

(No Model.)

E. MURPHY.
SLACK THREAD CONTROLLING DEVICE FOR SEWING MACHINES.
No. 436,486.
Patented Sept. 16, 1890.

Fig. 1.

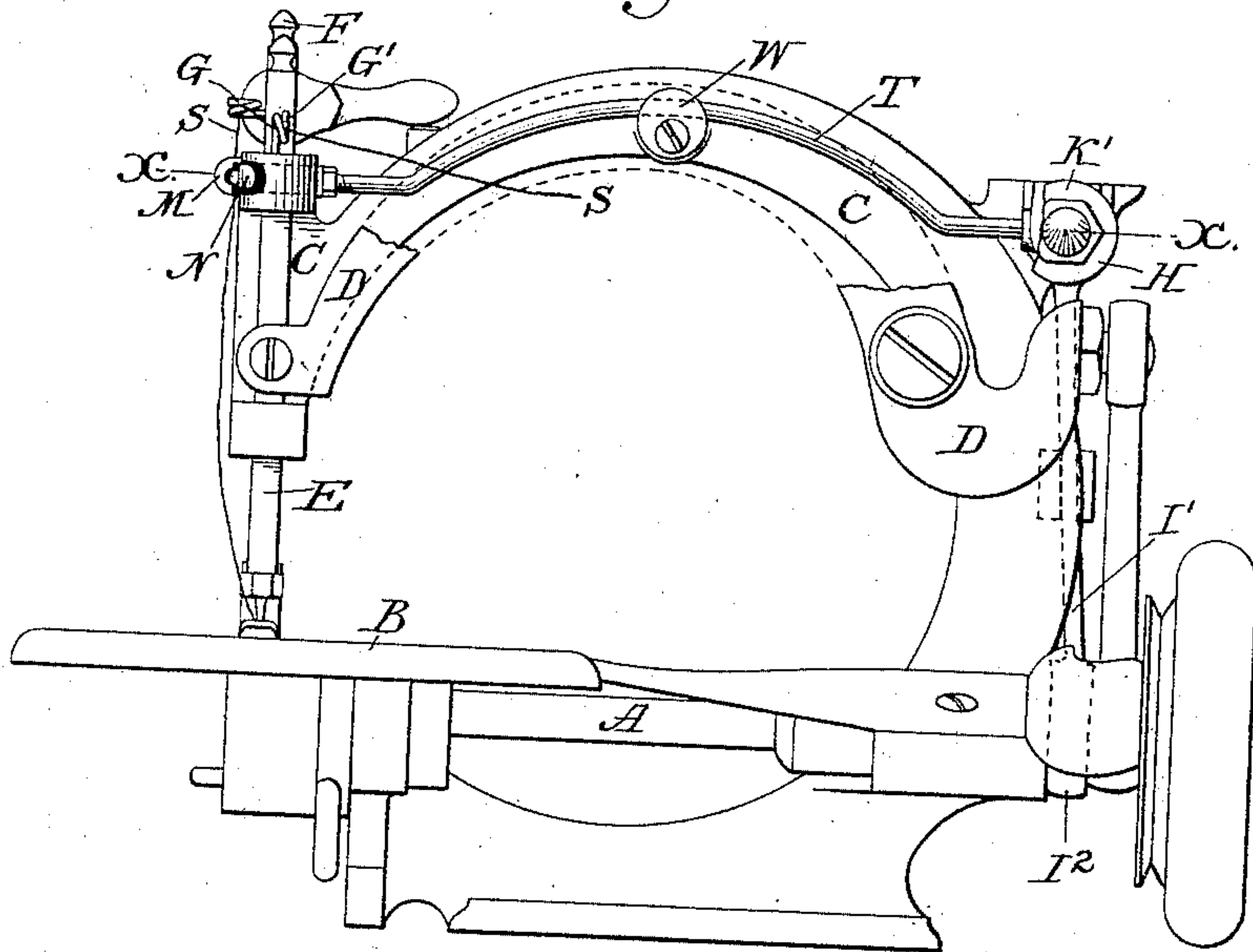


Fig. 2.

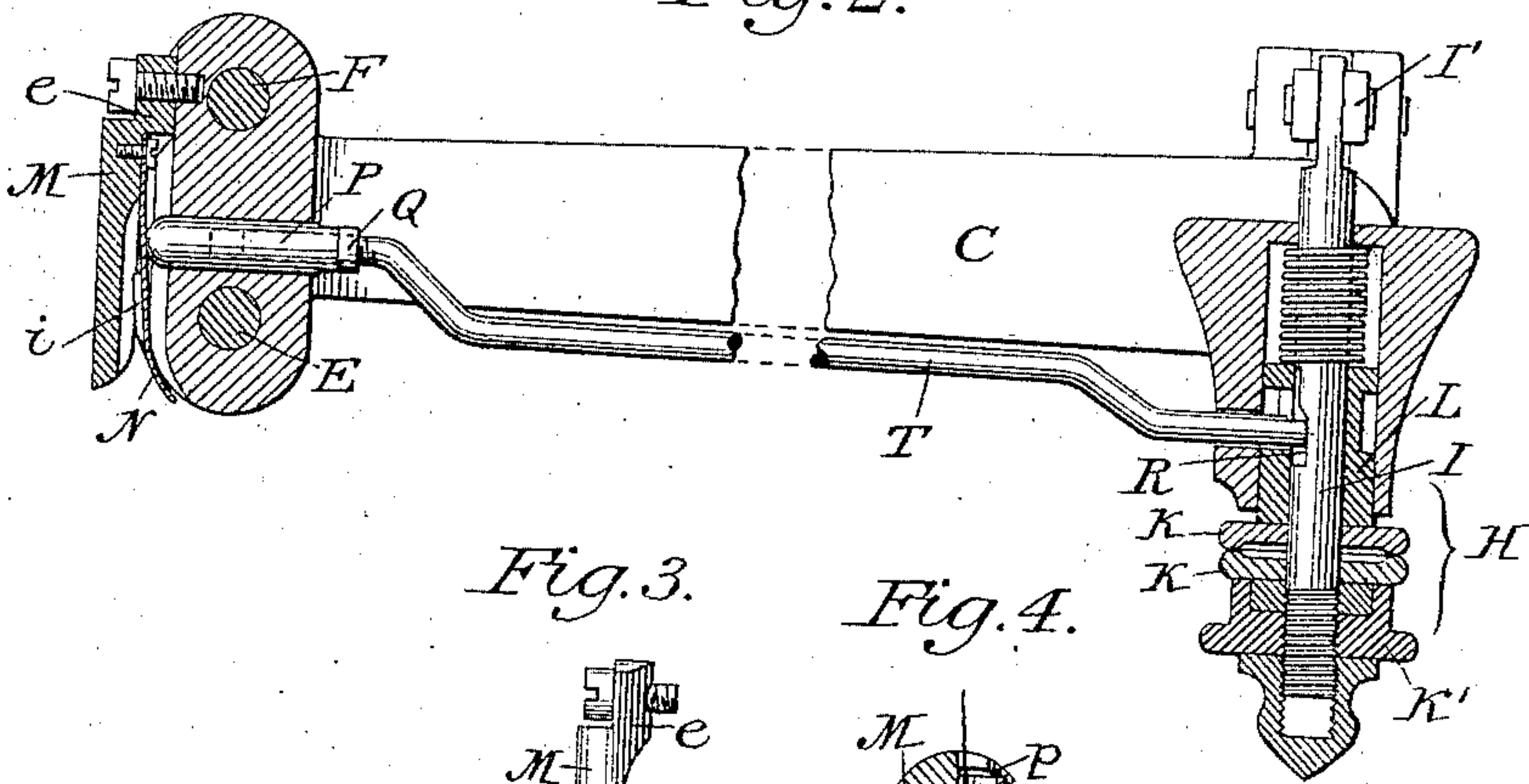


Fig. 3.

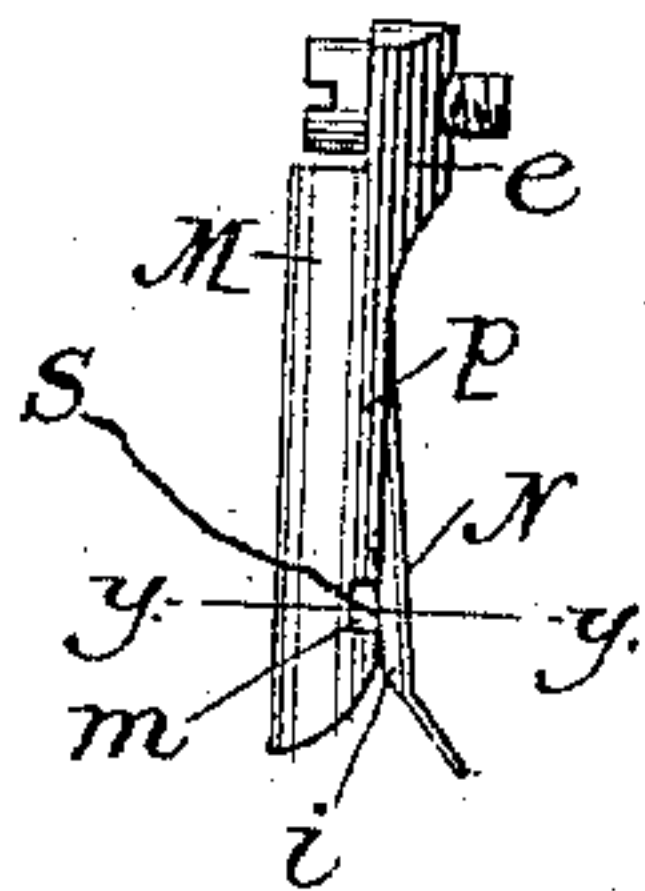
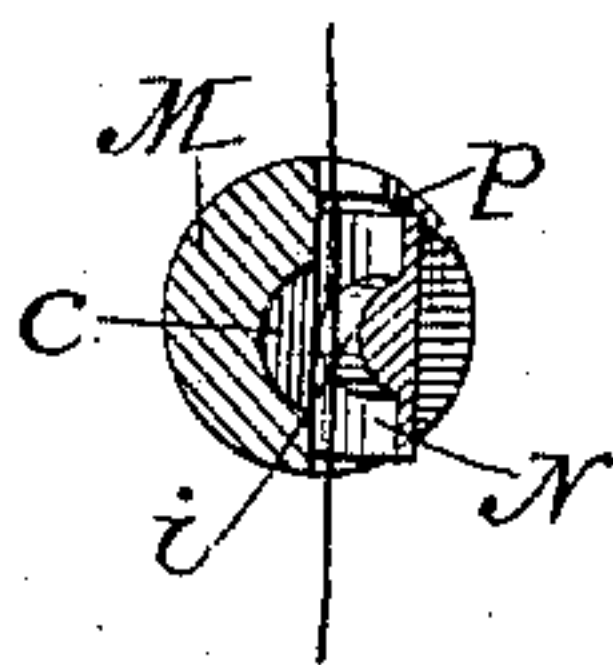


Fig. 4.



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EDWARD MURPHY, OF NEW YORK, N. Y., ASSIGNOR TO THE KRUSE & MURPHY MANUFACTURING COMPANY, OF SAME PLACE.

SLACK-THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 436,486, dated September 16, 1890.

Application filed October 24, 1889. Serial No. 328,029. (No model.)

To all whom it may concern:

Be it known that I, EDWARD MURPHY, of the city, county, and State of New York, have invented certain new and useful Improvements in Slack-Thread-Controlling Devices for Sewing-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to means for controlling the upper thread in a sewing-machine during the movements of the needle-bar, and has for its object to simplify the devices for preventing a slackness in said upper thread at and above the needle as the needle enters and passes down through the cloth.

It consists of a spring-plate or friction-pad working against a bar attached to the upper end of the front plate on the end of the head of the machine, said spring plate or pad being actuated by a loose rod extending therefrom to bear against an inclined surface formed upon the reciprocating rod of a tension device at the opposite end of the head, as is hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a sewing-machine of the Willcox & Gibbs type provided with my improved thread-controlling device, the needle-arm being partly broken away to disclose the underlying parts; Fig. 2, a horizontal section, partly broken away and on an enlarged scale, in line *xx* of Fig. 1, illustrating said device more in detail; Fig. 3, a view of the retaining-bar and its spring or friction pad detached, and Fig. 4 an enlarged transverse section thereof in line *yy* of Fig. 3.

A is the main shaft; B, the cloth-plate; C, the head; D, the needle-arm partly broken away; E, the needle-bar; F, the presser-bar; G', the thread-guide on the head, and G the thread-guide on the needle-bar, constituting the take-up device, all of which may be of any approved form, my invention being applicable to any of the well-known descriptions of sewing-machines, whether lock-stitch or single-thread.

H represents the tension device of substantially the form for which Letters Patent

No. 324,580 were granted to me August 18, 1885, and in which a rod I (see Fig. 2) is made to reciprocate in horizontal bearings by means of a pivoted lever I', operated by an eccentric I² on the main shaft A, and by its reciprocation causes the thread-clamping disks K K, mounted loosely thereon and confined by a nut K' on the outer end of the rod, to be borne to and from a spring-actuated collar L, mounted on the inner end of the rod.

M represents a semi-cylindrical bar adapted to be made fast by a screw passing through an offset at one end to the front face of the upper end of the head-plate on the outer end of the head C. The inner or flat face of the bar M is longitudinally recessed, the recess being semicircular in cross-section, as shown at *c* in Fig. 4, and the offset *e* is made to project out from said inner face far enough to hold it away from the face of the head-plate when the bar is attached thereto, and thereby leave a sufficient intervening space for the play of a flat elastic spring-plate or friction-pad N, (see Figs. 2, 3, and 4,) which is made fast at one end to the inner face of the bar M next to its offset *e*, as shown in Fig. 2. It is also provided with a transversely-curved flange *p*, projecting longitudinally from one edge thereof to form, in effect, a partial extension in cross-section of the periphery of the semi-cylindrical face of the bar, as shown in Fig. 4, and overarch the edge of the spring-plate N. This overarching flange *p* is notched at a point *m* (see Fig. 3) near the outer end of the retaining-bar M to guide the thread S, which is led down between the bar and friction-pad from the thread-guide G above. A longitudinal tongue *i*, half-round in cross-section, (see Fig. 4,) is formed upon the inner face of the spring-plate or friction-pad N near to its outer end (see Fig. 2) to fit into the counterpart recess *c* in the inner face of the bar M when the spring is forced inward, the resiliency of the spring operating to carry it away from the recess. The spring N and its tongue *i*, in combination with the bar M, against which it plays, serve as a retainer for the thread S led between the two through the notch *m*. The face of the reciprocating rod I on the side thereof next the friction-pad or retainer M is longitudinally notched

or recessed, the face of the recess being made to form an inclined offset in its length, as shown at R in Fig. 2. A rod T is carried loosely through a central bearing W on the side of the head C (see Fig. 1) to extend from the spring-plate N, against which its outer end is made to bear, to the face of the recess R, against which its inner end is made to bear. This rod is so adjusted in length as that when the inner end of the rod rests against the plane face of the recess at its point of greatest depression the spring-plate or friction-pad N is allowed to spring outward; but when by a forward movement of the tension-rod I its inclined face R is made to bear against said rod T to move it longitudinally toward the plate N it will thereby force said plate toward the bar M, so that the tongue *i* will be carried into its seat in the recess *c* of the bar to bind upon the interposed length of thread S, carried transversely down between them.

To facilitate the adjustment of the length of the actuating-rod T with reference to the spring-plate N, an adjusting-tip P is fitted to screw upon the outer end of the rod, so as to increase or shorten its length, the tip being made fast when adjusted by means of a lock-nut Q.

The thread S, after being carried from the tension device H through the take-up eyes G G', is readily slipped between the free outer ends of the friction-pad N and the retaining-bar M, so as to be brought under the tongue *i* in position to be carried and detained thereby in the recess *c*.

In the operation of my improved device so soon as the needle begins its downward movement the inclined surface on the longitudinally-moving tension-rod I is made to bear against the inner end of the rod T, and as the needle continues its movement the rod T is forced longitudinally forward, so as to carry the spring-plate or friction-pad N toward the retainer-bar M, and thereby clamp more or less closely the upper thread S, so as

to produce a frictional tension thereon sufficient to prevent any slackness therein below the bar M as the needle penetrates the cloth. By the time the downstroke of the needle is nearly completed the reversal in the movement of the tension-rod I will have allowed the rod T freedom to move back under the stress of the spring N, thereby leaving the thread free and slack for the formation of the loop to be entered by the looper or other stitch-forming device.

I claim as my invention—

1. The combination, in a sewing-machine, with its tension device and a longitudinally-reciprocating bar therein, having thereon an inclined surface, of the fixed thread-retaining bar, the friction-pad vibrating against it, and a loose rod playing longitudinally between the friction-pad and the said inclined surface on the reciprocating rod, whereby the friction-pad will be closed against the retaining-bar as the tension device is opened, substantially in the manner and for the purpose herein set forth.

2. The combination, in a thread-retaining device for sewing-machines, with a retaining-bar adapted to be secured at one end to the frame of the machine, and a spring-plate inserted in a recess between the frame and bar and secured at one end to vibrate at the other to and from the free end of the retaining-bar, of a tongue formed longitudinally on the face of said spring-plate to enter a counterpart recess in the retaining-bar, and means, substantially as described, for pressing the plate against the stress of the spring toward the retaining-bar, substantially in the manner and for the purpose herein set forth.

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

EDWARD MURPHY.

Witnesses:

A. N. JESBERA,
E. M. WATSON.