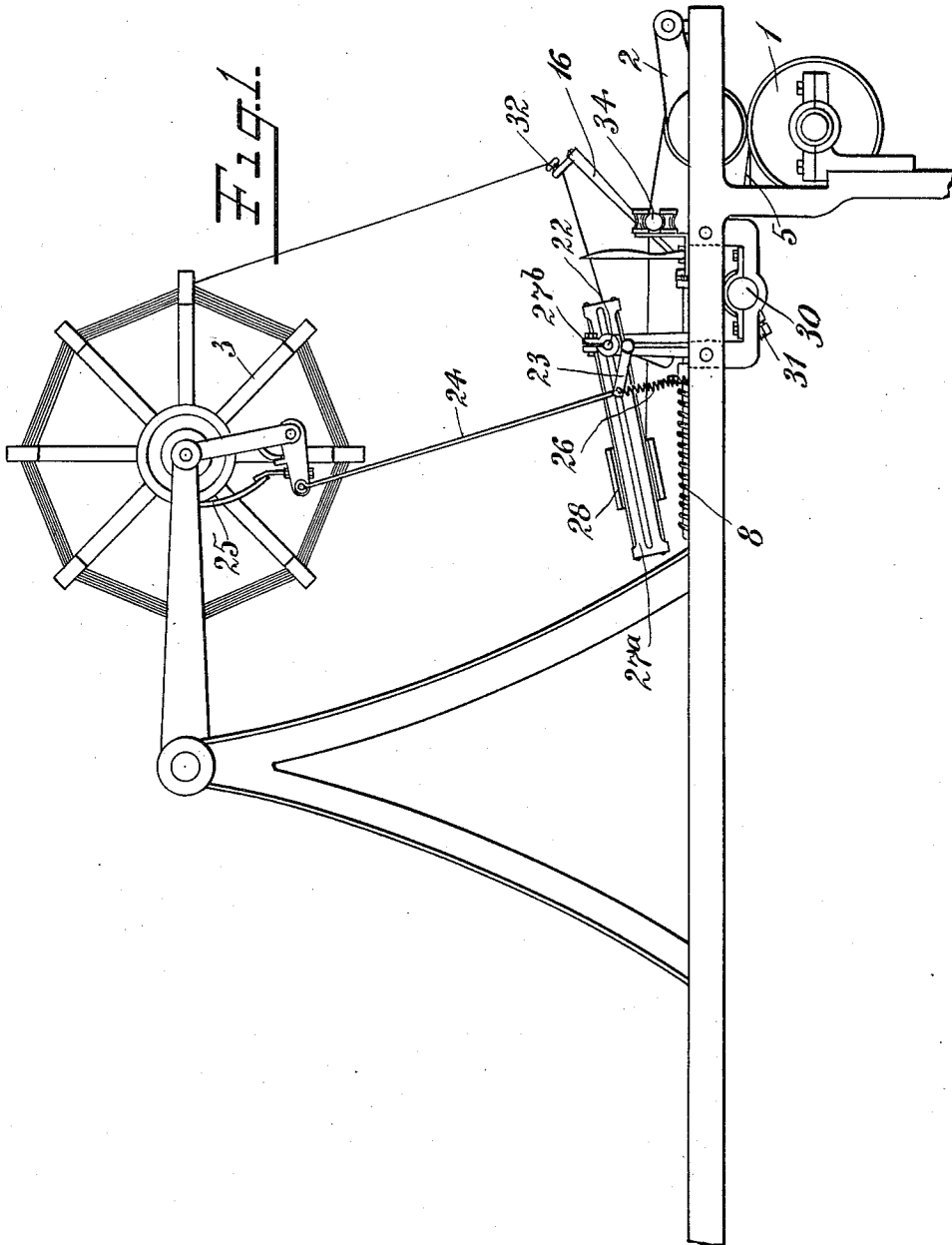


H. J. MARX.
WINDING MECHANISM.
APPLICATION FILED JULY 24, 1911.

1,029,704.

Patented June 18, 1912.

4 SHEETS—SHEET 1.



Witnesses:
Fred K. M. Dannerfelter
Chas. A. Reed

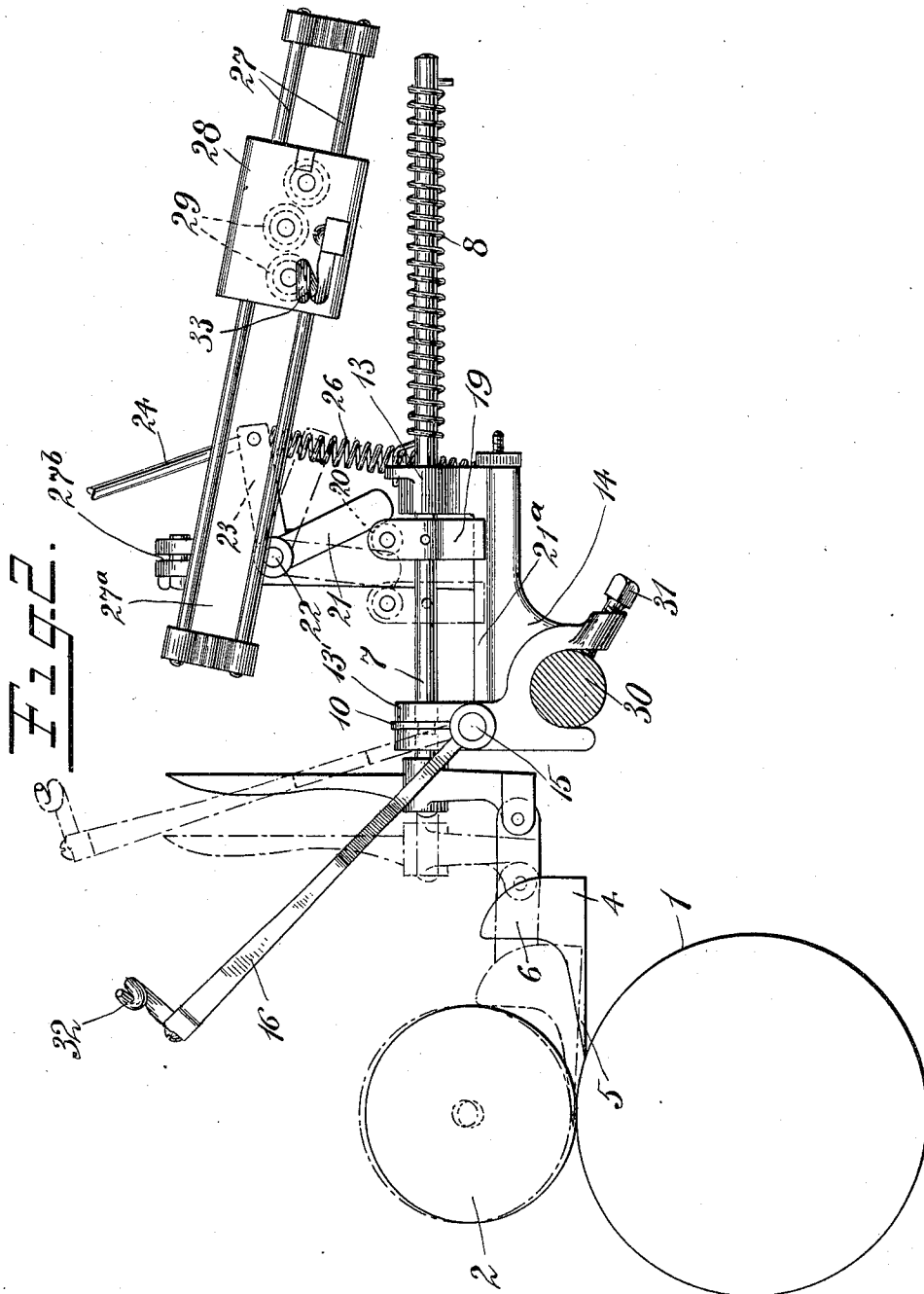
Inventor
H. J. MARX
By his Attorney
Barth H. Maxwell

H. J. MARX.
WINDING MECHANISM.
APPLICATION FILED JULY 24, 1911.

1,029,704.

Patented June 18, 1912.

4 SHEETS—SHEET 2.



Witnesses:
Fred S. M. Dannenfelser
Chas. M. Pease

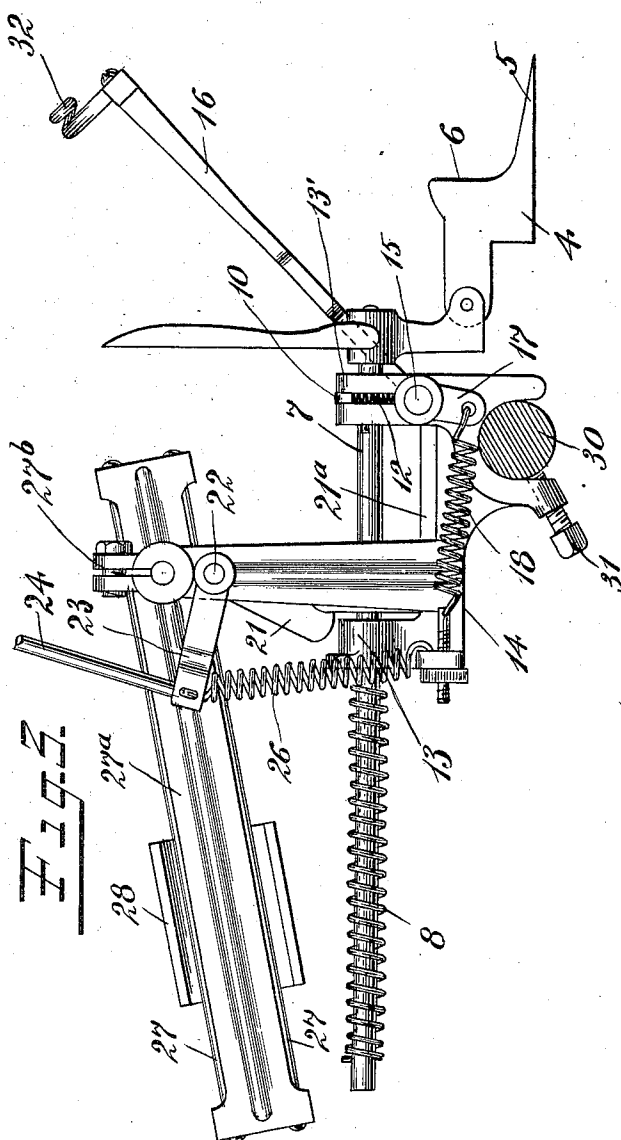
Inventor
H. J. MARX
By his Attorneys
Barth H. Morrow Mitchell

H. J. MARX.
WINDING MECHANISM.
APPLICATION FILED JULY 24, 1911.

1,029,704.

Patented June 18, 1912.

4 SHEETS-SHEET 3.



Witnesses:
Fred H. M. Dannerfelser
Charles Reed

Inventor
H. J. MARX
By his Attorneys
Bartlett, Maxwell & Mitcose

H. J. MARX.
WINDING MECHANISM.
APPLICATION FILED JULY 24, 1911.

1,029,704.

Patented June 18, 1912.

4 SHEETS-SHEET 4.

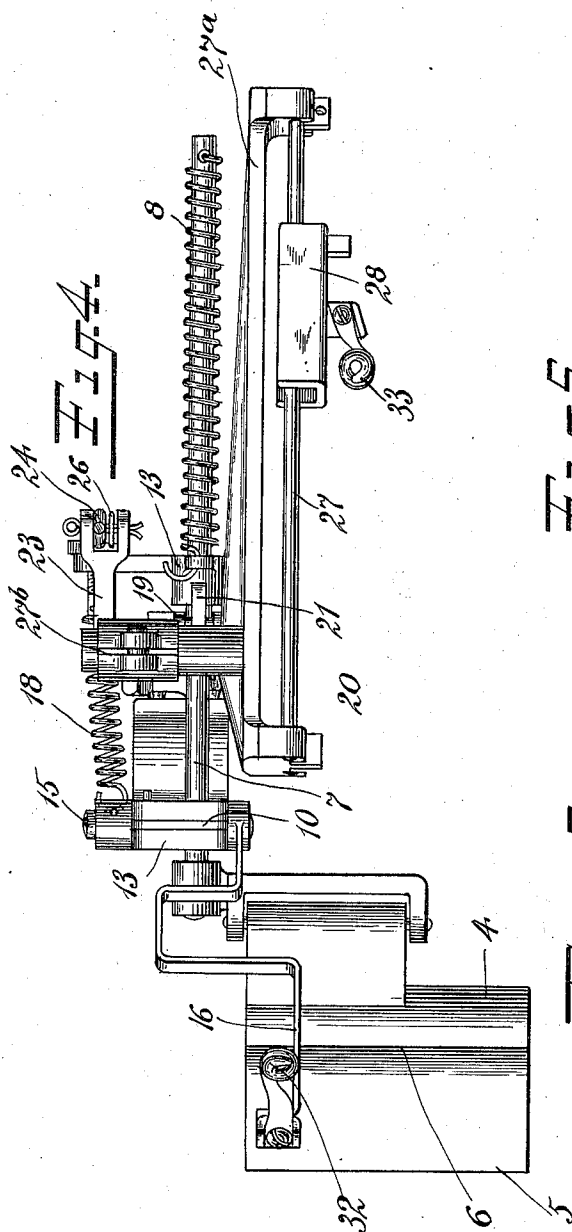


Fig. 4.

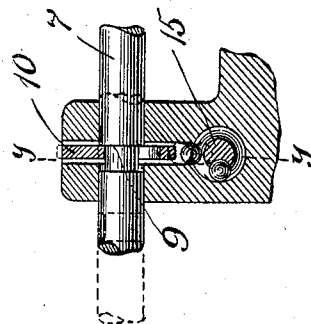
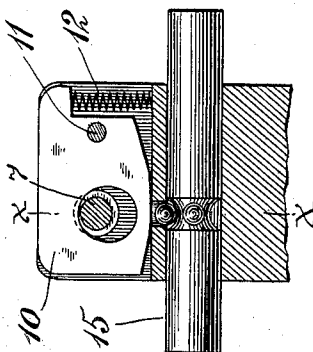


Fig. 5.



Witnesses:
Fred B. M. Dannenfelser
Chas. A. Sand

Inventor
H. J. MARX
By his Attorneys
Barth H. Maxwell & Minter

UNITED STATES PATENT OFFICE.

HENRY J. MARX, OF HOLYOKE, MASSACHUSETTS, ASSIGNOR TO THE AMERICAN
THREAD COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

WINDING MECHANISM.

1,029,704.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed July 24, 1911. Serial No. 640,117.

To all whom it may concern:

Be it known that I, HENRY J. MARX, a citizen of the United States, residing at Holyoke, county of Hampden, State of Massachusetts, have invented certain new and useful Improvements in Winding Mechanism, of which the following is a full, clear, and exact description.

My invention relates to improvements in winding machines, and has for its object to produce a new and improved mechanism for stopping the bobbin, or both bobbin and swift, whenever the tension of the thread being wound becomes abnormally great.

It further has for its object to provide a stop motion device having means for providing a slack in the thread under all circumstances, the slack being maintained under a yielding non-breaking tension, independently of the means for controlling the braking action.

The following is a description of an embodiment of my invention, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a side elevation of the stop mechanism proper, looking from the right. Fig. 3 is a similar view, looking from the left. Fig. 4 is a plan view of the same. Fig. 5 is a detail section on the line $x-x$ Fig. 6. Fig. 6 is a vertical section on the line $y-y$ Fig. 5.

Referring more particularly to the drawings, 1 represents a horizontal driving drum, on which a bobbin in the bobbin holder 2 rests so as to be rotated thereby.

3 is a swift suitably supported, holding the thread to be wound upon the bobbin.

4 is a shoe having a portion 5 adapted to pass between the drum 1 and the bobbin, so as to separate them, and to some extent act as a brake on the bobbin, and a vertical portion 6 constituting a supplemental braking face moving directly toward the axis of the bobbin so as to firmly engage the bobbin and immediately stop it. This shoe is carried by a slide 7, which normally tends to move toward the bobbin under the impulse of the spring 8. This slide 7 has a shoulder or recess 9, with which engages a detent 10 pivoted at 11 and normally forced toward the slide 7 by a spring 12. The slide is supported in bearings 13—13' carried by the frame 14. In this frame is mounted a revo-

luble cam shaft or releaser 15, from one end of which extends a light lever or arm 16. From the other end of the cam shaft 15 is a crank arm 17. A spring 18 connects the arm 17 with the frame 14 so as to normally tend to move the releaser 15 and lever 16 from detent releasing position.

Secured to the slide 7 is a projection 19 having at its upper end an anti-friction roller 20, which, when the slide 7 is retracted, engages the lever extension 21 from a shaft 22. The projection 19 engages a spline 21^a so as to keep the slide 7 from turning. To the other end of the shaft 22 is connected a crank arm 23. The end of the crank arm 23 is connected by a connecting rod 24 to a strap brake 25 on the swift. A spring 26 connects the crank arm 23 with the frame 14 and normally tends to move the connecting rod 24 so as to apply the brake 25 upon the swift. To the rear of the lever 16 are inclined rods 27 carried by an adjustable member 27^a constituting a way on which is mounted a sliding tension block or carriage 28 constituting a tension device acting upon the slack of the thread. This sliding block 28 is provided with anti-friction rolls 29 so as to move easily up and down the rods 27. The frame 14 is adjustable upon the transverse rod 30 by set screws 31, so as to be easily adjustable thereon in an angular position, and also so as to be easily removed therefrom. The ways 27 are also angularly adjustable relatively to the frame 14 by the clamp 27^b. This latter angular adjustment varies the inclination of the ways 27, and thereby the tension due to the sliding tension block 28 upon the slack of the thread can be easily adjusted. The lever 16 has a thread guide 32 and the sliding tension block 28 has a thread guide 33. The guides 32 and 33 are normally on opposite sides of the releaser 15. The slide 7 moves in a vertical plane that is substantially at right angles to the plane passing through the axis of the bobbin holder, so that when the slide 7 is released, it moves toward the bobbin so as to apply the brake thereto. The detent 10 moves in a plane substantially at right angles to the movement of the slide and to the vertical plane in which the slide moves.

In use, the thread from the swift is passed through the guide 32, thence through the guide 33, and thence over the traverse rod 34, to the bobbin, the slide 7 being held in

retracted position by the detent 10. If, on account of the knotting or tangling of the thread on the swift, the tension of the thread becomes abnormally great, the lever 16 is pulled upward until the cam shaft or re-
 5 releaser 15 actuates the detent 10 so as to release it from the slide 7, whereupon the spring 8 impels the slide 7 forward, together with the shoe 4, causing the portion
 10 5 to separate the bobbin from the drum and the face 6 to engage the side of the bobbin so as to immediately stop it. At the same time, the projection 19 releases the extension 21, permitting the spring 26 to move the rod
 15 24 so as to apply the strap brake upon the swift. The sliding block 28, when the strain becomes abnormal, starts up the guide rods 27, thereby preventing the strain upon the thread from reaching the breaking point
 20 before the slack which exists between the guide 32 and the bobbin is all taken up. The parts are so proportioned that the lever 16 will operate to release the detent 10 before the sliding block 18 is pulled fully up
 25 the guide rods 27. The slide 7, when there is little thread upon the bobbin, continues to move after the swift brake is applied, so that the bobbin brake will also be applied, the lost motion between the two brakes per-
 30 mitting the application of both of them, whatever may be the amount of thread upon the bobbin.

The invention permits of embodiment in various forms which are within the spirit
 35 of the invention and the scope of the appended claims, as will be evident to those skilled in the art.

What I claim is:

1. In a winding apparatus, the combina-
 40 tion of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bob-
 45 bin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever en-
 50 gaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means nor-
 55 mally tending to move said slide toward the bobbin holder, a swift for the thread to be wound, a brake for said swift released by said slide when said detent is released, and
 means normally tending to apply said swift brake.

2. In a winding apparatus, the combina-
 60 tion of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bob-
 65 bin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever en-

gaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means nor-
 70 mally tending to move said slide toward the bobbin holder, and a yielding slack holding guide engaging the thread between the guide on the releaser lever and the bobbin.

3. In a winding apparatus, the combina-
 75 tion of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bob-
 80 bin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever en-
 85 gaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means nor-
 mally tending to move said slide toward the bobbin holder, a swift for the thread to be wound, a brake for said swift released by
 90 said slide when said detent is released, means normally tending to apply said swift brake, and a yielding slack holding guide engaging the thread between the guide on the releaser lever and the bobbin.

4. In a winding apparatus, the combina-
 95 tion of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bobbin
 100 holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever en-
 105 gaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means nor-
 mally tending to move said slide toward the bobbin holder, a swift for the thread to be wound, and a brake for said swift released
 110 by said slide when said detent is released, said bobbin brake having lost motion relatively to said swift brake.

5. In a winding apparatus, the combina-
 115 tion of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bob-
 120 bin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever
 125 engaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means nor-
 mally tending to move said slide toward the bobbin holder, a swift, a brake for said swift, means normally tending to apply said
 130 swift brake, and a projection on said slide holding said swift brake in off position when said detent restrains said slide.

6. In a winding apparatus, the combina-
 135 tion of a driving drum, a bobbin holder, a

stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bobbin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever engaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means normally tending to move said slide toward the bobbin holder, a yielding slack holding guide engaging the thread between the guide on the releaser lever and the bobbin, a swift, a brake for said swift, means normally tending to apply said swift brake, and a projection on said slide holding said swift brake in off position when said detent restrains said slide.

7. In a winding apparatus, the combination of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bobbin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever engaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means normally tending to move said slide toward the bobbin holder, and a yielding slack holding guide engaging the thread between the guide on the releaser lever and the bobbin, said guides being on opposite sides of said releaser and movable relatively to one another and to said frame.

8. In a winding apparatus, the combination of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame

having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bobbin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever engaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means normally tending to move said slide toward the bobbin holder, a yielding slack holding guide engaging the thread between the guide on the releaser lever and the bobbin, a movable carriage for said slack holding guide, and an inclined way for said carriage.

9. In a winding apparatus, the combination of a driving drum, a bobbin holder, a stop motion frame, a slide in said frame having a movement in a vertical plane substantially at right angles to the vertical plane passing through the axis of said bobbin holder, a detent for said slide, a releaser for said detent, a lever for actuating said releaser, a guide on said releaser lever engaged by the thread to be wound, a brake carried by said slide and adapted to engage a bobbin in said bobbin holder, means normally tending to move said slide toward the bobbin holder, a yielding slack holding guide engaging the thread between the guide on the releaser lever and the bobbin, a movable carriage for said slack holding guide, and an inclined way for said carriage, said way being adjustable angularly relatively to said stop motion frame.

HENRY J. MARX.

Witnesses:

ROBT. K. CLARK,
JAMES L. BUGBEE.