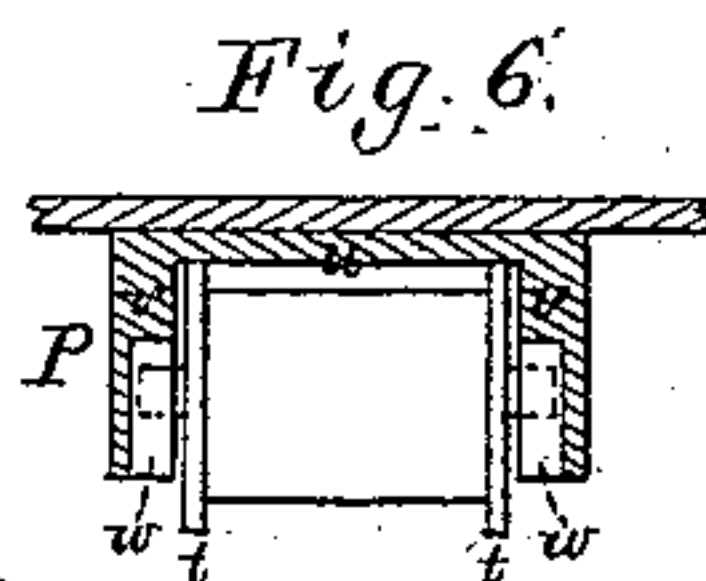
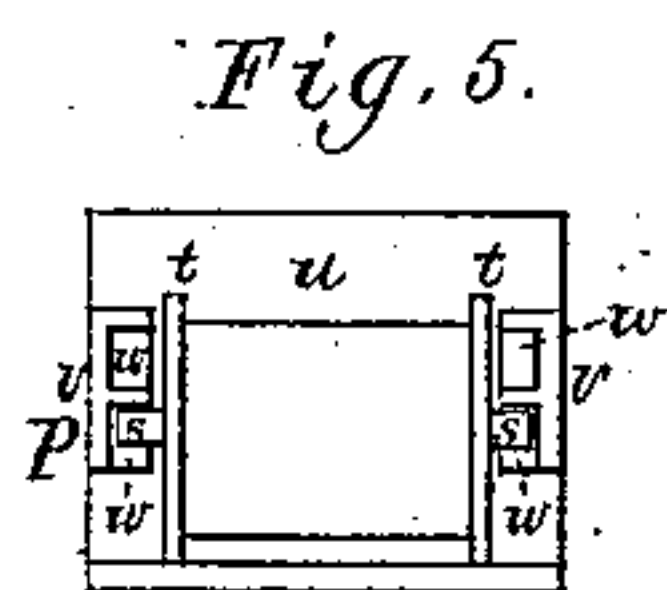
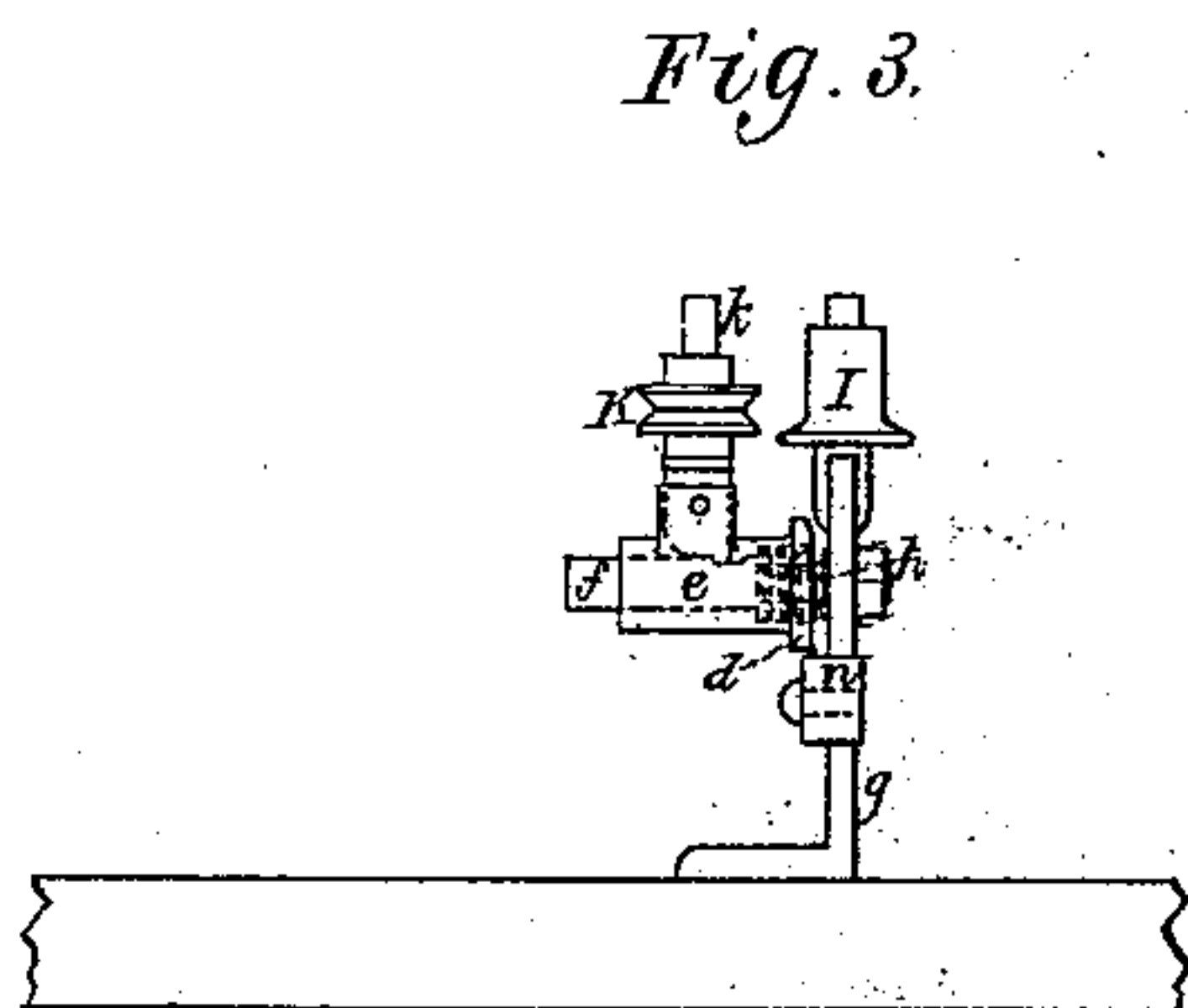
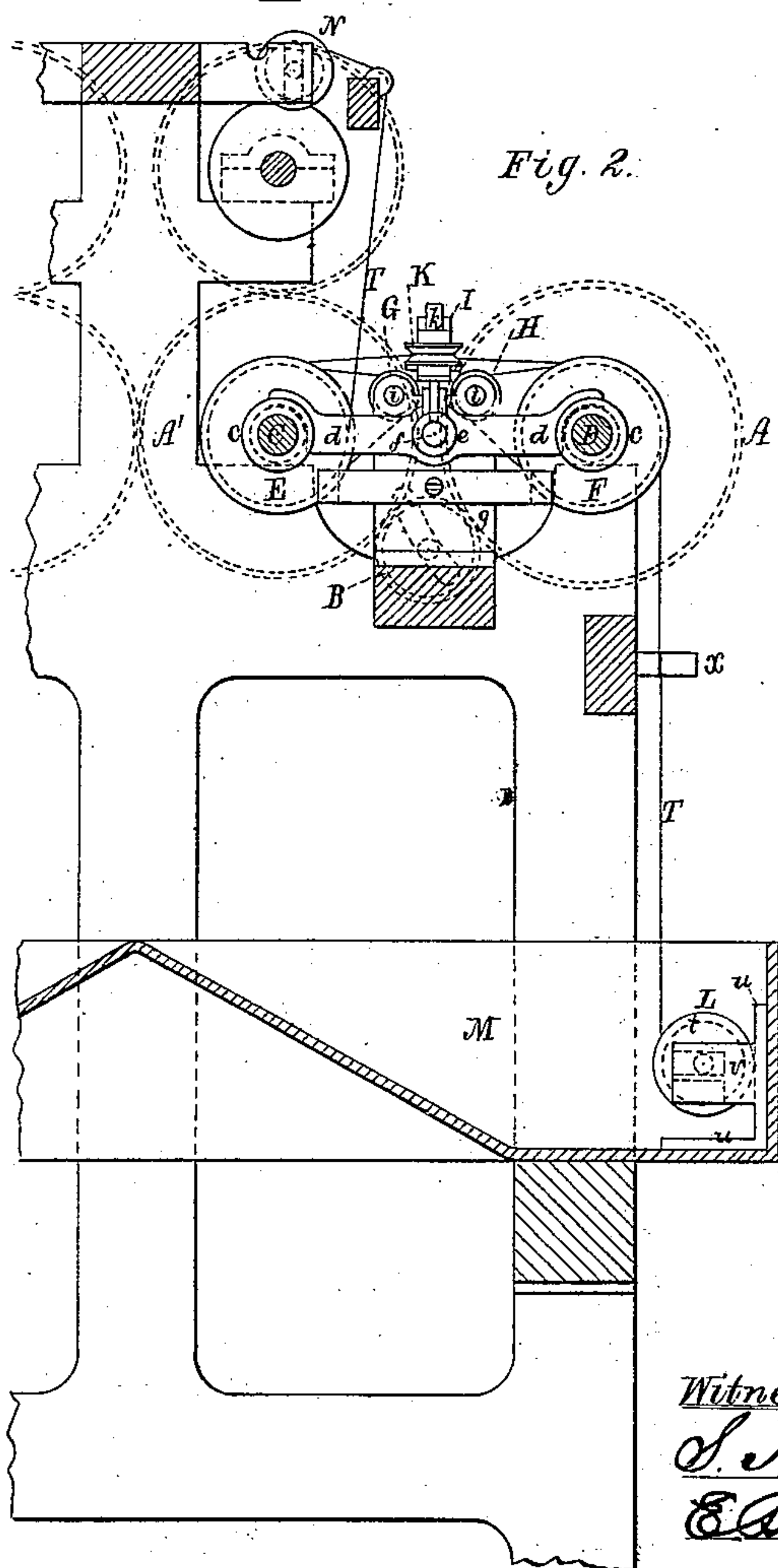
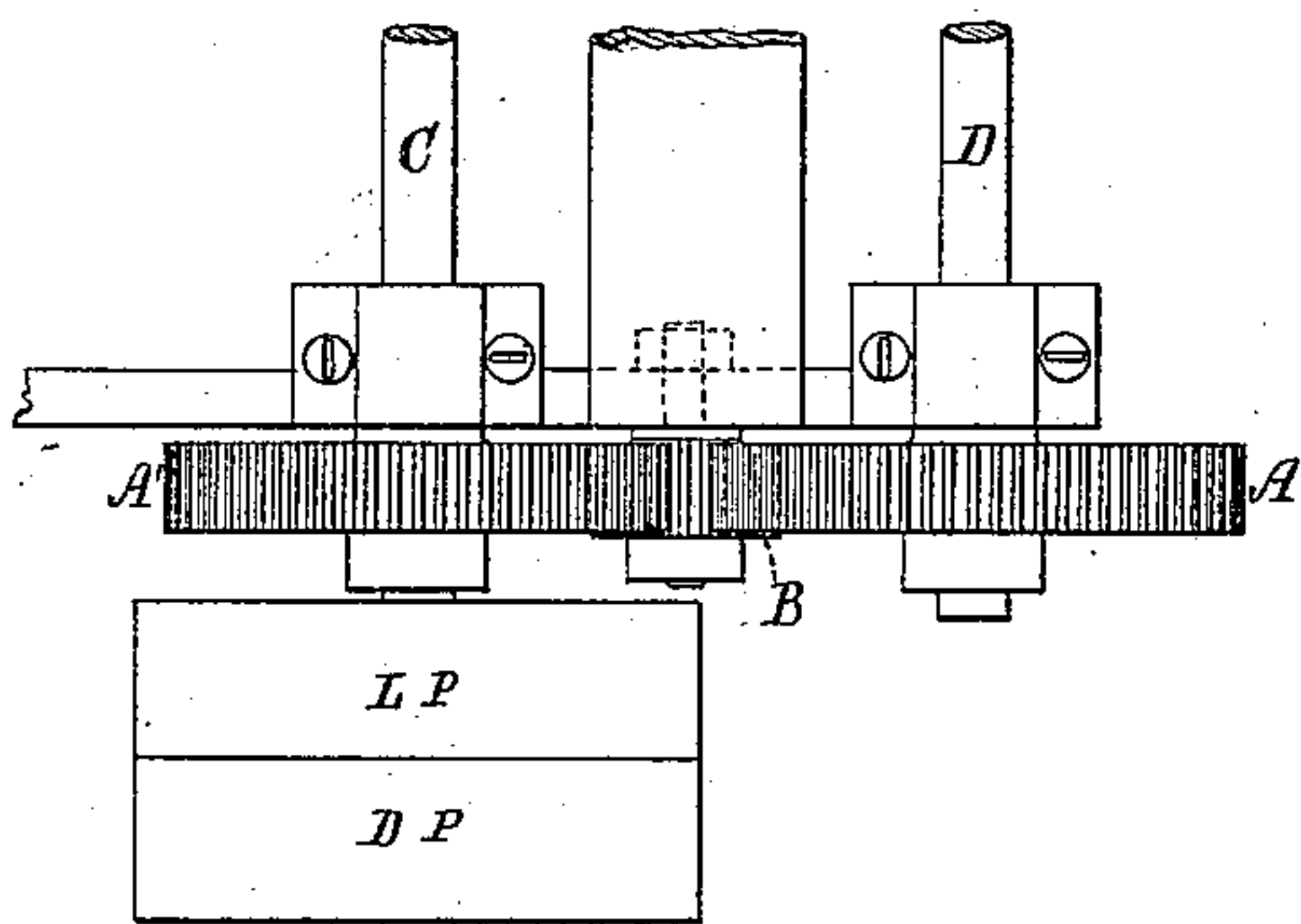
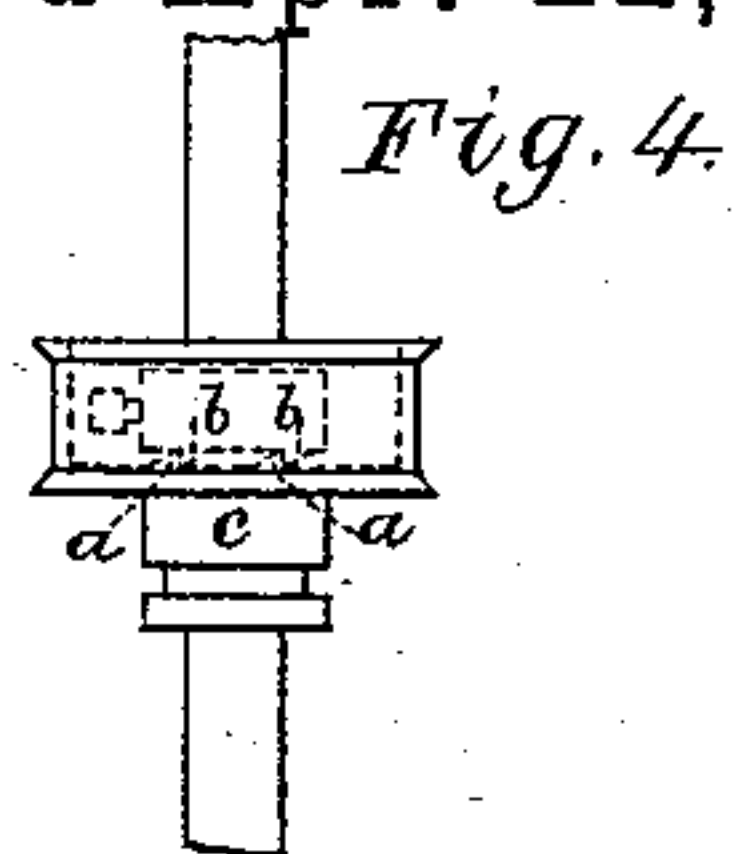


J. E. TYNAN.

No. 297,542.

Patented Apr. 22, 1884.



*Witnesses.*

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# UNITED STATES PATENT OFFICE.

JOSEPH E. TYNAN, OF PATERSON, NEW JERSEY.

MACHINERY FOR STRETCHING AND SMOOTHING SEWING-THREAD.

SPECIFICATION forming part of Letters Patent No. 297,542, dated April 22, 1884.

Application filed March 19, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH E. TYNAN, of Paterson, in the county of Passaic, of the State of New Jersey, have invented a new and useful Improvement in Machinery for Stretching and Smoothing Sewing-Thread; and I do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

10 Figure 1 is a top view, and Fig. 2 a transverse section, of a machine embodying my invention, the nature of which is defined in the claims hereinafter presented. Fig. 3 is a side view of certain parts of the stop-motion to be hereinafter described. Fig. 4 is a representation of the clutch for engaging a feed or drawing roller with its shaft. Fig. 5 is a front view, and Fig. 6 a horizontal section, of the spool-supporter to be described.

20 The machine, as usually constructed, is provided with several sets of the thread stretching and smoothing mechanism, they being arranged on opposite sides of its median vertical plane. The sets of each side of the frame are provided with two main shafts, C and D, 25 one of which—viz., that marked C—has applied to it a driving-pulley, D P, and a loose pulley, L P. These shafts, arranged parallel to each other and horizontally and properly supported in boxes, are provided with gears 30 A A', one of which—viz., A—is larger in diameter than the other. The gear A is fixed on the shaft D and the gear A' on the shaft C, both gears engaging with an intermediate pinion, B, arranged with them, in manner as represented.

On the two shafts C D are two wheels or rollers, E and F, which slide on the shaft lengthwise of it, each, however, having within 40 it a series of clutch-teeth, *a*, to engage with another set of clutch-teeth, *b*, applied to the shaft, in order that when the two sets are in engagement the roller or wheel shall be revolved by the shaft, provided it be in revolution. The hubs *c* of the wheels or rollers E and F are grooved transversely around them to receive a bar, *d*, forked at its ends. At its middle the said bar is fixed to a slide, *e*, adapted to slide horizontally on a pin, *f*, supported by and projecting from a standard, *g*, 50 as shown in Fig. 3. Within a chamber in the slider *e*, and around the pin, is a spiral spring,

*h*, it being shown in dotted lines in Fig. 3. The spring bears against the standard and the slider so as to force the latter away from the standard, in order to effect the unclutching of 55 the wheels E and F with the shaft C and D, they being held into engagement with such shafts by the draft or tension on the thread, which, while being stretched, is wound around 60 the rollers E and F, two intermediate grooved rollers, G and H, and two other rollers, I and K, arranged as represented. The grooved rollers G and H revolve on stationary journals *i i*, while the roller I turns on the upper 65 part of the standard *g*. The roller K, grooved as shown, is carried by a post, *k*, pivoted to the slider *e*, so as to be capable of being turned down in a direction away from the roller I, the post, when in a vertical position, bearing 70 at its foot on the pin *f* in a manner to prevent the said post from being drawn by the thread toward the roller I. The post K, however, may be firmly fixed to the slide, so as not to be capable of being turned down, it being convenient to have it pivoted to the slide. 75

The thread shown at T passes from a spool, L, (arranged in a tank, M, properly supplied with water or a suitable liquid,) upward to and about a stud, *x*, and is wound several 80 times around the rollers or wheels F and H. Thence it is carried once around both of the wheels I and K, and thence several times around the wheels G and E, from whence it is extended to a spool or bobbin, N, properly 85 arranged, and provided with mechanism for revolving it, in order to cause it to wind upon it the thread after the latter may have been stretched and smoothed. The arrangement of the thread about the several rollers or wheels 90 is shown in Fig. 1. The thread does not go entirely around either of the rollers F and H or G and E or I and K.

The gear A, being larger in diameter than the gear A', and being revolved by the pinion 95 B, driven by the said gear A', must turn at a somewhat slower speed than the gear A'. Consequently the wheel E will be revolved at a speed somewhat faster than the wheel F. This causes the thread to be stretched in 100 passing from the wheel F to the wheel E. By being drawn tightly on the various wheels, the thread, in passing around and from them while they are revolving, becomes smoothed,



the grooved wheels G and H serving to guide it properly on the wheels E and F, in order that its coils may not run against or override one another to their injury. The draft on the thread while it is being stretched causes the spring *h* to be contracted and the slide *e* to be moved so as to clutch the wheels or rollers E and F to the shafts C and D; but in case of breakage of the thread, or the spool L becoming discharged of its load, the spring *h* will be free to expand, and will move the slide *e* and its forked bar *d* so as to unclutch the wheels E and F from their shafts, from which it will be seen that the mechanism involves a "stop-motion" for the wheels E and F, such stop-motion consisting of the clutches *a b a b*, the furcated bar *d*, the slider *e*, spring *h*, post *k*, roller K, standard *g*, and guide-roller I, arranged as set forth.

In order that the drawing-wheel E and the feeding-wheel F, when they may be unclutched from their shafts, may not be revolved by the momentum generated in them, and thereby cause the thread to kink or work off, or improperly wind on the wheels more or less, I have projecting from the standard *g* two friction-abutments, *n*, (see Fig. 1,) against which the wheels are brought or drawn by the action of the stop-motion or the spring thereof immediately on the wheels becoming so unclutched.

The spool L, from which the thread is taken, has a peculiar supporter, (shown at P,) it being constructed so as either to sustain the spool by means of its two journals *s s* or by its heads *t t*. It is composed of a plate, *u*, bent at a right angle, and of two arms, *v v*, projecting from the vertical part of the plate, and provided with two sets of grooves, *w w*, to receive the journals *s s* of the spool. When the journals are in the upper grooves, they will be supported thereby, and the heads of the spool will be raised out of contact with the horizontal part of the plate *u*, and consequently the spool will revolve with less friction than it will when the journals are in the lower grooves and the heads are bearing on the said horizontal part of the plate *u*, the said lower grooves being formed

to admit of the heads resting at their peripheries directly on the said horizontal part of the plate, or against such and the vertical part of the plate. The upper grooves for reception of the journals also admit of the heads of the spool bearing against the vertical part of the plate. The degree of stretching of the thread will depend on the relative diameters of the gears A and A'. The post *k*, when drawn by the thread in the direction of the roller I, bears at its foot on the pin *f*, and acts as a brake to hold the slider *e* to the pin. The said post may have at its foot a projection to enter a notch in the pin. This projection, on breakage of the thread or it becoming entirely run off the spool, will be raised out of the notch as the slider is forced back by the spring. In some cases, when the thread may require little stretching, the grooved roller H may be removed or dispensed with, and the thread be wound once entirely around the roller F.

I claim—

1. The combination of the feeding wheel or roller F, drawing wheel or roller E, their shafts and operative gears, and the intermediate grooved guide-rollers, G and H, with the stop-motion arranged therewith, as set forth, and consisting of the clutches *a b a b*, furcated bar *d*, slider *e*, spring *h*, post *k*, roller K, standard *g*, and guide-roller I, all being arranged and adapted substantially as represented.

2. The stop-motion, substantially as described, consisting of the clutches *a b a b*, bar *d*, slider *e*, spring *h*, post *k*, roller K, standard *g*, and guide-roller I, arranged and combined essentially in manner to operate as and for the purpose set forth.

3. The combination of the stationary friction-abutments *n* with the feeding and drawing rollers or wheels, their shafts and operative gear and guide wheels, and stop-motion, as described, all being arranged, adapted, and to operate substantially as set forth.

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