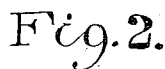


F. J. THIEME.
WINDING MACHINE FOR YARN OR THREAD.
APPLICATION FILED NOV. 25, 1911.

4 SHEETS—SHEET 1.



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4 SHEETS—SHEET 2.

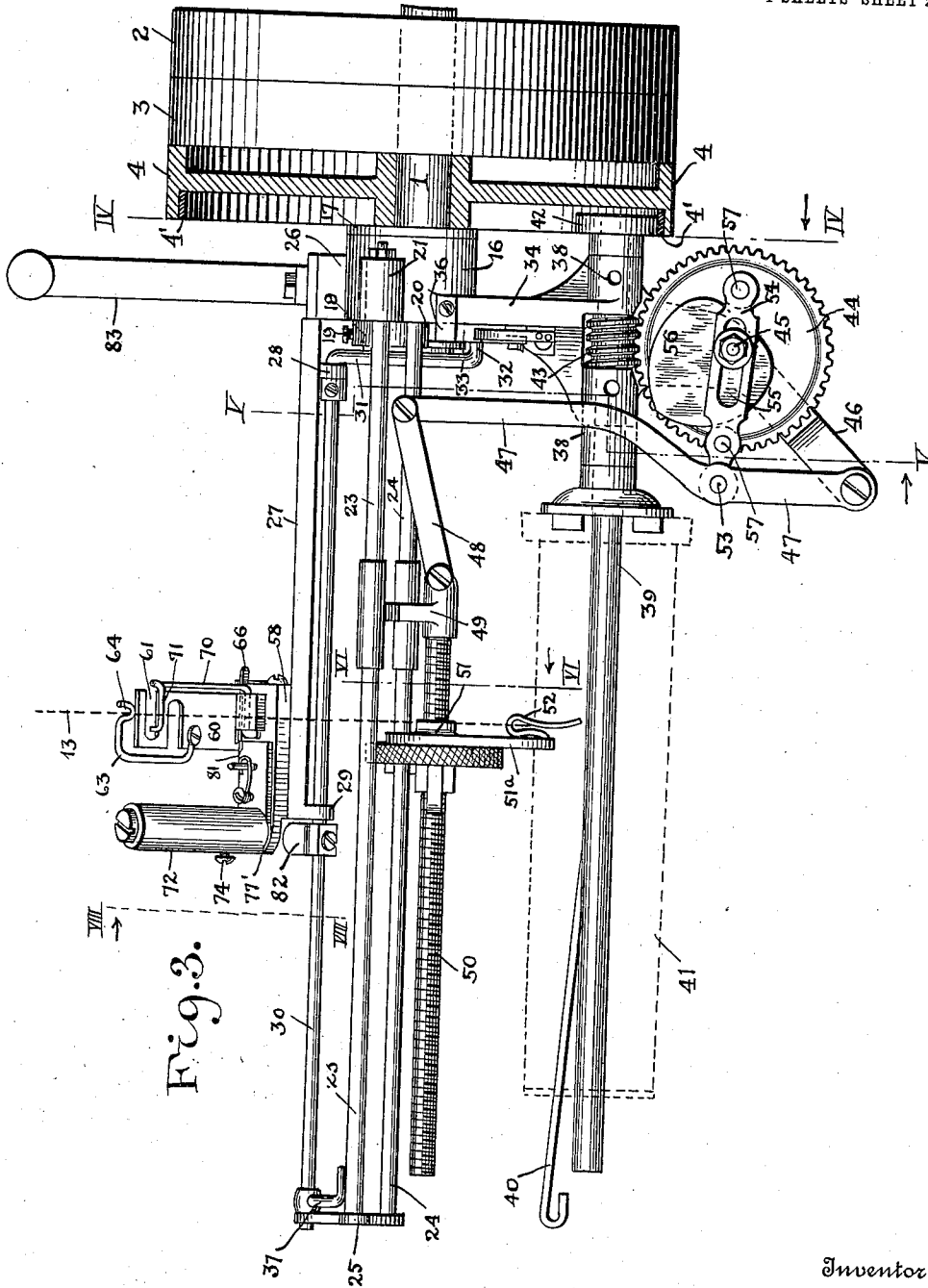


Fig. 3.

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4 SHEETS-SHEET 3.

Fig. 4.

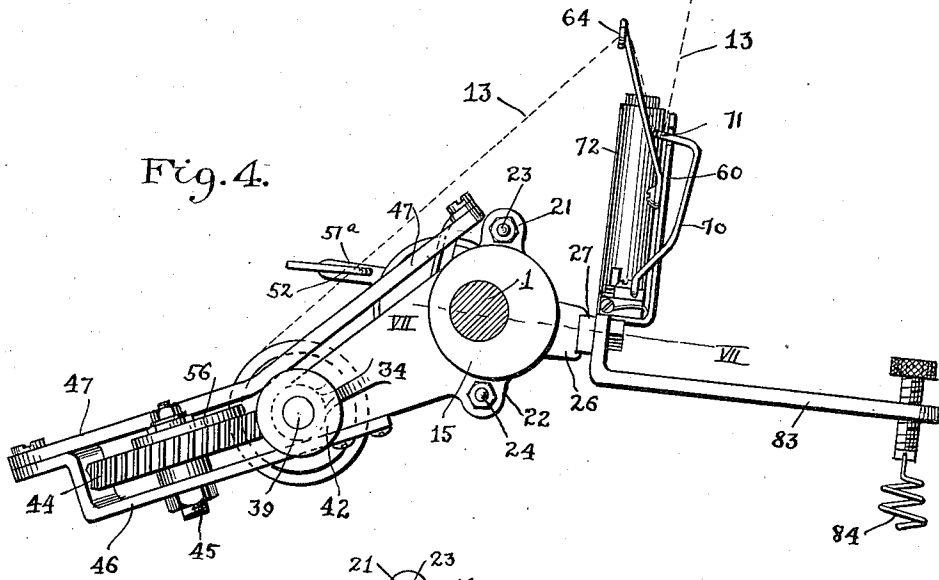


Fig. 5.

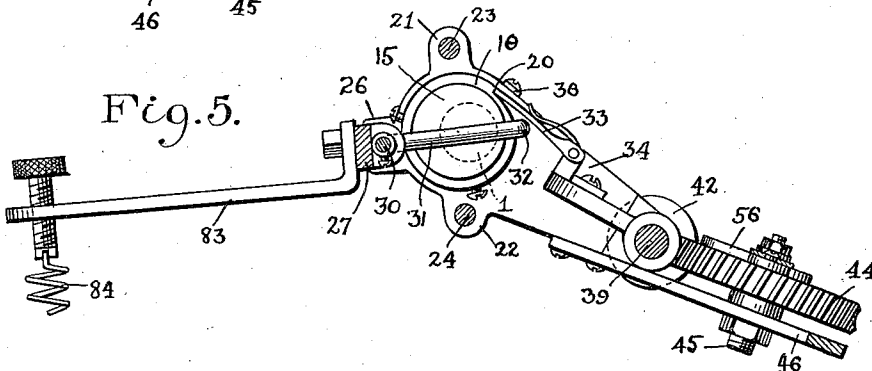


Fig. 6.

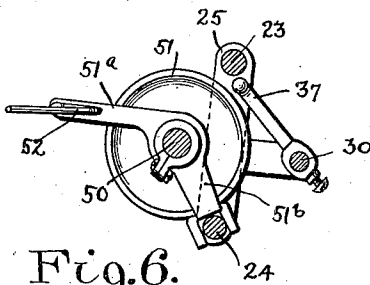
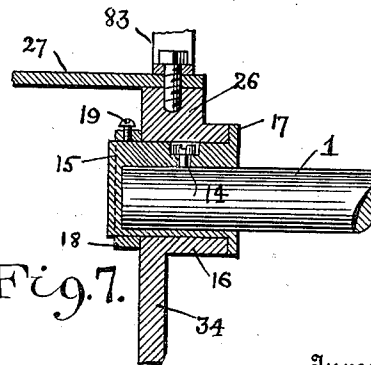


Fig. 7.



Witnesses

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4 SHEETS—SHEET 4.

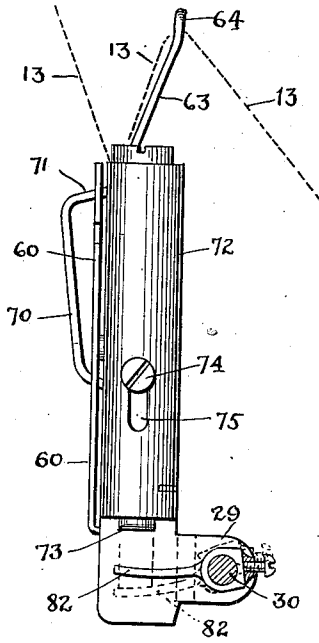


Fig. 8.

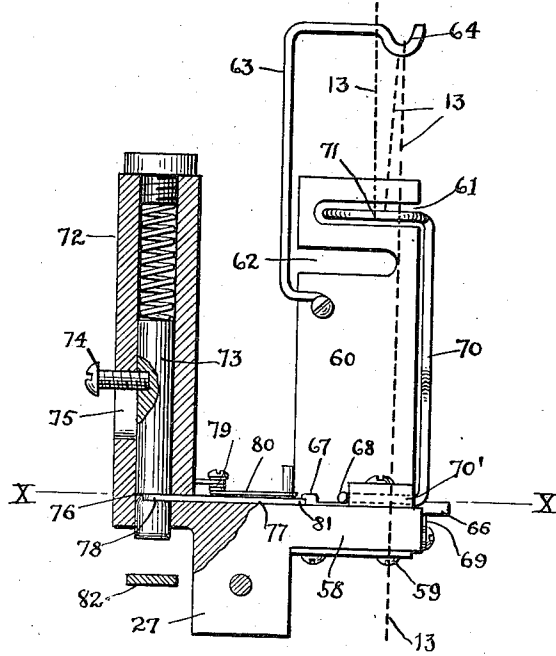


Fig. 9.

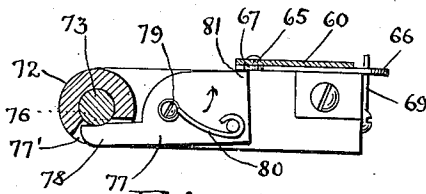


Fig. 10.

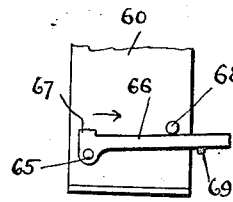


Fig. 11.

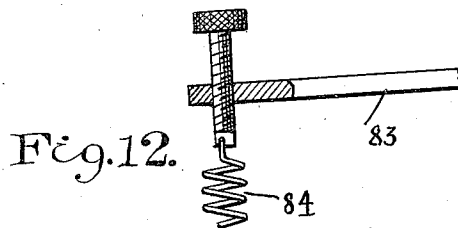


Fig. 12.

Witnesses

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UNITED STATES PATENT OFFICE.

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WINDING-MACHINE FOR YARN OR THREAD.

1,028,302.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed November 25, 1911. Serial No. 662,324.

To all whom it may concern:

Be it known that I, FREDERICK JOHN THIEME, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Winding-Machines for Yarn or Thread, of which the following is a specification.

This invention relates to a machine for back-winding or recovering of a yarn or thread, which has been knitted into a defective stocking, or other similar fabric.

The object of the invention is to provide a back-winding machine of such a size, construction and mode of operation as to enable the same to be directly supported or attached to the usual and common form of knitting machine, so that the same operator attending the knitting machine or machines can operate the back-winding machine without stopping the knitting machines.

A further object of the invention is to have the back-winding automatically stop, when the yarn or thread being recovered is discontinuous or broken, and the defective section of the thread or yarn in the stocking has been reached, in order to enable the attendant having charge of the knitting machine to recover the yarn or thread and also properly adjust or correct the defect in the continuity of the yarn in the knitting machine and resume the knitting operations.

Further objects and advantages of my invention will appear in the detailed description.

My invention consists of structural features and relative arrangements of the several parts of the apparatus which will hereinafter appear in the specification, and particularly pointed out in the appended claims.

In the four sheets of drawing forming a part of this specification and in which similar reference characters indicate the same parts in the several figures of drawing: Figure 1 is a front elevation of my machine showing the pulleys and section of the end of the attaching bar or shaft; Fig. 2 is an end view; Fig. 3 is an enlarged top plan view of the back-winding machine; Fig. 4 is a section on line IV—IV of Fig. 3; Fig. 5 is a section on line V—V of Fig. 3; Fig. 6 is a section on line VI—VI of Fig. 3; Fig. 7 is a section on line VII—VII of Fig. 4; Fig. 8 is an enlarged and sectional view taken on line VIII—VIII of Fig. 3; Fig. 9

is a side view partly in section of Fig. 8; Fig. 10 is a sectional view taken on line X—X of Fig. 9; and Figs. 11 and 12 are detail views.

Referring to Figs. 1 and 2, 1 is a bar or supporting shaft rigidly secured to the side of the frame of any suitable form of knitting machine. 2, 3 and 4 are idle pulleys supported on the bar or shaft 1 which are separate and independent of each other, and pulley 4 is provided with a facing of leather or other friction increasing material on one side of its inner periphery as shown in Fig. 3. 5 is a belt adapted by any well known belt shifter to engage any one of the three pulleys 2, 3 and 4 from the pulley 6, which is driven by a motor 7. 8 is a bracket suitably attached and rigidly supported from the frame of the knitting machine, so as not to interfere with the operation of any of its parts. Fixed on said bracket 8, is a form 9 adapted to receive an irregularly woven or defective stocking 10, or other knitted fabric of which the yarn or thread is to be recovered or unwound. 11 is a T-shaped bracket having supporting and guiding eyes 12, 12, for holding and properly leading the yarn or thread 13, passing from the imperfect fabric 10, to and into the back-winding machine hereinafter described.

On the end of the rod or shaft 1 (see Fig. 7) is fixed by means of a countersunk set screw 14, an eccentric 15, and rotatably supported and surrounding said eccentric is a supporting bracket or frame 16, which is prevented from lateral movement by flange 17, and a removable collar 18, said collar being securely held on the eccentric 11, by means of set screws 19, 19, and also provided with an off set 20 (see Fig. 5) for purposes to be hereinafter described. Rigidly attached and projecting from lugs 21 and 22 on said bracket or supporting frame 16, are two parallel rods 23 and 24 preferably circular in cross-section, whose outer ends are secured in a plate 25. Secured to and rigidly and laterally projecting from a side lug 26, of bracket 16, is a narrow platform 27, and rotatably supported near the inner and outer ends of said platform 27, by means of pierced ears 28, and 29, is a rocker bar 30, having at its inner end an extension 31 at right angles thereto, and a finger end 32, adapted to engage a spring pressed pawl 33, pivoted on the side extension 34, attached

to or made integral with the supporting frame 16. 36 is a stop for arresting the outward motion of the pawl 33, and finger end 32, after said pawl disengages the off set 20, on collar 19. The outer end of the rod 30, is also rotatably mounted in the plate 25, and is provided with a projection 37, for oscillating by hand, if so desired, the rocker bar 30 and its finger 32.

10 Rotatably supported in bearings 38, 38, on the lower end of the extension 34, is a shaft 39, having at one end a spring 40 for engaging a bobbin 41, to receive the yarn or thread rewound, as will be hereinafter described.

15 At the other or inner end of the shaft 39, is securely fastened or keyed a friction wheel 42, adapted to engage the inner friction or leather surface 4¹ of the pulley 4, as shown in Fig. 3. To the shaft 39 and between the bearings 38, 38, is keyed a worm 43, which meshes with a worm gear 44, rotatably mounted on a pin 45, supported by the bracket 46, secured on the underside of the extension 34 (see Fig. 5). A lever 47 has

25 one end pivotally attached to the free end of the bracket 46, while its other end, by means of a link 48, is pivotally connected to a bracket 49, supported by and reciprocating back and forth on the parallel rods 23, and 30 24, as shown. Extending horizontally from and carried by the bracket 49 is a screw threaded rod 50, on which is adjustable a nut 51 carrying an arm 51^a, having a yarn or thread guiding eye 52. Said nut 51, if

35 desired, may have an extension 51^b in the back, as shown in Fig. 6, with a forked end for engaging the rod 24. Pivotally connected to the lever 47 by means of a pin 53 is a link 54, having a slot 55, through which

40 slot passes the same pin 45 that carries the work gear 44. Between the link 54 and gear 44, and secured to said gear is a heart-shaped cam 56, adapted to engage anti-friction rollers 57, 57, and hence as will be readily understood, by the rotation of the gear 44 the lever 47 will be oscillated with a varying movement so as to properly and evenly

45 wind the yarn on the rotating bobbin 41.

Near the outer end and on top of the platform 27 is a lateral enlargement or base section 58 to which is secured on one side and in an upright position by means of screws 59, 59, a plate 60 having cut therein slots 61 and 62, and attached thereto a bent

55 wire 63 having a yarn guiding notch 64. Pivotally secured by means of a pin 65 (see Figs. 10 and 11) is a trigger 66 having a small enlargement 67, said trigger being normally held against a stop 68, by means

60 of spring 69.

70 is a bent wire whose lower bent in end 70¹ is pivotally secured to the top of the base section 58, while its middle or upright, and upper bent section 71 can swing free of the plate, said section 71 being adapted to

and having a normal tendency to pass through the slot 61, as indicated in Figs. 3 and 9, when not engaged by the yarn 13. 72 is a cylinder attached to the other side of the base section 58, and adapted to receive a

70 spring pressed plunger 73 the upward and outward movement of which is arrested by means of a screw 74 fastened to the plunger, striking the end of a slot 75, as shown.

75 Near the outer end of the plunger 73 is provided a notch 76 adapted to be engaged by the end 78 of a catch 77, passing through a slot 77¹, when said catch moves on its pivot 79. The catch 77 is normally pressed by a spring 80 in the direction of the arrow (Fig. 10) so that its nose 81 is just in engagement with the enlargement 67 of the trigger 66.

80 82 is a small lever securely fastened on the rocker bar 30, having its free end projecting directly under and adapted to be depressed by the lower end of the plunger 73, when released for purposes to be hereinafter described.

Referring to Figs. 1, 2, 4, 5 and 12, 83 is an arm rigidly secured to the side lug 26 on the back of the bracket 16, which is engaged at its free end by any suitable form of adjustable spring 84, the other end of said spring 84 being connected to a depending rod 85 secured to the platform 27, or any

90 other fixed support. Said spring 84 may have any suitable adjusting means whereby its strength with which it pulls in a downward direction on the free end of arm 83, as indicated by arrows, may be varied to suit the conditions, or if so desired, a variable weight may be suspended from the end of the arm 83, which would normally tend to rotate the supporting bracket or frame 16, about the eccentric 15, and lift upwardly the shaft 39 and its connections and free the friction wheel 42 from the inner periphery or surface 4¹ of pulley 4.

105 Having now fully described the structural features and relative arrangements of the various parts of the invention, and assuming the defective knitted fabric 10 of which the broken yarn or thread is to be recovered is placed on the form 9, as shown in Fig. 1, the yarn 13 is then passed through the eyes 12, 12, downwardly around the horizontal section 71 of pivoted bent wire 70, then upwardly over the guiding eye 52 and finally secured to the bobbin 41. It

110 will be readily seen by this arrangement (see Fig. 9) that the pivoted and bent wire 70, will be held in an upright position as long as the yarn is continuous and unbroken. Having properly threaded and adjusted the yarn through the machine, the operator depresses against the action of the spring 84, for reasons explained, the forward part of the machine, by rotating through a small angle the connected supporting bracket 16 around the end of the shaft 1 and eccentric

115 120 125 130

15. During this operation the pawl 33 rides over the top of the fixed collar 18 and finally drops back into the notch 20, as indicated in Fig. 5, and holds the back-winding machine in its lower position, and the friction wheel 42 firmly against the inner frictional surface 4¹ of pulley 4. The machine is now in position to be put in operation by shifting the belt 5 by any suitable means from the pulley 3 to pulley 4. By the revolving of the pulley 4, the rotation of wheel 42 is transmitted to shaft 39, thereby rapidly rotating the bobbin 41, which in turn winds up the yarn passing from the defective fabric 10 through the various guiding eyes and notches, as hereinbefore described. Simultaneously during the rotation of the shaft 39, the worm 43 revolves the worm gear 44, carrying with it the cam 56 which engages the link 54, causing the lever 47 to reciprocate the guiding eye 52 in such a manner as to evenly and properly distribute the yarn on the bobbin 41 during its rapid rotation.

25 Should at any time during the foregoing described operation of the machine, the yarn or thread be discontinuous, and as soon as the break in the yarn reaches the horizontal section 71 of the pivoted wire 70, the said section 71 passes through slot 61 of plate 60, and the wire 70 swings downwardly on its pivoted end 70¹ and strikes the trigger 66, moving said trigger on its pivot 65 against the action of the spring 69. As the trigger 66 moves as described, its enlargement 67 disengages the nose 81 of the catch 77, said catch releasing the plunger 73 which in turn is pushed out by its actuating spring into the position as shown in dotted lines 40 in Fig. 8. The lower end of the plunger 73 strikes the lever 82 which rocks the bar 30, causing the finger end 32 to disengage the notch 20, when by the action of the stored spring 84 the forward end of the back-winding machine is raised and the bracket 16 rotates about the eccentric 15 through a small angle until the same strikes a suitable stop, during which the reverse operation is effected from that described in 50 the setting of the machine. Owing to the action of the supporting bracket 16 rotating or riding around on the eccentric, the friction wheel 42 is drawn inward and away from the friction surface 4¹ of pulley 4, thereby stopping the rotation of shaft 39, and automatically stopping the operation of the machine, or further and unnecessary unwinding of the yarn from the incomplete stocking 10.

60 If it is desired to stop the operation of the machine, as for example, when the bobbin 41 is filled, the friction wheel 42 may be disengaged from the pulley 4 by rocking the bar 30 manually by means of the projection 37, when the pawl 33 will be disen-

gaged from its cooperating offset 20 without disturbing the thread through the machine.

From the foregoing disclosure, it will be seen that the back-winding machine is adapted to take up small space and can be readily attached to any of the forms of knitting machines. For this reason, it is not required to have the back-winding done in a separate part of the knitting mill, but the same operator attending a series of knitting machines can at the same time see to the operation of one or more of the back-winding machines, and hence do his own back-winding. Furthermore, the operation of the back-winding machine does not require the operation of any one of the knitting machines to be discontinued, as the knitting and back-winding machines are separate and independent of each other.

While I have herein shown and described one and the preferred form of my invention, I do not wish to limit myself to the use of back-winding only, or the exact construction and relation of the parts as herein disclosed, and desire it to be distinctly understood that the same can be used for any kind of thread winding and many changes would be readily suggested by one skilled in the art without departing from the spirit or essential features of the invention.

What I claim is:—

1. A winding machine for yarn or thread comprising a support, a pulley rotatably mounted on said support, an eccentric fixed on the support, a bracket rotatably supported on and surrounding said eccentric, a bobbin shaft rotatably supported by said bracket, a wheel fixed on said shaft adapted to engage said pulley, means for locking said bracket against rotation on said eccentric and holding the friction wheel against the pulley, means normally tending to partially turn the bracket about the eccentric, and means cooperating with the yarn or thread and arranged to be released when the yarn or thread is discontinuous for disengaging said locking means and moving the friction wheel from said pulley.

2. A winding machine for yarn or thread comprising a support, a pulley rotatably mounted on said support, an eccentric fixed on the support, a bracket rotatably supported on and surrounding said eccentric, a bobbin shaft rotatably supported by said bracket, a wheel fixed on said shaft adapted to engage said pulley, means for locking said bracket against rotation on said eccentric and holding the friction wheel against the pulley, means normally tending to partially turn the bracket about the eccentric, means cooperating with the yarn or thread and arranged to be released when the yarn or thread is discontinuous for disengaging said locking mechanism and remove the friction wheel from said pulley,

and means for properly guiding the yarn or thread on a bobbin supported on the shaft.

3. A winding machine for yarn or thread
5 comprising a support, a pulley rotatably mounted on said support, an eccentric fixed on the support, a collar having a notch secured on the support, a bracket rotatably supported on and surrounding said eccentric,
10 a bobbin shaft rotatably supported by said bracket, a wheel on said shaft adapted to frictionally engage said pulley, a pawl on the bracket adapted to engage the notch and lock said bracket against rotation on the eccentric and hold said friction wheel
15 against the pulley, means normally tending to partially turn the bracket about the eccentric, means for releasing the pawl from the notch, and means held by the yarn or thread and released when the yarn or thread
20 is discontinuous for actuating the pawl releasing means, and disengage the friction wheel from said pulley.

4. A winding machine for yarn or thread
25 comprising a support, a pulley rotatably mounted on said support, an eccentric fixed on the support adjacent said pulley, a collar having a notch secured on the support, a bracket rotatably supported on and surrounding said eccentric, a bobbin shaft rotatably supported by said bracket, a wheel
30 fixed on said shaft adapted to frictionally engage said pulley, a pawl on the bracket adapted to engage the notch for locking said bracket against rotation on the eccentric and hold the wheel frictionally against the pulley, a spring attached to and normally tending
35 to partially turn the bracket about the eccentric, a rocker shaft engaging and adapted to release the pawl from the notch, and means normally held by the yarn or thread and released when the yarn or thread is discontinuous for actuating the rocker shaft and disengage the pawl from the notch and
40 permit the bracket to slightly rotate about the eccentric.

5. A winding machine for yarn or thread comprising a support, a pulley rotatably mounted on said support, an eccentric fixed
50 on the support and adjacent said pulley, a collar having a notch secured on the support, a bracket rotatably mounted on and surrounding said eccentric, a bobbin shaft rotatably supported by said bracket, a wheel
55 on said shaft adapted to frictionally engage said pulley, a pawl on the bracket adapted to be seated against the notch for locking said bracket against rotation on the eccentric

and hold the friction wheel against the pulley, a spring connected with and normally tending to partially turn the bracket about the eccentric, a rocker shaft mounted on the bracket adapted to release the pawl from the notch, a plunger for quickly operating the rocker shaft, a trigger releasing
60 said plunger, and means released when the yarn or thread is discontinuous for moving said trigger.

6. A winding machine for yarn or thread comprising a support, a pulley rotatably
70 mounted on said support, an eccentric fixed on the support and adjacent said pulley, a collar having a notch secured on the support, a bracket rotatably supported on and surrounding said eccentric, a bobbin shaft
75 rotatably supported by said bracket, a wheel on said shaft adapted to frictionally engage said pulley, a pawl on the bracket engaging the notch of the collar and locking said bracket against rotation on the eccentric
80 and hold the friction wheel against the pulley, a spring connected with and normally tending to partially turn the bracket about the eccentric, a rocker shaft mounted on the bracket adapted to release the pawl from
85 the notch, a spring actuated plunger for quickly hitting and moving the rocker shaft, a trigger engaging said plunger and supporting the same, and a pivoted wire supported by the yarn and adapted to drop
90 and release the trigger from the plunger when said yarn is discontinuous.

7. A winding machine for yarn or thread comprising a support, a rotatable member mounted on said support, an eccentric fixed
95 on the support, a frame rotatable on and surrounding said eccentric, a rotary bobbin holder supported by said frame, means on said bobbin holder adapted to engage and be rotated by the rotatable member, means
100 for locking said frame against rotation on the eccentric and holding the bobbin holder in rotary connection with the rotatable member, means normally tending to partially turn the support about the eccentric, and
105 means cooperating with the yarn or thread and actuated when the yarn or thread is discontinuous for disengaging the locked frame and eccentric.

In testimony whereof I affix my signature in presence of two witnesses.

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