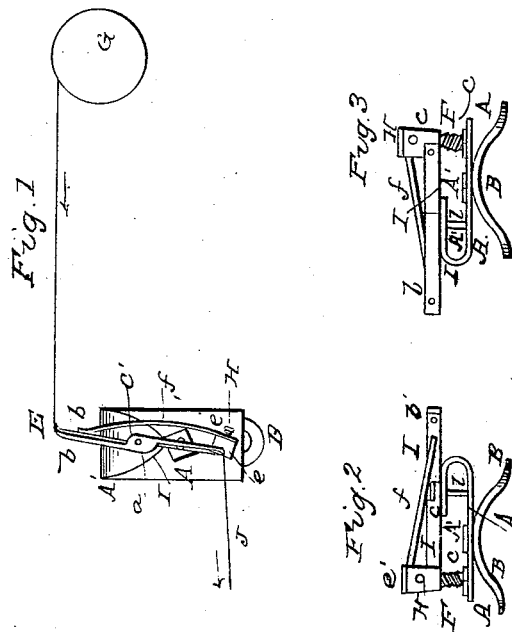


# GOODRICH & CHANDLER.

Thread Tension Device for Sewing Machines.

No. 53,783.

Patented April 10, 1866.



Witnesses  
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# UNITED STATES PATENT OFFICE.

THOMAS A. CHANDLER AND H. C. GOODRICH, OF ROCKFORD, ILLINOIS.

## IMPROVEMENT IN THREAD-TENSION DEVICES FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 53,783, dated April 10, 1866.

### *To all whom it may concern:*

Be it known that we, T. A. CHANDLER and H. C. GOODRICH, of Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Sewing-Machines; and we do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of the devices for regulating the tension. Fig. 2 is a side view of the same. Fig. 3 is a view of the side opposite from 2.

Like letters of reference refer to like parts in the views.

Our improvement relates to an arrangement of devices for regulating the tension of the thread in sewing-machines, whereby a perfect tension is produced upon the thread irrespective of its size or unevenness in sewing goods of all kinds without regard to their texture or quality, being self-regulating in its operation and requiring no adjustment by the operator.

A is a plate curved up and back at one end, as at A'. This plate is secured or attached at the center to a plate, B, designed to be connected to a sewing-machine. In one end of the plate A there is a screw, F, screwed through a nut, c, down through the plate. At the upper end of this screw there is a clamp, H, that consists of two plates, e e'. The plate e is formed in one piece with the screw, and the plate e' is screwed onto one side of the plate e. Between the plates e and e' of the clamp is secured the end of a spring, f, which can be adjusted vertically or horizontally between the plates, as may be desired, in regulating the tension, and by means of the screw F the clamp can be raised or lowered.

I is a lever pivoted to the plate A A' by means of a pin, l, (seen in Fig. 2,) attached to the lever, and inserted through holes in the plate, forming the fulcrum upon which the lever vibrates. At one end of the lever there are jaws, E, one of which is formed on the end of the lever, as seen at b, and the other, or b', is pivoted at c' to the lever, and against which the end of the spring f presses. The other end of the lever comes against one side of the clamp H, as represented in Figs. 1 and 3, and is turned or curved round at the end, in which

there is an eye for the thread J that passes along one side through a hole in the middle part, a, of the lever, along between the jaws b b', and through an eye in the end of the jaw b. The ends of the jaws b b' and the other end of the lever are turned or curved in the direction that the thread is running from the spool G, which is noted by the arrows in Fig. 1.

The pin l, or fulcrum upon which the lever vibrates, can be in the middle, one side, or at any point along the lever, as it will not affect its operation.

The lever I, with its connections, as described, for regulating the tension, is attached to the frame of a sewing-machine at its highest point, and should be in such position that its length will be in a line nearly at right angles to the course of the thread as delivered from the spool.

The thread J from the spool is readily inserted in the lever by opening the jaws E and putting the thread through the eye in the jaw b, along between the jaws, through the hole in the middle part, a, of the lever, and along one side of the other end through its eye, thus throwing the thread out of a direct line between the spool and eyelets leading to the needle, for the purpose of affecting the lever I, to obtain the desired tension, as will be described.

When the spring f is adjusted upon the jaw b' it produces an elastic pressure upon the thread between the jaws that will give or yield according to the strain or stress upon the thread by its being drawn through the cloth in sewing.

The principle upon which this tension-regulator operates is, the degree of resistance that the thread meets with in being drawn through the cloth, whatever it may be, is communicated to the lever I, producing an equivalent action upon it, caused by the motion of the thread as it is thus drawn from the spool. Consequently in sewing fine, thin material, where the resistance of the thread is little, the action of the thread upon the lever will be slight, and where the resistance is greater, by the thread being drawn through thicker material or material of a different texture, the action upon the lever will be in the same degree greater. The action of the thread upon the lever, under all circumstances, corresponds with the resistance

that the thread meets with as it is drawn through the cloth, for the lever I will turn or move upon its fulcrum more or less, according to this resistance of the thread in the cloth; and as the thread is clamped between the jaws, and by the action or bearing of the spring *f* on one side, the more the lever is turned by the thread the tighter the thread will be clamped between the jaws, increasing the tension of the thread as is required. In this way a perfect tension is produced upon the thread in sewing goods of any thickness or texture without further adjustment by the operator; and it makes no difference in regard to the size of the thread, as all sizes and inequalities act with the same facility upon the lever. The desired tension required depends upon the position of the lever, taking into consideration the power

of the spring, which in all regulators is ascertained by practical tests before being applied to machines.

What we claim as our improvement, and desire to secure by Letters Patent, is—

1. The pivoted lever I and jaws E, in combination with the spring *f*, arranged in the manner and operating as and for the purpose set forth.

2. The adjustable clamp H, plate A, and pivot *l*, in combination with the spring *f* and lever I, arranged and operating substantially as and for the purpose set forth.

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Witnesses:

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