Aug. 21, 1928. 1,681,559

H. M. STEPHENSON

SEWING MACHINE BOBBIN WINDER

Filed June 22, 1927 2 Sheets-Sheet 1

Fig. 1.

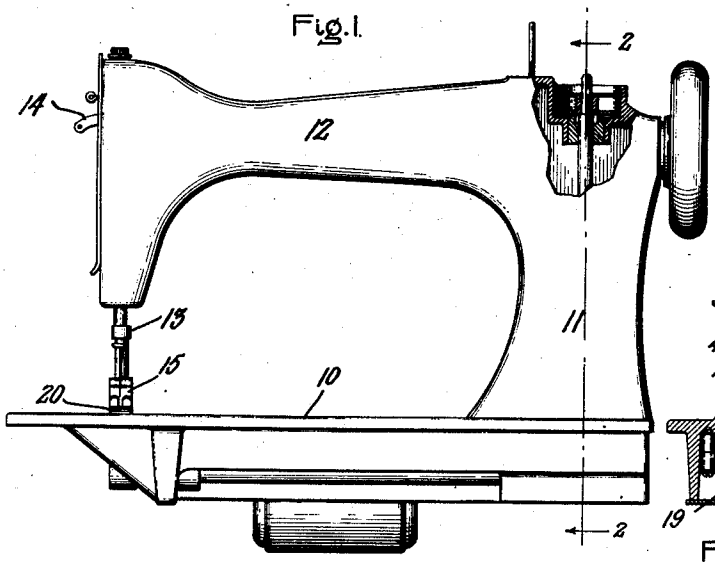


Fig. 2.

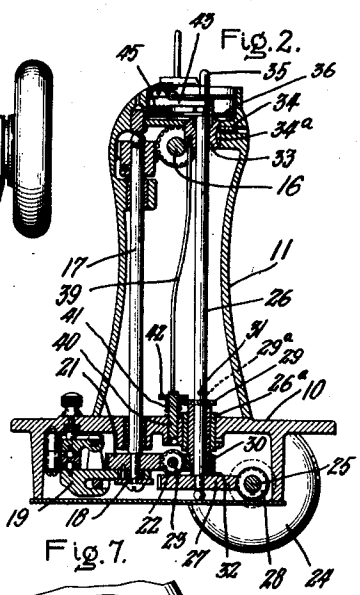


Fig. 7.

Fig. 3.

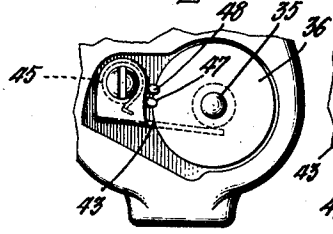
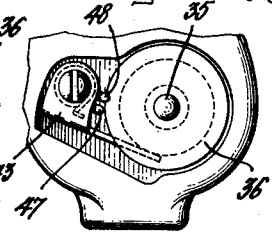
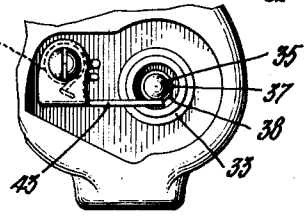
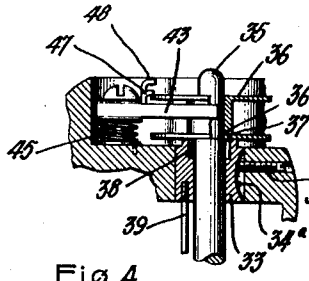
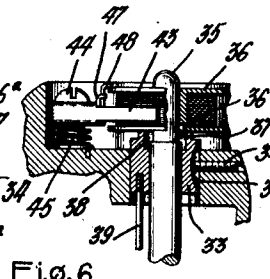


Fig. 5.









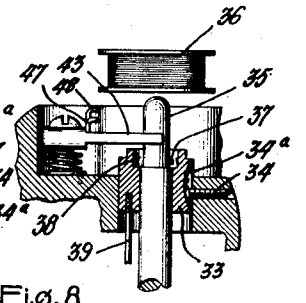


Fig. 4.

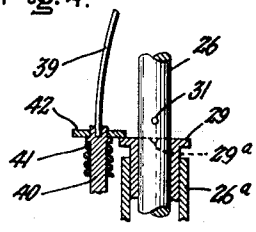


Fig. 6.

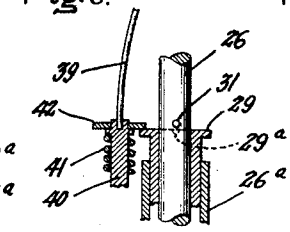
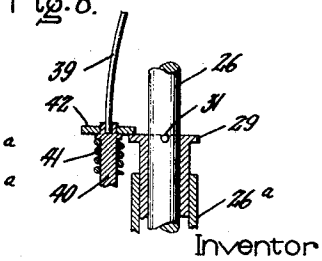


Fig. 8.



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Fig. 9.

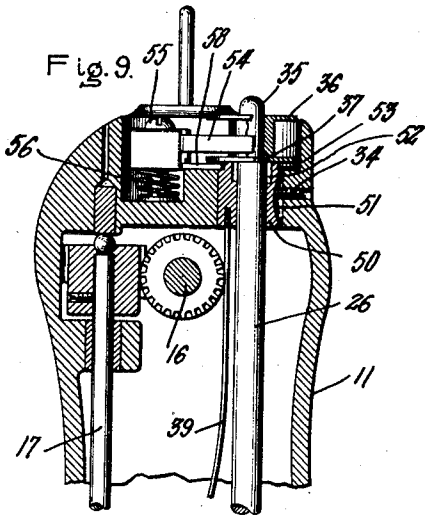


Fig. 14.

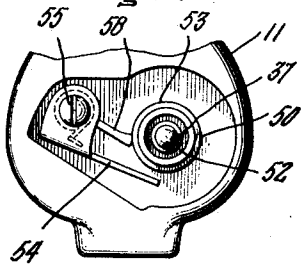


Fig. 10.

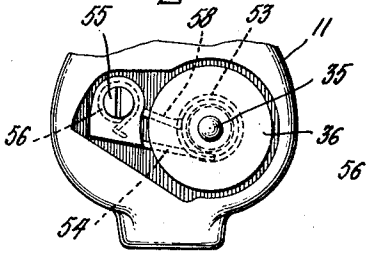
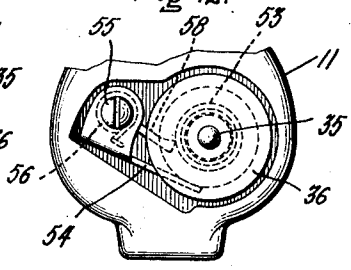
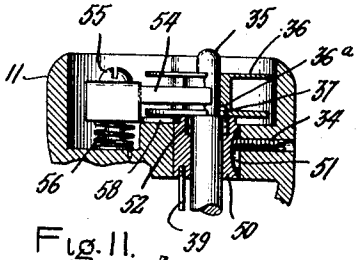
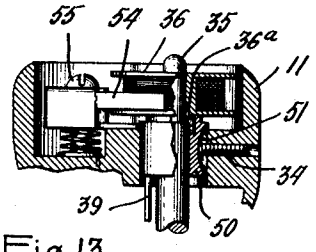


Fig. 12.







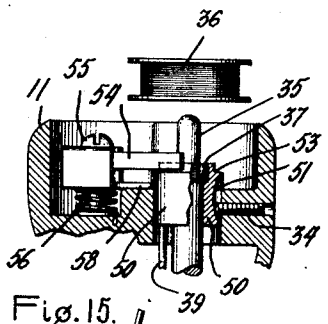


Fig. 11.

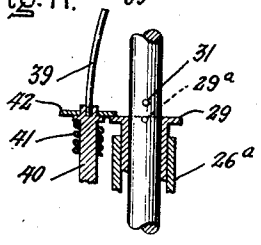


Fig. 13.

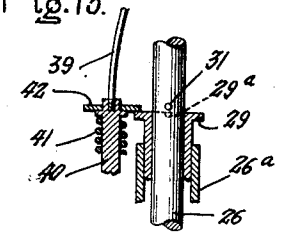
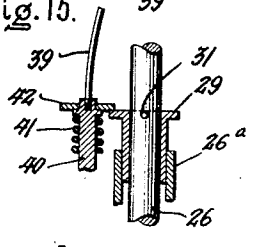


Fig. 15.



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Patented Aug. 21, 1928. 1,681,559

UNITED STATES PATENT OFFICE.

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SEWING-MACHINE-BOBBIN WINDER.

Application filed June 22, 1927. Serial No. 200,726.

My invention relates to sewing machines and more particularly to a construction for winding bobbins which is associated with the stitch forming mechanism of the machines.

In sewing machines as heretofore constructed the actuating means, comprising a treadle or electric motor, has been connected to the stitch forming mechanism of the machines by suitable means including a clutch so that the actuating means could be disengaged from the stitch forming mechanism when it was desired to wind the sewing machine bobbin. These machines were provided with a bobbin winding spindle supported thereon independent of the sewing machine mechanism and arranged to be connected to the sewing machine actuating means after the latter was disconnected from the stitch forming mechanism. This arrangement for disconnecting the actuating means from the stitch forming mechanism was provided so that the stitch forming mechanism would not disturb a partly completed seam which might be in the machine during the bobbin winding operation and because the bobbin winding spindle is driven at such high speed that if the stitch forming mechanism were being actuated at the same time objectionable vibration of the machine would result. In order to wind a bobbin on such machines it was necessary to disconnect the actuating means from the stitch forming mechanism and then to connect the bobbin winding spindle to the actuating means. Moreover care and attention was necessary on the part of the operator of the sewing machine to properly wind the bobbin and to stop the winding operation before too much thread was wound on the bobbin.

The object of my invention is, to greatly simplify the operation of rewinding the bobbins for sewing machines. In one aspect of my invention I accomplish this object by providing means including a bobbin winding spindle for actuating the mechanisms of the sewing machines. In another aspect of my invention I accomplish this object by providing a sewing machine construction in which the operation of placing the bobbin on the bobbin winding spindle in position to be wound will automatically disconnect the sewing machine actuating means from the stitch forming mechanism so that the bobbin winding spindle can be driven independently thereof. The winding operation is automatically controlled in this construction by means which retains an empty bobbin on the spindle in position to be wound, automatically releases the bobbin from the spindle after a predetermined amount of thread is wound on the bobbin, and retains the latter on the spindle in this released position until removed by the operator of the machine. The construction is also such that removing the bobbin from the bobbin winding spindle automatically reconnects the stitch forming mechanism to the actuating means so that the sewing machine can be again operated in the usual manner.

My invention will be more fully set forth in the following description referring to the accompanying drawings, and the features of the novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming part of this specification.

In the drawing Fig. 1 is a side elevation of a sewing machine embodying my improved bobbin winder partly broken away to show the relation of parts; Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1; Fig. 3 is a plan view of a portion of the arm of the sewing machine showing a bobbin retained on the bobbin winding spindle in position to be wound; Fig. 4 is a fragmentary sectional view of the bobbin winding spindle and related parts as shown in Figs. 2 and 3; Fig. 5 is a plan view of the bobbin winder with a bobbin thereon, after the thread wound on the bobbin has moved the follower to a position in which it releases the bobbin from the bobbin winding spindle and permits the bobbin to move to a position in which it is retained on the spindle in such position as not to be rotated thereby; Fig. 6 is a fragmentary sectional view of the parts shown in Fig. 5; Fig. 7 is a plan view of the bobbin winder as it appears when the bobbin is removed and the sewing machine is performing the usual sewing operation; Fig. 8 is a fragmentary sectional view of the bobbin winder as shown in Fig. 7; Fig. 9 is a fragmentary transverse section of a sewing machine showing my improved bobbin winding spindle in connection with a modified form of bobbin retainer, the sewing machine and bobbin winding construction being otherwise like that shown in Figs. 1 and 2; Fig. 10 is a plan view of the bobbin winder shown in Fig. 9; Fig. 11 is a fragmentary

longitudinal section of the bobbin winding spindle as shown in Fig. 10; Fig. 12 is a plan view of the bobbin winding spindle showing the bobbin retainer in the position which it occupies when the bobbin is released from the bobbin winding spindle by the winding of a predetermined amount of thread thereon; Fig. 13 is a longitudinal section of the bobbin and bobbin winding spindle as shown in Fig. 12; Fig. 14 is a plan view of the bobbin winder with the bobbin removed, as shown in Fig. 9; Fig. 15 is a longitudinal section of the bobbin winder shown in Figs. 9 and 14 showing the stitch forming mechanism and the actuating means reconnected.

Referring to the drawing, the sewing machine in connection with which I have illustrated my invention comprises a bed-plate 10 having a hollow standard 11 thereon from which extends an overhanging arm 12 for supporting the needle bar 13, take-up 14 and presser-foot 15 of the usual construction. The needle bar 13 and take-up 14 are actuated by a suitable mechanism which is driven by a horizontal shaft 16 extending through the overhanging arm 12 (Figs. 2 and 9). The horizontal shaft 16 is geared to a vertical shaft 17 having a cam or eccentric 18 fixed on the lower end thereof for actuating a suitable feeding mechanism by a bar 19, which transmits movement from the cam or eccentric to the feed-dog 20 of the machine through the remainder of the feeding mechanism. This specific feeding mechanism which is described and claimed in my application Serial No. 197,584 filed June 9, 1927, forms no part of the present invention and any other suitable feeding mechanism may be employed in connection with my improved bobbin winder. A gear 21 is also mounted on the lower end of the shaft 17 in position to mesh with a gear 22 which is attached to a horizontal shaft 23 supported on the bed-plate 10 and extending to the other end of the machine adjacent the feed-dog for rotating a looper. It will be clear in view of the foregoing that rotation of the horizontal shaft 23 will actuate the needle bar 13 and the take-up 14 through the horizontal and vertical shafts 16 and 17 respectively, at the same time rotating the eccentric 18 which is fixed to the shaft 17 and actuating the feed-dog of the machine by means of the bar 19 and the remainder of the feeding mechanism. The actuating means for the sewing machine comprises an electric motor 24 which is attached underneath the bed-plate 10 in any suitable manner and has a shaft 25 extending parallel to the horizontal shaft 23. The foregoing described construction of the sewing machine is merely illustrative of one form of machine to which my invention may be applied and the machine may be of any other suitable form.

In accordance with my invention a bobbin winding spindle 26 is supported in the bed-plate 10 at 26^a and extends vertically through the hollow standard 11 and above the upper wall of the arm of the machine into a recess adapted to receive a bobbin. The lower end of the shaft 26 is provided with a gear 27 which meshes with the gear 28 secured to the motor shaft 25 so that the bobbin winding spindle is driven whenever the motor is running. The lower end of the shaft 26 is supported in the bearing 26^a by a sleeve 29 which is slidably fitted on the shaft and rotatable in the bearing. The lower end of the sleeve 29 has a gear 30 fixed thereon which meshes with the gear 22 on shaft 23 so that rotation of the sleeve 29 actuates the looper by means of shaft 23, the needle bar and take-up mechanisms by means of the shaft 17, and the feeding mechanism by means of the bar 19. The sleeve 29 is formed with a notch 29^a which is retained in engagement with a pin 31 projecting from the shaft 26, as shown in Fig. 8, during the ordinary operation of the sewing machine, by a spring 32 between the gear 27 and the end of the sleeve 29. The engagement of the notch 29^a with the pin 31 completes a driving connection between the motor 24 and the stitch forming mechanism which includes shaft 25, gears 27 and 28, bobbin winding spindle 26, pin 31, sleeve 29, and gears 30 and 22. In this construction depressing the sleeve 29 against the spring 32 slides the sleeve, and the gear 30 attached thereto, downwardly on the bobbin winding spindle 26 and causes the notch 29^a to disengage the pin 31 so that the stitch forming mechanism is disconnected from the bobbin winding spindle and the motor which drives the same.

The bobbin winding spindle 26 extends through the upper wall of the standard 11 of the sewing machine and is supported in a collar 33 which is movable longitudinally thereon over a range of movement which is limited by a set screw 34 extending into the recess 34^a formed in the collar 33. As shown more clearly in Fig. 8, the end of the bobbin winding spindle 26 is reduced in diameter at 35 to slidably receive a sewing machine bobbin 36. This reduced portion 35 has a pin 37 projecting therefrom which is adapted to engage a recess 36^a in the bobbin 36 and form a driving connection between the bobbin winding spindle and the bobbin. The collar 33 is provided with a counter-bore 38 of sufficient diameter to permit it to move upwardly to a position surrounding the pin 37. When a bobbin is not being wound the collar 33 is retained in this position by a spring 41 which is arranged on a pin 40 slidably fitted in an opening in the bed-plate 10 and which tends to move the collar upwardly by means of a rod 39 connecting the pin and the collar. The pin 40 has a flange 42 fixed thereon which extends over the collar 29 so that depressing the collar 33 moves the sleeve 29 downwardly

and thereby disconnects the stitch forming mechanism from the bobbin winding spindle and the driving motor geared to the latter.

In order to wind a bobbin it must be placed on the reduced end 35 of the spindle 26 with the pin 37 in the recess 36ª of the bobbin to form a driving connection between them, as shown in Fig. 4. In placing the bobbin 36 on the bobbin winding spindle in this position the bobbin 36 must be forced against the collar 33 and depressed far enough to move the end of the collar below the pin 37 which forces the sleeve 29 downwardly against the spring 32 by the rod 39 and flange 42 so that the stitch forming mechanism is disconnected from the spindle. The bobbin is retained in this position by a projection 47 extending over the flange of the bobbin, as shown in Fig. 3, and formed on a follower 43, which is pivotally supported on the arm of the machine adjacent the spindle 44, and which is urged toward the latter by a spring 45. The follower bears on the bobbin between the flanges thereof during the winding operation and is swung outwardly on its pivotal support against the spring 45 by the thread wound on the bobbin. The projection 47 is arranged on the follower so that it extends over the bobbin flange at the beginning of the winding operation and is moved from this position shown in Fig. 3 to the position shown in Fig. 4 beyond the edge of the bobbin flange by the follower swinging on its pivotal support under the action of the thread wound on the bobbin. The movement of the projection 47 over the edge of the bobbin flange releases the bobbin and permits it to move upwardly on the bobbin winding spindle against a projection 48 out of engagement with the pin 37, as shown in Fig. 6. The projection 48 retains the bobbin in this position in which the bobbin winding spindle turns freely in the bobbin without rotating it so that thread is not wound on the bobbin. The projection 48 is arranged so that the upward movement of the bobbin on the spindle releases the bobbin from the pin 37 and stops the winding operation without bringing the notch 29ª into engagement with the pin 31 so that the stitch forming mechanism is not reconnected to the driving motor by the upward movement of the bobbin which stops the winding operation. This is a very desirable arrangement as it avoids starting the stitch forming mechanism unexpectedly on completion of the winding operation which would confuse the operator and possibly disturb uncompleted work in the machine. The arrangement of the projection 48 on the follower is such that the latter can be swung outwardly far enough to move the former over the edge of the bobbin flange so that the bobbin can be removed from the bobbin winding spindle which causes the collar 33 and sleeve 29 to move upwardly far enough to bring the notch 29ª into engagement with the pin 31 and reconnect the driving motor to the stitch forming mechanism, as shown in Fig. 8, so that the machine can be operated in the usual manner after replacing the bobbin and its case within the looper.

When it is desired to rewind the empty bobbin it is placed on the reduced portion 35 of the bobbin winding spindle 36 by swinging the follower 43 outwardly far enough to permit the lower flange of the bobbin to be brought into contact with the collar 33. The bobbin is then forced downwardly which depresses the collar 33 and disengages the notch 29ª in the sleeve 29 from the pin 31, disconnecting the motor 24 from the stitch forming mechanism of the sewing machine. Depressing of the collar 33 also moves the counterbore 38 below the pin 37 so that the latter can be brought into engagement with the recess 36ª in the bobbin 36. When the parts are in this position the follower 43 is released so that the spring 45 swings it between the flanges of the bobbin and moves the projection 47 of the follower over the upper flange of the bobbin 36 which retains the latter on the bobbin winding spindle in position to be wound, as clearly shown in Figs. 3 and 4. Thread is then wound on the bobbin which swings the follower 43 about its pivotal support 44 and moves the projection 47 out of engagement with the upper flange of the bobbin. Disengaging the projection 47 from the bobbin stops the winding operation as it permits the bobbin to move upwardly with the collar 33 under the action of springs 41 and 32 until the bobbin is brought against the projection 48 and out of engagement with the pin 37, as shown in Fig. 6. In this position of the bobbin 36 the portion 35 of the spindle 26 turns freely therein without rotating the same. When the bobbin stops rotating it will be apparent that the winding operation is complete so that the circuit to the motor 24 is opened at the foot rheostat or switch which stops the rotation of the bobbin winding spindle. The bobbin 36 is then removed from the spindle which permits the collar 33 and sleeve 29 to move to their uppermost positions under the action of the springs 41 and 32 respectively and bring the groove 29ª into engagement with the pin 31 on the bobbin winding spindle 26 thereby reengaging the driving motor with the stitch forming mechanism of the sewing machine. The bobbin is then replaced in its bobbin case within the looper and the sewing operation may be continued in the usual manner.

In Figs. 9 to 15 I have illustrated a slight modification of the follower and bobbin retainer arrangement shown in Figs. 1 to 8, the structure of the sewing machine being otherwise as shown therein.

In this modification of my improved bobbin winder the upper end of the shaft 26 is

supported in a collar 50 which is provided with a recess 51 into which projects the set screw 34 for limiting the range of vertical movement of the collar. The collar is also provided with a counterbore 52 which in its uppermost position surrounds the pin 37 projecting from the reduced portion 35 of the shaft 26, as shown in Figs. 14 and 15, and the upper end of the collar is formed with a shoulder 53. In this form of my invention the position of the bobbin 36 and the collar 50 is controlled by a follower arm 54, which is pivotally supported on the arm of the machine at 55 and which is urged toward the spindle by a spring 56 connected at one end to the follower and at the other end to the arm of the machine. In this modification instead of employing projections such as 47 and 48, as shown in Figs. 2 to 8 for retaining the bobbin on the bobbin winding spindle I provide the follower with a projection 58 extending adjacent the shoulder 53 on the collar 50 to engage the same for retaining the collar depressed below the pin 37 so that the pin engages the bobbin 36 during the winding operation, as shown in Figs. 9 and 11. During the winding operation the follower 54 extends between the flanges of the bobbin and the spring 56 causes it to move inwardly against the bobbin bringing the projection 58 over the shoulder 53 as shown in Figs. 10 and 11. Winding of thread on the bobbin then causes the follower 54 and the projection 58 to move from the position shown in Figs. 10 and 11 to that shown in Figs. 12 and 13. The projection 58 is so arranged that the movement of the follower 54 disengages the projection from the shoulder 53 on the collar 50 and permits the latter to move upwardly under the action of springs 41 and 32 so that the counterbore 52 surrounds the pin 37 on the bobbin winding spindle. The follower 54 is positioned so that the upward movement of the collar 50 brings the lower flange of the bobbin into engagement with the follower 54 which disengages the bobbin from the pin 37 but does not cause the notch 29a to reengage the pin 31 so that the winding operation is stopped without reengaging the stitch forming mechanism to the driving motor of the sewing machine. In this position of the parts, as clearly shown in Fig. 13, the bobbin winding spindle turns within the bobbin without rotating the same so that it will be immediately apparent that the winding operation is completed and the electric circuit to the driving motor will be interrupted. When the bobbin is removed from the bobbin winding spindle the projection 58 on the follower bears against the side of the collar 53 under the action of the spring 56 and the collar 53 will be in its uppermost position, which permits the sleeve 29 to move upwardly into such position that the notch 29 engages the pin 31 on the shaft 26 and reconnects the driving motor of the sewing machine to the stitch forming mechanism, as shown in Fig. 15.

In operation of the form of my invention shown in Figs. 9 to 15, when it is desired to wind the bobbin the follower 54 is swung outwardly so that the bobbin 36 can be placed on the reduced portion 35 of the bobbin winding spindle in engagement with the collar 50. The bobbin is then forced downwardly which depresses the collar 50 and brings the pin 37 on the bobbin winding spindle into engagement with the recess 36a in the bobbin 36. The follower 54 is released and is urged by the spring 56 into engagement with the bobbin which swings the arm 58 over the shoulder 53 formed on the collar 50 and retains the parts in the position shown in Figs. 9, 10, and 11. In this position of the parts the sleeve 29 is depressed by the rod 39 and flange 42 against springs 41 and 32 out of engagement with the pin 31 so that the driving connection between the motor 24 and the stitch forming mechanism of the sewing machine which is actuated through the sleeve 29 is interrupted, in the same manner as explained in describing the form of my invention shown in Figs. 1 to 8. Thread is wound on the bobbin which swings the follower 54 to the position shown in Figs. 12 and 13, and the arm 58 off of the shoulder 53. This permits the bobbin and the collar 50 to move upwardly under the action of springs 41 and 32 so that the counterbore 52 surrounds the pin 37 on the reduced portion 35 and disengages the bobbin 36 from the pin 37 which stops the winding of thread on the bobbin. However, this movement of the collar 50 does not permit the sleeve 29 to move upwardly far enough to bring the notch 29a into engagement with the pin 31 so that the stitch forming mechanism is not reconnected to the driving motor at the same instant that the winding operation is completed. The operator of the machine will then open the circuit to the driving motor and remove the bobbin from the bobbin winding spindle which will permit the parts to assume the position shown in Figs. 14 and 15, and reconnect the stitch forming mechanism to the motor 24 by bringing the notch 29a in the sleeve 29 into engagement with the pin 31. The bobbin is then replaced in the machine and the sewing operation continued.

It will be apparent from the foregoing that I have produced an improved bobbin winding arrangement for sewing machines which automatically disengages the actuating means from the stitch forming mechanism of the sewing machine in response to placing a bobbin on the bobbin winding spindle in position to be wound, and that the actuating means will be reconnected to the stitch form-

ing mechanism when the bobbin is removed from the bobbin winding spindle after being wound.

Various modifications will occur to those skilled in the art of the embodiment of my invention disclosed herein, and although I have shown my invention in connection with an electric rotary center bobbin sewing machine, I desire it to be understood that my invention is not limited to the particular arrangement shown and described, and I intend in the appended claims to cover all modifications which do not depart from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a sewing machine, a needle operating mechanism, means for actuating said needle operating mechanism, means for winding a bobbin, and means for disconnecting said needle from said needle actuating means responsive to placing a bobbin in engagement with said bobbin winding means.

2. In a sewing machine, a needle operating mechanism, a bobbin winding spindle, and means including said spindle for actuating said needle operating mechanism.

3. In a sewing machine, a needle operating mechanism, a bobbin winding spindle, means including said spindle for actuating said needle operating mechanism, and means for disconnecting said needle operating mechanism from said spindle responsive to placing a bobbin to be wound on said spindle.

4. In a sewing machine, a stitch forming mechanism, means for actuating said stitch forming mechanism, means for winding a bobbin, and means for disconnecting said stitch forming mechanism from said actuating means responsive to placing a bobbin in engagement with said bobbin winding means.

5. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle, and means including said spindle for actuating said stitch forming mechanism.

6. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle, means including said spindle for actuating said stitch forming mechanism, and means for disconnecting said stitch forming mechanism from said spindle responsive to placing a bobbin to be wound on said spindle.

7. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle including means adapted to rotate a bobbin therewith, means for actuating said stitch forming mechanism and said spindle, and means for disconnecting said stitch forming mechanism from said actuating means responsive to placing a bobbin on said spindle in engagement with said bobbin rotating means.

8. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle including means adapted to rotate a bobbin therewith, means including said spindle for actuating said stitch forming mechanism, and means for disconnecting said stitch forming mechanism from said spindle responsive to placing a bobbin on said spindle in engagement with said bobbin rotating means.

9. In a sewing machine having a bed-plate, a stitch forming mechanism, a bobbin winding spindle extending above and below said bed-plate, actuating means below said bed-plate, means for mechanically connecting said actuating means and said stitch forming mechanism including said bobbin winding spindle.

10. In a sewing machine having a bed-plate, a stitch forming mechanism, a bobbin winding spindle extending above and below said bed-plate, means for actuating said stitch forming mechanism arranged beneath said bed-plate, means for mechanically connecting said actuating means and said stitch forming mechanism including said spindle, and means for disconnecting said actuating means from said stitch forming mechanism in response to placing a bobbin on said bobbin winding spindle.

11. In a sewing machine, a needle operating mechanism, means for actuating said needle operating mechanism, means for winding a bobbin, means for disconnecting said actuating means from said needle operating mechanism responsive to placing a bobbin in engagement with said bobbin winding means, and means for reconnecting said actuating means and said needle operating mechanism responsive to disengaging the bobbin from said bobbin winding means.

12. In a sewing machine, a needle operating mechanism, a bobbin winding spindle, means including said spindle for actuating said needle operating mechanism, means for disconnecting said actuating means from said needle operating mechanism responsive to placing a bobbin to be wound on said spindle, and means for reconnecting said actuating means to said needle operating mechanism responsive to removing the bobbin from said spindle.

13. In a sewing machine, a needle operating mechanism, means for winding a bobbin, means for actuating said needle operating mechanism and said bobbin winding means, means for disconnecting said actuating means from said needle operating mechanism responsive to placing a bobbin in engagement with said bobbin winding means, means for disconnecting said bobbin from said bobbin winding means responsive to winding a predetermined amount of thread on the bobbin, and means for reconnecting said actuating means to said needle actuating mechanism responsive to removing the bobbin from said bobbin winding means.

14. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle including means adapted to rotate a bobbin there-

with, means for actuating said stitch forming mechanism and said spindle, means for disconnecting said stitch forming mechanism from said actuating means responsive to placing a bobbin on said spindle in engagement with said bobbin rotating means, means for retaining the bobbin in engagement with said bobbin rotating means, means for releasing the bobbin from engagement with said bobbin rotating means upon the winding of a predetermined amount of thread thereon and for retaining the bobbin on said spindle out of engagement with said bobbin rotating means, and means for reconnecting said stitch forming mechanism to said actuating means upon the removal of the bobbin from said bobbin winding spindle.

15. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle including means adapted to rotate a bobbin therewith, means for actuating said stitch forming mechanism including said spindle, a clutch for connecting said spindle to said stitch forming mechanism including means for retaining it in such a position as to form a connection between them, a collar slidably mounted around said spindle surrounding said bobbin rotating means, and means for releasing said clutch to disconnect said spindle from said stitch forming mechanism responsive to moving said collar from its position surrounding said bobbin rotating means.

16. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle including means adapted to rotate a bobbin therewith, means for actuating said stitch forming mechanism including said spindle, a clutch for connecting said spindle to said stitch forming mechanism, a bobbin releasing member extending above said bobbin rotating means and movable longitudinally of said spindle, means for releasing said clutch to disconnect said spindle from said stitch forming mechanism in response to movement of said member from its position above said bobbin rotating means, and means for retaining a bobbin to engage said bobbin rotating means and to displace said member from its position above said bobbin rotating means for disengaging the clutch connecting said spindle and said stitch forming mechanism.

17. In a sewing machine, a stitch forming mechanism, a bobbin winding spindle including means adapted to rotate a bobbin therewith, means for actuating said stitch forming mechanism including said spindle, a clutch connecting said spindle and said stitch forming mechanism, a collar slidably mounted on said spindle surrounding said bobbin rotating means, means connecting said collar and said clutch for disengaging the latter to disconnect said spindle and said stitch forming mechanism upon movement of said collar from its position surrounding said bobbin rotating means, means for retaining a bobbin on said spindle to engage said bobbin rotating means and to displace said collar for disengaging the clutch connecting said spindle and said stitch forming mechanism, a follower, means for retaining said follower against the thread wound on the bobbin, means for causing said follower to release said bobbin retaining means when a predetermined amount of thread is wound on the bobbin and for retaining the bobbin on said spindle out of engagement with said bobbin rotating means, and means for reengaging said clutch for reconnecting said spindle and said stitch forming mechanism when the bobbin is removed from said spindle.

18. In a sewing machine, a bobbin winder, a follower adapted to bear against the thread wound on a bobbin thereon, means on said follower for retaining the bobbin in engagement with said bobbin winder, and means for causing the means on said follower to release the bobbin from the bobbin winder and stop the winding of thread on the bobbin when a predetermined amount of thread is wound thereon.

19. In a sewing machine, a bobbin winder having a spindle, means on said spindle adapted to rotate a bobbin, a follower extending adjacent said spindle and adapted to bear on the thread wound on the bobbin, means on said follower adapted to retain the bobbin in engagement with said bobbin rotating means, means on said follower adapted to retain the bobbin on said spindle out of engagement with said bobbin rotating means, and means for causing said follower to move said first mentioned means out of engagement with the bobbin and to stop the winding of thread on the bobbin in response to winding a predetermined amount of thread thereon.

20. In a sewing machine, a bobbin winder having a spindle, means on said spindle adapted to rotate a bobbin, a follower extending adjacent said spindle adapted to bear on the thread wound on the bobbin, said follower having two projections displaced from each other longitudinally of said spindle, a pivotal support for said follower, one of said projections being adapted to retain the bobbin in engagement with said bobbin rotating means when said follower is near the axis of said spindle and to release the bobbin from the bobbin rotating means when said follower is moved outwardly from the spindle by the thread wound on the bobbin, the other projection being adapted to retain the bobbin on said spindle out of engagement with said bobbin rotating means when said one projection releases said bobbin.

In witness whereof, I have hereunto set my hand this 20th day of June, 1927.

HUGH M. STEPHENSON.