

(No Model.)

2 Sheets—Sheet 1.

T. L. BUTLER.

DRIVING MECHANISM FOR SPINNING SPINDLES.

No. 397,629.

Patented Feb. 12, 1889.

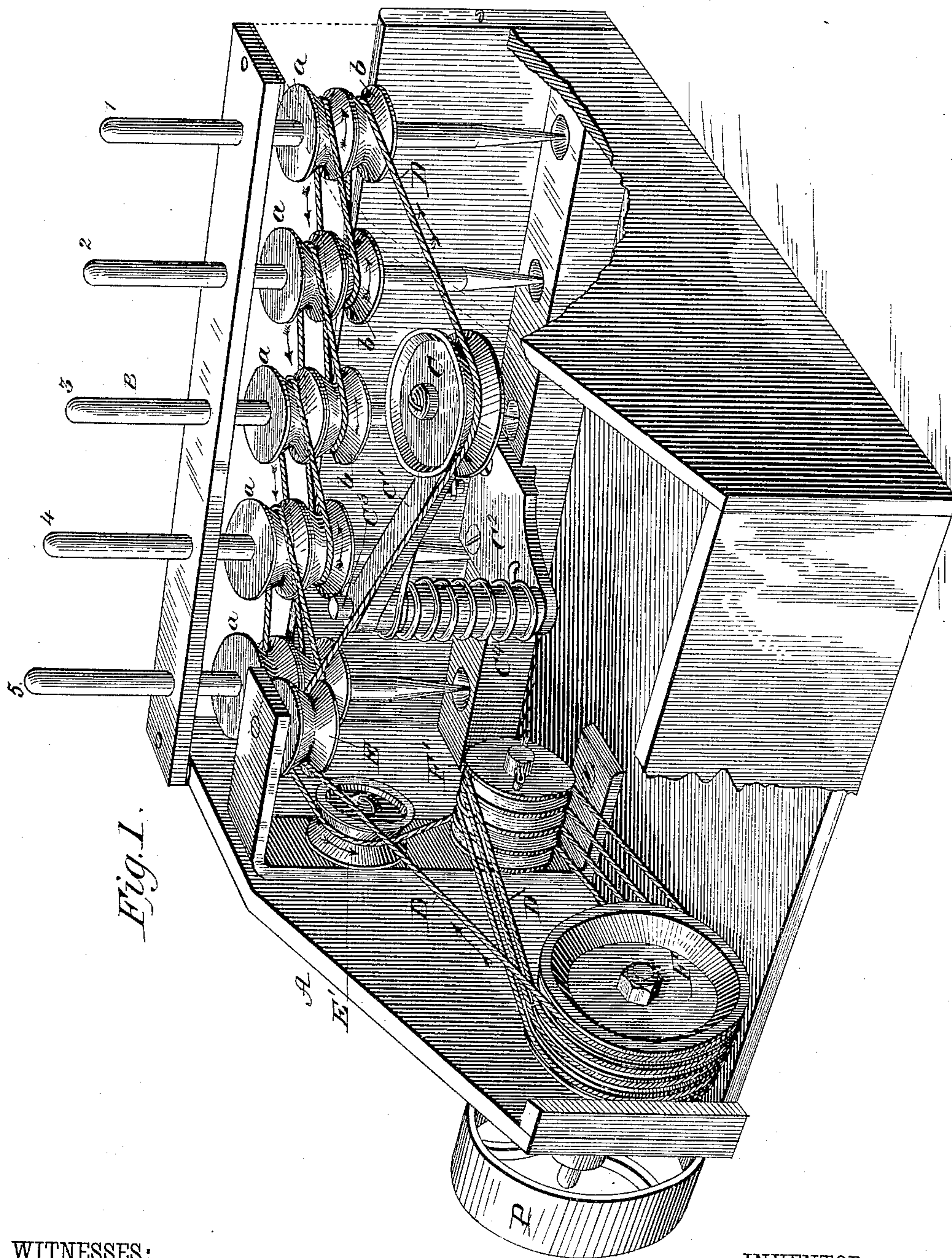


Fig. 1.

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INVENTOR:

Thomas L. Butler
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(No Model.)

2 Sheets—Sheet 2.

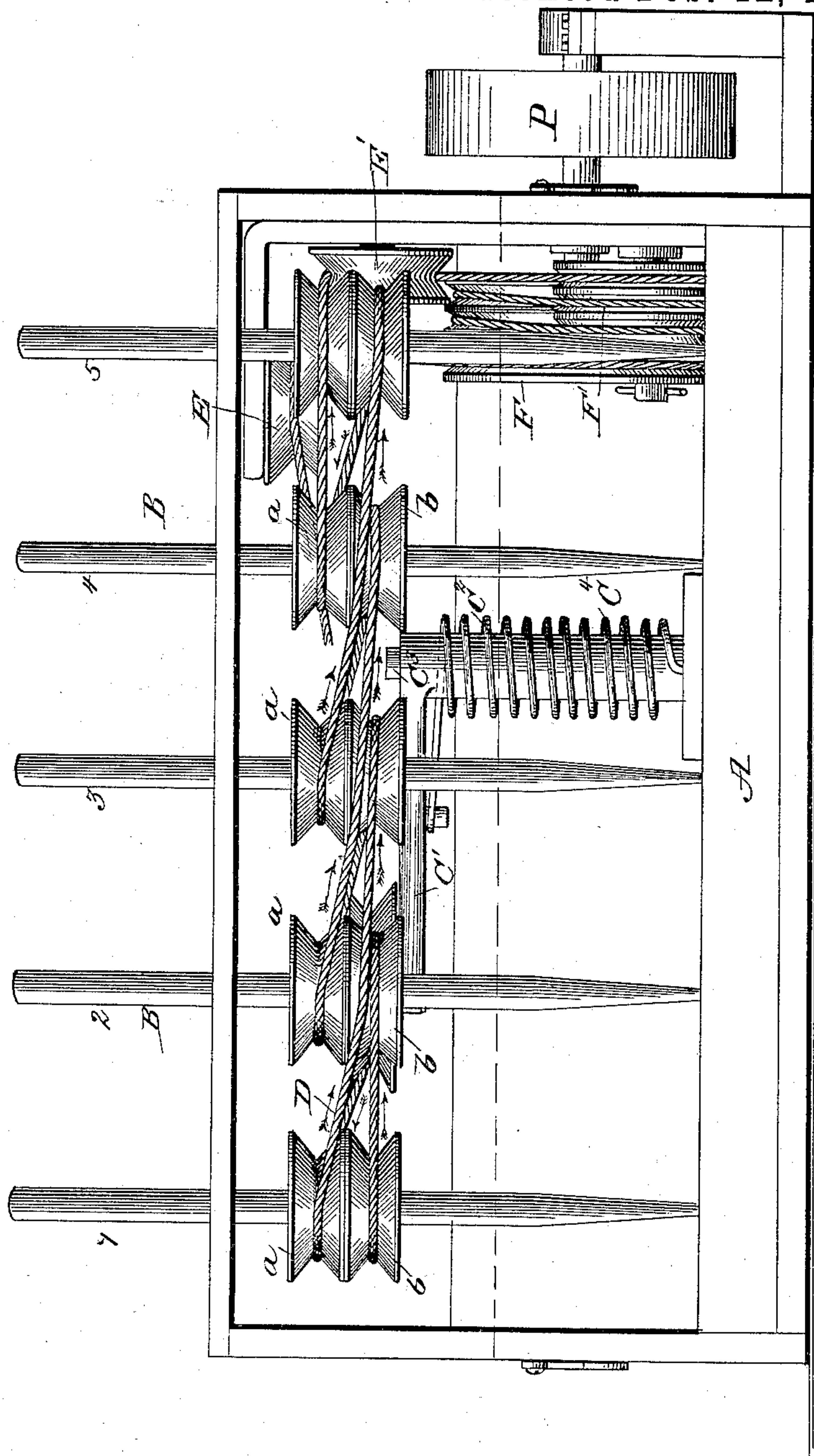
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Fig. 2.



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UNITED STATES PATENT OFFICE.

THOMAS L. BUTLER, OF BLACKSTONE, MASSACHUSETTS.

DRIVING MECHANISM FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 397,629, dated February 12, 1889.

Application filed October 18, 1888. Serial No. 288,509. (No model.)

To all whom it may concern:

Be it known that I, THOMAS L. BUTLER, of Blackstone, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Driving Mechanism for Spinning-Spindles, of which the following is a specification.

The object of my invention is to provide an improved driving mechanism for rotating the spindles of a spinning-machine. Ordinarily the spindles are driven by independent belts from a long horizontal driving-cylinder. Said cylinder, which is made of sheet metal, is very liable to be broken by the cumulative lateral strain of the spindle-belts, which breakage renders inoperative a large number of spindles and involves much loss of time; furthermore, with independent belts to each spindle it is not possible to get a uniform tension for them all, and this involves a lack of uniformity in the spun product of the several spindles.

With reference to curing these evils, my invention consists in providing each spindle with two whirls and combining with the same a single continuous belt which passes around both whirls of each spindle, and a pair of grooved driving-drums, each having several parallel grooves, around which the belt passes in a sufficient number of convolutions to give the necessary friction to positively transmit the power through a single belt to all the spindles.

Figure 1 is a perspective view of one section of the driving mechanism; and Fig. 2 is a side view of the spindles from the opposite side to that shown in Fig. 1, and showing the travel of the belt around the whirls of the spindles.

A represents the frame of the spinning-machine, which carries the usual rails and steps for the spindles.

B are the spindles, which are provided each with two whirls, *a b*.

D is the driving-belt, which passes to one end of the series of spindles over a tension-pulley, C, mounted in the end of an arm, C', projecting horizontally from a vertical sleeve, C², which is journaled upon an upright stem, C³, supported upon the frame-work. Around the sleeve C² is wound a spiral spring, C⁴, one

end of which bears against the arm C' and the other end of which is secured to the base of the stem, so that the elasticity of the spring will cause the pulley C to take up the slack of the driving-belt and keep it at the proper tension. From the tension-pulley the belt extends around a horizontal lead-pulley, E, and thence it extends to the larger drum, F. The belt from the other end of the series of spindles passes around a vertical lead-pulley, E', and thence passes to the smaller drum, F'. These two drums are arranged only at the end of the series of spindles, and do not extend longitudinally along the frame, as do the driving-cylinders. Said drums have an equal number of grooves, and in these grooves and in successive convolutions around the two drums the driving-belt passes, going to the drums from one lead-pulley and emerging from the drums over the other lead-pulley.

Power is imparted to the drums for rotating them by means of a band-pulley, P, fixed upon the same shaft with drum F and driven by a belt.

The object of the grooves and the successive convolutions of the belt around the two drums is to secure a positive transmission of power from the larger drum to the belt without slipping, which it would be especially liable to do, by reason of the large amount of work which it has to do in driving all the spindles. There is therefore a special relation between the spindles, the belt driving all the spindles, and the multiple groove and convolutions of the belt on the drums.

In adjusting the belt around the double whirls of the spindles the belt, passing from the tension-pulley, travels first around the lower whirl of spindle No. 1, then around the lower whirl of spindle No. 2, thence to and around the upper whirl of spindle No. 1, thence to and around the lower whirl of spindle No. 3, thence to the upper whirl of spindle No. 2, thence to the lower whirl of spindle No. 4, and so on, the belt having a double lap around the spindles in pairs. This gives a large amount of frictional driving-surface to each spindle and connects the spindles together for a uniform motion.

The object in providing each spindle with two whirls is to permit the belt to be wound

around and paid off from one spindle to the other, in accordance with the travel of the belt, as above indicated.

I am aware that it has been proposed to
5 drive a series of spindles by a single belt which had merely a tangential contact with the whirls of the spindles, and also that spindles have been provided with double whirls, with belts driven by a cylinder and extend-
10 ing around the whirls of two spindles to connect the spindles for a uniform motion, and I do not claim either of these features broadly.

Having thus described my invention, what I claim as new is—

15 1. The combination, with a series of spindles having double whirls, of a single continuous driving-belt wound around the whirls of the spindles in pairs, so as to have a double lap, as described, and a pair of multiple grooved

drums arranged at one end of the series and 20 having the belt wound around the same in multiple convolutions to positively actuate the belt, as described.

2. The combination, with a series of spin- 25 dles having double whirls, of a single continuous driving-belt wound around the whirls of the spindles in pairs, so as to have a double lap, as described, a spring tension-pulley for the belt; a pair of multiple grooved arms having the belt wound around the same in several 30 convolutions, and a pair of lead-pulleys for directing the course of the belt to and from the spindles, as described.

THOMAS L. BUTLER.

Witnesses:

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PATRICK F. MCQUILLEN.