the proper direction for winding on the yarn. By the time the carriage has been run up to the beam, the table has moved so far, that its highest

operative transverse line 6, which is very near that end which is represented at the right hand of the drawing, has come in contact with the finger, and at that time, the small spur wheel which drives the large spur wheel H, is uncoupled from its shaft and leaves the table A, free to be returned to the position from which it started, viz:— with the finger *d*, on the line 25, by two weights L, which are attached to the right hand end of the table by cords *l*, passing over pulleys *m*, whose axles are attached to the framing of the mule. The action of the weights upon the table A, is certain and immediate, and as the shaft X, is uncoupled by a positive movement (similar to that in my former mule) the table is at once thrown back to the position where it is required to remain stationary until the time when the next backing off operation is required to commence. During the backward movement of the table A, the finger *d*, follows the surface, and causes the segments on the swinging frame to bring back to shaft X, to the proper position to be coupled at the right time.

The short descending inclined part 25, 5, of the table, and the long ascending inclined part 5, 6, gradually increase in steepness from the side 7, to the side 8, of Fig. 3. The side 7, is where the finger rests when the cops are commenced, and it is gradually worked by the screw, toward the side 8, where it arrives when the cop is finished.

The variation in the steepness of the inclination is necessary, in order to suit the changing shape of the cops as their building progresses. The form of the cam is fully shown in the drawing. The proportionate inclinations of the sides 7, and 8, of the cam, will depend on the shape of the cop to be produced. The longitudinal inclinations of the ascending part 5, 6, of the table may be made in irregular curves, in order to give the spindles different velocities at different stages of every winding on operation.

Instead of a double inclined table moving having a rectilinear motion as described, I propose, if desirable, to use a substantially similar table moving back and forth, around a fixed vertical axis; every part of its surface moving in a horizontal plane like the rectilinearly moving table,—in that case, the inclination 25, 5, and 5, 6, will be described in circles instead of in straight lines, and the transverse lines 25, 5, and 6, will be radial to the axis.

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

Communicating rotary motion to the spindles, and governing the said motion in backing off and winding on the yarn during the progressive stages of the building of the cops, through the agency of a double inclined table A, having either a rectilinear motion or a circular motion with every portion of its face moving in a plane as described; the said table transmitting motion to the shaft which drives the spindles through any mechanical means, whereby the desired result can be produced.

WANTON ROUSE.

Witnesses:
M. F. McFadon,
Benj. R. Dean.