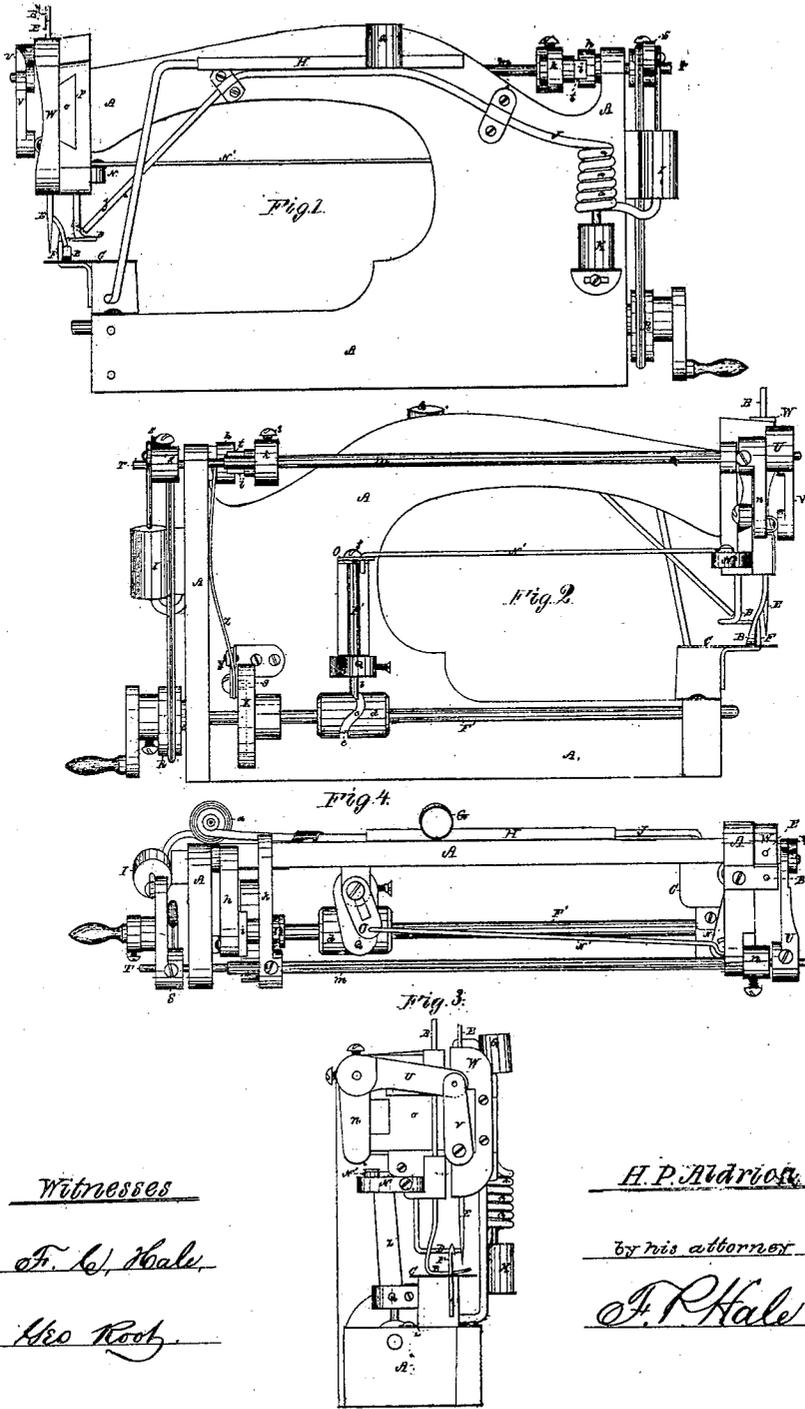


H. P. ALDRICH.  
WAXED THREAD SEWING MACHINE.

No. 113,962.

Patented Apr. 25, 1871.



Witnesses

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# United States Patent Office.

HOSEA P. ALDRICH, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 113,962, dated April 25, 1871.

## IMPROVEMENT IN WAXED-THREAD SEWING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all to whom these presents may come:

Be it known that I, HOSEA P. ALDRICH, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Waxed-Thread Sewing-Machines; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figures 1 and 2 denote side elevations of a wax-thread sewing-machine as provided with my invention;

Figure 3 is a front end elevation; and

Figure 4 a top view thereof.

One part of my invention has reference to that class of machines for sewing leather with a waxed thread, which employs an awl or pincher and a hooked needle, the awl being arranged above the table and the needle below the same, the material to be sewed being fed along by the awl.

The second part of my invention has reference and is adapted to any sewing-machine that uses a waxed thread.

The object of my invention is to remedy certain defects incident to wax-thread sewing-machines as heretofore constructed.

One serious difficulty heretofore experienced in all waxed-thread sewing-machines, using a "hard-wax" thread, has been that whenever it became necessary to stop the machine, whether for adjusting the work or otherwise, the wax upon that portion of the thread most remote from the wax-heating receptacle (such being that in immediate proximity to the hook of the needle) became so hardened as to seriously impede the operation of the needle when the work was next resumed, not only causing so great strain upon the needle as to injuriously bend and often break it, but producing breakage of the thread. To prevent this evil is the purpose of my air-heating and forcing apparatus, to be hereinafter described.

Another difficulty incident to many waxed-thread sewing-machines, in which the material is fed along by the awl or piercer, is that the lever operating the awl or awl-carrier has been so constructed and arranged as to produce so great friction and wear on the working parts of such lever as to soon throw the awl out of its true working path. By my construction of the lever and its arrangement upon a rocker-shaft, as hereinafter specified, a natural easy motion is imparted to such lever, whereby the least possible amount of friction and wear is secured.

Another defect found in sundry waxed-thread sewing-machines as heretofore constructed, in which the awl is employed as the feeding power, is that the awl enters the leather in a slanting direction and not perpendicular thereto, the result being that the leather so punctured is not acted on evenly, and that the top of the leather, moving faster than the under portion, became often more or less puckered. This is com-

pletely obviated by my invention, in which the awl is so arranged that its vertical and lateral movements are perfectly perpendicular to each other, so that in puncturing the leather and feeding it along the awl acts uniformly on all parts of the leather.

In the said drawing—

A denotes the frame of the machine;

B, the presser-foot;

C, the table or rest on which the leather is supported while being sewed;

D is the thread-guide;

E, the awl or piercer;

F, the hooked needle; and

F', the main driving-shaft of an ordinary wax-thread sewing-machine.

G is a wax receptacle, through which the thread passes in its passage to the needle.

H is a pipe for conducting steam to warm the presser-foot and the table, the same being fully described in Letters Patent as granted to myself and another on the 30th day of May, 1865. As such constitutes no part of my present invention no further description thereof is herein necessary.

In order to obviate the cooling or hardening of the wax on the thread intervening between the eye or hook of the needle and the wax receptacle, and thereby maintain it in its proper working consistency under all circumstances, I combine with the machine the following device:

I is an air-forcing pump, which is attached to any suitable part of the machine.

This pump has a pipe, J, leading from it, which extends along longitudinally of the machine, and has a series of coils, *a a*, &c., made in it, as shown in figs. 1 and 3, the said pipe terminating at its outer or lower end, near the working point of the awl and needle.

The piston-rod of the pump is attached to a rocker-arm, S, of the mechanism for giving the vertical movements to the awl, to be hereinafter described.

K is a lamp, which is so disposed that its flame shall come in immediate contact with the coils of the pipe J, whereby the air passing through the same shall be heated, and by the action of the pump be forced out of the end of the tube upon the thread adjacent thereto, and thus preserve the wax upon the same in a proper working condition. I would remark that I do not limit my invention to the employment of a lamp for heating the air in the pipe, as the same may be effected by a steam-pipe arranged in juxtaposition thereto.

The mechanism next to be described is that for operating the thread-guide and regulating its vibrations.

The said guide D is pivoted to the frame A, and has a horizontal rocker-arm, N, affixed to it near its upper end.

This arm, by means of a pitman, N', is connected

to an adjusting-arm or link, O, which in turn is connected with a vertical shaft, P, suitably supported in bearings projecting from the frame A, and having an arm, Q, affixed to its lower end, which carries a pin or stud, b, that works in a cam-groove, c, formed in a sleeve, d, disposed on the main driving-shaft.

The arm or link O has a slot made longitudinally in it, which enables the arm to be moved so as to form a leverage of greater or lesser length, in accordance with the greater or lesser movement of the thread-guide that may be desired, the arm being affixed to the shaft P and adjusted thereon by means of a set-screw, f.

The mechanism for giving the vertical movements to the awl will next be described.

R is an eccentric disposed upon the main driving-shaft, as seen in figs. 1 and 2, the upper end of the rod of such eccentric being pivoted to the rocker-arm S, to which the piston-rod of the pump is pivoted.

The said arm S is disposed upon one end of a long horizontal rocker-shaft, T, which is supported in bearings in the frame A, as seen in figs. 2 and 4.

This shaft carries on its opposite end a short rocker-arm, U, to whose inner end the awl-carrier or arm V is pivoted.

The awl E, affixed to a projection from the arm V, extends through a block, W, and slides freely up and down within the same, being guided in its vertical movements thereby. By revolving the main driving-shaft the proper vertical movements of the awl will be produced by means of the mechanism just described.

The next portion of my invention to be described is the mechanism for giving to the awl its horizontal reciprocations for feeding the material along while being sewed.

X is a wheel affixed upon the main driving-shaft, the same having an eccentric groove cut in one face thereof, in which a stud, g, carried by a vibratory or rocker-arm, Y, pivoted to the frame, as seen in fig. 2, works.

Z is a pitman, one end of which is connected with the arm Y, while its other end is pivoted to a grooved arm, h, one end of which is pivoted to the frame A.

i is a sliding block or wedge which works in the groove t in the said arm, and is connected to another grooved or slotted arm, k, by means of a set-screw, l.

The said arm k is affixed to one end of a long hollow rocker-shaft or sleeve, m, and is made adjustable thereon by means of a set-screw, s, the said sleeve enveloping the rocker-shaft T, hereinbefore mentioned.

n is an arm, which is affixed to the opposite end of the said hollow shaft, the lower end of such arm being pivoted to a dovetailed slider, o, which slides in a correspondingly-shaped chamber, p, made in the frame A and in a plane parallel with the table C. To the outer end of the slider o the head-block W, through which the shank of the awl slides, is affixed. By this connection of the awl with the slider o the awl receives its lateral reciprocations in accordance therewith.

The mechanism for regulating the horizontal movements of the awl or the length of the stitches consists of the said grooved arm h, the sliding wedge i, the slotted arm k, and the set-screw l. To do this the wedge is to be moved in its groove either toward or away from the center of motion of the arm k, as circumstances may require; the set-screw being fixed in its proper position, determines the degree of vibration of the hollow rocker-shaft T and the lever n, and, consequently, the movement of the slider o, which moves the awl horizontally, and thereby regulates the length of the stitch.

Having described my invention,

What I claim is as follows:

1. The combination of an air-heating and forcing apparatus with a wax-thread sewing-machine, substantially as and for the purpose set forth.

2. The mechanism above described for operating the thread-guide, the same consisting of rocker-arm N, the pitman N', the arm O, shaft P', arm Q, and cam d c, the whole being arranged and actuated by the driving-shaft, as set forth.

3. The link o, formed and applied to the shaft P' to adjust the reciprocating movement of the thread-guide.

4. The mechanism, as described, for giving to the awl its horizontal movements, the same consisting of the slider o and its block W, arm n, sleeve m, the compound levers or arms k and h, formed and connected as specified, pitman Z, arm Y, cam-wheel X, and stud g, the whole being arranged and actuated by the driving-shaft, substantially as set forth.

5. In an organized sewing-machine, the combination of the mechanism above described for producing the vertical reciprocation of the awl with that for effecting the horizontal movements thereof, as and for the purpose set forth.

HOSEA P. ALDRICH.

Witnesses:

F. P. HALE,

F. C. HALE.