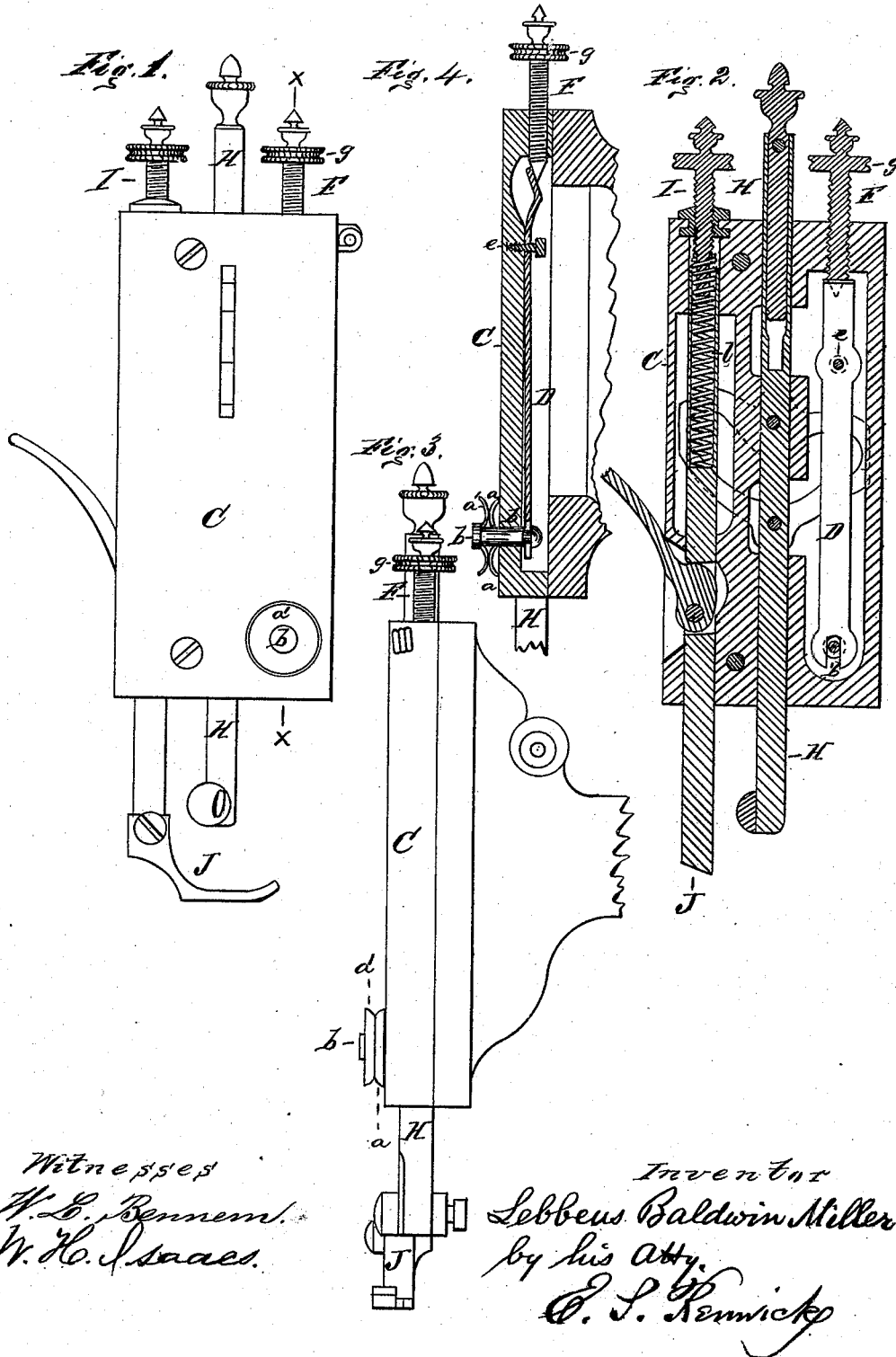


L. B. MILLER.
Sewing-Machine.

No. 214,513.

Patented April 22, 1879.



Witnesses
W. B. Bennett.
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Inventor
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UNITED STATES PATENT OFFICE.

LEBBEUS B. MILLER, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE
SINGER MANUFACTURING COMPANY, OF NEW YORK CITY.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **214,513**, dated April 22, 1879; application filed
November 17, 1877.

To all whom it may concern:

Be it known that I, **LEBBEUS BALDWIN MILLER**, of Elizabeth, in the county of Union and State of New Jersey, have made an invention of certain new and useful Improvements in Sewing-Machines; and that the following is a full, clear, and exact description and specification of the same.

This invention has reference more particularly to the devices connected with the head of the bracket-arm or needle-arm of sewing-machines; and its objects are to facilitate the regulation of the tension upon the needle-thread, and to impart a symmetrical appearance to the devices connected with the said head.

To these ends my invention consists of the combination and arrangement of certain devices, which are specified in detail in the claim at the close of this specification.

In order that the invention may be fully understood, I have represented in the accompanying drawings, and will proceed to describe, the best mode in which I have thus far embodied my invention in a working machine.

Figure 1 of said drawings represents a face view of the head of the needle-arm of a Singer sewing-machine with my improvements applied thereto. Fig. 2 represents a sectional view of the same. Fig. 3 represents an edge view of the same. Fig. 4 represents a transverse section of some of the parts at the line *x x* of Fig. 1.

The tension device or thread-tension (represented in the said figures) consists of two perforated disks, *a a'*, mounted upon a movable bolt, *b*, which passes through their centers into the head *C* of the needle-arm. One of these disks, *a*, rests at its back against the face of the said head *C*.

The other disk, *a'*, may be drawn with greater or less force toward the first disk, *a*, by means of the bolt *b*, so as to produce a greater or less frictional resistance to the free movement of the needle-thread inserted between the adjacent faces of the two disks.

In order to apply the force the inner end of the bolt *b* is grooved to receive the forked end of a lever-spring, *D*, which is held in an upright position within the cavity of the head,

its fulcrum-point being perforated to admit the screw *e*, by which it is held in place. The upper arm of this lever-spring *D* is inclined, as seen in Fig. 4, and a conical pointed adjusting-screw, *F*, is provided to operate against this inclined arm.

The screw is inserted in a screw-threaded hole formed in the top of the head *C*, so that the screw-head *g* is in a very convenient position to be turned by the operator of the machine. This tension-screw is also arranged at the side of the needle-bar *H* opposite that at which the regulating-screw *I* of the presser-foot *J* is arranged, the said needle-bar being arranged centrally of the said head, so that the two regulating-screws present a symmetrical appearance.

The regulating-screw *I* of the presser-foot operates upon a spring, *l*, so as to compress it or permit its extension, and thus regulate the force acting to depress the presser-foot *J* upon the article being sewed. The inner end of the regulating-screw *F* of the thread-tension, being conical, operates, when screwed downward upon the incline of the lever tension-spring, as a wedge to move the upper arm thereof laterally, and thus cause the lower arm to act with greater force in pulling the outer tension-disk, *a'*, toward the inner disk, *a*. When, on the other hand, this regulating-screw is screwed upward, the force exerted by the lever-spring is relaxed.

The invention may also be embodied by substituting a wheel thread-tension in place of tension-disks. In such case the grooved tension-wheel, around which the needle-thread is coiled, may be set upon the movable bolt *b* in place of the tension-disks, and a frictional disk of cloth (or other material capable of exerting a frictional resistance to the turning of the wheel) may be inserted between the inner face or disk surface of the wheel and the face of the head *C*. Then the screwing of the adjusting-screw *F* downward will cause the lever-spring to pull the tension-wheel against the cloth-disk with greater force, so that a greater frictional resistance will be exerted against the turning of the tension-wheel, and consequently the tension on the needle-thread will be increased. When, on the other hand, the

regulating-screw is screwed upward, the force exerted by the lever-spring in pulling the wheel-disk against the frictional or cloth disk is relaxed, and the tension upon the thread will be diminished.

The tension-wheel and the frictional disk thus constitute substitutes in my combinations for the tension-disks first described.

I claim as my invention—

The combination and arrangement, substantially as before set forth, of the bracket-arm

of the sewing-machine, the tension-disks and the bolt thereof, the lever-spring, and the regulating-screw thereof, arranged at the top of the head of the bracket-arm.

Witness my hand this 29th day of October, A. D. 1877.

LEBBEUS BALDWIN MILLER.

Witnesses :

JNO. SCOTT,

JAMES MEEHAN.

1.000 words.