(No Model.)

O. ATWOOD.

TENSION EVENER FOR SILK DOUBLING MACHINES.

No. 261,295. Patented July 18, 1882.

Fig 3.

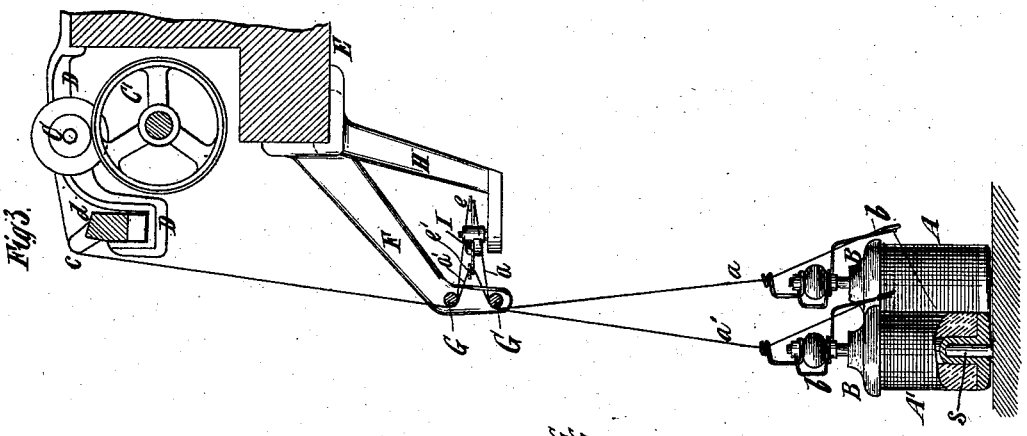


Fig 4.

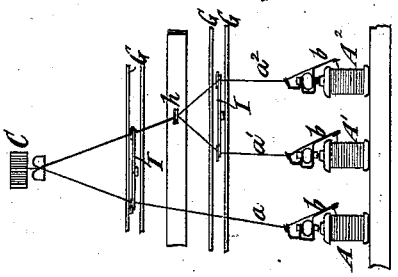


Fig 1.

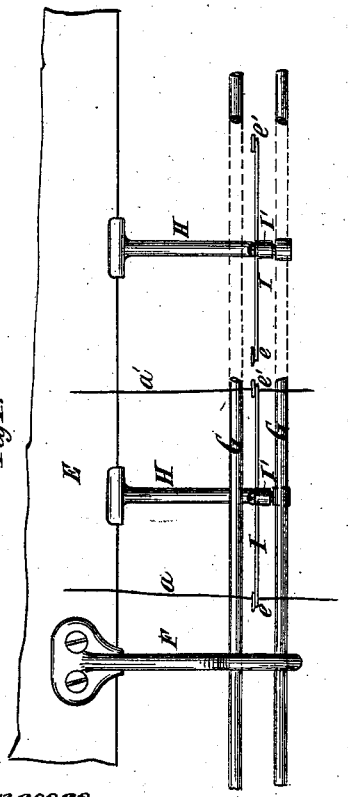
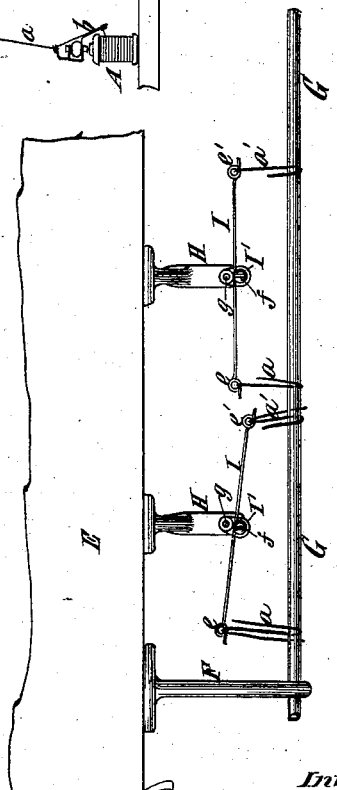


Fig 2.



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TENSION-EVENER FOR SILK-DOUBLING MACHINES.

SPECIFICATION forming part of Letters Patent No. 261,295, dated July 18, 1882.

Application filed December 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, ORLO ATWOOD, of New London, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Tension-Eveners for Silk-Doubling Machines, of which the following is a specification.

This invention relates to machines for taking two or more strands or threads of silk or other fibrous material from as many separate spools and doubling and winding them on a single bobbin or spool. Sometimes the two or more strands or threads will be under unequal tension, caused by one spool delivering more freely than the other or others, as would be the case if it had more silk on it, and were therefore larger, or if its flier should turn more freely than those of the other spools. This difference in tension makes one of the strands wound on the winding bobbin or spool longer than the other or others, and the doubled and twisted thread becomes uneven or knotty.

The object of my invention is to provide a simple means whereby the two or more strands or threads which are being doubled and wound on the winding bobbin or spool will always be wound under the same tension; and to this end my invention consists in an evener of novel construction, such evener being composed of one or more rods or bearers, on one side of which two strands or threads may pass, and a lever pivoted or fulcrumed at the opposite side of the bearer or bearers and provided on opposite sides of its fulcrum with two eyes, through which the strands or threads, after passing over, under, or between said rods or bearers, are conducted in such manner that a drag is produced in said eyes and on said rods or bearers, and the said lever is swung or pulled one way or the other, according as one or the other strand draws harder from its spool or flier, and is thereby caused to produce a greater drag on that strand or thread which comes easiest from its spool or flier, and to equalize the tension of the two strands or threads as they pass together to the winding-bobbin.

In the accompanying drawings, Figure 1 represents a front view of two of my improved eveners with threads passing through the eyes of one. Fig. 2 represents a plan thereof. Fig. 3 represents a transverse section of the evener and of certain portions of a doubling-machine and a side view of two spools from which the strands or threads are carried through the evener and then wound upon the winding-bobbin, and Fig. 4 represents a diagrammatic front view of my eveners arranged to produce a uniform tension on three threads or strands.

Similar letters of reference designate corresponding parts in all the figures.

Referring, first, more particularly to Fig. 3, which represents only such parts of an ordinary doubling-machine as are necessary for illustrating my invention, A A′ designate the spools from which the strands *a a′* are taken, and which, as here represented, are stationary. The spools A A′ are placed upon pins *s*, which constitute in effect stationary spindles.

B designates the weighted base of the fliers, which rests upon the spools, and *b* designates the fliers, through which the strands *a a′* are taken.

C designates the bobbin on which the two strands *a a′* are wound, and which is driven in the ordinary way by a friction-wheel, C′. The strands are passed over guides *c*, supported on the rail *d*; and D designates a hanger supporting the bobbin C and said rail *d*.

Any usual arrangement of drop-wires and stop devices for stopping the rotation of the bobbin C when a strand breaks or gives out may be used; but as these form no part of my invention they are not illustrated.

Referring now to Figs. 1 and 2, in connection with Fig. 3, E designates a rail comprised in the frame-work of the machine, and F designates hangers depending therefrom and supporting bearers G, arranged one above the other. The bearers G may consist of small metal rods, as here shown, passing through holes in the hangers F and arranged a short distance apart—say one inch, for example. H designates hangers, also depending from the rail E, and I designates the eveners, which consist of levers pivoted at about the middle of their length to the hangers H, and having eyes *e e′* at or near their two ends. As here shown, these consist simply of pieces of wire, each secured by a screw, *f*, to a stock-piece, I′, which is pivoted to the hanger F at *g*, and upon the pivot *g* the lever is adapted to swing horizontally, as seen clearly in Fig. 2. The

lever is pivoted about midway vertically between the rods or bearers G, or opposite the space between said rods or bearers and behind them, while the strands *a a'* pass in front or on the opposite side of said rods or bearers, and are passed through the eyes *e e'* of the lever. As the strands are wound on the bobbin C one may unwind from its spool more easily than the other, owing to the flier operating more easily, to a larger quantity of silk on the spool, or to any other cause, and consequently that strand or thread will be under less tension or have less drag on it than the other. In Figs. 2 and 3 the strand *a'* is shown as under the greatest tension, and it pulls the eye *e'* toward the rods G, and thereby moves the eye *e* away from said rods. As the eye *e'* moves toward the rods G the drag on the strand *a'* is lessened, because the said strand will be deflected at less acute angles over the rods and in the eye, and at the same time the drag on the strand *a* will be increased, because it will be deflected over the rods and in the eye *e* at more acute angles. When either strand slackens or is drawn off from its spool too freely the evener-lever will swing on its pivot so as to move the eye through which said strand passes away from the rods G, and consequently the tension between the upper evener rod or bearer G and the winding-bobbin C will always be uniform. Where three strands, *a a' a²*, are to be drawn from three spools, A A' A², as shown in Fig. 4, and doubled, the two strands *a' a²* are first passed through the eyes of one evener-lever I, then through an eye, *h*, and then through one eye of a second evener-lever I, while the strand *a* will be taken directly through the other eye of the last said lever. Where four strands are to be drawn from four spools two evener-levers are arranged below and one above, and through each eye of the latter lever two strands will pass.

It will be seen that by my invention I provide a very simple and effective evener, whereby the two or more strands are always wound upon the winding-bobbin under a uniform tension, and the thread produced will be uniform throughout and without any uneven portions.

It is obvious that a single rod or bearer in connection with the evener-lever would accomplish the desired result to a certain extent; but the evener is of course much more effective where two such rods or bearers are used.

It is also obvious that this invention is applicable to doubling-machines in which the strands are drawn from revolving bobbins or spools instead of from stationary spools.

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

1. In a doubling-machine, an evener consisting of a rod or bearer, on one side of which the strands are to pass, and a lever having two eyes for the strands, and pivoted between said eyes on the opposite side of said rod or bearer, substantially as and for the purpose herein described.

2. In a doubling-machine, an evener consisting of rods or bearers, on one side of which the strands are to pass, and a lever having two eyes for the strands, and pivoted between its eyes on the opposite side of and opposite the space between said rods or bearers, substantially as and for the purpose herein described.

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