2 Sheets--Sheet 1.

E. E. BEAN.

Wax-Thread Sewing-Machines.

No. 128,008. Patented June 18, 1872.

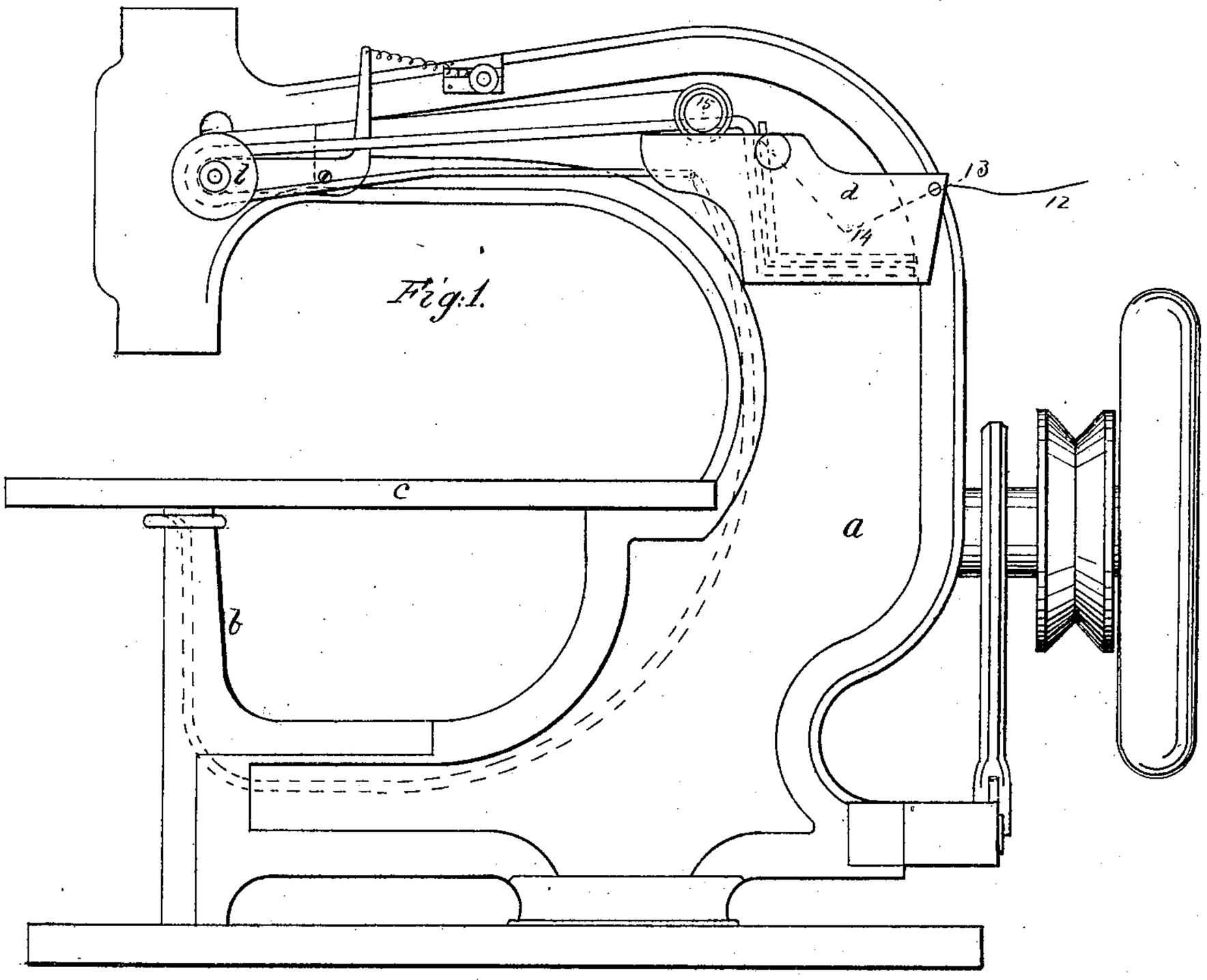

Fig. 1.

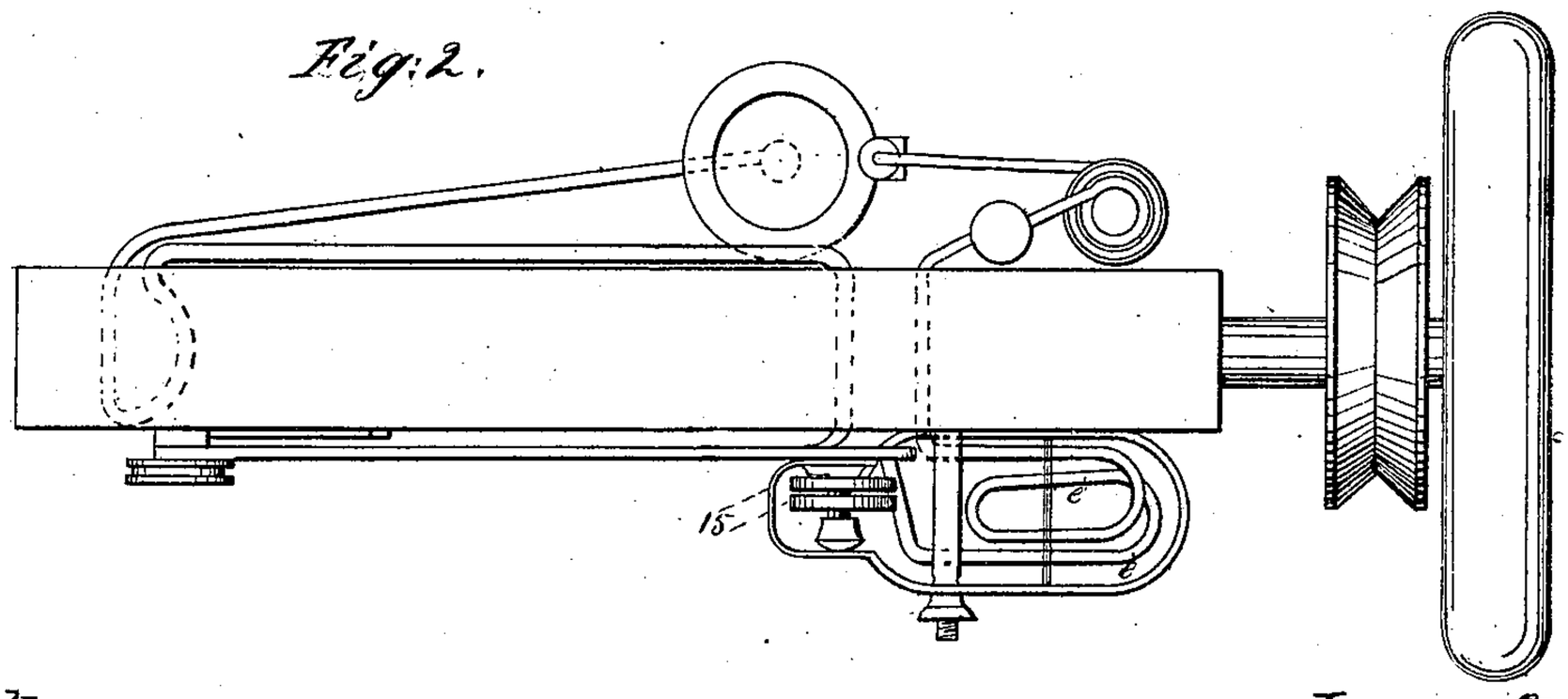

Fig. 2.

Witnesses

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2 Sheets--Sheet 2.

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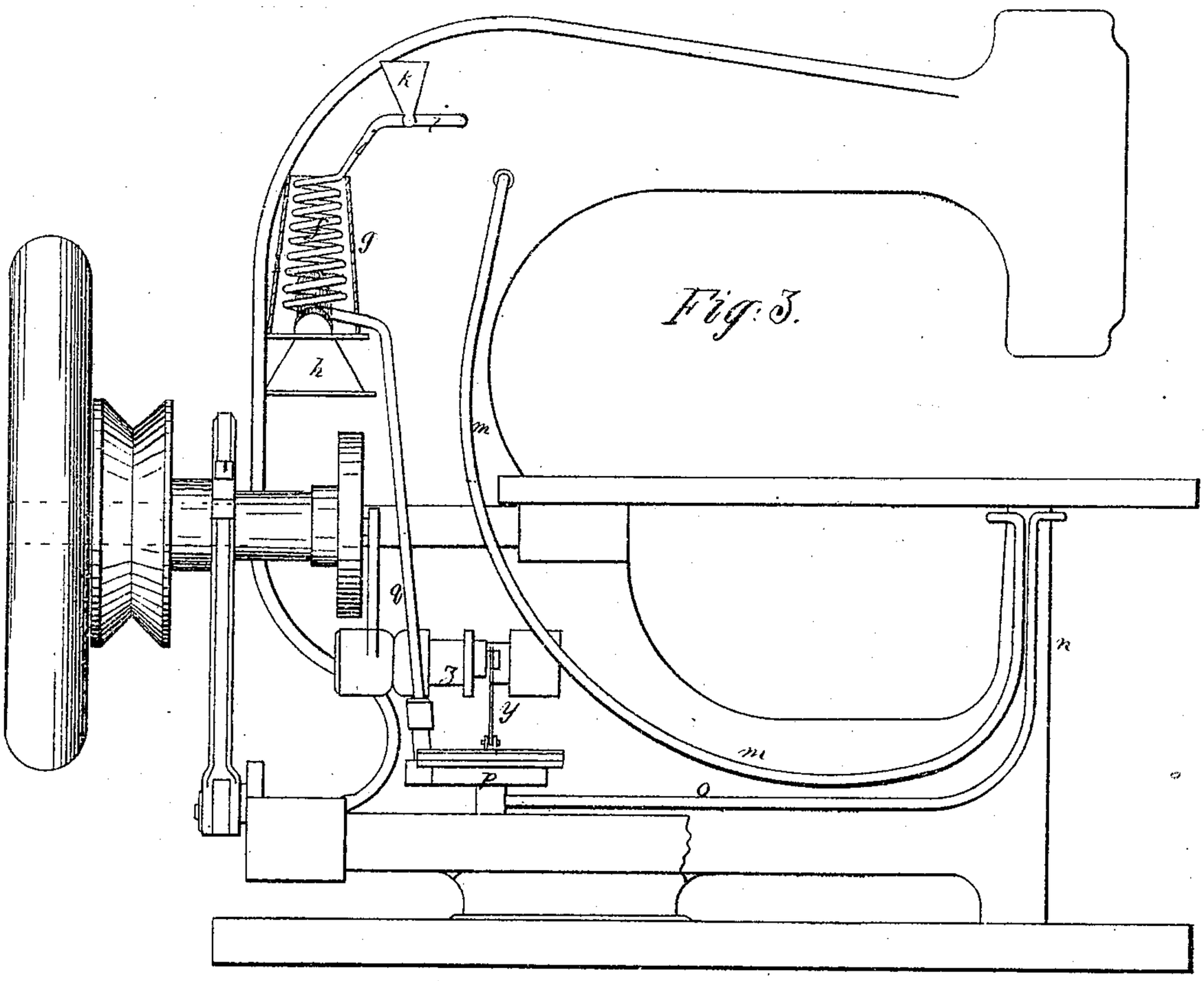

Fig: 3.

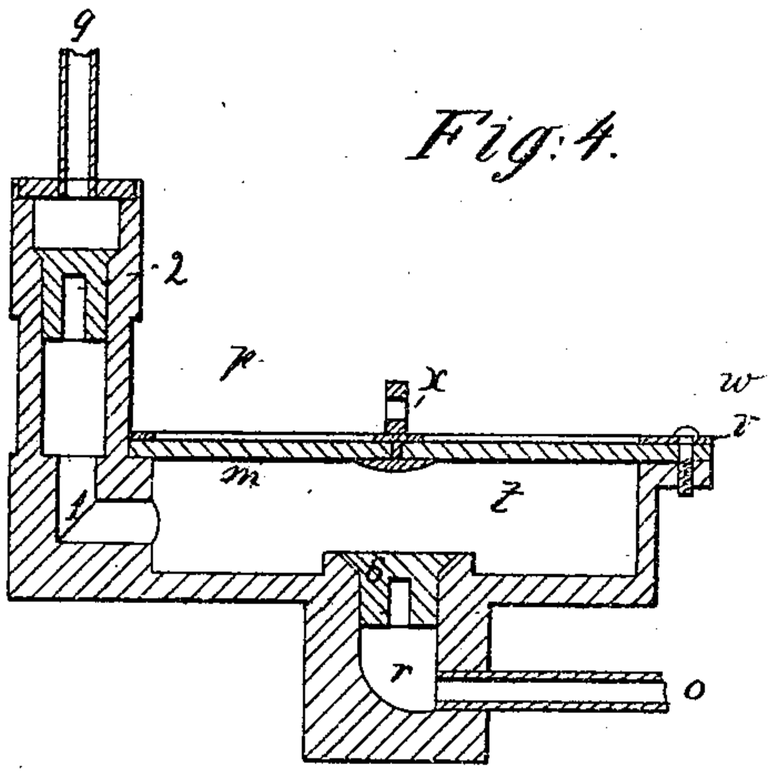

Fig: 4.

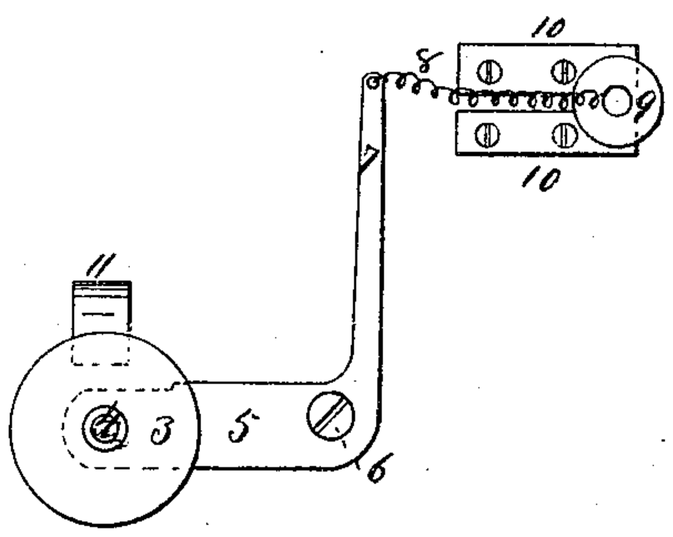

Fig: 5.

Witnesses

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128,008

UNITED STATES PATENT OFFICE.

EDWIN E. BEAN, OF BOSTON, MASS., ASSIGNOR TO THE CONSOLIDATED WAX-THREAD SEWING-MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN WAX-THREAD SEWING-MACHINES.

Specification forming part of Letters Patent No. 128,008, dated June 18, 1872.

I, EDWIN E. BEAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements on Wax-Thread Sewing-Machines, of which the following is a specification:

Nature and Objects of the Invention.

The nature of my invention relates to improvements on wax-thread sewing-machines, consisting in the employment of a series of pipes, through which hot water is made to circulate for the purpose of keeping the hard wax used on such machines in a liquid state. The water is heated by means of a lamp placed under a coiled pipe, and the water is kept in continuous circulation by means of a pump operated from any of the moving parts of the machine. The water is conducted through pipes in the box containing the wax, by which arrangement the wax is kept in a liquid state, so as to adhere easily to the thread that is conducted through the wax. The pipes containing the heated water are also conducted to the tension-roller and to the post close under the table, so as to keep the wax-thread soft and pliable during the whole operation of the sewing-machine, as will now be shown and described.

On the drawing, Figure 1 is a front elevation of a sewing-machine with my improvements attached thereto. Fig. 2 is a plan of the same. Fig. 3 is a rear view of said machine. Fig. 4 is an enlarged central longitudinal section of the pump; and Fig. 5 is an enlarged side view of the tension arrangement.

Similar letters refer to similar parts wherever they occur on the drawing.

a is the frame of a wax-thread machine. *b* is the post, and *c* the table. A box, *d*, containing the wax, is secured to the frame *a* in a suitable way, as shown in Figs. 1 and 2. A coiled pipe, *e*, is placed in the lower part of the box *d*, through which the heated water is made to pass from the heater *f*. The heater *f* is placed on the rear of the frame *a*, or in any suitable place, according to the construction and shape of the sewing-machine, and consists in a coiled pipe surrounded by a chimney, *g*, shown in dotted lines on Fig. 3. A suitable lamp, *h*, is placed under the coiled pipe *f* in such a manner that the burner of the said lamp projects in the lower part of the coil *f*. A candle or a gas-burner may be used to equal advantage instead of the lamp *h*, where circumstances so admit. The upper part of the heater *f* is connected to a pipe, *i*, to which a funnel, *k*, is attached, for the purpose of filling the pipes with water as it evaporates. The pipe *i* projects through the frame *a* and connects with the coiled pipe *e* in the box *d*. After the pipe *e* leaves the box *d* it is carried around the shaft for the tension-roller *l*, as shown in Fig. 1, for the purpose of keeping the wax-thread pliable and soft when passing over or around the said tension-roller *l*. After the pipes have been carried around the shaft for the tension-roller *l* it is carried back toward the rear of the machine, where it is bent downward, in a manner as shown at *m m* on Fig. 3, and conducted to the upper part of the post *n*, where the pipe surrounds the said post for the purpose of keeping the wax-thread soft and pliable, during the sewing of the same, in the material operated upon. After the pipe *m* has passed around the post *n* it is carried back as the pipe *o* to the pump *p*, shown on Fig. 3. From the pump *p* the water is pressed through the pipe *q* in the coiled heater *f*, from which it is again conducted to the respective parts of the machine in a manner as shown and for the purpose herein described. The pump *p* is shown in an enlarged section in Fig. 4, on which *o* is the supply-pipe, leading in the valve-chamber *r*, covered by the valve *s*, as shown. *t* is a chamber covered by an elastic diaphragm, *u*, that is held closely to the flange of the chamber *t* by means of the ring *v* and screws *w*. In the center of the diaphragm *u* is an eye, *x*, attached, to which the connecting-rod *y* is hinged, as shown in Fig. 3. The link *y* is attached in its other end to any suitable moving part, Z, or its equivalent on the machine, where the proper throw can be obtained for the link *y*. A space, 1, leads from the chamber *t* and is covered by the valve 2, as shown in Fig. 4, and the pipe *q* connects with the upper part of the pipe 1.

The operation of the pump *p* is as follows: As the diaphragm *u* is raised upward in the center it creates a vacuum in the chamber *t*, when the valve *s* is opened automatically, thus allowing the liquid from the pipe *o* to enter the chamber *t* freely; and when the diaphragm *u* is pressed down it forces the liquid up through the pipe

1 and valve 2 in the pipe *q* leading in the heater *f*. In this manner the water is continually entering the pump *p* from the pipe *o* and pressed upward, through the pipe *q*, to the heater *f*. It is not necessary to use this kind of a pump, as other kinds of pumps may be constructed to work my invention to equal advantage.

My arrangement for regulating the proper tension of the thread used is shown in enlarged detail on Fig. 5. On that figure, 3 is the tension-roller, movable around the axis 4, that is rigidly secured to the knee-lever 5, that is made to swing slightly on the screw or pin 6 attached to the frame of the sewing-machine. The upper end 7 of the knee-lever 5 is connected by means of a spiral spring, 8, to an adjustable set-screw, *g*, adjustable in the slotted bearings 10 10, shown on Fig. 5. A stationary piece, 11, is attached to the frame of the sewing-machine, and the surface of the roller 3 is thus pressed against the piece 11 by the action of the spiral spring 8 on the knee-lever 5 7. By simply moving the set-screw 9 in or out in the slotted bearings 10 10 the tension on the roller 3 may be decreased or increased, as may be required.

The wax-thread 12 enters the box *d* through a small hole, 13, shown on Fig. 1, from which it is carried, under the guide 14, through the melted wax, to the wipers 15 15, shown on Figs. 1 and 2. From the wipers 15 15 the wax-thread is conducted to the tension-roller 3 in the usual way, and from the tension-roller to the thread-carrier, as usual.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

A pump and connected pipe combined, substantially as described, with the frame of a sewing-machine, for the purpose of circulating water through such pipes to the different parts of the machine, as and for the purpose set forth.

EDWIN E. BEAN.

Witnesses:

ALBAN ANDRÉN,

WM. N. HUTCHINSON.