W. C. MEYER.

WAX THREAD SEWING MACHINE.

APPLICATION FILED FEB. 7, 1916.

1,341,065.

Patented May 25, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

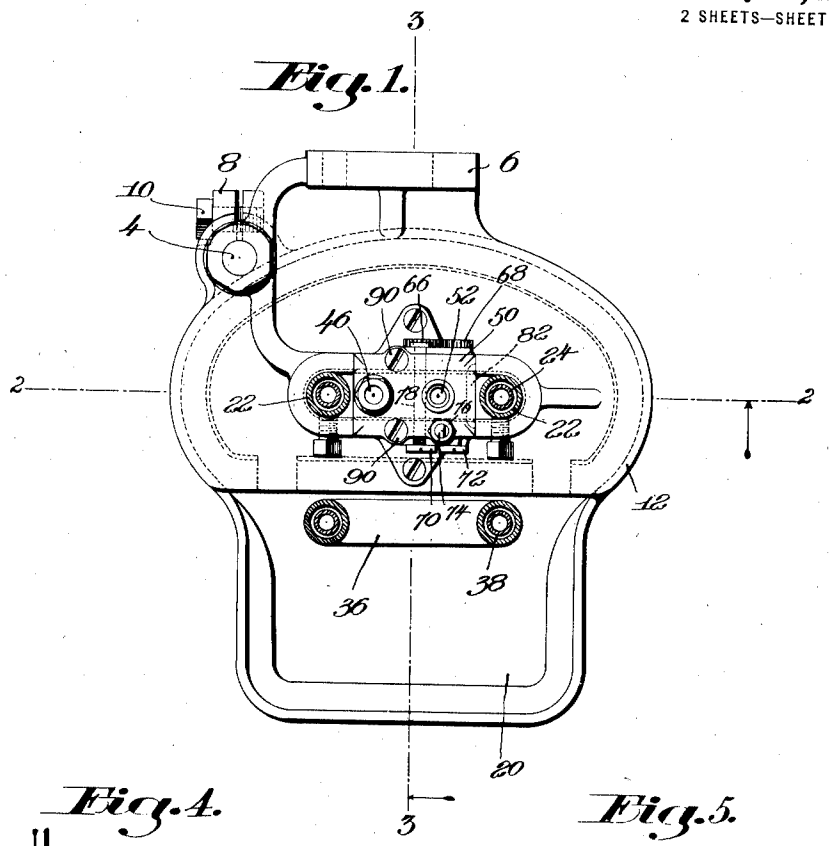


Fig. 4.

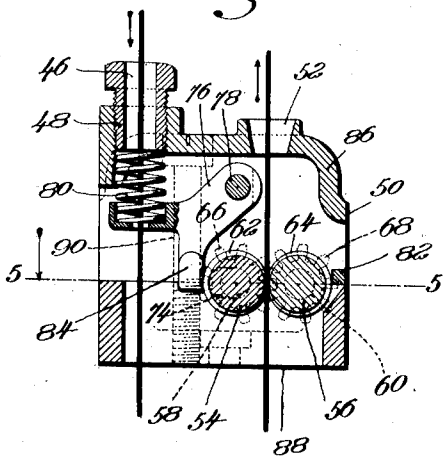
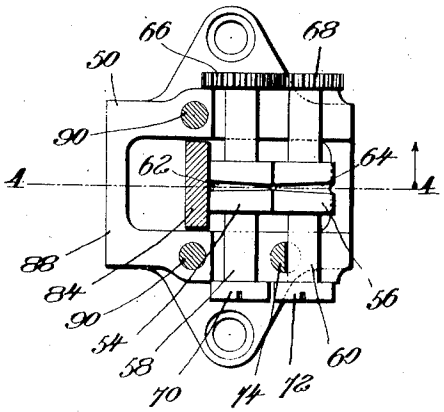


Fig. 5.



Witness

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2 SHEETS—SHEET 2.

Fig. 2.

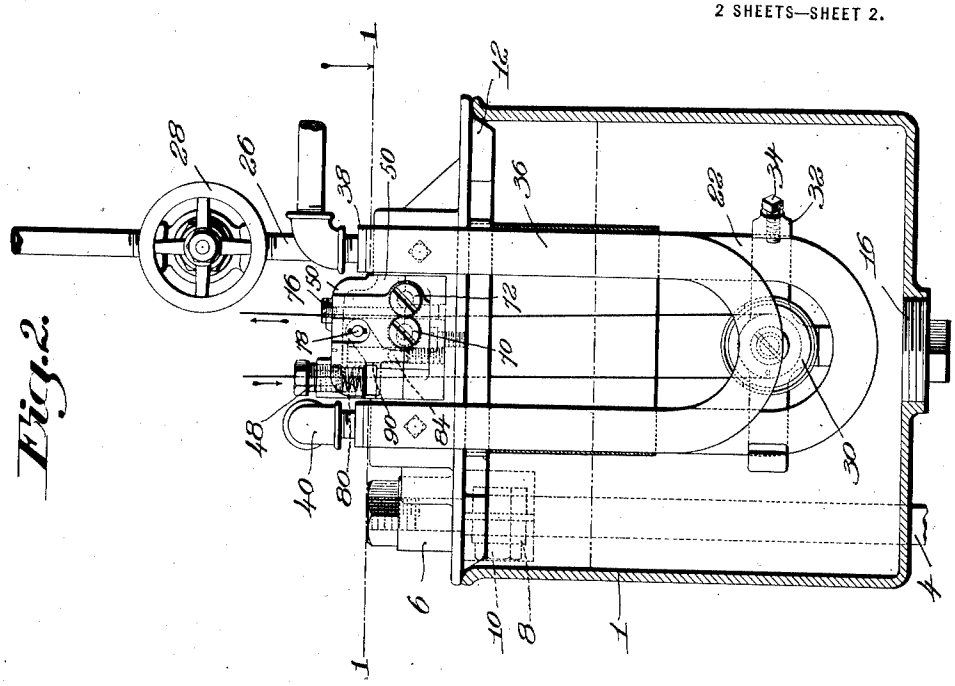
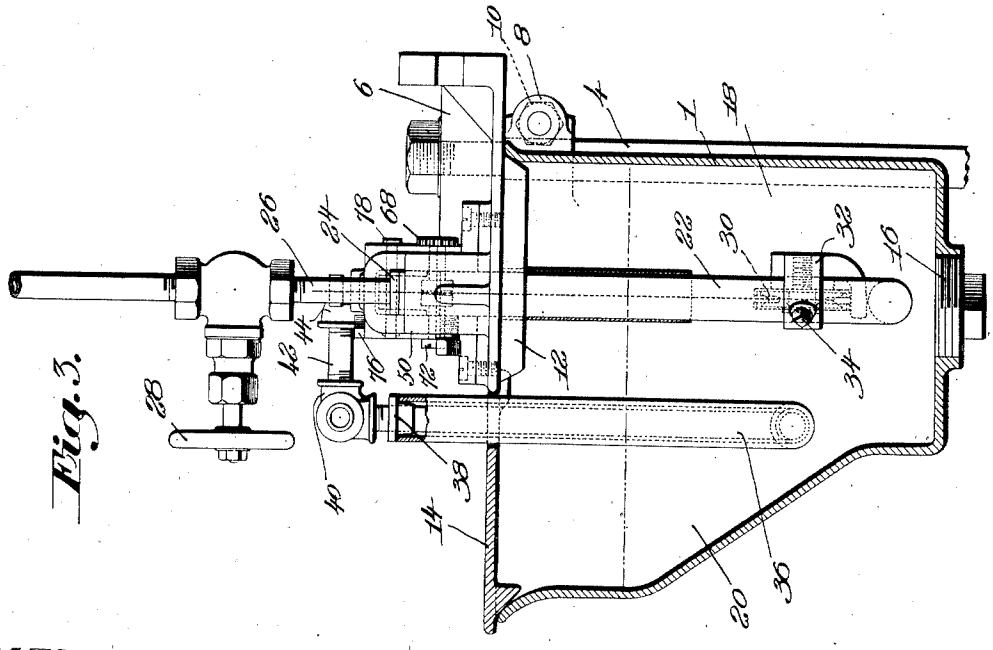


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM C. MEYER, OF BEVERLY, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

WAX-THREAD SEWING-MACHINE.

1,341,065. Specification of Letters Patent. Patented May 25, 1920.

Application filed February 7, 1916. Serial No. 76,721.

To all whom it may concern:

Be it known that I, WILLIAM C. MEYER, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Wax-Thread Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to thread waxing devices for wax thread sewing machines.

The present invention is in certain respects particularly designed as an improvement on thread waxing devices such as are shown and described in the patent to Meyer, No. 1,011,224, December 12, 1911, and in the patent to Eppler No. 1,015,304, January 23, 1912. In the constructions illustrated in these patents the wax receptacle comprises a thread waxing chamber through which the thread passes, and a wax supply reservoir separated from the thread waxing chamber by a partition having one or more openings through which the wax as it is melted in the supply reservoir flows into the thread waxing chamber. The heating devices of these constructions comprise a heating member extending into the thread waxing chamber close to the path of the thread to keep the wax along the path of the thread in a properly melted condition without boiling or overheating the wax. The melting of the wax in the supply reservoir is dependent upon the heat transmitted from the heating member which is located at some distance from the reservoir. It often happens, when thread waxing devices of this character are employed, that there is not sufficient heat transmitted to the wax supply reservoir to melt the wax properly, with the result that the wax in the thread waxing chamber is not replenished as fast as it is used up by the thread.

The primary object of the present invention is to provide thread waxing devices with improved means for heating the wax, by which the wax will be kept properly melted without overheating in the thread waxing chamber, and which will insure the melting of the wax in the supply reservoir as fast as required to replenish the supply of wax in the thread waxing chamber.

In accordance with this object, the invention comprises a wax receptacle having a thread waxing chamber through which the thread passes and a wax supply reservoir, a heating member extending into the thread waxing chamber to heat the wax in proximity to the thread, and a second heating member for heating the wax in the supply reservoir. In the preferred construction the heating member for heating the wax in the supply reservoir extends into the receptacle intermediate the waxing chamber and the supply reservoir close to the walls of the receptacle, and forms the dividing partition between the chamber and the reservoir. This heating member obstructs the passage of the unmelted wax and the heat transmitted therefrom to the wax in the supply reservoir insures the proper melting of the wax supply.

In the accompanying drawings illustrating the present invention in its preferred form, Figure 1 is a view in horizontal section of the thread waxing devices taken substantially on the line 1—1 of Fig. 2; Fig. 2 is a view partly in vertical section taken substantially on the line 2—2 of Fig. 1, and partly in front elevation; Fig. 3 is a view partly in vertical section taken substantially on the line 3—3 of Fig. 1, and partly in side elevation; Fig. 4 is a detail view in vertical section taken substantially on the line 4—4 of Fig. 5, and illustrating particularly the wax stripping devices; and Fig. 5 is a detail view in horizontal section taken substantially on the line 5—5 of Fig. 4.

The thread waxing devices illustrated in the drawing comprises a wax receptacle 1 mounted on a vertical rod 4 secured at its upper end in a bracket 6 adapted to be attached to the frame of the sewing machine to which the thread waxing devices are applied. The receptacle is formed with a projecting split clamp 8 through which the rod 4 passes and the clamp is actuated to clamp the receptacle upon the rod by means of an actuating bolt 10. The bracket 6 is formed with an extension 12 which forms a part of the cover for the receptacle. The remainder of the cover consists of a removable cover

plate 14. The receptacle is formed with an opening at its base in which is threaded a plug 16. By removing this plug the wax may be drained from the receptacle.

The receptacle comprises a thread waxing chamber 18 through which the thread passes on its way from the supply to the sewing point and in which the wax is applied to the thread and a wax supply reservoir 20 in which the lumps of unmelted wax are placed and from which the wax is replenished in the thread waxing chamber as it is used up by the thread.

The wax in the thread waxing chamber is heated by means of a U-shaped heating member 22 attached to the portion 12 of the cover of the receptacle and extending down centrally into the thread waxing chamber. This heating member consists of a tube through which passes a steam pipe 24 connected with a steam supply pipe 26 the passage of steam through which is controlled by a valve operated by a hand wheel 28. The heat from the steam pipe heats up the heating member 22 and the heat transmitted therefrom serves to melt the surrounding wax. The tube 22 forms a jacket for the steam pipe 24 there being an intervening air space between the steam pipe and the tube so that the member 22 will not become overheated.

In order to guide the thread through the receptacle a thread truck 30 is mounted upon a frame or carrier 32 embracing the arms of the heating member 22 and secured thereto by a set screw 34. The thread in its passage through the thread waxing chamber traverses a path substantially parallel with the heating member 22 so that the wax along the path of the thread is constantly kept in a suitably melted condition to impregnate the thread.

A second U-shaped heating device 36 extends into the receptacle in position such that it forms the partition separating the wax supply reservoir from the thread waxing chamber. This heating device is arranged to follow the walls of the receptacle and obstructs the passage of lumps of unmelted wax from the wax supply reservoir to the thread waxing chamber. This heating device also consists of a tubular jacket through which passes a steam pipe 38 connected by the union 40, short pipe section 42, and union 44 with the steam pipe 24, the steam pipe 38 being thus supplied with exhaust steam from the steam pipe 24. The heating device 36 will thus be heated to a somewhat lower temperature than the heating member 22. The heating member 36 furnishes the necessary heat to the wax in the supply reservoir to insure the proper melting of the wax supply and a constant flow of melted wax from the supply reservoir into the thread waxing chamber. This heating device also transmits considerable heat to the wax in the waxing chamber and assists in keeping the wax properly melted along the path of the thread.

The thread in its passage through the wax receptacle enters the receptacle through an opening 46 in a sleeve 48 mounted on a detachable housing 50 attached to the cover of the receptacle and emerges through an opening 52 in the housing. The stripping devices for stripping the wax from the thread as it emerges from the receptacle are mounted in this housing. The stripping devices comprise two peripherally engaging non-rotating rolls 54 and 56 fixed respectively to the shafts 58 and 60 mounted in bearings on the housing. These rolls are formed with registering grooves 62 and 64 which form, at the contact point of the rolls, an opening for the passage of the thread. Each of the grooves in the rolls varies in size at different points in the periphery of the roll and the rolls are held from rotation during the normal operation but are arranged for simultaneous rotary adjustment to vary the size of the thread passage formed by the grooves. Intermeshing gear wheels 66 and 68 are mounted respectively on one end of each of the roll carrying shafts 58 and 60 and upon the opposite ends of these shafts are fixed heads or disks 70 and 72 having grooves for the reception of a screwdriver or other suitable tool. The rolls are held from rotation by means of a drawbolt 74 mounted in a suitable bore in the housing 50 and having an enlargement which engages the shaft 60. The drawbolt is actuated to engage the enlargement thereon tightly with the shaft 60 by means of a nut 76 threaded thereon. After loosening the nut and thereby relieving the engagement of the drawbolt with the shaft 60 the rolls 54 and 56 may be rotated to adjust the size of the thread passage between the rolls by means of a tool inserted in the slot in one of the disks 70 or 72. The adjustment of the rolls is then maintained by tightening the drawbolt. The stripping action of the stripping rolls may thus be adjusted so that just the right amount of wax is left on the thread after the thread passes through the thread passage between the rolls, or this adjustment may be utilized to regulate the size of the thread passage for different sizes of thread.

In order to permit the rolls to yield relatively when a knot or enlargement in the thread passes between the rolls, the roll 54 is mounted for movement toward and from the roll 56 and is yieldingly pressed toward the roll 56. In the construction shown the shaft 58 is mounted in bearing slots in the housing 50 one of which is shown at 74, Fig. 4, and the roll 54 is yieldingly pressed toward the roll 56 by means of a lever 76 pivoted at 78 and having an arm bearing on the

periphery of the roll 54. In the other arm of this lever is seated the lower end of a coiled spring 80 which at its upper end engages the lower end of the sleeve 48. This spring acts through the lever to keep the roll 54 pressed yieldingly against the roll 56. The force with which the roll 54 is pressed toward the roll 56 may be regulated by adjusting the sleeve 48 which is threaded into the housing 50. To enable the wax which rapidly accumulates on the rolls to be easily and quickly removed, wax scrapers are mounted in position to bear on the peripheries of the rolls for scraping the wax from the rolls.

One of these scrapers indicated at 82 consists of a bar mounted in the housing 50 substantially parallel with the axis of the rolls and arranged to bear at one of its edges against the periphery of the roll 56. Another scraper bar indicated at 84 is formed on the lever 76 and constitutes the portion of the lever which bears on the periphery of the roll 54. When the accumulated wax is to be removed from the rolls, the drawbolt 74 is loosened and the rolls are given a complete revolution, the scraper bars 82 and 84 acting during the rotation of the rolls to scrape the wax from the peripheries of the rolls.

The housing 50 is preferably made in two parts 86 and 88 separated in a plane through the axis of the stripping rolls and held together by screws 90. This construction enables the rolls to be easily removed from and replaced in the housing.

Having thus explained the nature and object of the present invention, and having specifically described an apparatus embodying the invention in its preferred form, what is claimed is:

1. A thread waxing device, having, in combination, a wax receptacle comprising a thread waxing chamber and a wax supply reservoir communicating therewith, means for guiding the thread through the thread waxing chamber, a heating device relatively remote from the supply reservoir for heating the wax in the thread waxing chamber to a relatively high temperature, and a second heating device located at the supply reservoir for heating the wax in the wax supply reservoir to a lower temperature.

2. A thread waxing device, having, in combination, a wax receptacle comprising a thread waxing chamber and a wax supply reservoir communicating therewith, means for guiding the thread through the thread waxing chamber, a high temperature heating device extending into the thread waxing chamber at a point relatively remote from the supply reservoir for maintaining the wax in said chamber in condition for application to the thread, and a low temperature heating device extending into the wax receptacle and located at the wax supply reservoir for heating the wax in the wax supply reservoir.

3. A thread waxing device, having, in combination, a wax receptacle having a thread waxing chamber and a wax supply reservoir, devices for guiding the thread through the thread waxing chamber, a heating device extending into the thread waxing chamber, and a second heating device extending into the receptacle intermediate the thread waxing chamber and the wax supply reservoir to heat the wax in the supply reservoir and forming a partition between the reservoir and the chamber to intercept the lumps of unmelted wax.

4. A thread waxing device, having, in combination, a wax receptacle comprising a thread waxing chamber and a wax supply reservoir, means for guiding the thread through the thread waxing chamber, a heating device for heating the wax in the thread waxing chamber and a heating device extending into the receptacle intermediate the thread waxing chamber, and the wax supply reservoir to heat the wax in the supply reservoir and forming a partition between the chamber and the reservoir to intercept the lumps of unmelted wax.

5. A thread waxing device, having, in combination, a wax receptacle comprising a thread waxing chamber and a wax supply reservoir, devices for guiding the thread through the thread waxing chamber, means for heating the wax in the chamber, and a U-shaped heating member extending into the receptacle and following the walls of the chamber for heating the wax in the receptacle and forming a partition between the chamber and the reservoir to intercept the lumps of unmelted wax.

6. A thread waxing device, having, in combination, a wax receptacle comprising a thread waxing chamber and a wax supply reservoir, devices for guiding the thread through the receptacle, a U-shaped heating device extending into the thread waxing chamber substantially parallel with the path of the thread, and a U-shaped heating device extending into the receptacle between the chamber and the reservoir and following the walls of the receptacle.

7. A thread waxing device, having, in combination, a wax receptacle comprising a thread waxing chamber and a wax supply reservoir, devices for guiding the thread through the thread waxing chamber, a steam heating device extending into the thread waxing chamber, steam connections for supplying steam thereto, a second steam heating device extending into the receptacle for heating the wax in the supply reservoir, and connections for supplying the second heating device with exhaust steam from the first heating device so that the second heating de-

vice is heated to a lower temperature than the first heating device.

8. A thread waxing device having, in combination, a wax receptacle comprising a thread waxing chamber and a wax supply reservoir communicating therewith, means for guiding the thread through the thread waxing chamber, a heating device located relatively remote from the supply reservoir and arranged to maintain the wax in the waxing chamber in condition for application to the thread, and a second heating device located at the supply reservoir and at a distance from the thread for heating the wax in the supply reservoir.

WILLIAM C. MEYER.