(No Model.) 2 Sheets—Sheet 1.

S. W. WARDWELL, Jr.

WAX THREAD SEWING MACHINE.

No. 270,710. Patented Jan. 16, 1883.

Fig. 1.

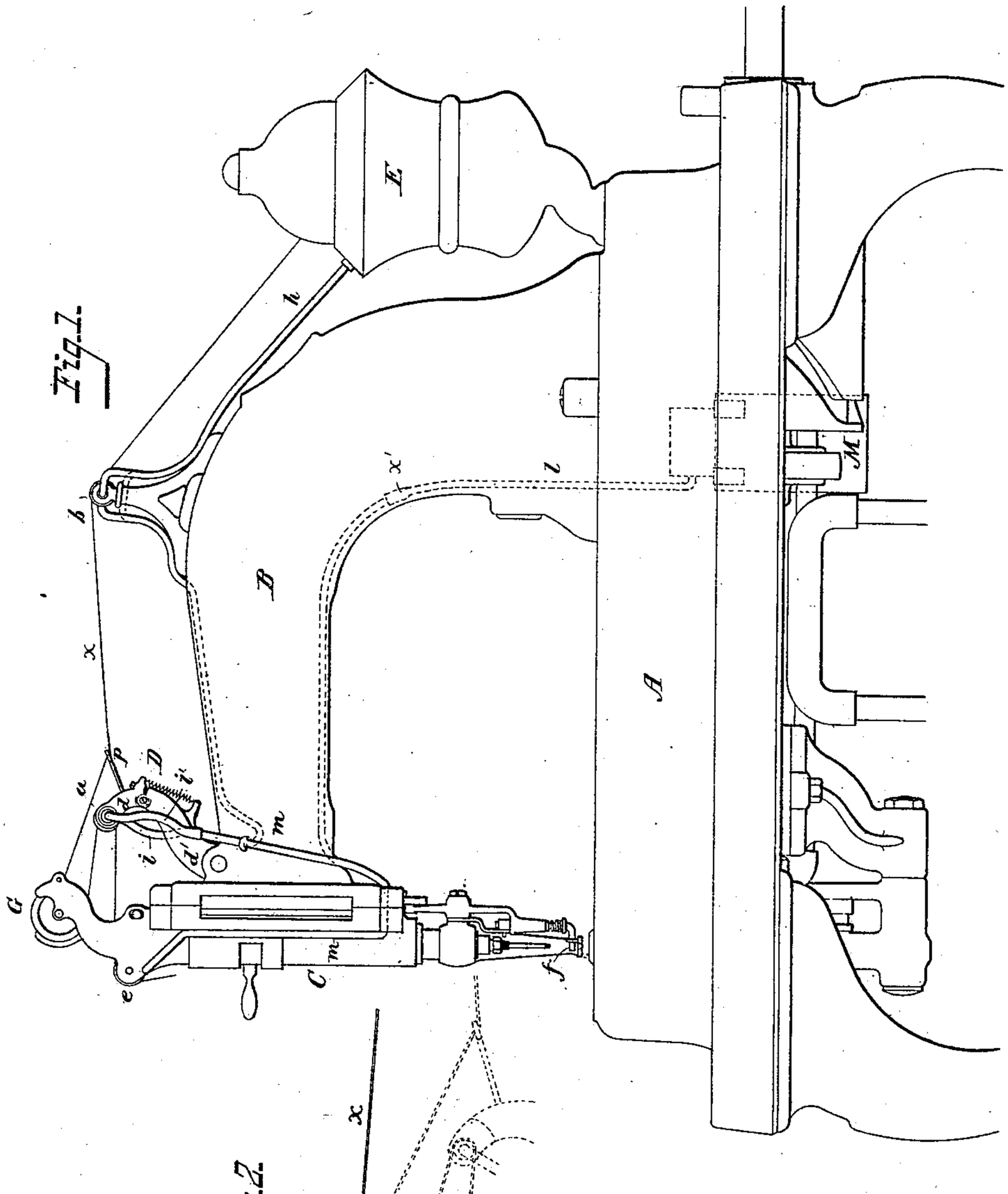

Fig. 2.

Attest:
Courtney L. Cooper
H. C. Fairmann.

Inventor.
S. W. Wardwell Jr.
By his attorney
Charles E. Foster

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

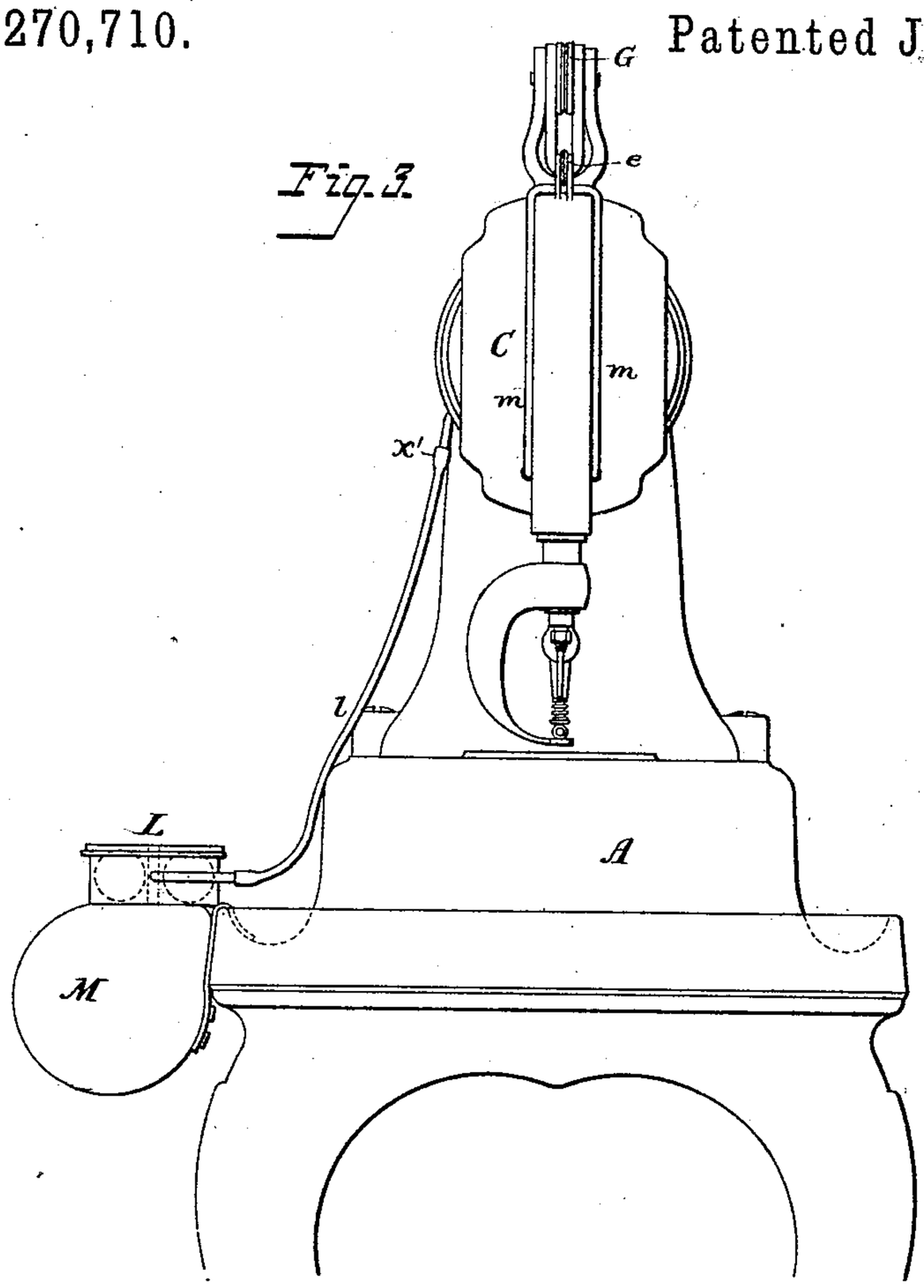
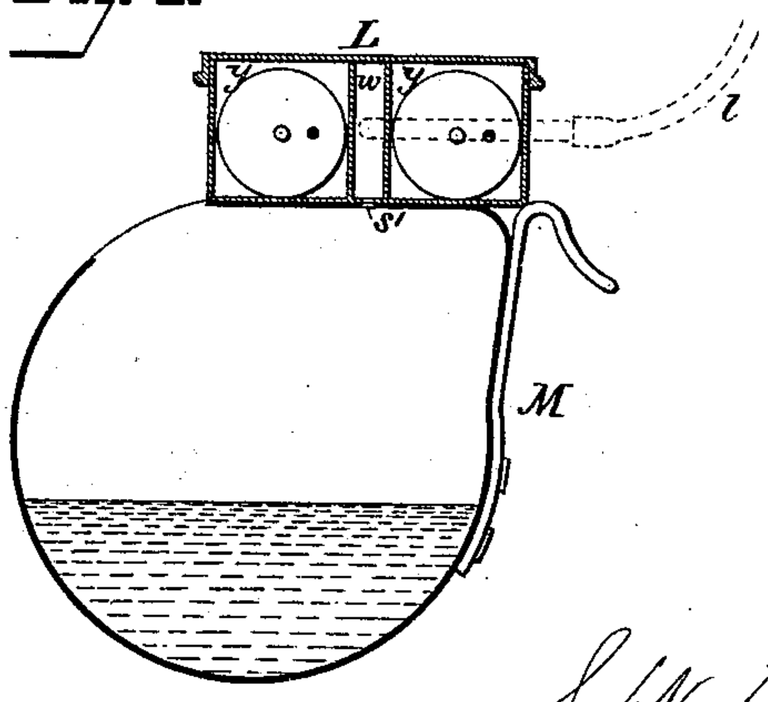


Fig. 4.



Attest:
Courtney A. Cooper
F. E. Tansmann.

Inventor.
S. W. Wardwell Jr.
By his attorney
Charles E. Foster

UNITED STATES PATENT OFFICE.

SIMON W. WARDWELL, JR., OF WOONSOCKET, RHODE ISLAND.

WAX-THREAD SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 270,710, dated January 16, 1883.

Application filed May 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, Jr., a resident of Woonsocket, Providence county, Rhode Island, have invented an Improved Wax-Thread Sewing-Machine, of which the following is a specification.

My invention relates mainly to that class of sewing-machines in which waxed threads are employed; and it consists in means whereby to draw the loop positively to its position in the material, and yet maintain the thread taut, should it be released at any time.

The invention further consists in means for heating the thread.

In the drawings, Figure 1 is a side elevation of a wax-thread sewing-machine illustrating my improvements. Fig. 2 is a diagram illustrating the operation of the take-up. Fig. 3 is a front elevation of sufficient of the machine to show my improvements, and Fig. 4 is a detached sectional view of the bobbin-heating case.

My invention is intended to be applied to any of the usual forms of wax-thread sewing-machines, that illustrated in the drawings being somewhat similar to the machine patented to me August 12, 1879, A being the base; B, the overhanging arm; C, the head; D, the take-up lever, carrying a grooved pulley, *a*; *b*, a guide-pulley on the arm B; E, the wax-pot, which is hollow and receives steam from a heater, as in the aforesaid patented machine; *e*, the guide-pulley over which the thread passes to the needle, and G the pulley, which is clamped as the upper thread is drawn back.

In this class of sewing-machines (in which the needle-thread is drawn upward by the action of the take-up lever while clamped between the lever and the bobbin, so as to draw all the loops positively to the same extent in the fabric) variations will sometimes occur from the slackening of the thread by its slipping from the feeder *f*, or otherwise. To overcome this defect, I construct the take-up lever D in two sections, *d d'*, pivoted together, and provide the same with a spring, *s*, which tends to throw back the upper section, and with a set-screw, *t*, which limits the forward movement of said section. The outer section, *d*, carries the friction-pulley *a*, round which the needle-thread *x* passes on its way from the clamp-pulley G to the guide-pulley *e*, at the front of the head. As the take-up moves back, the section *d*, bearing upon the head of the screw *t*, is held rigidly in its place and draws up the thread *x*, held by the pulley G, until the loop is at the desired point in the material, the take-up being practically rigid and producing the same effect upon all the loops. If the take-up were in one piece and the threads should be released by slipping from the feeder *f*, or from any other cause, the thread would become slack and might lap around the needle or otherwise interfere with the operations of the machine. By the construction shown this is avoided, as the spring *s*, in such case, will tilt back the section *d*, so as to at once take up any slack which there may be after the take-up reaches the limit of its backward movement.

The forward limit of the movement of the section *d* may be regulated by adjusting the screw *t*, which will thus determine the amount of thread drawn up and the position of the loop in the material.

Any other suitable adjusting or regulating device may be substituted for the screw *t*, and a flat spring arranged to depress the heel of the section *d* may be substituted for the spiral spring shown.

To prevent the thread from escaping from the pulley G should it become slack between the pulley and the pot, I may use an arm, *p*, secured to the section *d*, and provided with an eye, through which the thread passes, as shown. When the take-up is in its forward position the thread can move forward without being deflected, when the take-up moves back the arm *p*, bends the thread, and thus takes up any slack.

In operating with machines of this kind it is found that in very cold weather, or when the rooms are not sufficiently warmed, the thread in its passage from the wax-pot to the needle becomes hard, stiff, and wiry, and liable to knot, cut at the eye of the needle or in the leather, and is generally difficult to manipulate. It is also found that the thread in the bobbins becomes hard and difficult to work when the bobbins are removed from the shuttle for any length of time. To overcome these difficulties I have provided means for warming every part of the machine with which the thread is brought in contact and for heating the thread while in front of the head and just before passing to

the needle. Different means of doing this may be employed. I prefer to use small steam or hot-water pipes, the arrangement shown being effective. The pipe *h* communicates with the steam-space of the wax-pot and receives steam therefrom. It then extends to the guide-pulley *b*, in close proximity thereto, or, preferably, through the hollow axis of the latter, along the arm near to the pivot of the lever D, where it is either provided with a joint or is connected with a flexible section, *i*, which communicates with the hollow spindle of the pulley *a*, a second flexible section, *i'*, leading to the end of a metal section, *m*, passing through the head C, near the lower end thereof. The pipe *m* extends upward in front of the head and adjacent to the path traversed by the thread and beneath the pulley *e*, and then downward, through the head and back along the arm to any desired point, *x'*.

To the side of the base A, or at any other desired point, is suspended permanently or detachably a metal case, L, having one or more receptacles, *y y*, large enough to receive the filled shuttle-bobbins, the case being divided to form a steam-space, *w*, from which a rubber pipe, *l*, leads to the end of the pipe *m*. An opening, *s'*, in the bottom of the case permits steam or moisture to escape from the chamber *w*, and a pan or tray, M, may be arranged below to collect the drip. This tray may form part of the bobbin-heating case, as shown, or may be detachable therefrom.

It will be apparent that the bearings may be heated by steam from any source or by other hot fluids.

I claim—

1. The combination, with a sewing-machine, and with its thread-clamp, of a vibrating take-up lever in two sections, pivoted together, connected by a spring and provided with an adjusting device, substantially as set forth.

2. The arm *p*, provided with an eye arranged upon the take-up D, substantially as and for the purpose set forth.

3. The combination of the hot-fluid-conducting pipe leading to the front of the machine and flexible conducting-tubes leading to and from the roller on the thread take-up to said hot-fluid pipe, substantially as specified.

4. The combination, with a sewing-machine, of a box adapted to receive the bobbins, and having a chamber communicating with the pipe conveying heating-fluid, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SIMON W. WARDWELL, JR.

Witnesses:

FRED H. BISHOP,

G. EDWARD BISHOP.