(No Model.)

E. MURPHY.

THREAD CONTROLLING DEVICE FOR SEWING MACHINES.

No. 315,956. Patented Apr. 14, 1885.

Fig. 1.

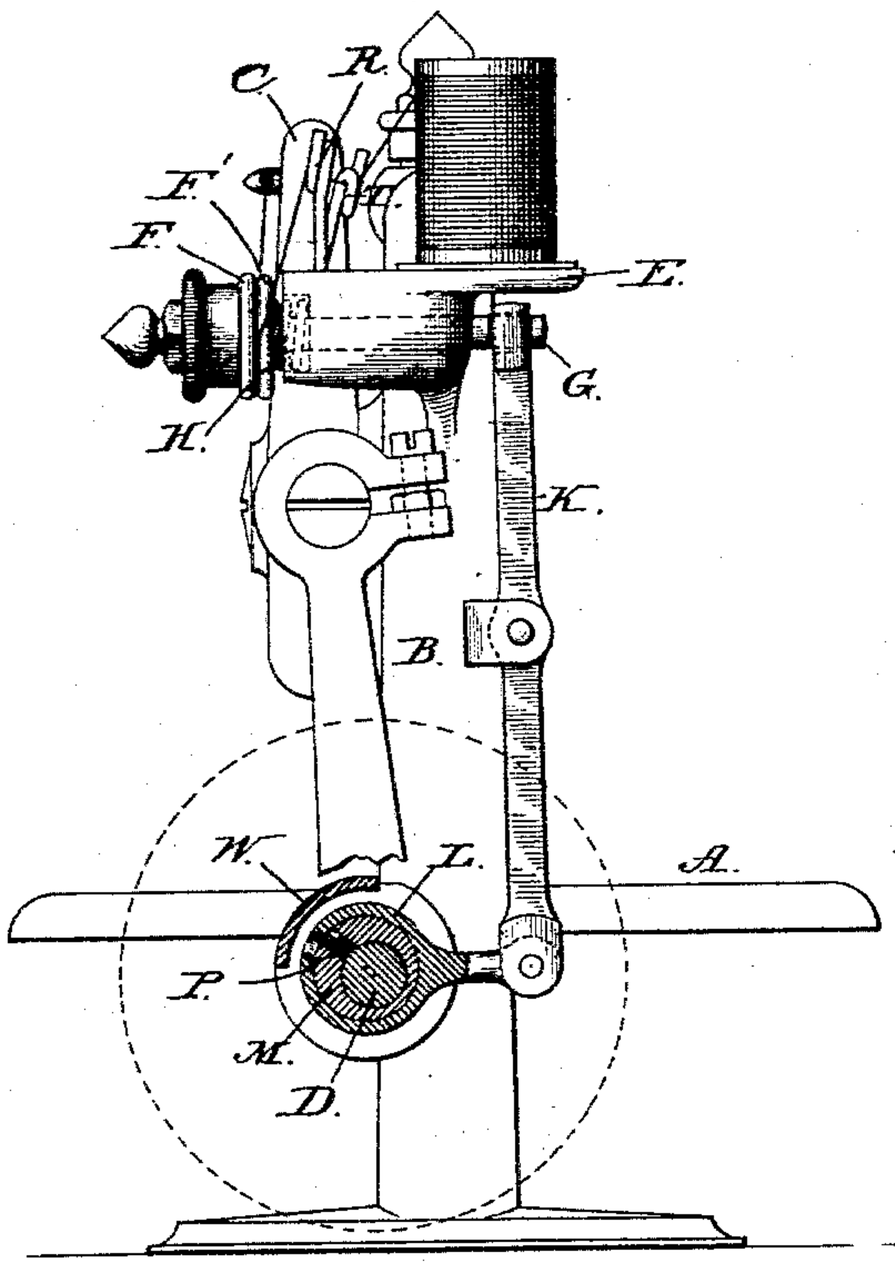
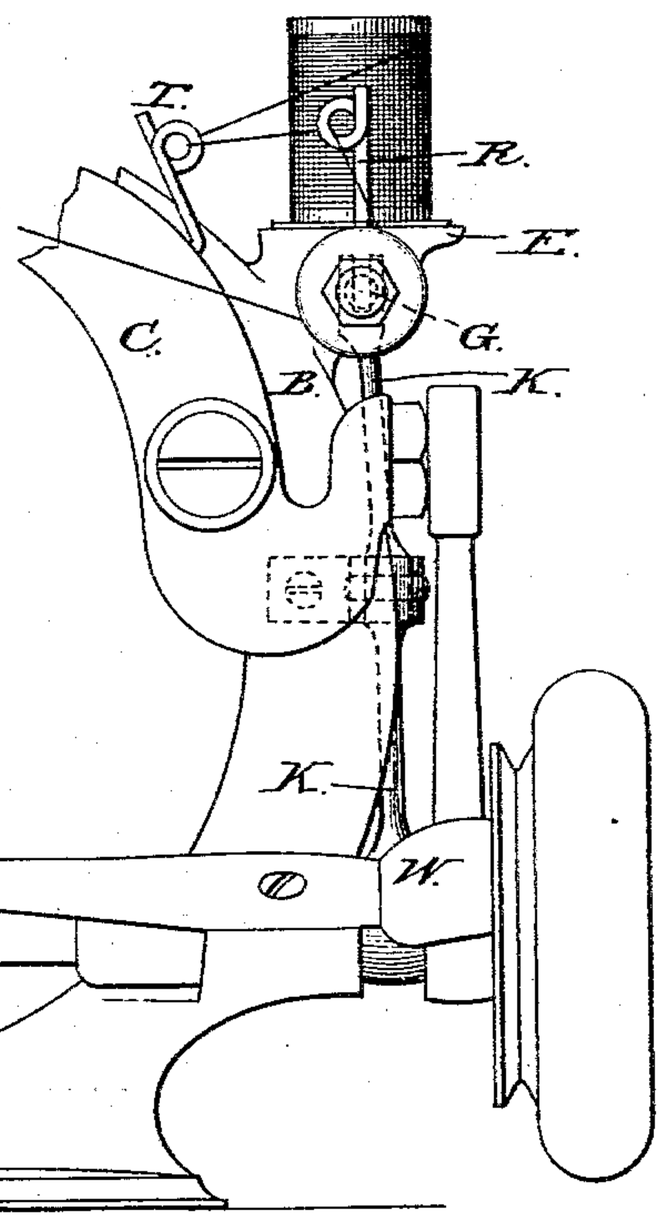


Fig. 2.



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UNITED STATES PATENT OFFICE.

EDWARD MURPHY, OF NEW YORK, N. Y.

THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 315,956, dated April 14, 1885.

Application filed September 30, 1884. (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 a new and useful Improvement in Thread-Controlling Devices for Sewing-Machines; and I do hereby declare 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 that class of tension devices for sewing-machines in which a proper length of thread is automatically drawn off from the spool at each stroke of the needle, and is clamped and rigidly held during the greater part of the stroke and left perfectly free during the formation of the stitch.

The object of my invention is to simplify the construction and operation of the thread-controlling apparatus, and at the same time provide for such a nice adjustment thereof as shall permit its automatic movement to be timed with accurate precision to the movements of the needle as required to insure invariably the production of a perfect stitch. This I accomplish by combining the tension or clamping disks with the front end of the spool-stand where they are the least in the way and most readily threaded, and actuating the same by means of a centrally-pivoted lever mounted under the spool-stand and operated by an adjustable eccentric upon the main shaft, and by combining with the clamping-disks an eye upon the spool-stand and an eye upon the needle-arm, so that the movement of the needle-arm shall, while the thread is lightly held between the disks, operate to draw a length of thread from off the spool in readiness to be fed freely forward between the disks when they are opened or set free.

In the accompanying drawings, Figure 1 is an end or rear view of a sewing-machine, with parts broken away and in section to illustrate more fully my improvement; and Fig. 2, a side elevation of a portion of this rear end.

A represents the cloth-plate, B the frame, and C the needle-arm, operated, as usual, from the main shaft D of the machine.

E is the spool-stand upon the frame, and F F′ the clamping-disks mounted upon a horizontal rod, G, fitted to reciprocate transversely in the frame under the spool-stand. The clamping-disks may be of any approved description adapted to be drawn together by the longitudinal movement of the rod G, which in the device illustrated is attached to the outer disk, F, the inner disk, F′, being left free to play upon the rod and to be drawn by the outer disk toward the face of the frame. A spring, H, interposed between the frame and the disk F′, is compressed as the disks move toward it, and produces an elastic pressure of the disks upon the intervening thread.

The reciprocating movement of the tension-rod G in its bearings is produced by means of a vertical lever, K, pivoted centrally to the frame, and hinged at one end to the outer end of the tension-rod and at the other to a radial arm projecting from an annular strap or band, L, encircling an eccentric, M, fitted upon the main shaft D inside of the eccentric N, which operates the needle-arm. The eccentric M is secured, when adjusted upon the shaft, by means of a set screw, P. By its adjustment the movement of the bar G, and consequently the grip of the clamping-disks upon the thread, may be timed to occur at any desired moment in the movement of the needle-arm and stitch-producing mechanism. The duration of the grip or tension of the disks upon the thread is determined and adjusted by the extent of motion which is permitted between the inner disk and the face of the frame.

A self-threading eye, constructed of a bent wire, T, is fixed to the top of the needle-arm, and a second self-threading eye, R, is fixed upon the outer end of the spool-stand near to the clamping-disks, so that when the thread from the spool is led through the eye T and the eye R to and between the disks, each downward movement of the needle-arm (which occurs while the disks are drawn together to bind and hold the thread) will operate to pull off a length of thread from the spool, which, as the arm rises, is left loose and free to be drawn forward between the opened disks.

I am aware that tension or clamping disks have been mounted upon a fixed horizontal rod secured to the frame of a sewing-machine, one of said disks being actuated by a lever of the second order, which, being pivoted at one end above the rod so as to bear against the movable disk, depends far enough to bear against a cam on the main shaft, its contact

with the cam being insured by means of a spring or an elastic arm; but my invention constitutes an improvement upon this device in that it avoids all interference with the needle-arm and permits the use of a guard or shield, W, over the eccentric on the front side of the machine and its connecting-bar, and more particularly in that it furnishes the exact, durable, and accurately-adjustable connection of the disks and tension-rod with the main shaft, which is necessary in a tension device operating to clamp and firmly hold the thread, and which cannot be obtained with a cam and lever, as above described.

I claim as my invention—

1. The combination, with the frame, spool-stand, main shaft, and thread-clamping disks of a sewing-machine, of a horizontal rod mounted to reciprocate transversely to the frame in bearings under the spool-stand and to carry and actuate the clamping-disk fitted upon its outer end, an eccentric fitted upon the main shaft, an annular band encircling said eccentric, and a lever hinged at its upper end to the inner end of the reciprocating bar and at its lower end to the band, and which is pivoted intermediately to the frame of the machine, all substantially in the manner and for the purpose herein set forth.

2. The combination, in a sewing-machine, with the thread-clamping disks F F′, mounted upon a horizontally-reciprocating rod G, actuated mediately by an eccentric upon the main shaft, and with the spool-stand E, and an eye, T, fixed upon the needle-arm C of the machine, of a second eye, R, fixed upon the spool-stand, and through which the thread passing from the spool through the eye T is led before passing to the tension-disks, all 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:

G. H. SPENCER,

A. B. MOORE.