June 19, 1923. 1,459,074

E. J. RAY

BOBBIN WINDING MACHINE

Filed July 27, 1920

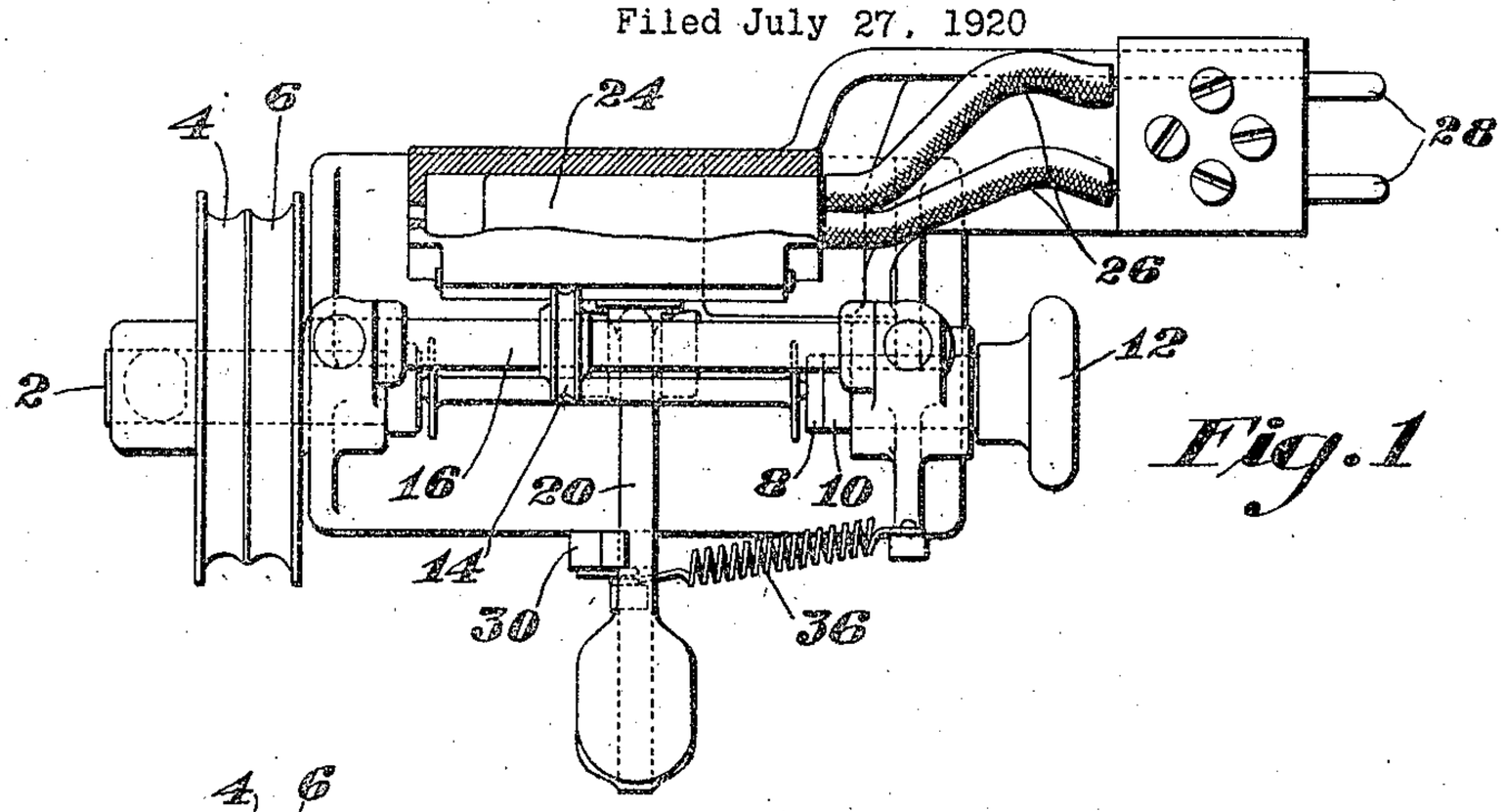


Fig. 1

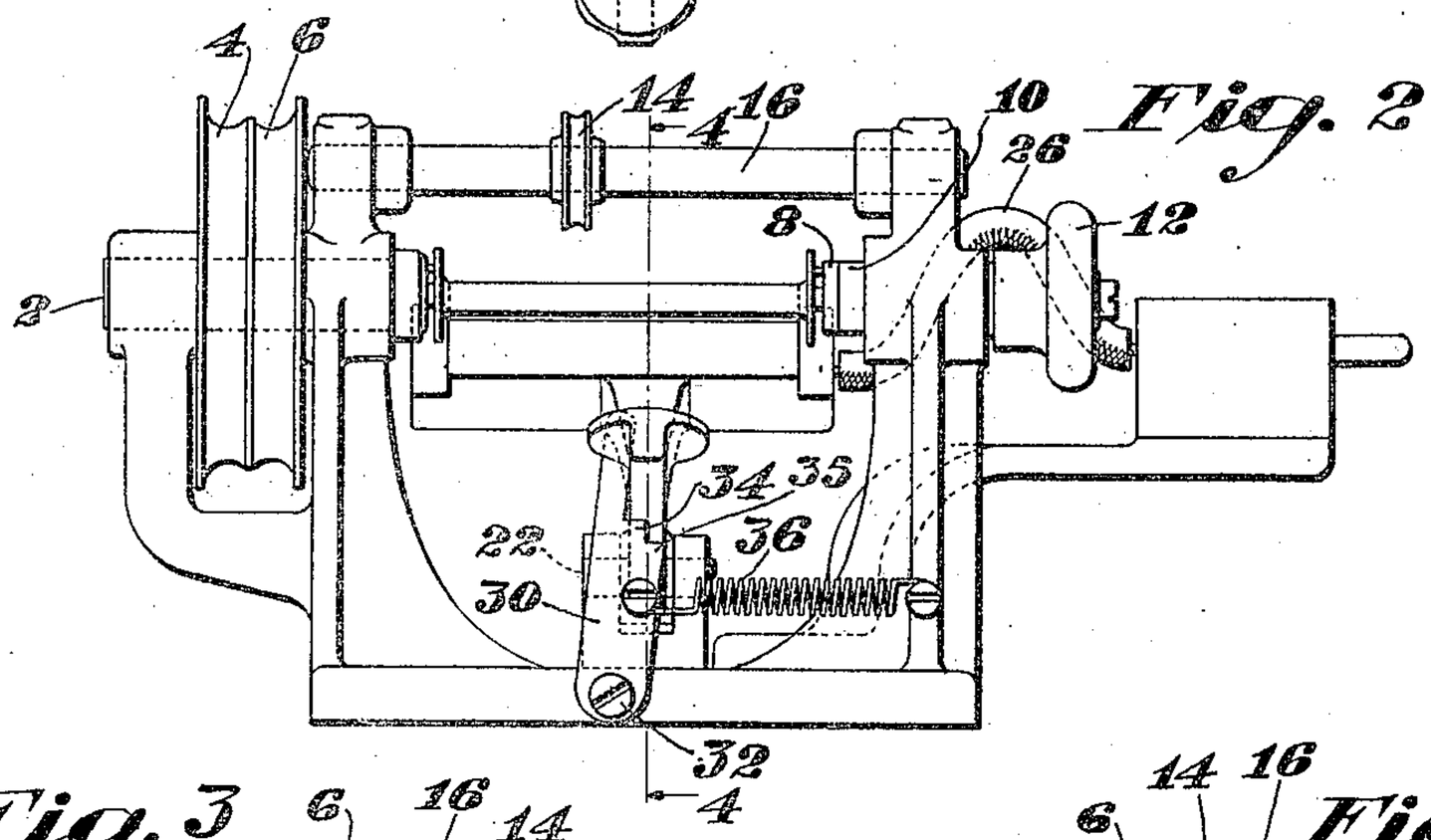


Fig. 2

Fig. 3

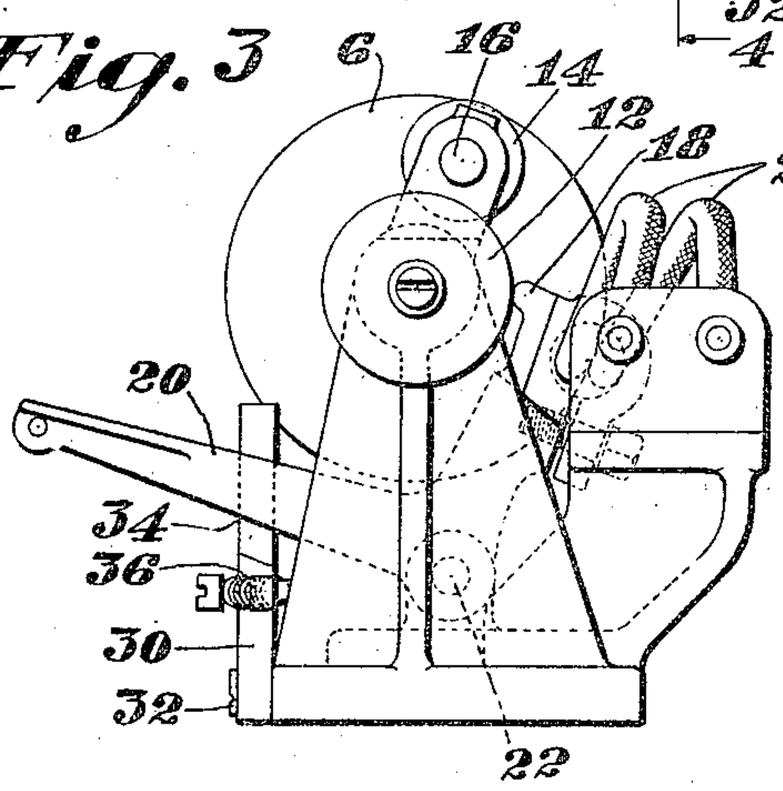
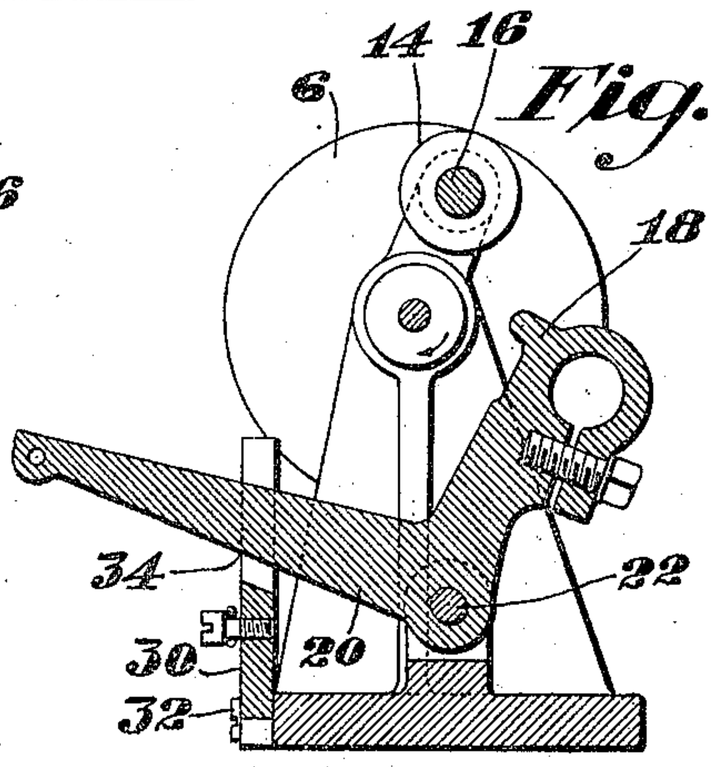


Fig. 4



Witness

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UNITED STATES PATENT OFFICE.

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BOBBIN-WINDING MACHINE.

Application filed July 27, 1920. Serial No. 399,282.

To all whom it may concern:

Be it known that I, EUGENE J. RAY, 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 Bobbin-Winding 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 machines for winding waxed thread on sewing machine bobbins and, more particularly, to heating device for such machines.

In winding waxed thread on bobbins, the thread is often chilled before it reaches the bobbin and the wax on the thread becomes partially congealed. If the thread is not heated before it is wound on the bobbin, the thread will not lay on the bobbin in even layers and the amount of thread which can be wound on the bobbin is greatly reduced. For this reason, bobbin winding machines for winding waxed thread are usually provided with heating devices for heating the thread before it is applied to the bobbin.

The primary objects of the present invention are to improve the construction and mode of operation of heating devices for bobbin winding machines of this class, and to produce a machine having a heating device which will heat the thread in a highly efficient manner with very little loss of heat.

With these objects in view, the invention consists in the novel and improved constructions, arrangements and combination of parts hereinafter described and particularly pointed out in the claims, the advantages of which will be readily understood and appreciated by those skilled in the art.

The invention will be clearly understood from the accompanying drawings illustrating the invention in its preferred form, and the following detailed description of the constructions therein shown.

In the drawings Fig. 1 is a plan view partly broken away and partly in section of a machine embodying the invention; Fig. 2 is a view in front elevation of the machine; Fig. 3 is a view in end elevation of the machine looking from the right; and Fig. 4 is a sectional view of the machine taken substantially on the line 4—4 of Fig. 2 with the heating unit removed.

The machine illustrated in the drawing is provided with a rotary driving shaft 2 upon which are mounted fast and loose pulleys 4 and 6. The bobbin is supported in the machine between the inner end of the driving shaft 2 and the inner end of a rotary stud 8 rotatably mounted in a bearing in a shaft 10. The shaft 10 is mounted to slide longitudinally in a bearing in the frame, and is acted upon by a spring (not shown) which tends to force the same inwardly so as to hold the bobbin in position between the stud 8 and the shaft 2 as shown in Figs. 1 and 2. Upon the shaft 10 is mounted a hand wheel 12 by means of which the shaft may be moved outwardly in inserting or releasing a bobbin. The thread is guided onto the bobbin by means of a groove guide roll 14 rotatably and axially movable on a rod 16.

The thread as, or just before it reaches the bobbin, is engaged by a thread presser 18 formed on the free or movable end of one arm of a bell crank lever 20 pivoted at 22 on the frame. The other arm of the lever is acted upon yieldingly by certain devices (not shown) which tend to swing the same into a direction to carry the thread pressed toward the bobbin. The movement of the presser toward the bobbin, however, is limited by means of a latch 30 pivoted at 32 on the frame and provided with shoulders 34 and 35 arranged to engage the forwardly extending arm of the lever 20. During the winding operation the latch 30 and the lever 20 are relatively located so that the lever engages the shoulder 35. With the lever in the position thus determined by the latch, the thread presser 18 is located close to the bobbin in position to engage the thread substantially as it reaches the bobbin. The thread presser thus cooperates with the thread guide 14 to cause the thread to wind on the bobbin compactly in smooth, even layers.

Before a bobbin is inserted in or removed from the machine, the lever 20 and latch 30 are relatively located so that the shoulder 34 on the latch engages the lever, thereby holding the lever in the position shown in the drawings with the thread presser 18 located relatively remote from the bobbin. The latch is held in acting position by a coiled spring 36. Upon starting the machine the latch 30 is swung by the operator against the

action of the spring to release the shoulder 34 from engagement with the lever 20 and allow the lever to engage the shoulder 35.

For the purpose of heating the thread as it is wound on the bobbin the thread presser 18 is heated to a relatively high temperature by means of a heating device mounted thereon, and the thread presser heats the thread by conduction and radiation at and adjacent a point of contact of the thread therewith. In the present machine the heating device consists of an electrical heating unit 24 mounted in a suitable chamber in the thread presser from which lead conductor wires 26 connected with the plug terminals 28 of a flat-iron plug.

By heating the thread presser the thread is heated at the most advantageous point and the heating of the thread requires a very small amount of heat. Furthermore, the reduction of the wax on the thread to the proper condition to enable the thread to be wound evenly and compactly on the bobbin is insured.

Having explained the nature and object of the invention, and having specifically described a machine embodying the invention in its preferred form, what is claimed is:

1. A bobbin winding machine having, in combination, means for rotatably supporting a bobbin, means for rotating the bobbin, a lever, a thread presser formed on the free end of said lever for engaging the thread as it is wound on the bobbin, and a heating device carried by the thread presser in close proximity to the point of engagement with the thread.

2. A bobbin winding machine having, in combination, means for rotatably supporting a bobbin, means for rotating the bobbin, a thread presser for engaging the thread as it is wound on the bobbin, an electrical heating unit carried by the thread presser and circuit connections for said heating unit.

3. A bobbin winding machine having, in combination, means for rotatably supporting a bobbin, means for rotating the bobbin, a thread presser for engaging the thread as it is wound on the bobbin, an electrical heating unit carried by the thread presser, conductors connected with the heating unit and a plug member having its terminals connected respectively with said conductors.

4. A bobbin winding machine having, in combination, means for rotatably supporting a bobbin, means for rotating the bobbin, a lever, a thread presser formed on the free end of said lever for engaging the thread as it is wound on the bobbin provided with a chamber in close proximity to the point of engagement with the thread, and a heating device mounted in said chamber.

5. A bobbin winding machine having, in combination, means for rotatably supporting a bobbin, means for rotating the bobbin, a thread presser for engaging the thread as it is wound on the bobbin provided with a chamber in close proximity to the point of engagement with the thread and an electrical heating unit mounted in the chamber, and circuit connections for said heating unit.

EUGENE J. RAY.