Jan. 12, 1932. A. F. CARLSON 1,841,010

THREAD WAXING DEVICE

Filed July 12, 1929

Fig. 1.

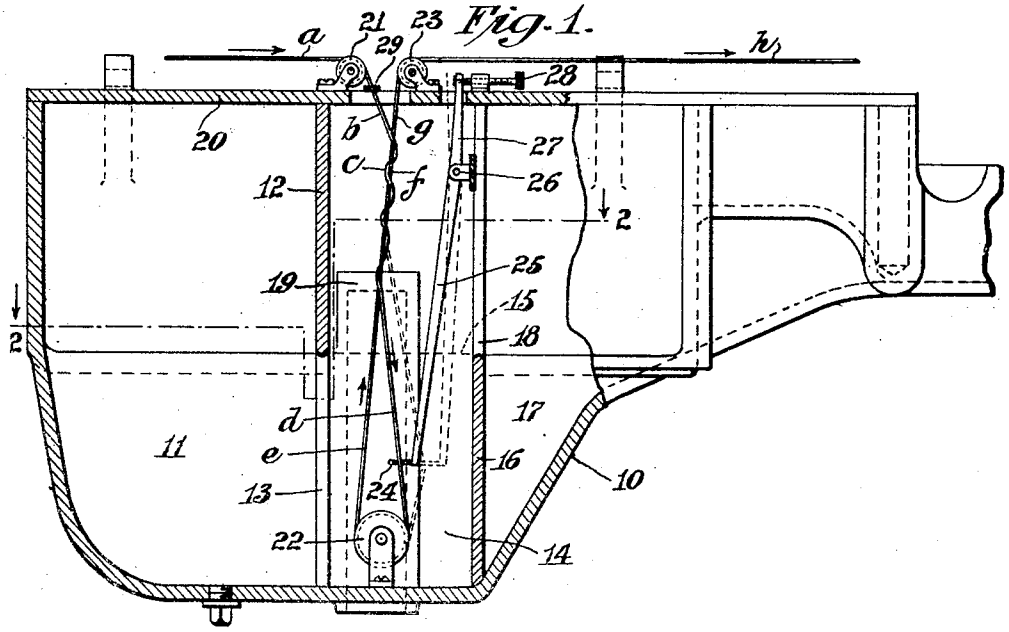


Fig. 2.

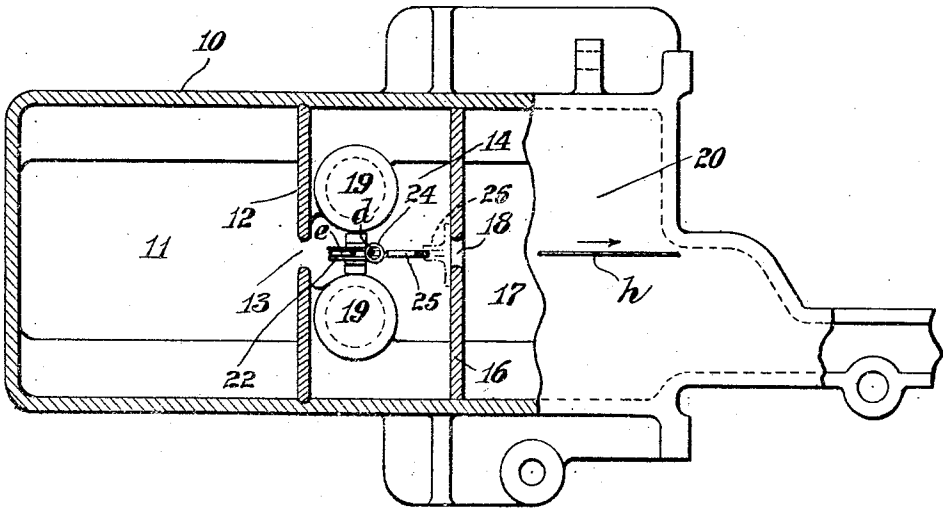
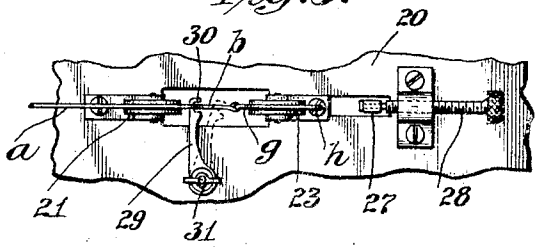


Fig. 3.



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UNITED STATES PATENT OFFICE

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THREAD WAXING DEVICE

Application filed July 12, 1929. Serial No. 377,674.

This invention is a novel thread waxing device, being adapted particularly for use with wax thread sewing machines, such for example as the Reece shoe stitching machine, of which an instance is illustrated in Patent Number 1,420,580, granted June 20, 1922, and the earlier patents mentioned therein, showing a welt-and-turn shoe sewing machine; but adapted also for other waxing or similar treating of threads, cords and the like. The present invention pertains more especially to wax pots wherein the wax is maintained in a molten condition and is applied to the thread drawn through the wax, an instance of such wax pot being illustrated in the prior patent of Schoenky 1,177,967, granted April 4, 1916 wherein the thread is drawn through the molten wax and is subjected to a stripping action as it passes out of the pot to remove surplus wax.

The general object of the present invention is to improve the efficiency and convenience of thread waxing devices of the kind referred to. A particular object is to afford an improved and adjustable thread stripping means in connection with a wax pot, wherein the action of stripping the surplus wax from the thread can be readily and accurately controlled. Other and further objects and advantages of the present improvement will be explained in the hereinafter following description of the illustrated embodiment thereof or will be apparent to those conversant with the subject.

To the attainment of the aforesaid objects and advantages, the present invention consists in the novel thread waxing device and the novel features of combination, arrangement and structure herein illustrated or described.

It has heretofore been proposed to carry the entering thread and the delivered thread through the upper part of the wax pot, passing around a submerged guide, and the down-thread twisted about the up-thread for the purpose of stripping the surplus wax from the latter, but it is believed that such devices have not been successful, because of the mode of adjustment of twist by rotating the submerged thread guide and because of the need of a spreader between the down-thread and up-thread between the level of the wax and the twisted portion of the thread in order to maintain the latter out of the molten wax.

According to the present invention, means are provided cooperating with the thread guides for altering or adjusting the spread of the threads, below or above the wax level, or both, or for changing the tightness of the twist, so as to regulate the stripping action without rotary adjustment, and the spread of the submerged portions of thread being so wide as to maintain the twist at a position substantially above the wax level, so as to dispense with a spreader above the wax level between the two threads and the accumulation of wax thereon.

The invention may be described in one aspect as a thread waxing or treating device having an entering thread guide and a delivering guide, with a submerged guide arranged so that the down-thread may be twisted with one or two or more turns about the up-thread for the purpose of stripping the latter, together with means cooperating with said guides for altering the spread of the thread above and below the twist, or changing the tightness of the twist, to regulate the stripping action.

In the accompanying drawings Fig. 1 is a substantially central longitudinal vertical section of a waxing device illustrating the principles of the present invention.

Fig. 2 is a top plan view taken partly in horizontal section substantially at the plane 2—2 of Fig. 1.

Fig. 3 is a fragmentary top plan view of the entering and delivering thread guides and other parts not shown in Fig. 2.

The wax or other treating material is maintained in a vessel 10 which may be of the design shown or other suitable design. The wax or pot vessel is divided into chambers. It comprises first a supply chamber 11 formed at the left end of the vessel by means of a wall or partition 12 which is preferably removable. The lower part of this wall is shown as centrally slitted to form a feed gate 13 by which wax melting in the

chamber 11 may flow through to the main or waxing chamber 14.

In the waxing chamber 14 the level of the wax is shown at 15. This chamber is formed by the side walls of the vessel together with the removable wall 12 and a wall 16 which may be permanently formed in the vessel, leaving a chamber 17 at the right end of the vessel for receiving any wax overflowing from the main chamber, an overflow slit or gate 18 being formed in the wall 16 above the wax level 15.

The heating and melting of the wax may be performed in any known manner, for example by steam or electricity; and inset chambers 19 are shown extending upwardly from the bottom of the vessel 10 so as to stand in isolated positions in the waxing chamber 14, each of these for example being arranged to receive an electric resistance heating unit. These heating chambers being spaced away from the side walls of the vessel are substantially surrounded by the molten wax so that the heat is delivered mainly to the wax and overheating of the vessel walls is minimized.

The course of the thread may be substantially as follows. The thread stretch *a* from the supply is shown coming to the wax pot above the level of the removable cover 20. The thread first passes over an entering guide 21 which may be in the form of a small wheel or pulley. The thread then passes down at *b* to the point where, at *c* it is twisted around the upcoming thread. Beyond the twist the down-thread passes at *d* to the submerged thread guide or wheel 22 which is of substantial diameter so that the twisted part of the thread will naturally take a position substantially above the wax level. After passing around the submerged guide or wheel 22 the thread ascends at *e* to the point where it is engaged at *f* by the downcoming thread *c*. Above the twist the up-thread passes at *g* to the delivery guide or pulley 23 from which the thread is shown passing off at *h* to the sewing machine, bobbin or other place of disposal.

With the arrangement of guides thus described it is clear that a certain regulation of twist and stripping actions may be effected by passing the down-thread a greater or less number of times around the up-thread. It is shown making three twists about the up-thread, which might be increased or decreased. The wax carried up on the up-thread is usually in excess, and having to pass through several twists of down-thread the wax is caused to be stripped partially from the up-thread leaving the latter in a fairly uniform condition, while the surplus wax is progressively carried downwardly by the down-thread, which thereafter passes into the molten wax, this arrangement avoiding the depositing of wax upon mechanical parts of the device.

In order to give a finer regulation of the stripping action this invention operates by maintaining the amount of twist, but altering the tightness of the twist or tension upon the threads. This may be done in different ways, for example by altering the spread of the threads above and below the point of twist.

In the illustrated embodiment of the invention the adjustment of stripping action is secured primarily by altering the spread between the lower sections of threads *d* and *e* passing around the lower or submerged guide 22. If the amount of spread at the lower end is increased this will tighten up the twist and give a more effective stripping action. This may be accomplished for example by the employment of a submerged spreading or deflecting means 24 shown in the form of a simple eye surrounding the thread stretch *d*. Fig. 1 shows this device both in full lines and in dotted lines. The normal position is in full lines, but when shifted to the dotted line position the thread section *d* will be deflected to its dotted line position as shown. A convenient way to afford the stated results is to mount the eye or deflector 24 upon a carrier or bar 25. This is shown extending upwardly to a point above the molten wax where it is pivoted at 26, for example on the wall 16. An extension 27 of the bar is shown extending upwardly above the pivot, with adjusting means at its upper end in the form of a screw 28 which may be turned manually to shift the position of the bar and thereby alter the travel of the down-thread and the stripping action. The screw 28 may be located in any convenient place, above or below the removable cover 20, for example on the vertical wall 16, but is shown engageable in a threaded boss upstanding from the cover 20, in which case the connection between the lever part 27 and the screw may be a mere abutting connection or a detachable device.

In conjunction with the described adjustment there may be a complementary adjustment of the thread section *b*. For example it may be put under greater or less tension to increase or decrease the tightness of twist, namely by a tension device applied to the thread section *a* or a friction device applied to the entering guide 21. However, an advantageous way of handling the upper adjustment is by a means of a deflector or lever 29 shown mounted on top of the cover 20, having a thread engaging notch 30, and a clamping nut 31 for holding the lever in any swung position. By this arrangement the spread of the thread sections *b* and *g* above the twist may be altered in conjunction with the change of spread between the sections *d* and *e* below the twist. This affords a cooperating adjustment and permits the twisted sections of threads to be confined between the wax level and the vessel cover.

It will thus be seen that here has been described a thread waxing or analogous device, for treating threads, embodying the principles and attaining the objects of the present invention. Since many matters of combination, arrangement and structure may be variously modified without departing from the principles of the invention it is not intended to limit the invention to such matters except to the extent set forth in the appended claims.

What is claimed is:

1. In a thread waxing or analogous device, an entering thread guide and a delivery guide, both located above the wax level, and a submerged guide, said guides so arranged that the down-thread may be twisted a greater or less number of turns about he up-thread, for stripping material from the latter, and other means cooperating with said guides for altering the tightness of twist of the threads, without altering the number of turns of twist.

2. In a thread waxing or analogous device, an entering thread guide and a delivery guide, both located above the wax level, and a submerged guide, said guides so arranged that the down-thread may be twisted a greater or less number of turns about the up-thread, for stripping material from the latter, and a submerged eye cooperating with said guides and movable for altering the spread of the submerged threads and thereby the tightness of twist of the threads.

3. In a thread waxing or analogous device, an entering thread guide and a delivery guide, both located above the wax level, and a submerged guide, said guides so arranged that the down-thread may be twisted about the up-thread, for stripping material from the latter, and means cooperating with said guides for altering the spread of the thread portions below the wax level.

4. In a thread waxing or analogous device, an entering thread guide and a delivery guide, both located above the wax level, and a submerged guide, said guides so arranged that the down-thread may be twisted about the up-thread, for stripping material from the latter, and means cooperating with said guides for altering the spacing of the entering and delivery guides above the wax level.

5. In a thread waxing or analogous device, an entering thread guide and a delivery guide, both located above the wax level, and a submerged guide, said guides so arranged that the down-thread may be twisted about the up-thread, for stripping material from the latter, and means cooperating with said guides for altering the spread of the thread portions both above and below the wax level.

6. A device as in claim 3 and wherein the spread altering means is a deflector having means for shifting it inwardly or outwardly with the submerged thread.

7. In a thread waxing or analogous device, an entering thread guide and a delivery guide, both located above the wax level, and a submerged guide, said guides so arranged that the down-thread may be twisted about the up-thread, for stripping material from the latter, and means cooperating with said guides for altering the tension of the down-thread twisted about the up-thread, without altering its number of turns about the up-thread.

8. In a thread waxing device a vessel for holding molten wax with means for heating the waxing chamber thereof, means for guiding the thread downwardly into the vessel and through the waxing chamber and upwardly therefrom with the down-thread twisted about the up-thread above the wax level in the chamber to strip excess wax from the up-thread, an overflow gate from the waxing chamber at a level ensuring that the molten wax therein will not submerge the twisted portions of thread, and a wax supply chamber wherein solid wax may be gradually melted and delivered to the waxing chamber.

In testimony whereof, this specification has been duly signed by:

AXEL FOLKE CARLSON.