

UNITED STATES PATENT OFFICE.

BENJAMIN F. LANDIS, OF ST. JOSEPH, MISSOURI.

WAX-HEATER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 328,233, dated October 13, 1885.

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To all whom it may concern:

Be it known that I, BENJAMIN F. LANDIS, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Wax - Heaters for Sewing-Machines, of which the following is a description.

This invention relates to that class of devices used for heating the wax in waxed-thread sewing-machines; and it has for its object to keep the wax-fluid in the reservoir, to cause the same to flow of its own weight into the needle-waxing cup, and to maintain an equal moist heat in the shuttle-race. It has been common to heat the shuttle-race by discharging steam directly into it; but this method has the disadvantage of maintaining only a very low degree of heat, something below that of boiling water, and old wax in cold weather does not become very soft at that heat. Furthermore, the steam condenses rapidly on the machine and rusts it and soils the work. Dry heat has also been used in the shuttle-race, but this is likely to do as much damage by overheating as the steam does by underheating, for while steam cannot be over 212° Fahrenheit in the open air, the flame of a gas-burner may be 800°, and it is very easy to scorch the thread by dry heat, so that it has no strength. To avoid these objections and to utilize the fuel, I discharge the waste steam from my wax-heater into the dry air of the combustion-chamber, thus partially dampening the air and saving what heat there is left in the steam. Then I conduct this partially-saturated air into the shuttle-race. The air, thus partially saturated with moisture, may be readily maintained at from 300° to 400° of heat, which is far too high to allow moisture to precipitate on the machine, and yet is very different in its effect upon a waxed thread from dry heat, leaving the thread full strength, equally pliable, and more easily worked.

To this end my invention consists in the construction and combination of parts forming a wax-heater and the method of using the same, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, part in section, of a portion of a sewing-machine showing my wax-heater. Fig. 2 is a plan view of the same, and Fig. 3 is a transverse vertical section at *x*, Fig. 1. Fig. 4 is a plan view of the wax-reservoir and heating device.

A represents that portion of a sewing-machine which supports the plate B, and in which is the shuttle-race C.

D is the needle, which reciprocates vertically, as usual, and to the end of which I wish to supply the wax to be drawn up into the leather at each return-stroke, thereby saturating the thread in each stitch-hole.

E is the wax-cup into which the needle dips.

F is a pipe to carry wax from the reservoir G to the said cup, which is a part of the said pipe.

H and I represent adjusting-screws, of which there may be any suitable number to hold the whole wax heating and supplying device, hung loosely to the sewing-machine thereby.

A portion of the wax-reservoir G' is shaped to rise beside the shuttle-race to form a fountain-head, from which wax may flow by gravity through the pipe F into the cup E. The flow may be increased or decreased by raising or lowering the reservoir by the screws H, and the amount of dip of the needle into the wax may be regulated by the screws I.

J is the boiler or hot-water chamber, and K the combustion-chamber. *a* is the right-hand wall of the wax-reservoir; but both the boiler and the combustion-chamber extend to the wall *b*.

c is a flue, extending from the combustion-chamber up through or beside the boiler to the lower side of the iron forming the shuttle-race. The flue extends beneath the shuttle-race from the wall *b* to *e*, and heats the metal body of the race.

f is a small hole through the floor of the shuttle-race to admit air from the flue.

L is a steam-pipe to relieve the boiler. This pipe passes through the length of the straight portion of the pipe F to keep the wax therein warm, thence out through the elbow *g*, and down into the flue *c* of the combustion-chamber, where it points up in the desired direction of the current of air.

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This construction accomplishes four purposes. First and second, as before stated, it relieves the boiler of its steam and heats the wax in pipe F; thirdly, it discharges this steam, which is otherwise wasted, into the combustion-chamber, thereby saving the heat contained in the steam and saturating the heated air with moisture to equalize and mellow its action on the thread, as stated in the objects set forth; and, lastly, by this pipe being pointed upward, it establishes a current in the flue c in the proper direction.

Heat may be produced in the combustion-chamber by any usual process, such as by the gas-jets P. If the heat be increased, the water will boil faster and more steam will be injected into the flue, thereby dampening the heat more and preventing its injurious effect. If there is too little heat to produce steam, it may safely be used dry on the thread. Therefore the use of steam becomes a self-regulating heat-controller.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a sewing-machine having a shuttle-race and a needle adapted to reciprocate past the shuttle-race above and below it, of a wax-reservoir hung bodily lower than the bottom of the shuttle-race, means for adjusting it higher or lower, a cup below the shuttle-race in the path of the needle, and a pipe connecting the said cup with the reservoir, as and for the purpose specified.

2. The combination, with a sewing-machine having a shuttle-race and a needle, of a wax-reservoir, a wax-cup in the path of the needle, a pipe connecting the cup with the reservoir, a water-boiler beneath the reservoir, a combustion-chamber beneath the boiler, and adjusting-screws attaching the whole of the said device to the sewing-machine, substantially as described.

3. The combination of a sewing-machine shuttle-race, a needle, and a wax-cup therefor, a combustion-chamber beneath the shuttle-race, and a broad flue therefor, the opening of which is along and against the under side of the shuttle-race at both sides of the needle.

4. The combination of a sewing-machine shuttle-race, a needle, a wax-cup therefor, a combustion-chamber beneath the shuttle-race, having a broad flue terminating against the under side of the shuttle-race, a boiler, and a steam-discharge pipe therefor terminating in the said flue beneath the shuttle-race, substantially as shown and described.

5. The combination, with a sewing-machine having a shuttle-race and needle and a wax-supplying device, of means, substantially as described, for supplying mingled hot air and steam to the shuttle-race for the purpose specified.

BENJAMIN F. LANDIS.

Witnesses:

W. X. STEVENS,
 SOLON C. KEMON.