T. G. PLANT.

BOBBIN WINDING MECHANISM.

APPLICATION FILED SEPT. 8, 1908.

935,230. Patented Sept. 28, 1909.

Fig. 1.

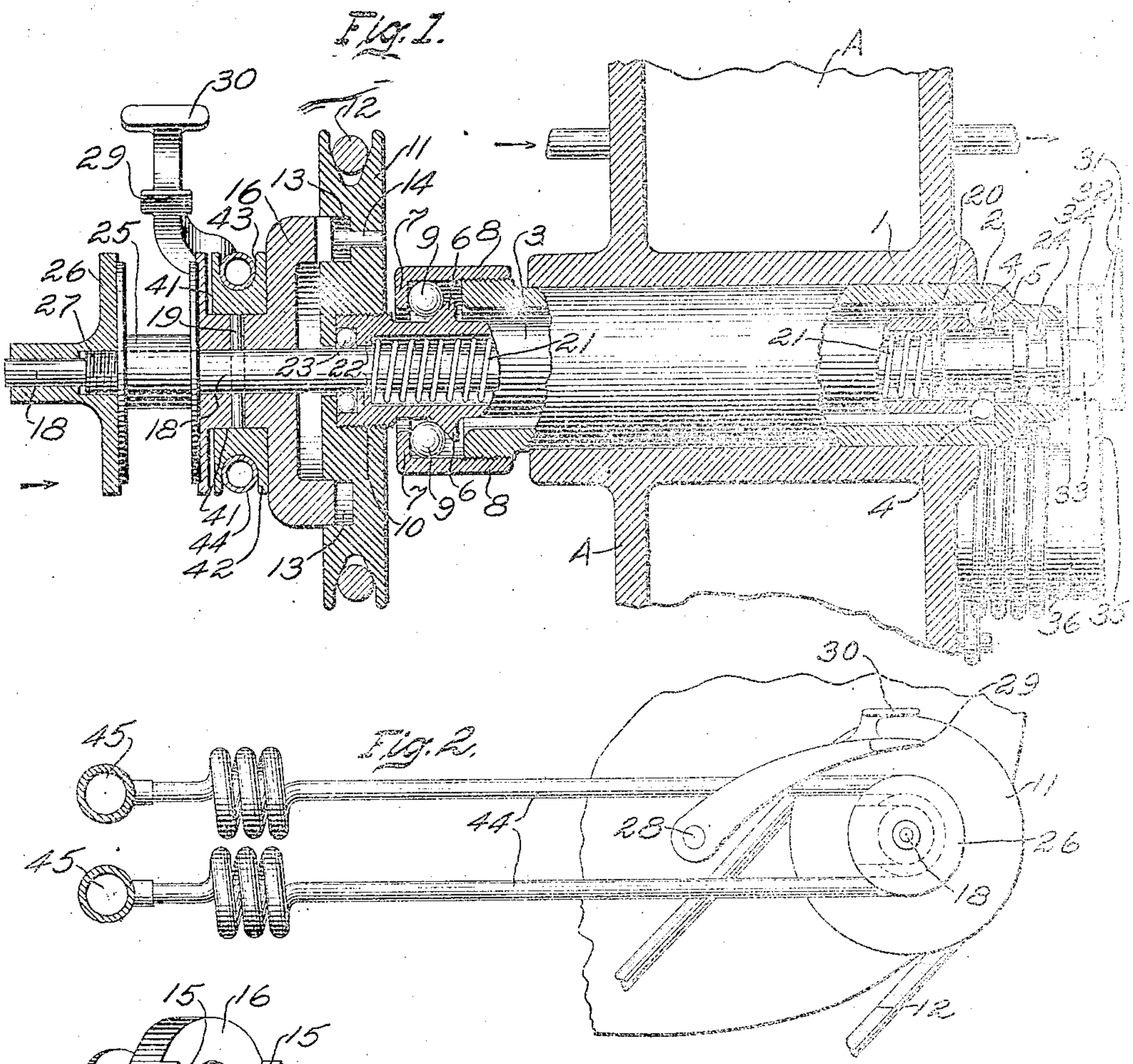


Fig. 2.

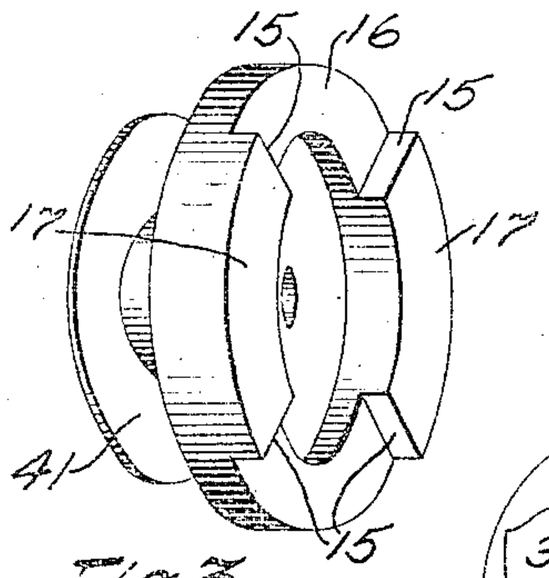
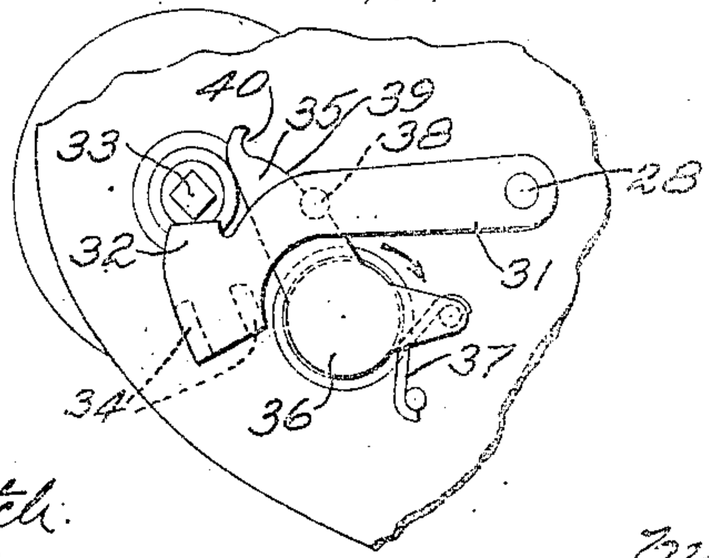


Fig. 3.

Fig. 4.



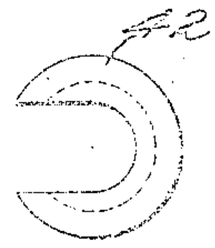


Fig. 5.

Witnesses:
Powell F. Hatch.
Redfield A. Allen

Inventor:
Thomas G. Plant
by Robt. P. Harris.
Atty.

UNITED STATES PATENT OFFICE.

THOMAS GUSTAVE PLANT, OF BOSTON, MASSACHUSETTS.

BOBBIN-WINDING MECHANISM.

935,230.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed September 8, 1908. Serial No. 451,955.

To all whom it may concern:

Be it known that I, THOMAS GUSTAVE PLANT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Bobbin-Winding Mechanisms, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

The invention to be hereinafter described relates to machines for winding thread and more particularly to that type for winding waxed thread to be used in sewing certain portions of boots and shoes, the object of the invention being to provide simple and efficient devices of this character and transmit heat to the center of the thread mass as it is wound and after the winding has been completed, so that the waxed thread may be maintained in proper working condition and ready for use as desired.

In the drawings, which illustrate one form or general embodiment of the invention, Figure 1 is a sectional front elevation of a winding mechanism, parts being broken away, showing the present invention applied thereto; Fig. 2 is a front elevation looking in the direction of the arrow from the left in Fig. 1; Fig. 3 is a detached detail of the driven member composing part of the driving means; Fig. 4 is a detached and broken away detail on a smaller scale and looking from the right in Fig. 1; and Fig. 5 is a detached detail of the bearing block for use in connection with the heat conductor or conduit.

The frame A, which may be of any suitable construction, and preferably forms part of the frame work of a boot and shoe sewing machine, is provided with a bearing portion 1, in which is fixedly secured the sleeve 2, said frame A, if desired, being formed hollow and heated or not, as preference may dictate. Rotatably mounted within the fixed sleeve 2 is the rotatable sleeve 3 extending longitudinally therein. This rotatable sleeve 3 is preferably held within the fixed sleeve 2 by anti-friction bearings. In the present form of construction, such anti-friction bearings at one end comprise balls 4 interposed between a shoulder 5 on the fixed sleeve and the inclined end portion of the rotatable sleeve 3. The sleeve 3 near its opposite end is provided with the seats 6 opposed to the end wall 7 of a cap 8 secured as by screw threads to the exterior of the fixed sleeve 2, anti-friction balls 9 being interposed between the seat 6 and end wall 7. From the construction described it will be clear that while the sleeve 3 is held from longitudinal movement in the fixed sleeve 2, it is free to rotate therein on its anti-friction ball bearings.

Secured to one end of the rotatable sleeve 3, as by the screw threads 10, or otherwise, is the driving means 11, said driving means 11 being shown as a pulley about which passes the belt 12 leading from any suitable source of power. The face of the driving means or pulley 11 is provided with a groove 13 into which project, at suitable intervals, pins 14, said pins 14 being so disposed as to engage shoulders 15 on the driven means 16 which, in the present form of the invention, is shown as a clutch member, having segmental portions 17 adapted to extend into the recess 13 in the pulley 11, the construction being such that when the member 16 is moved to the right in Fig. 1, the pins 14 and the shoulders 15 will be brought into engagement by rotation of the pulley 11, and when said member 16 is moved to the left, Fig. 1, the said parts are placed in non-engaging or inoperative position.

Passing longitudinally through the rotatable sleeve 3 is the driving shaft 18 to which is fixed, as by a pin 19, the driven member 16 hereinbefore referred to. The shaft 18 at one end within the rotatable sleeve 3 is provided with a fixed collar 20, and a spring 21 surrounds the shaft 18, one end of the spring resting upon the collar 20 and the other against the flange portion 22 adjacent the opposite end of the sleeve 3, the parts being so disposed and arranged that the spring 21 will normally tend to move the shaft 18 to the right, Fig. 1. Disposed between the rotatable sleeve 3 and the shaft 18 are the anti-friction bearings 23, 24, said bearings in the present form of the invention being shown as anti-friction balls disposed between the sleeve 3 and said shaft 18. The shaft 18 is preferably provided

with a portion to receive a bobbin or other thread carrier 25, said bobbin or thread carrier being clamped rotatably with the shaft 18 and its driven member 16 by means of a cap 26 having a screw thread connection 27 with said shaft.

Mounted in the machine frame is the stop shaft 28 which is provided at one portion thereof, adjacent the bobbin or thread carrier 25, with a thread contacting finger 29 and a finger piece 30. Near its opposite end, the stop shaft 28 is provided with a start and stop controller 31 having a cam face 32, see Figs. 1 and 4, adapted to contact with the end 33 of the shaft 18 and move said shaft endwise against the tension of the spring 21, when such start and stop controller has its engaging or free end raised. The free end of the start and stop controller 31 likewise has flanges 34, 34 adapted to embrace the square end of the shaft 18, as indicated in Fig. 4, when the free end of the said controller is sufficiently raised.

Mounted on the machine frame, as indicated in Figs. 1 and 4, is a controller actuator 35 pivotally supported at 36 and normally acted upon by a spring 37 to move the free end of said actuator to the right, Fig. 4. The controller 31 is provided with a pin 38 adapted to engage a receiving socket in the actuator 35, as indicated in Fig. 4, when said controller is in its lowered position, Fig. 4, the construction being such that when the parts are in position as indicated in Fig. 4, the controller actuator 35 will, by means of its socket engaging the pin 38, hold the start and stop controller 31 in its lowered position, as indicated in Fig. 4. As heretofore stated, the part 29 which is adapted to engage the wound mass of thread upon the bobbin or thread carrier 25 when the winding is practically completed is mounted on the shaft 28 and, consequently, with the parts, as indicated in Fig. 4, the start and stop controller 31 will hold the thread contacting face 29 in position to be engaged by the thread when the mass has been completely wound.

From the construction thus far described, it will be clear that when the start and stop controller 31 is in its lowered position, as in Fig. 4, the shaft 18 will, by reason of the spring 21, be forced to the right, and the driving and driven members 11 and 16, respectively, will be brought into operative engagement. At such time, the part 29 will be positioned to be out of contact with the thread being wound but will contact with said thread when the thread mass has reached the desired amount. At this time, the part 29 will be lifted, thereupon lifting the start and stop controller 31, and disengage its pin 38 from the notch in the controller actuator 35. The edge 39 of the actuator is formed inclined or curved, as indicated in Fig. 4, terminating in a stop 40, and as soon as the pin 38 is disengaged from the holding notch, it will be engaged by the inclined or curved edge 39 of the actuator, which through the spring 37 will complete the lifting movement of the start and stop controller 31 and cause its cam 32 to move the shaft 18 to the left, thus disengaging the driving and driven members, and its flanges 34 to engage the square edges of said shaft and stop rotation thereof.

As well known by those skilled in the art, the proper and convenient use of waxed thread in a sewing machine requires that such thread shall be heated. Heretofore, this heated condition of the thread has been practically secured by baking the bobbins after they have been wound, such method being open to the objections of non-uniformity in the heat distribution and the fact that a large number of bobbins were required. In the present form of the invention, means are provided to supply heat to the interior of the thread mass as it is wound and to maintain the thread mass suitably heated until it is required for use, whereupon the operator has simply to remove the heated bobbin or thread carrier and place it in sewing position, another or empty bobbin or thread carrier being placed upon the winding shaft 18 and the winding operation started by merely depressing the fingerpiece 30, all as will be well understood.

In a prior application, Ser. No. 406,618, filed Dec. 16, 1907, means have been described and broadly claimed for supplying heat to the center of the thread mass as it is being wound or after it is wound, and in the present application claims are made only to features of improvement on the broad invention as will appear.

As a convenient means for supplying heat to the center of the thread mass as and after it is wound, the driven or clutch member 16 is provided with a circular recess 41 as indicated in Figs. 1 and 3, and seated within this recess is a bearing block 42, said parts being preferably formed of metal, such bearing block having an exterior seat 43 for a heat conductor or conduit 44, which is preferably in the form of a long, flexible pipe connected at its respective ends to steam or other heat supplying pipes 45. By this form of heat conductor or conduit means, the driven or clutch member 16 may be moved freely to the right and left with the bobbin driving shaft 18 without disturbing its connection with the source of heat supply, the flexibility of the pipe 44 being sufficient to permit this movement. It will be seen from Figs. 2 and 5 that while the bearing block 42 is mounted upon the driven or clutch member 16, as hereinbefore stated, and embraces said clutch member, it does not rotate therewith, thus furnishing a fixed

bearing surface for the heat conductor or conduit 44. Obviously, heat supplied to the conductor or conduit 44 will be transmitted through the bearing block and hub of the driven or clutch member 16 to the shaft 18 and from it direct to the center of the bobbin or thread carrier and the mass of thread wound or being wound thereon.

While the above is well adapted as a good, practical form of the invention herein disclosed, it is to be understood that said invention is not restricted or circumscribed by the limitations of the details set forth and that various changes may be made within the true field of the invention as hereinafter defined by the claims.

Claims:

1. In a machine for winding thread, the combination of a supporting frame, means on which the thread is wound supported by said frame, driving means for said winding machine, and means independent of the supporting frame for transmitting heat primarily through the means upon which the thread is wound to the center of the thread mass.

2. In a machine for winding thread, the combination of a supporting frame, means on which the thread is wound supported by said frame, driving means for said winding machine, and a heat conduit connected to the means on which the thread is wound and formed independent of the supporting frame for transmitting heat primarily to the center of the thread mass.

3. In a winding machine for winding thread, the combination of a supporting frame, means upon which the thread is wound supported by said frame, driving means for said winding machine, a conduit or heat conductor leading from a source of heat supply, and connections between the conduit or heat conductor and the means upon which the thread is wound independent of said supporting frame for transmitting heat to the interior of the thread mass.

4. In a winding machine for winding thread, the combination of a supporting frame, a bobbin or thread carrier on which the thread is wound, winding means for winding the thread on said bobbin or thread carrier, and a conduit formed independent of the supporting frame for transmitting heat through said bobbin or thread carrier primarily to the center of the thread mass.

5. In a winding machine for winding thread, the combination of a supporting frame, means upon which the thread is wound, driving means for said winding machine comprising a shaft, and a heat conduit formed independent of the supporting frame leading from a source of heat supply to said shaft for transmitting heat through said shaft to the center of the thread mass.

6. In a winding machine for winding thread, the combination of a supporting frame, a bobbin or thread carrier on which the thread is wound, driving means for said winding machine, means for stopping the winding operation when the desired amount of thread has been wound on said bobbin or thread carrier, and a heat conductor or conduit formed independent of the supporting frame leading from a source of heat supply for transmitting heat primarily through said bobbin or thread carrier to the center of the thread mass to maintain the thread mass at the desired temperature both during and after the winding operation.

7. In a winding machine for winding thread, the combination of a supporting frame, means upon which the thread is wound, driving means for said winding machine, starting and stopping mechanism for the driving means, and a heat conduit other than the supporting frame for transmitting heat primarily to the center of the thread mass during the operative condition of the winding means and after the winding operation has ceased.

8. In a winding machine for winding thread, the combination of means upon which the thread is wound, driving means for said winding machine, a heat conductor or conduit leading from a source of heat supply to transmit heat to the center of the thread mass, and a bearing block interposed between said conduit or conductor and the means on which the thread is wound.

9. In a winding machine for winding thread, the combination of a bobbin or thread carrier, winding means for said bobbin or thread carrier, driving means for said winding means, a heat conductor or conduit leading from a source of heat supply to said winding means, and a stationary bearing block interposed between the conductor or conduit and winding means to afford a bearing for such conductor or conduit.

10. In a winding machine for winding thread, the combination of a supporting frame, winding means supported by said frame, driving means including clutch members, means for moving said clutch members into and out of operative relation, and a heat conductor or conduit leading from a source of heat supply and connected to one of said clutch members to transmit heat to the thread mass.

11. In a winding machine for winding thread, the combination of a supporting frame, a shaft 18 supported thereby, a bobbin or thread carrier adapted to be connected operatively with said shaft, driving means for said shaft, and a conductor or conduit 44 leading from a source of heat supply and passing about said shaft to transmit heat to the center of the thread mass.

12. In a winding machine for winding thread, the combination of a supporting

frame, a shaft, as 18, supported thereby, a bobbin or thread carrier adapted to be operatively connected to said shaft, a loose clutch member 11, a fast clutch member 16, and a heat conductor or conduit 44 connected to said fast clutch member to transmit heat thereto.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

THOMAS GUSTAVE PLANT.

Witnesses:

IRVING U. TOWNSEND,

ARTHUR W. CALVER.