(No Model.)

T. C. DILL.

SPOOL SUPPORT FOR MULES.

No. 490,950. Patented Jan. 31, 1893.

FIG. 1.

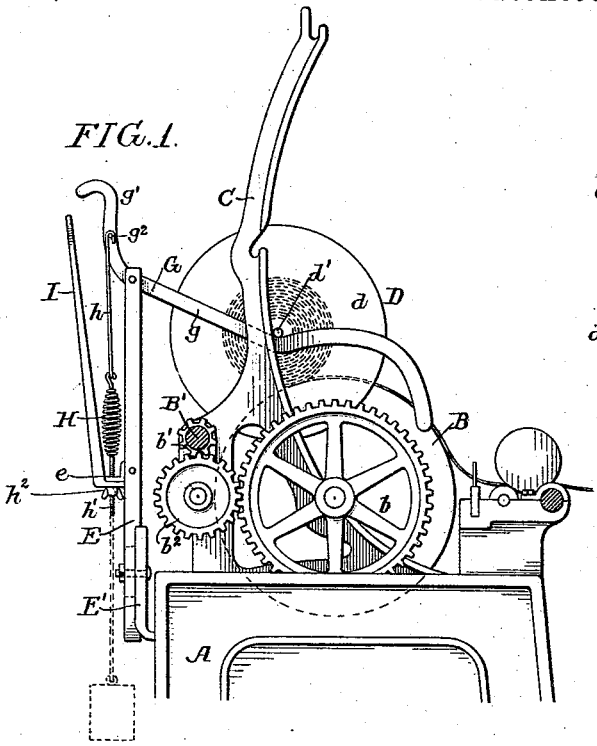


FIG. 2.

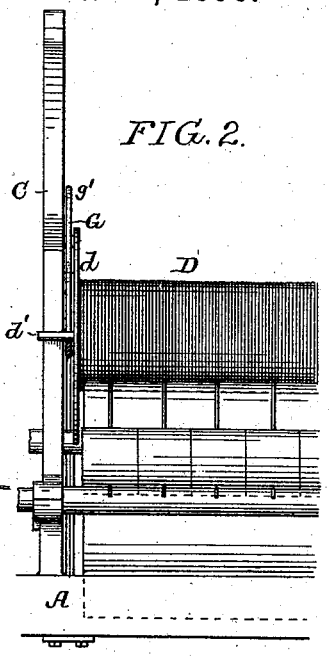


FIG. 3.

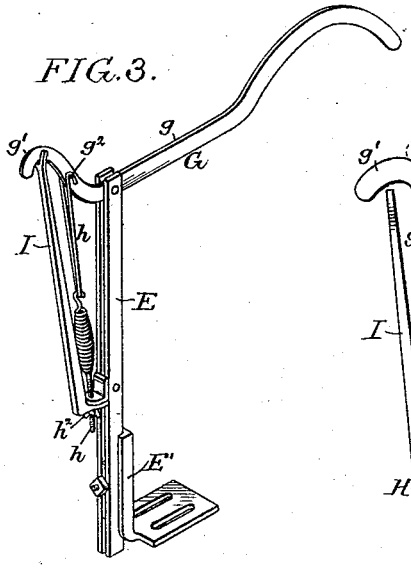
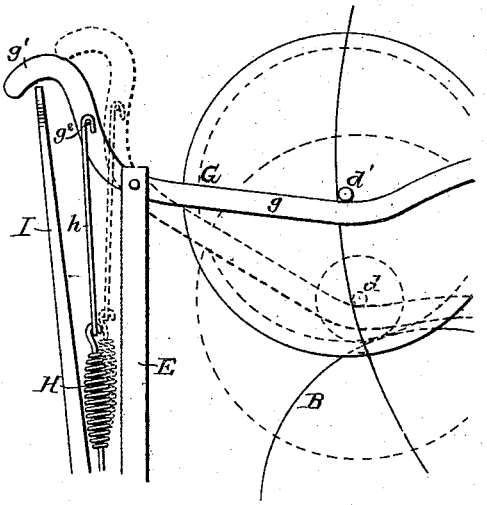


FIG. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS C. DILL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE T. C. DILL MACHINE COMPANY, OF SAME PLACE.

SPOOL-SUPPORT FOR MULES.

SPECIFICATION forming part of Letters Patent No. 490,950, dated January 31, 1893.

Application filed August 20, 1892. Serial No. 443,577. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. DILL, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Spool-Supports for Mules, of which the following is a specification.

My invention relates to the spool carrying mechanism of a spinning mule and the object of my invention is to relieve the driving drum from the full weight of the spool, thus preventing to a great extent the breaking of the yarn owing to the packing of the strands upon the spool. This object I attain in the following manner, reference being had to the accompanying drawings, in which—

Figure 1, is a side view of sufficient of a spinning mule to illustrate my invention, the spinning mule shown being of the ordinary construction now in common use; Fig. 2, is an elevation of the same; Fig. 3, is a perspective view of my attachment; and Fig. 4, is a diagram view showing the support in the two extreme positions.

Spinning mules as now constructed are so arranged that the full weight of the spool and that of the yarn or slubbing upon it are supported entirely by the driving drum by which motion is imparted to the spool to unwind the yarn therefrom. Consequently as the spools are very long and have a large number of ends of yarn upon them, this weight so embeds one strand of yarn upon another as to compact it, and when the feeding rolls draw off the slubbing from the spool they not only have to carry the yarn which is very light but also have to pull it away from the yarn upon the spool in which it is embedded, consequently the yarn often breaks between these two points necessitating the constant attention of the operator.

I have found that the weight of the spool is a great deal more than is required to drive it, and that if the drum be relieved of this extra weight it will not be compacted and become embedded among the other strands upon the spool.

Referring to the drawings A is the frame of the mule, B is the drum driven through the gear wheel b and pinion b' and intermediate b^2 from the shaft B'. These drums B are arranged in sections throughout the entire length of the mule and support the spools D, said spools having heads d which overhang each side of the drums B, the drums being in contact with the yarn as shown in Figs. 1 and 2.

The spools have trunnions d' which rest against the bracket or standard C, curved in the manner shown, the bracket being at the rear of the center of the drum so that the tendency of the spool is to rest against the standard in position to resist any tendency to roll off from the drum. This is the ordinary method of mounting spools upon spinning drums, the whole weight of the spool being supported by the drums. I, however, arrange at intervals at the rear of the mule adjustable standards E, supported preferably by adjustable brackets E' adapted to the rear of the frame A. Each of these upright frames or standards E carries a lever G curved as shown in the drawings and the long arm g of each lever passes under the trunnion d' of the spool and is so shaped as to form with the standard C a V bearing for the spool. The short arm g' of the lever has a pin g^2 to which is adapted a link h which in turn is adapted to a spring H adjustably secured to a bracket e on the standard E. The spring H has a screw threaded extension h' to which is adapted the thumb nut h^2 by which the tension of the spring is regulated. Thus it will be seen on referring to the diagram that when the spool is full and rests in the position shown by full lines in the diagram Fig. 4, the leverage is increased and consequently the spring will support a heavier spool than when the lever is in the position shown by dotted lines, and this leverage gradually decreases as the yarn is drawn off from the spools, until the spool is empty, when it is in the position shown by dotted lines in Fig. 4, and consequently the leverage is decreased and is only sufficient to support a small portion of the weight of the spool so that if the parts are so adjusted the lever will relieve the drum from the greater portion of the weight of the spool, preventing the compacting of the several strands upon the spool and allowing the yarn to be removed freely therefrom. When the spool is removed from the levers G by the

operator the lever springs back and the short arm g' strikes an abutment I which has a V-shaped head for receiving the arm as shown in the perspective view. This abutment is guided by the upright E and has an extension which rests directly under the bracket e, the screw threaded portion h' of the spring passing through an orifice in said extension so that when the arm is thrown back by the spring in striking the abutment it is cushioned by the spring itself.

Other abutments may be used without departing from my invention and a weight may be used as shown by dotted lines in Fig. 1, which can be substituted for the spring, but I prefer to use the spring in all cases.

It will be understood that my invention may be applied to the spool supports of carding machines or winding frames upon which are mounted the spools for receiving the roving to be drawn out and twisted in the mule or spinning machine.

I claim as my invention:—

1. The combination in a mule, of the drum, the spool, a pivoted lever for taking part of the weight of the spool, an upright E to which said lever is hung, and a bracket E′, the said upright being vertically adjustable on said bracket, substantially as set forth.

2. The combination in a mule, of the drum, the spool mounted thereon, guides for said spool, and levers for supporting said spool and relieving the driving drum of the full weight of said spool, substantially as described.

3. The combination in a mule, of the driving drum, the spool mounted thereon, guides therefor, a pivoted lever, one arm of said lever passing under the trunnions of the spool, a spring connected to the other arm of the lever and in such relation to the pivot of said lever that as the yarn is drawn off from the spool, the leverage of the spring will be decreased, substantially as described.

4. The combination of the drum B, the spool D mounted thereon, standard C for guiding the spools, levers G, uprights E to which the levers are pivoted, the long arm of each lever passing under the trunnions of the spools, springs connected to the short arms of each lever and to the uprights, and adjustable so as to alter the amount of tension, substantially as described.

5. The combination of the drum, the spools mounted thereon, the standards guiding said spools, the levers for supporting the spools, uprights upon which the levers are mounted, a spring connected to the short arm of each of the levers, an abutment for the short arm of each lever and mounted upon the spring so that when the lever is relieved of the weight of the spool it will be cushioned by its spring, substantially as described.

6. The combination in a mule, of the drum and spool, with mechanism for sustaining part of the weight of the spool in such a manner that the spool will at all times have a given bearing upon the drum, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS C. DILL.

Witnesses:
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HENRY HOWSON.