(No Model.)

J. B. MORGAN.

THREAD WAXING AND TENSION DEVICE FOR SEWING MACHINES.

No. 493,637. Patented Mar. 21, 1893.

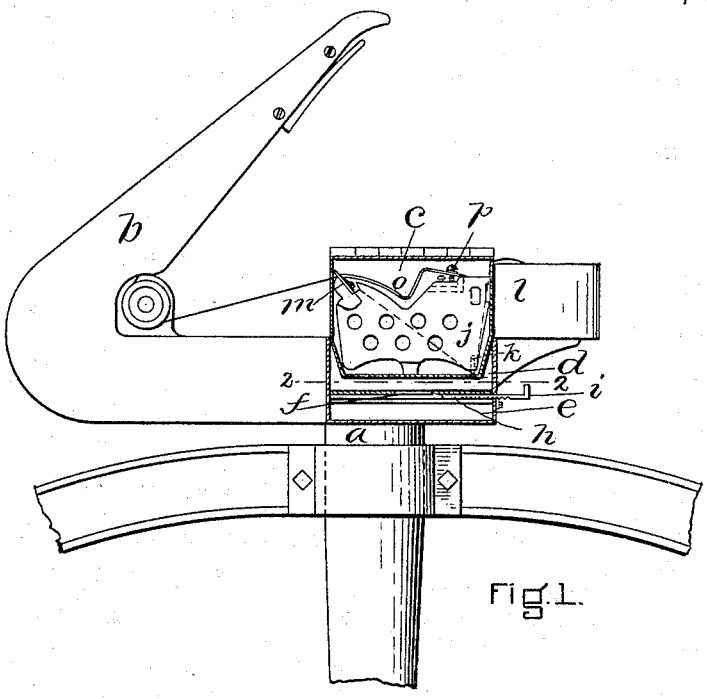

Fig. 1.

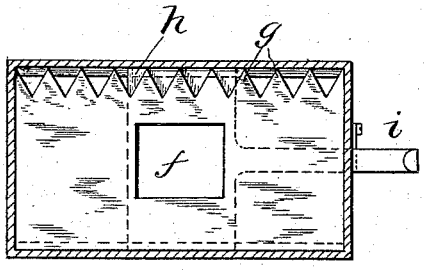

Fig. 2.

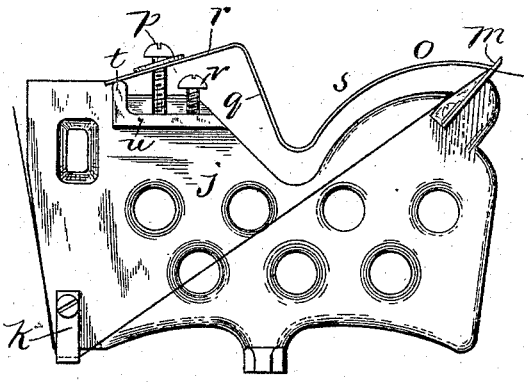

Fig. 3.

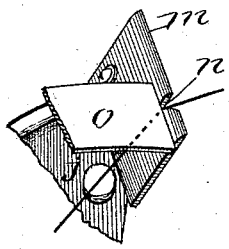

Fig. 4.

WITNESSES.

Arthur W. Crosley.

A. D. Harmon.

INVENTOR.

John B. Morgan

UNITED STATES PATENT OFFICE.

JOHN B. MORGAN, OF MIDDLEBOROUGH, MASSACHUSETTS.

THREAD-WAXING AND TENSION DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 493,637, dated March 21, 1893.

Application filed January 25, 1892. Serial No. 419,187. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. MORGAN, of Middleborough, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Thread-Waxing Devices for Wax-Thread Sewing-Machines, of which the following is a specification.

My invention has relation to means for retarding the thread in the process of its use in wax-thread sewing machines, particularly such as are adapted to use in the manufacture of boots and shoes.

This invention is intended to furnish for sewing machines an improved sewing tension device or means for retarding the thread. It adjusts itself automatically to threads of different size. It can be used as a wax retarder, as well as a thread retarder, or the two can be combined in one and the same operation. When used as a wax retarder its location is wholly inside the wax tank.

To these ends the invention consists in a device for sewing machines provided with a metal retarder for its lower portion, and comprising in its construction an adjustable leaf spring, or its equivalent, having an adjustable wearing surface. A portion of the length of the spring may be bent at a substantially right angle, or so adjusted to another portion and bearing at its free end upon said retarder in proximity to the thread passage, so that the said free end may move both down and up without special limitation, or by the bottom of the thread passage both to increase or diminish its retarding force to either the thread or wax, or both, also to the necessary adjustment of the continual wear which it undergoes. The free end of the spring is so constructed that it may swing from the face of the retarder at the will of the operator to admit of quick adjustment in changing threads, which is important. The attached end of the spring bears on a raised seat near the screw on which the spring swings. A platform is attached to the raised seat through which the tension screw passes. Another screw near this screw and under this spring is for an adjustment spring rest, if required. Its use prevents not only injury to the spring from over-pressure, but lessens the rigidity of the spring when necessary to prevent the fraying of loose twisted threads, and causing an accumulation of lint or other substance to impair the perfect retarding of the same.

The invention will first be described in connection with the accompanying drawings, forming a part of this specification, and then be pointed out with particularity in the claims.

Of the said drawings: Figure 1, is a sectional side view of my improvement as applied to a horn of a boot and shoe sewing machine. Fig. 2, is a sectional view taken on the line 2—2 of Fig. 1. Fig. 3, represents a side elevation on an enlarged scale, of the retarder, and its support inside of the wax box the view being taken on the side opposite that shown in Fig. 1. Fig. 4 is a detail view in perspective of the retarder.

Similar letters of reference designate corresponding parts in all of the views.

In the drawings *a* designates the base or support, and *b* the horn of a boot and shoe sewing machine.

c designates the wax pot beneath and surrounding the lower portion of which is a warming hot air space or chamber *d*, to which heat is admitted from the heating chamber *e* through the opening in the separating or baffle plate *f*, or it may be through space or teeth *g* formed on the supporting plate or track on which the damper slides.

h designates a damper which is provided with a handle *i* with a notched rib underneath to enable it to be moved laterally so as to control the extent of the opening through which heat is admitted to the warming space *d* controlling the degree to which the wax and thread in the wax pot is heated. Ordinarily, it will not be necessary to open the space *f* by means of the damper, sufficient heat being admitted to keep the wax in the wax pot in a liquid state by passage through the space between the teeth *g*. Should, however, the temperature in the room where the machine is operated be too low, or from other cause it should be desired to heat the wax in the wax pot to an unusual degree, the damper *h* may be drawn out, and so accomplish the object desired. The position of the damper to the hole in the baffle plate may be sustained either by the friction of the baffle plate on

the damper, or by a clutch bearing on the rib to the handle of the damper interlocking with a projection below, thus preventing the alteration in temperature by the jar of the machine to which it is attached in displacing the damper.

j designates a plate or support secured in the wax pot *c* and provided at its lower end as at *k* with a guide for the thread which enters from the ball holder *l* and passes from the said ball holder and guide to the wax retarder, which is contrived to remove the superfluous wax from the thread, and keep the amount supplied thereto uniform. In this use a tension may be formed sufficient to control the tension round the regular tension wheel and prevent the thread thereon from its continual slipping on the wheel causing loose stitches in the sewing which make bunches in the channel to the shoe and an imperfect finish of the bottom where the leather is laid over the bunches thus caused. The wax retarder for its lower half in the present case consists of a plate *m* having a guide or recess *n* through which the thread passes. The spring *o* bears at its free end upon the thread face of the retarder, and upon the thread passing over it. The said spring is secured at its rear end upon the plate *j* by means of a screw *p* which passes through the base of the spring and into the plate, so that by turning said screw down harder or loosening it up upon the spring, the latter may be made to operate with greater or less retarding force upon the thread passing over the retarder *m*. Spring *o*, for a portion of its length, as for example, that marked *q* may be bent at substantially right angles to the portions marked *r* and *s*, so that the free end of the spring may pass without limitation up and down on the thread face of the retarder to accommodate itself to the proper retardation of the thread, or to different sizes or numbers of thread used. This operation of the spring is particularly important in wax requiring to be heated, as well as its location inside the wax tank. The difference in the use and the results of the use of cold liquid wax and wax liquefied by heat, being so great, necessitates the distinctions in the application of the retarder as herein explained. A stripper which may work well in cold liquid wax, may not work as well in heated wax. The object of the special location of the retarder inside the wax tank or its equivalent gives a hot retarder and enables both wax and thread to be used colder and with less damage to both, than with a cold retarder outside the wax tank for removing the superfluous wax.

It is to be noted that while the device is exceedingly simple in construction, it is entirely efficient for the purpose of retarding superfluous wax and creating an unvarying tension, and accommodating itself to any size of thread, as before explained. It is not necessary that the spring should be bent to the exact form shown in the drawings, since any other bending of the same whereby it may be allowed to yield both laterally and vertically may answer the purpose, and other changes may be made in the form and arrangement of parts constituting the invention without departing from the nature or spirit thereof. The attached end or base of the spring rests upon a narrow rounded raised seat *t* which makes the free end of the spring quite sensitive respecting its tension on the thread. The raised seat is provided with a laterally extending base *u* in which is arranged a screw *v* under the spring *o*, which screw may be adjusted so as that the spring may bear thereon under certain circumstances.

Having thus described my invention and explaining a way of using the same, I declare that what I claim is—

1. In a waxing device for sewing machines, the combination with the wax-pot, of a support arranged therein longitudinally of the length of the said pot, a thread-retarding plate carried by one end of the support, a spring having one end adjustably secured to the support, and its free end in engagement with the inner face of the retarding plate and a thread guide carried by the support and arranged diagonally opposite the thread retarding plate.

2. In a waxing device for sewing machines, the combination, with the wax-pot, of a vertical support arranged therein, a recessed thread-retarding plate carried by one end of the support, an irregularly bent spring adjustably secured near the opposite part of the support, and having its free end in engagement with the said retarding plate and a thread guide carried by the support and arranged diagonally opposite the thread retarding plate.

3. In a waxing device for sewing machines, the combination, with the wax-pot, of a vertical support having at one end a raised, rounded seat, and at its opposite end a recessed thread-retarding plate, a spring adjustably secured to the support, one end of the spring being in engagement with the said seat, and the opposite end in engagement with the said plate and a thread guide carried by the support and arranged diagonally opposite the thread retarding plate.

4. In a waxing device for sewing machines, the combination, with the wax-pot, of the support *j* arranged therein, the recessed thread-retarding plate *m*, the spring *o*, the raised seat *t*, upon which the spring bears at one end, and the holding screw *p*, and a thread guide *k* carried by the lower portion of the support, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of January, A. D. 1892.

JOHN B. MORGAN.

Witnesses:
ARTHUR W. CROSSLEY,
A. D. HARRISON.