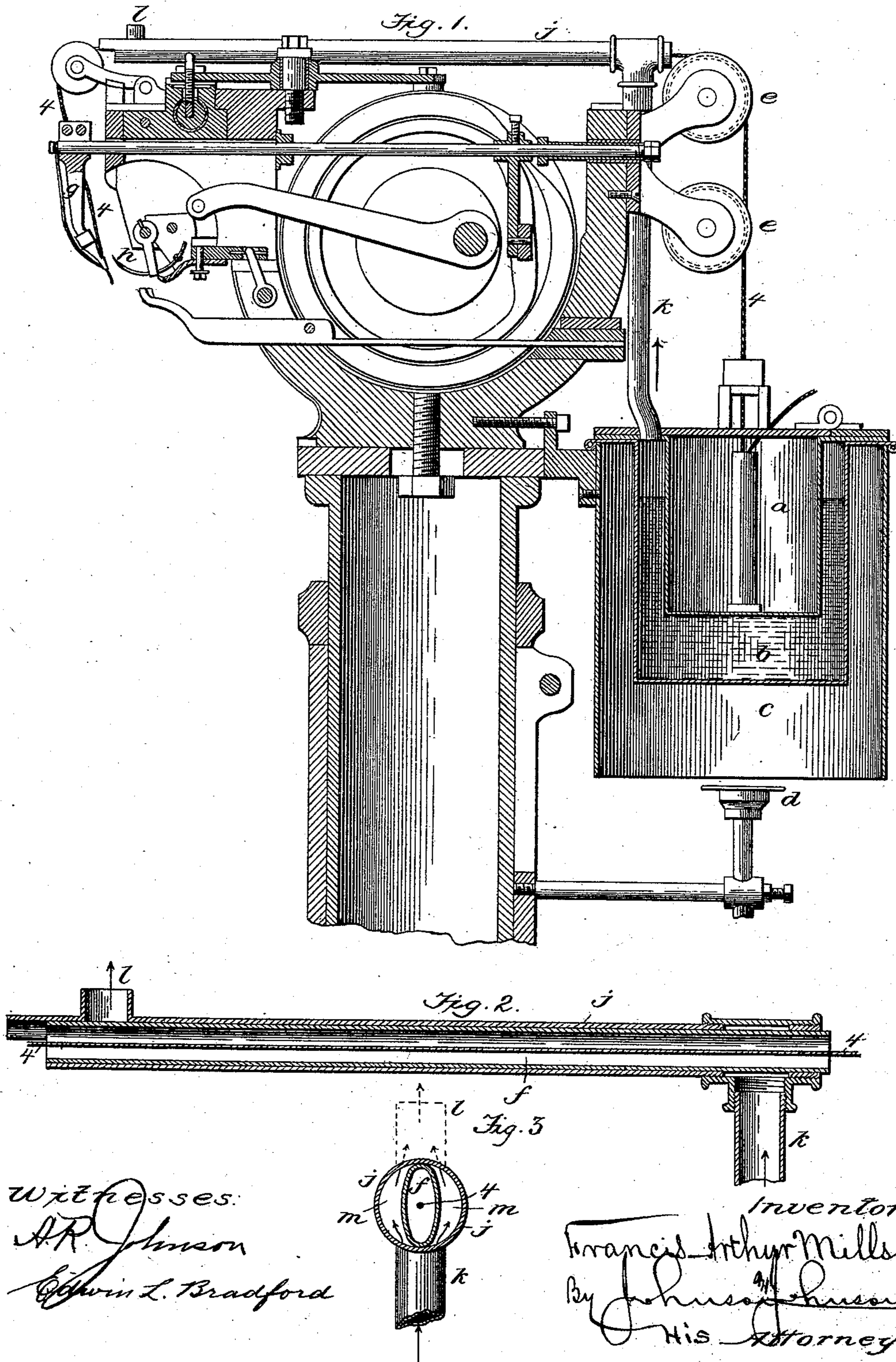


(No Model.)

F. A. MILLS.
WAX THREAD HEATING DEVICE FOR SEWING MACHINES.
No. 524,340. Patented Aug. 14, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANCIS ARTHUR MILLS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF TO JAMES MUNDELL, OF SAME PLACE.

WAX-THREAD-HEATING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 524,340, dated August 14, 1894.

Application filed February 23, 1894. Serial No. 501,205. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS ARTHUR MILLS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Wax-Thread-Heating Devices for Sewing-Machines, of which the following is a specification.

In shoe sewing machines using waxed thread, provisions have been made for heating the thread for the purpose of keeping it soft and pliable as it is fed to the needle. In such provisions the waxed thread has been conducted to the needle through tubes and subjected therein to the heat of a hot air-draft direct from the heating chamber of the waxing device. This hot air-draft I have found parches and stiffens the thread and hardens it, and is objectionable for the reason that such effect tends to obstruct the feed of the thread through the eye of the needle and increases the resistance of the thread in the work. The entire machine has also been heated to keep the waxed thread hot, but this is still more objectionable as it increases the wear of the working parts, burns out the oil of the lubricated parts and subjects the thread to a hardening action of the hot parts with which it may be in contact in its passage from the wax-pot to the needle. My improvement avoids these objections; and my said improvement consists in a construction of the thread conduit whereby steam generated in the water vessel used in heating the wax-pot, is utilized for heating such conduit externally and thereby heat the waxed thread by the radiation of heat within the tube through which the waxed thread passes to the needle, keeping the thread hot and pliable and the machine comparatively cool.

The accompanying drawings represent in Figure 1 a vertical section of so much of a shoe sewing machine as illustrates the application thereto of my improvement for heating thread by steam. Fig. 2 shows the steam heated thread conduit in longitudinal section. Fig. 3 is a cross section of such conduit.

The wax-pot I prefer to arrange at the rear side of the machine and it may be of any suitable construction.

As shown the pot *a* for containing the wax depends within a water chamber *b*, which is heated by an inclosing drum *c* and a burner *d* at the under open end of said drum. The thread *4* is conducted from the wax-pot to the tension device *e* from which it passes into and through the heating conduit *f* to looper *g* and thence to the needle *h*. The thread conduit *f* is open at both ends and is arranged horizontally at the top of the machine so as to receive the thread from the tension device and deliver it to the looper-arm. This thread conduit is inclosed by a jacket *j* which connects by a vertical pipe *k* with the top of the water-pot *b* so that the steam generated in the latter will constantly fill this jacket and pass out through an opening *l* at the front end of the jacket and thereby heat the thread conduit externally which heats the waxed thread therein by radiation.

I prefer to make the thread conduit of an oval form in cross-section and place it with the oval standing vertical so as to divide the steam jacket into two longitudinal side spaces *m, m*, into which the steam passes from the vertical tube, as seen in Fig. 3. This construction gives the advantage of confining the steam in contact with the opposite oval walls of the thread conduit, and provides room for the slight vertical vibration of the thread within the conduit caused by the action of the looper-arm in drawing the thread through it from the tension device, preventing thereby as much as possible the contact of the thread with the hot walls.

It will be understood that in using steam a sufficient degree of heat is radiated through the walls of the conduit to give a uniform heat to the waxed thread therein. It will also be understood that I make no claim herein to any part or combination of parts of the sewing machine illustrated in the drawings, and that the construction whereby steam is used as the heating medium for the thread may be applied to machines of different constructions.

I claim as my improvement—

1. In a shoe sewing machine using waxed thread, a conduit for the thread having an inclosing jacket or tube, in combination with a

wax-pot having a water-chamber, a tube connecting the latter with said jacket, and means for heating said chamber whereby steam generated in the water chamber, used in heating
5 the wax-pot, may be utilized for heating the thread-conduit, for the purpose stated.

2. In a shoe sewing machine using waxed thread, a conduit for the thread having an oval form in cross-section, in combination,

with an inclosing jacket divided longitudi- 10
nally by said oval thread conduit, a water heating chamber and a tube connecting the latter with longitudinal divisions of the jacket as described.

FRANCIS ARTHUR MILLS.

Witnesses:

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