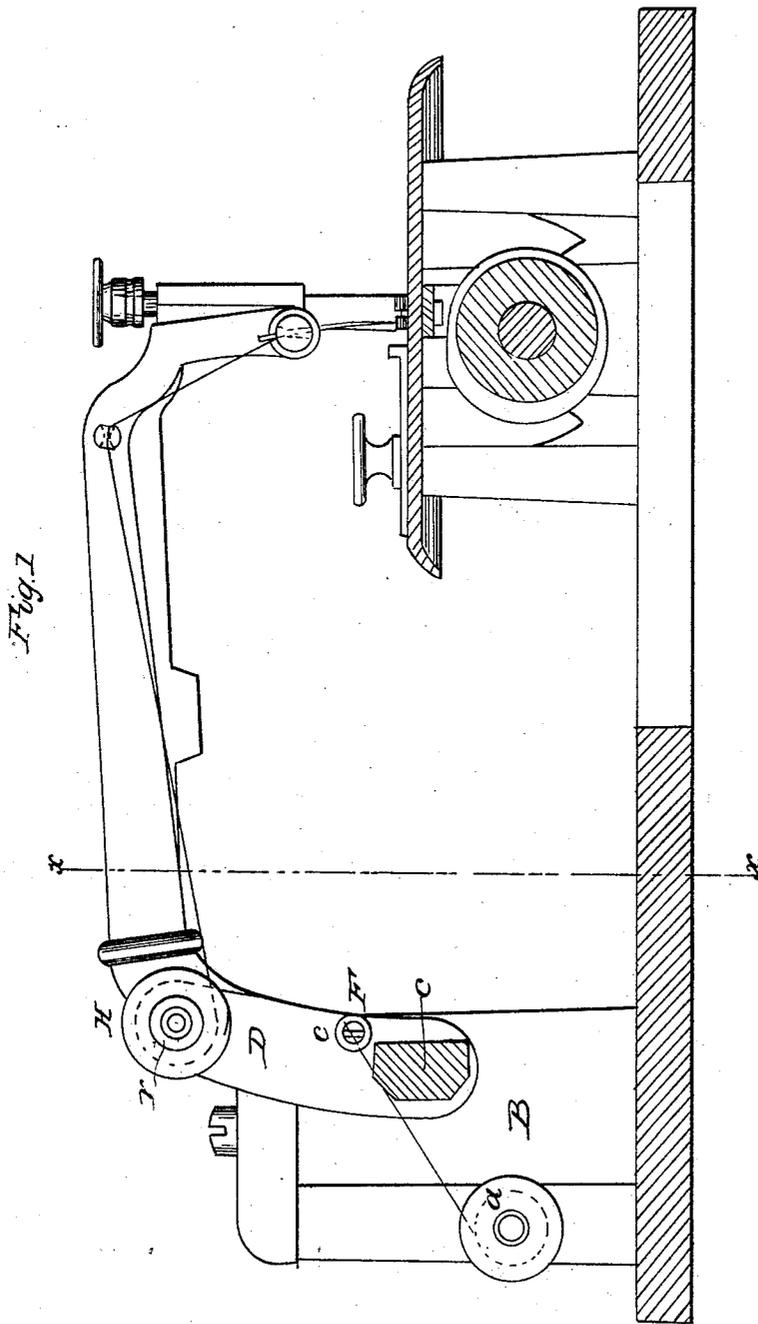


C. D. WHEELER.
Sewing Machine Thread Tension.

2 Sheets—Sheet 1.

No. 22,045.

Patented Nov. 9, 1858.

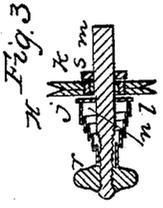
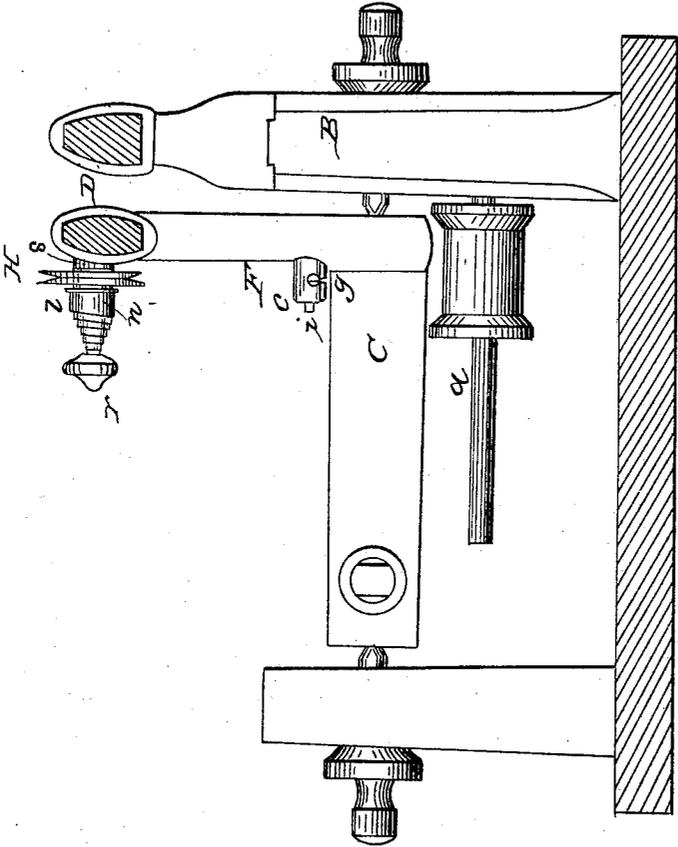


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Sewing Machine Thread Tension.

No. 22,045.

Patented Nov. 9, 1858.



UNITED STATES PATENT OFFICE.

C. D. WHEELER, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 22,045, dated November 9, 1858.

To all whom it may concern:

Be it known that I, CALVIN D. WHEELER, of the city, county, and State of New York, have invented a new and useful Improvement in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical longitudinal section of a Wheeler & Wilson sewing-machine with my improvement applied thereto. Fig. 2 represents a vertical transverse section of the same machine at the line *xx* of Fig. 1, and Figs. 3 and 4 are sections of certain parts of the thread-tension detached from the machine.

My invention has reference to that portion of the mechanism of a sewing-machine by means of which the tension of the thread is regulated; and its object is to produce a uniform tension upon the thread without reference to the quantity of thread, whether large or small, which may be wound upon the spool.

My invention consists in interposing between the thread-spool and the place where the thread is used a sheave whose greater or less freedom of motion on its axis is controlled by an adjustable friction-brake, and whose periphery contains a sharp groove in which the thread, which is passed partly round the sheave, jams, so that the sheave is turned by the thread as the latter is drawn to the point where it is used, and the tension or strain upon the thread depends upon the greater or less resistance of the friction-brake, which, when once adjusted, remains constantly the same, whatever quantity of thread be passed through the machine.

In the machine represented in the accompanying drawings my improvements are applied to regulate the tension of the thread that passes to the needle. The spool of thread is placed upon a spindle, *a*, which is secured in a convenient position for the purpose to one of the standards, *B*, that supports the rock-shaft *C* of the needle-arm *D*. From this spool the thread is passed through the drag *F*. The drag in the present instance consists of two pieces of hardened steel, *c* and *i*, contained in and supported by a tubular case, *e*, which is secured to the needle-arm. One of these pieces, *e*, is acted upon by a slight spring, *o*, which tends to force it toward the other, while the other forms a screw-plug, *i*, which is screwed

into the case *e* and closes its end. The case has a transverse notch, *g*, cut into its lower side at the point of contact of the steel pieces, and this notch extends about half-way through the case, so as to permit the thread to be introduced between the faces of the steel pieces and to guide it across their centers. - The thread from the drag passes to the groove in the sheave *H*. It is necessary that the innermost part of this groove should be sharp, so that fine thread may be certain to jam in it; and as I have found it extremely difficult to turn such a groove in a solid piece of metal, I have found it expedient to construct the sheave of two disks, *j k*, whose adjacent faces are turned to the proper shape, and which are riveted together. This sheave is mounted upon an axis, *m*, secured to the needle-arm. A friction-washer, *l*, is mounted upon the same axis, to press against the side of the sheave and act as a friction-brake. This washer is prevented from turning with the sheave by flattening a portion of the axis and making the hole in the washer of corresponding form. It is pressed toward the sheave by means of a volute spring, *n*, whose tension is adjusted by means of a milled nut, *r*, that is screwed upon the axis, and can be readily turned by the hand of the operator.

In order to enable the apparatus to work for a length of time without cleaning or oiling, I have found it expedient to interpose a greased leather washer between the sheave and the shoulder *s* of the axis upon which it turns, and a second greased leather washer between the sheave and the spring-washer *l*.

In using the mechanism thus described the thread is inserted in the notch of the drag *F*, and is passed around the sheave *H* in the manner represented in Fig. 1, so that it nearly encircles it, after which it is passed to the needle. The tension is regulated by screwing up the milled nut *r* to a greater or less extent, thus forcing the spring to press the spring-washer toward the sheave with greater or less force, and causing the washer to oppose a greater or less resistance to the turning of the sheave, which consequently holds back the thread with greater or less force. As the thread passes constantly around the same circle in the groove, and as the tension of the spring, when once adjusted, is constant, and as the action of the spring-drag upon the thread is also in the pres-

ent instance constant, it follows that the tension of the thread will be same, whatever quantity be passed through the apparatus, and whether much or little be wound upon the spool. The office of the drag F is to prevent the slacking of the thread upon the rotating regulating apparatus, and insure its close contact therewith, which might not occur if the thread were conducted directly from the spool to the regulator, especially if the thread should deliver from the spool too freely. Any other apparatus which will fulfill this office may be substituted for the one above described, and in place of interposing such a drag between the sheave and the spool or other source of thread, a spring-brake may be made to act upon the spool itself.

The apparatus thus described may be modified as circumstances may render expedient. It is applicable not only to sewing-machines, but to any purpose where thread, yarn, cord,

or rope is to be delivered with a uniform tension. If the cord be large, it is not necessary that the groove should be so fine at its bottom, but it must be sharp enough to insure the jamming of the cord in it.

Having thus described the apparatus which embodies my improvements, what I claim as my invention, and desire to secure by Letters Patent, is—

The combination of a sheave whose groove is sharp, or so constructed that the thread may jam therein by a partial passage around the sheave, with an adjustable friction-brake to control the movement of the said sheave, substantially as described.

In testimony whereof I have hereunto subscribed my name.

CALVIN D. WHEELER.

Witnesses:

MYRON PERRY,
S. W. DIBBLE.