(No Model.) 3 Sheets—Sheet 1.

E. C. A. MASSON.

SPINNING MULE.

No. 317,397. Patented May 5, 1885.

FIG. 4.

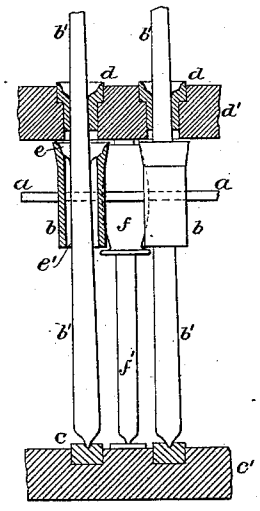


FIG. 1.

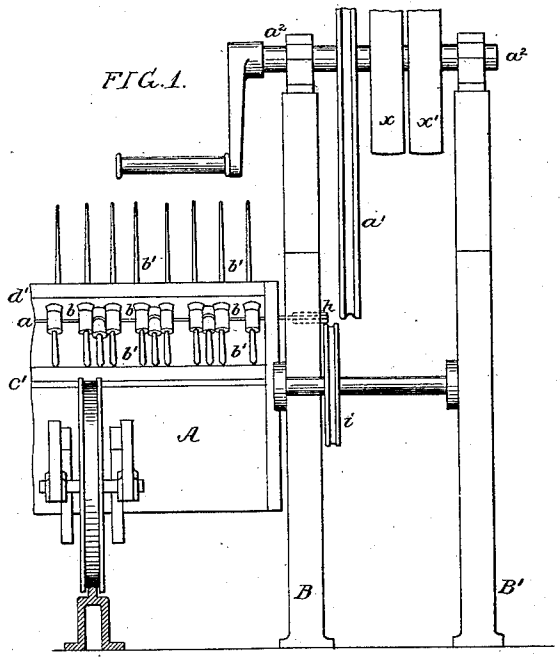


FIG. 5

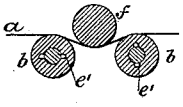
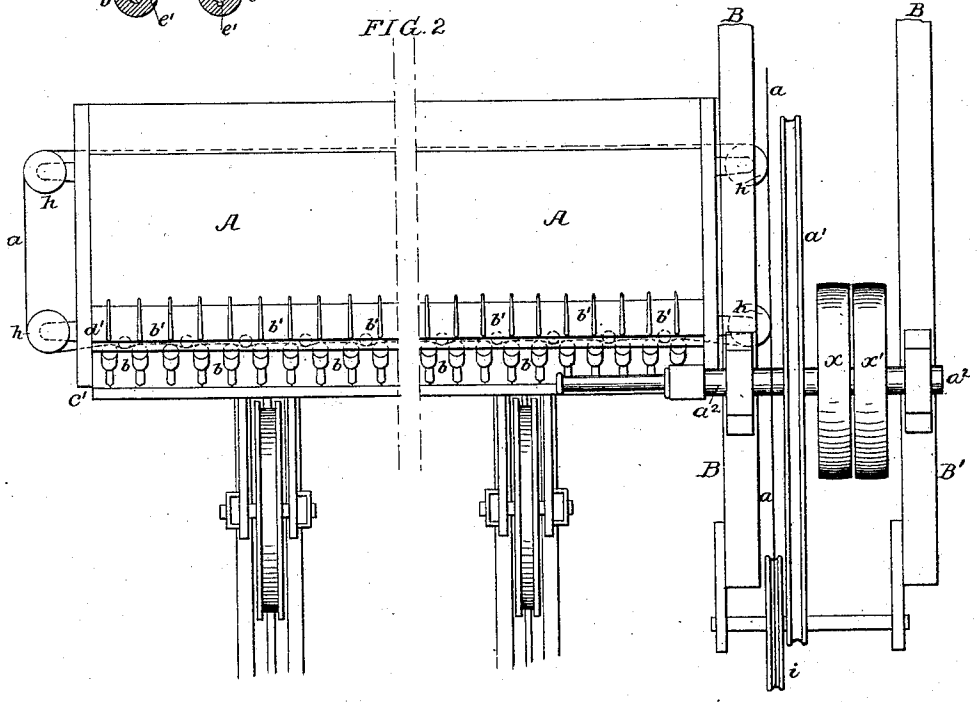


FIG. 2



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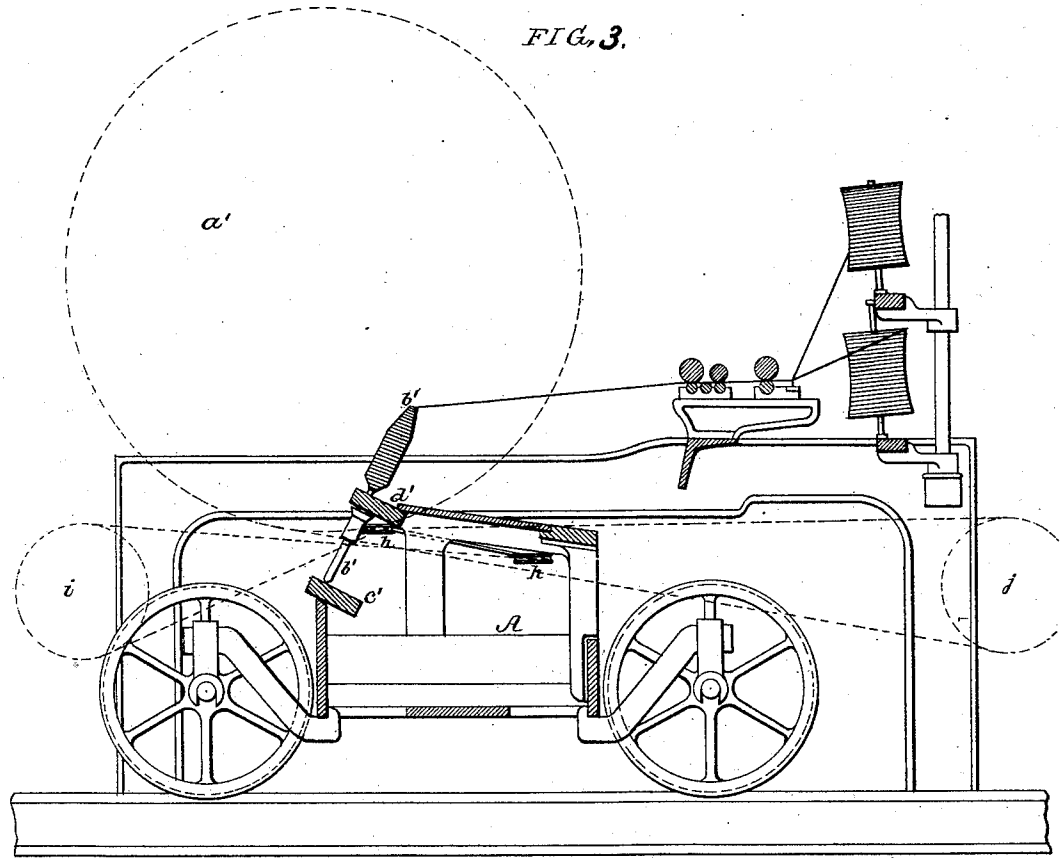
(No Model.) 3 Sheets—Sheet 2.

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FIG. 3.



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(No Model.) 3 Sheets—Sheet 3

E. C. A. MASSON.

SPINNING MULE.

No. 317,397. Patented May 5, 1885.

FIG. 6.

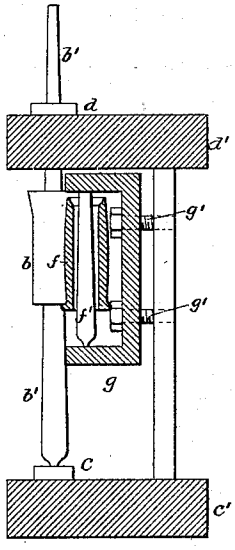
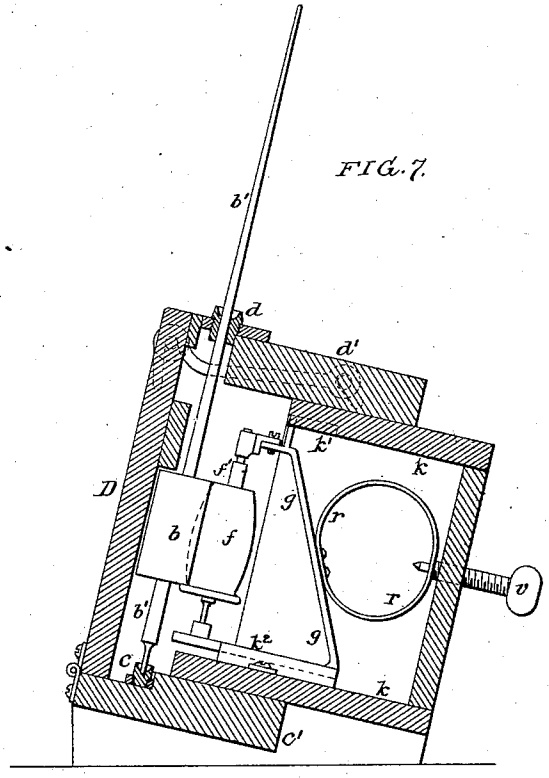


FIG. 7.



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UNITED STATES PATENT OFFICE.

ETIENNE CHARLES AMAND MASSON, OF LENCLOS, FRANCE.

SPINNING-MULE.

SPECIFICATION forming part of Letters Patent No. 317,397, dated May 5, 1885.

Application filed April 16, 1883. (No model.) Patented in France June 20, 1882, No 150,059; in Germany July 23, 1882, No. 21,165; in Belgium October 30, 1882, No. 59,412; in England November 3, 1882, No. 5,245; in Italy November 15, 1882, No. 14,802, and in Spain April 28, 1883, No. 3,875.

To all whom it may concern:

Be it known that I, ETIENNE CHARLES AMAND MASSON, a citizen of the Republic of France, and residing in Lenclos, Department of L'Aube, France, have invented certain Improvements in Spinning-Mules, (for which I have obtained a French Patent No. 150,059, dated June 20, 1882; German Patent No. 21,165, dated July 23, 1882; Belgian Patent No. 59,412, dated October 30, 1882; British Patent No. 5,245, dated November 3, 1882; Spanish Patent No. 3,875, dated April 28, 1883, and Italian Patent No. 14,802, dated November 15, 1882,) of which the following is a specification.

My invention consists in so constructing a spinning-mule that all the spindles on the carriage may be driven at the same speed.

In the accompanying drawings, Figure 1 is a view of a portion of one end of a mule embodying my improvements. Fig. 2 is a plan view of the same, but showing in addition the opposite end of the traveling carriage. Fig. 3 is a transverse section of the mule, showing the driving-pulleys in dotted lines. Fig. 4 is a vertical section, drawn to a larger scale, of a portion of the rails and spindles of the mule-carriage. Fig. 5 is a sectional plan of the same. Figs. 6 and 7 are vertical sections of modifications.

A is the usual traveling carriage of the mule, with its spindles b' mounted in step-bearings c in the lower rail, c', and in bolsters d in the upper rail, d'; and B B′ are the standards of the fixed head-stock, provided with suitable bearings for the driving-shaft a^2, with its fast and loose pulleys x x'. On each of the spindles b' is mounted a pulley, b, with a cylindrical surface, and adjacent to each pair of pulleys, and between and partly behind the same, is a friction-pulley, f, mounted on a spindle, f', also having a step-bearing in the lower rail, c', and a top bearing in the bolster-rail d', Figs. 1 and 4. Between these friction-pulleys and the spindle-pulleys passes the endless driving belt or cord a, which passes around grooved guiding-pulleys h h, mounted on each end of the carriage. These pulleys f give the necessary tension to the cord and keep it in contact with the pulleys on the spindles b'.

The driving of a number of spindles by one endless belt or cord has heretofore been practiced in fixed spinning and throstle frames. In order to apply this method to the driving of mule-spindles, I employ the arrangement shown in Figs. 1, 2, and 3. The endless belt, after passing around the horizontal pulleys h h at the end adjacent to the head-stock, passes around grooved pulleys i j, mounted on fixed axes on opposite sides of the standards B B′, as indicated by dotted lines in Fig. 3, the pulleys i j being at a sufficient distance apart to allow the carriage its full movement without the guide-pulleys h h coming into contact with the said pulleys i j. The endless belt, after passing partially round the pulleys ij, passes around the grooved pulley a' on the driving-shaft a^2, which, through the means described, imparts the desired simultaneous movement to all the spindles. It will thus be seen that the length and tension of the endless cord a remain constant in every position of the mule carriage, and this without in the least interfering with the to-and-fro movement of the latter.

To prevent oil from running onto the surfaces of the pulleys b from the bearings d d, an annular recess, e, is formed in the upper portion of each pulley to catch the oil that escapes from the bolster d, and small vertical passages or channels e' are formed in the pulley to carry off the oil entering the recess e. Similar passages and recesses may be formed in the friction-pulleys f, as indicated in the modification Fig. 6.

If it is desired to reduce the length of the spindles f', they may be mounted in a bracket or brackets, g, as shown in Fig. 6, in which case the bracket is adjustably secured to a suitable part of the frame by screw-bolts or set-screws, as at g' g'. I prefer, however, to employ the adjusting devices shown in the modification Fig. 7, to secure the desired tension of the driving belt or cord. In this case each spindle f' is mounted in an independent bracket, g, guided at top and bottom in slots k' in a frame or box, k, secured to the rails c' d', or in slots in plates k^2, secured to the said frame, as shown, at the lower end.

To the back of each bracket g is secured a

spring, *r*, acted on by an adjusting-screw, *v*, by which the tension of the spring, and consequently the pressure of the pulley *f*, on the belt or cord can be easily regulated, and this regulation may be applied through any one or more of these friction-pulleys.

If desired, a hinged front board, D, may be applied to the rails *c' d'* in front of the spindles, as shown in Fig. 7.

I claim as my invention—

The combination of the head-stock and traveling carriage of a spinning-mule and spindles, with friction and guide pulleys on the carriage for the endless belt or cord, and pulleys *i*, *j*, and *a'* on the fixed head-stock, the said pulleys *i* and *j* being at distance apart greater than the extent of travel of the carriage.

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

ETIENNE CHARLES AMAND MASSON.

Witnesses:

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ROBT. M. HOOPER.