(No Model.)

E. A. BALDWIN.

SPINDLE DRIVING MECHANISM FOR SPINNING MACHINES.

No. 452,332. Patented May 12, 1891.

Fig: 1.

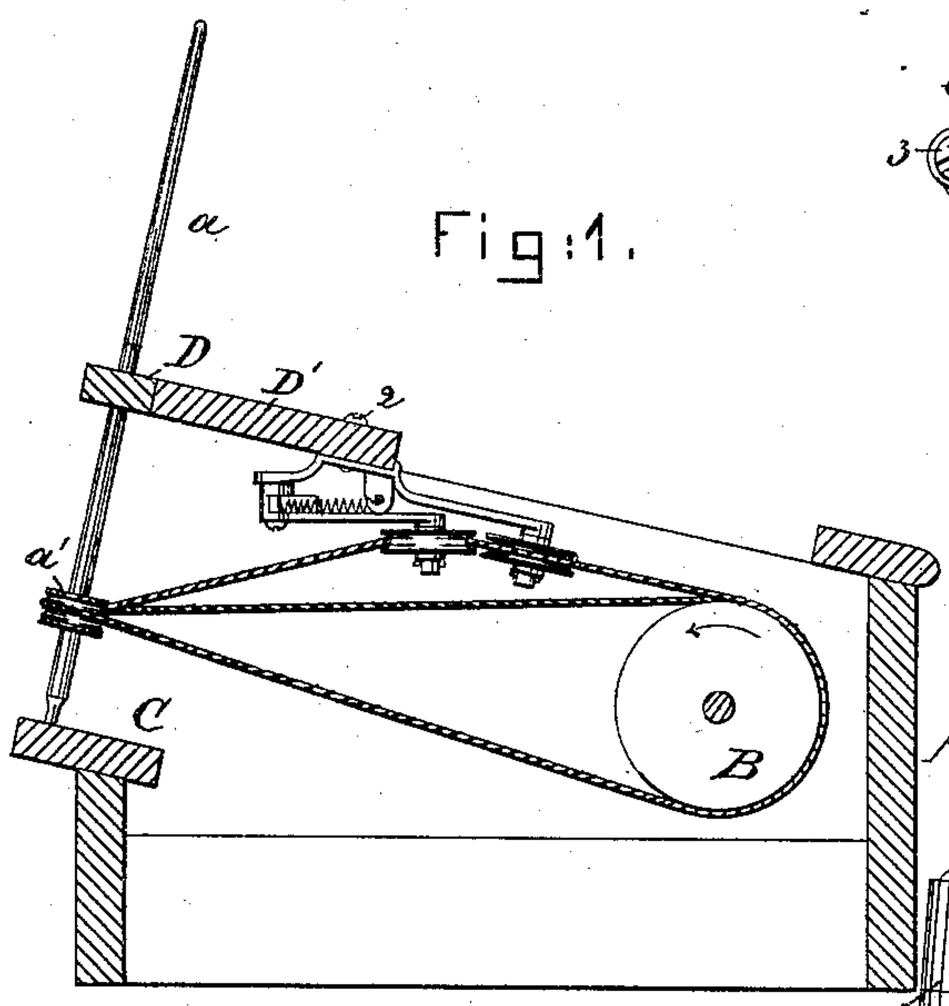


Fig: 2.

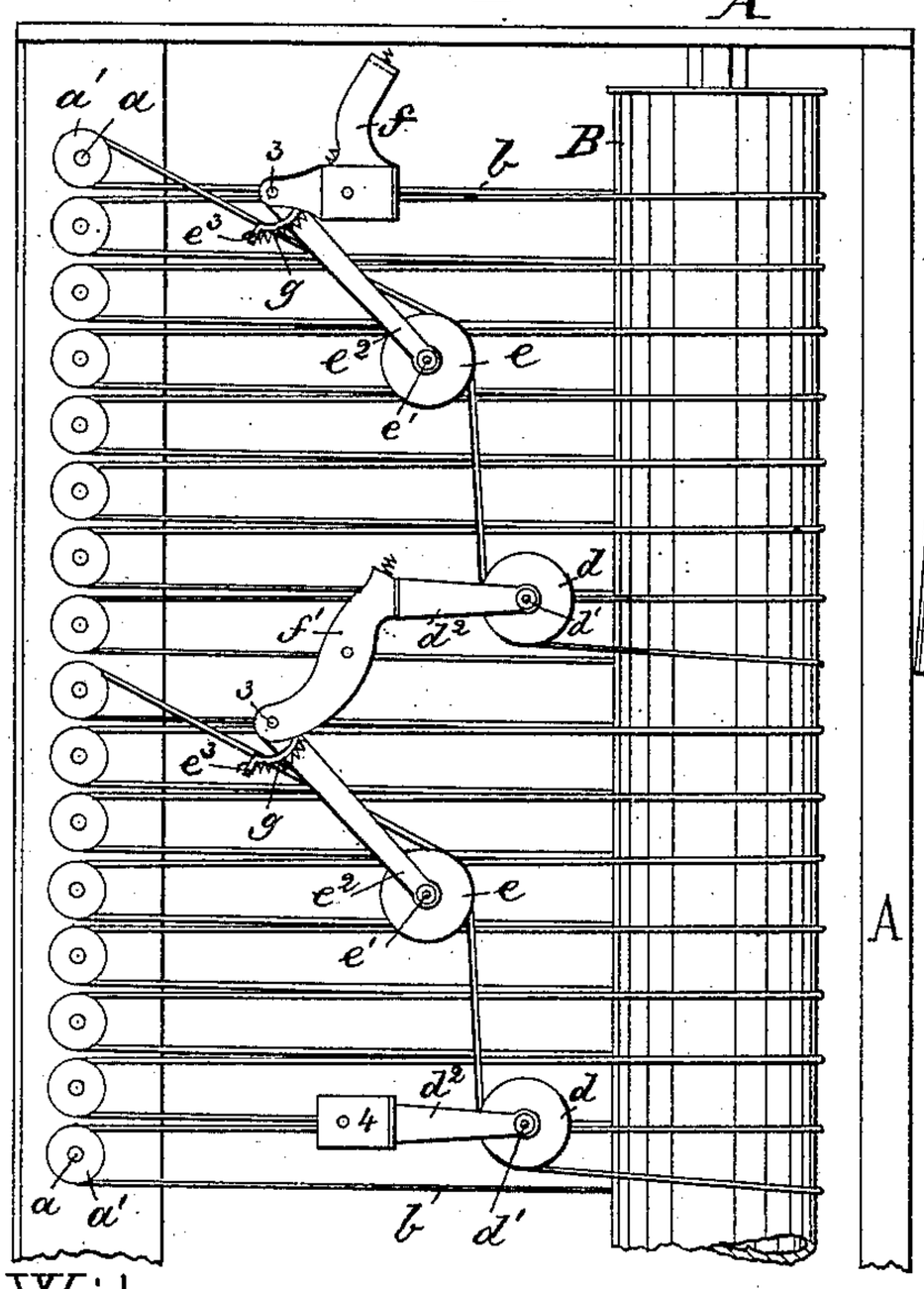


Fig: 3.

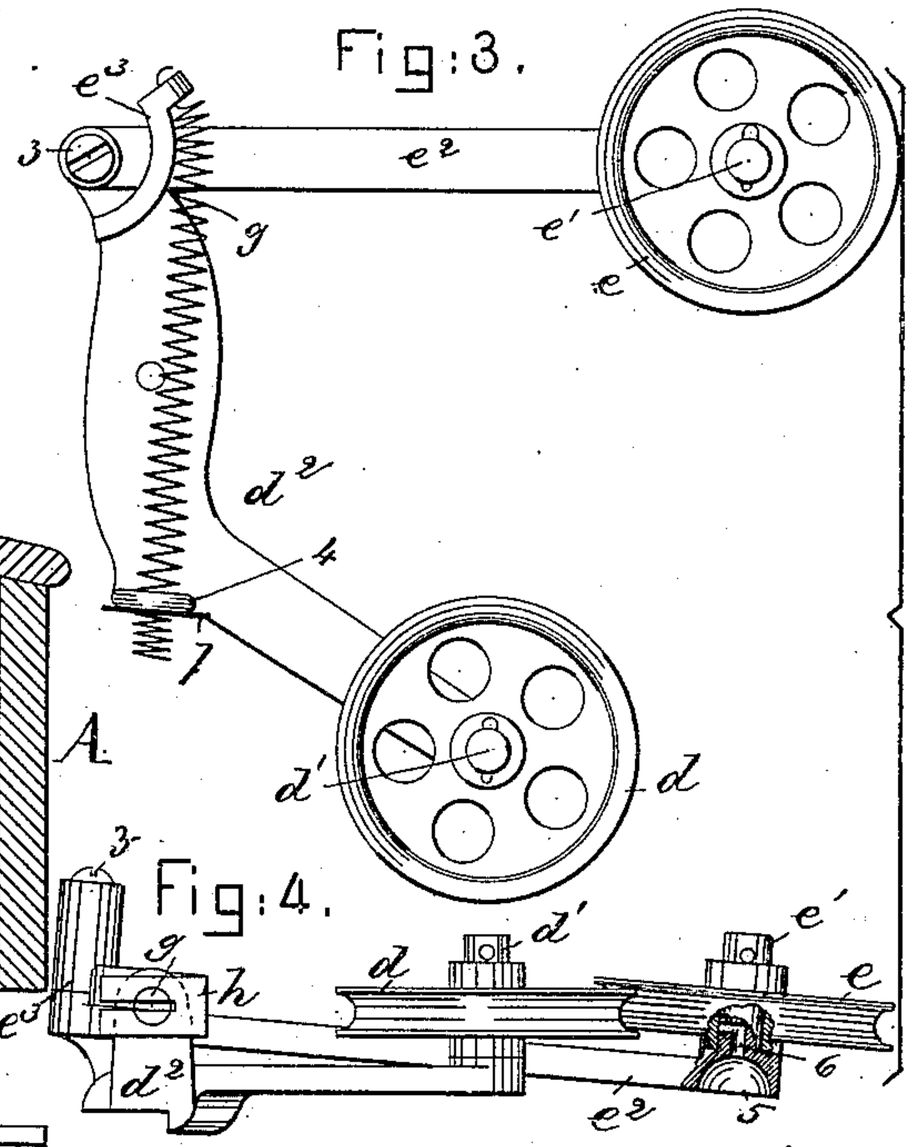


Fig: 4.

Fig: 5.

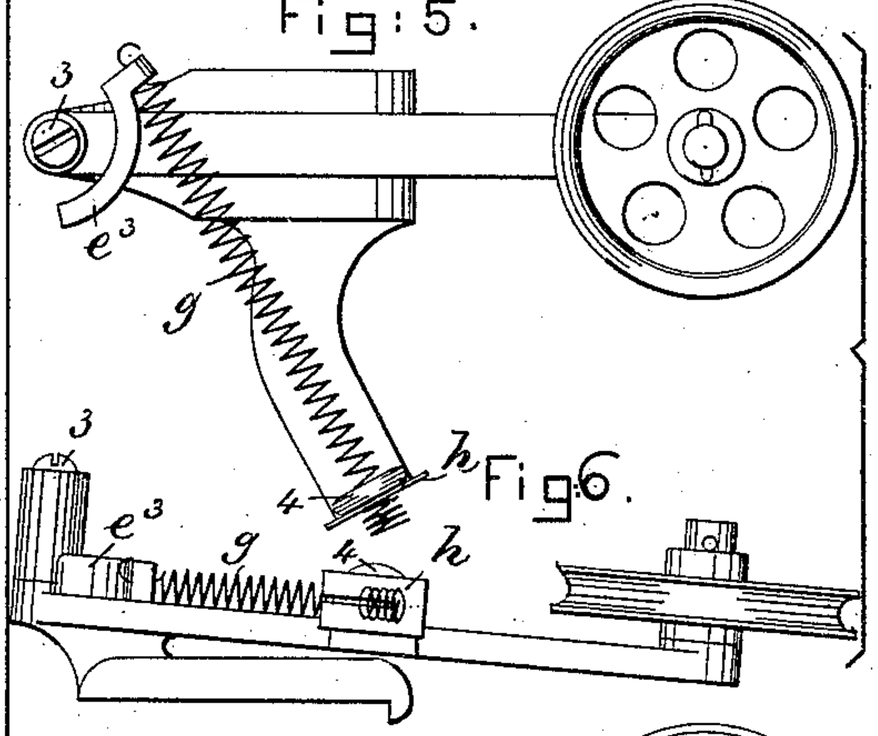


Fig: 6.

Fig: 7.

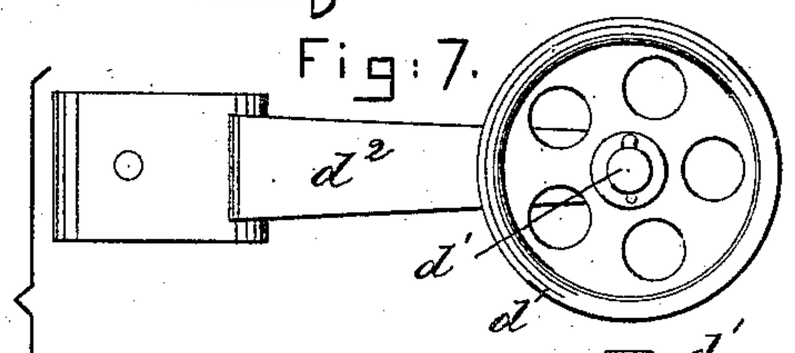
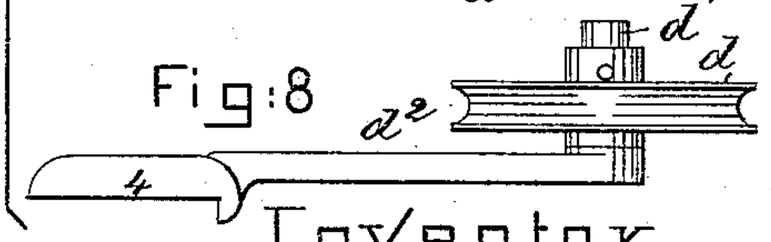


Fig: 8



Witnesses.

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UNITED STATES PATENT OFFICE.

EBEN A. BALDWIN, OF NORTH ANDOVER, MASSACHUSETTS, ASSIGNOR TO THE DAVIS & FURBER MACHINE COMPANY, OF SAME PLACE.

SPINDLE-DRIVING MECHANISM FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 452,332, dated May 12, 1891.

Application filed June 10, 1890. Serial No. 354,954. (No model.)

To all whom it may concern:

Be it known that I, EBEN A. BALDWIN, of North Andover, county of Essex, State of Massachusetts, have invented an Improvement in Spindle-Driving Mechanism for Spinning-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention, adapted for use in spinning and twisting machines, has particular reference to controlling the tension of a spindle-driving band adapted to drive a number of spindles, the band having a series of loops which are extended each loop about one spindle, the band returning to the drum from each spindle, the power of the drum being imparted to the same band at as many points as there are spindles, the drum for driving the band being extended from one to the other end of the series of spindles driven by the band. In connection with a band and drum for driving a series of spindles I have employed a tension device which acts upon the band between one of the spindles at one end of the series, and the drum opposite the spindle at the other end of the series.

The particular features in which my invention consists will be hereinafter pointed out in the specification and in the claims at the end thereof.

Figure 1 in section represents part of a spinning-frame of the class known as a "mule" with my improvements added; Fig. 2, a top or plan view of the parts shown in Fig. 1. Fig. 3 shows the sheave device detached; Fig. 4, an edge view thereof. Figs. 5 to 8 show the two sheave members supported on arms somewhat differently shaped.

The frame-work A, of any shape commonly used in spinning-machines, the drum B therein, the step-rail C, the spindle-rail D, the spindles *a*, having whirls *a'*, and the continuous band *b*, extended again and again about the said drum and about one after another of the whirls *a'*, are and may be all as usual.

In accordance with my invention I have made a tension apparatus consisting, essentially, of sheaves *d e*, arranged in pairs, the sheaves *d* being adapted, as shown, to rotate on fixed pivots *d'* of arms d^2, attached to some fixed or rigid part of the frame-work—for instance, the beam D'—by a suitable screw or bolt 2.

The sheaves *e* rotate on studs *e'* of movable arms e^2, pivoted at 3 upon a suitable stationary part, preferably part of the arm d^2, as best shown in Fig. 1 and in the central part of Fig. 2; but the castings at the ends of the frame to support one of the studs *d'* and one of the arms e^2, having a stud *e'*, are of somewhat different shape to adapt them to the ends of the frame—as, for instance, the endmost arm d^2 (shown in Figs. 2, 7, and 8) has a flattened part 4, which is attached to the rail D, while the casting *f*, which holds the part 3 of the endmost arm e^2, as at top of Fig. 2 and as in Figs. 4 and 5, is of a different shape from the part *f'* of arm d^2; but it will be understood that the particular shape of the arm or casting holding the pivot or pivots *d'* and 3 is immaterial. Each arm e^2 has connected to it and to the casting having the pivot 3 a strong spiral spring *g*. The strength of the spring *g* is varied to suit by a spring-holder, shown as a thin slotted plate *h*, which is made to straddle the end of the said spring outside the ear 4, as best shown in Figs. 3 to 6.

The studs *d' e'*, forming pivots for the sheaves *d e*, are directed downwardly, so that the said sheaves may be said to depend from or below the casting d^2 or *f*, so that in case a band breaks or falls it will not catch on the parts supporting the said sheaves, which, with a rapidly-running band, would be liable to do damage to the machine. The sheaves run on the slack sides or runs of the band, and the springs *g*, acting on the arms or levers e^2, cause the sheaves *e* to act on and hold the band under a strain measured by the springs *g*, which, as stated, may be adjusted as to their strength. The pivots or studs *e' d'* for the said sheaves are, as best shown in Fig. 4, made hollow or provided with cups 5, out from which lead oil-holes 6, the said cups being adapted to receive fibrous packing to retain oil poured therein when the casting b^2 is in working position, it being shown in Fig. 4 as bottom side up, the said cup and oil-hole enabling oil to be supplied to the studs for the said sheaves.

The spools are herein arranged in groups of eight, each band driving eight spindles.

Prior to my invention I am aware that a single long band has been made to travel in a nearly straight line next to and in contact with a series of whirls, the band being pressed slightly against the said whirls by a series of sheaves arranged alternately between pairs of spindles, and this band driven by a force due to but a single turn about a pulley has been acted upon by a tension device composed of at least three sheaves, as in United States Patent No. 29,527. I am also aware that a series of spindles has been driven by a band passed several times about two short drums arranged near one end of the series of spindles, said band being passed twice about the whirls of each of the spindles, as in United States Patent No. 397,629, and over two independent sheaves on axes at right angles to each other, a third pulley carried by a spring-actuated arm, and acting also against the said band, serving the purpose of a tension device.

Referring to the drawings herein, it will be seen that each whirl is half surrounded by a separate loop of the band, and that each spindle is driven direct from the cylinder by its own loop made in the band, one-half of each loop going directly from the drum to the whirl, thus receiving from the drum power to be expended in driving the spindle which that loop surrounds, whereas in the patents referred to one long loop is depended upon to rotate many spindles, and consequently the band must be made sufficiently large to withstand the aggregated strain of all the spindles in the series. The use of a long loop in a band to drive many spindles is objectionable, because the band must be of larger diameter, and the tendency of a long band stretching between the point where it leaves the drum and returns to it is much greater than where the single loop of the band drives a single spindle. It will also be noted that the drum in this my invention is extended from end to end of the series of spindles, and that but one drum is needed to drive the band having a series of loops, one for each spindle.

I claim—

1. A series of spindles having whirls, a drum extended from end to end of the said series of spindles, and a band extended about the said drum opposite each spindle to thus form a series of loops running directly from the said drum to each spindle and returning directly from each spindle to the said drum, substantially as represented, combined with a tension device consisting of a pair of sheaves arranged on substantially vertical pivots and adapted to guide the band from the drum near one end of the series or group of spindles to the whirl of a spindle at the other end of said series or group of spindles, and a spring to keep one of the sheaves pressed against the band, the combination being and operating substantially as described.

2. The combination, with the part or plate f', the arm e^2, and its connected spring, of an adjusting-plate h, to hold the said spring in adjusted position, substantially as described.

3. A series of spindles having whirls, a drum extended from end to end of the said series of spindles, and a band extended about the said drum opposite each spindle, to thus form a series of loops running directly from the said drum to each spindle and returning directly from each spindle to the said drum, substantially as represented, combined with a tension device consisting of a pair of sheaves arranged on substantially vertical downwardly-extended pivots, and adapted to guide the band from the drum near one end of the series or group of spindles to the whirl of a spindle at the other end of said series or group of spindles, and means to keep one of the sheaves pressed against the band, the supporting devices of the depending sheaves being located above the band, the combination being and operating substantially as described.

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

EBEN A. BALDWIN.

Witnesses:
JAS. L. BRACKETT,
GEO. L. WRIGHT.