E. WACKERHAGEN.

SPOOL OR BOBBIN WINDING MACHINE.

APPLICATION FILED SEPT. 10, 1910.

1,031,213.

Patented July 2, 1912.

4 SHEETS—SHEET 1.

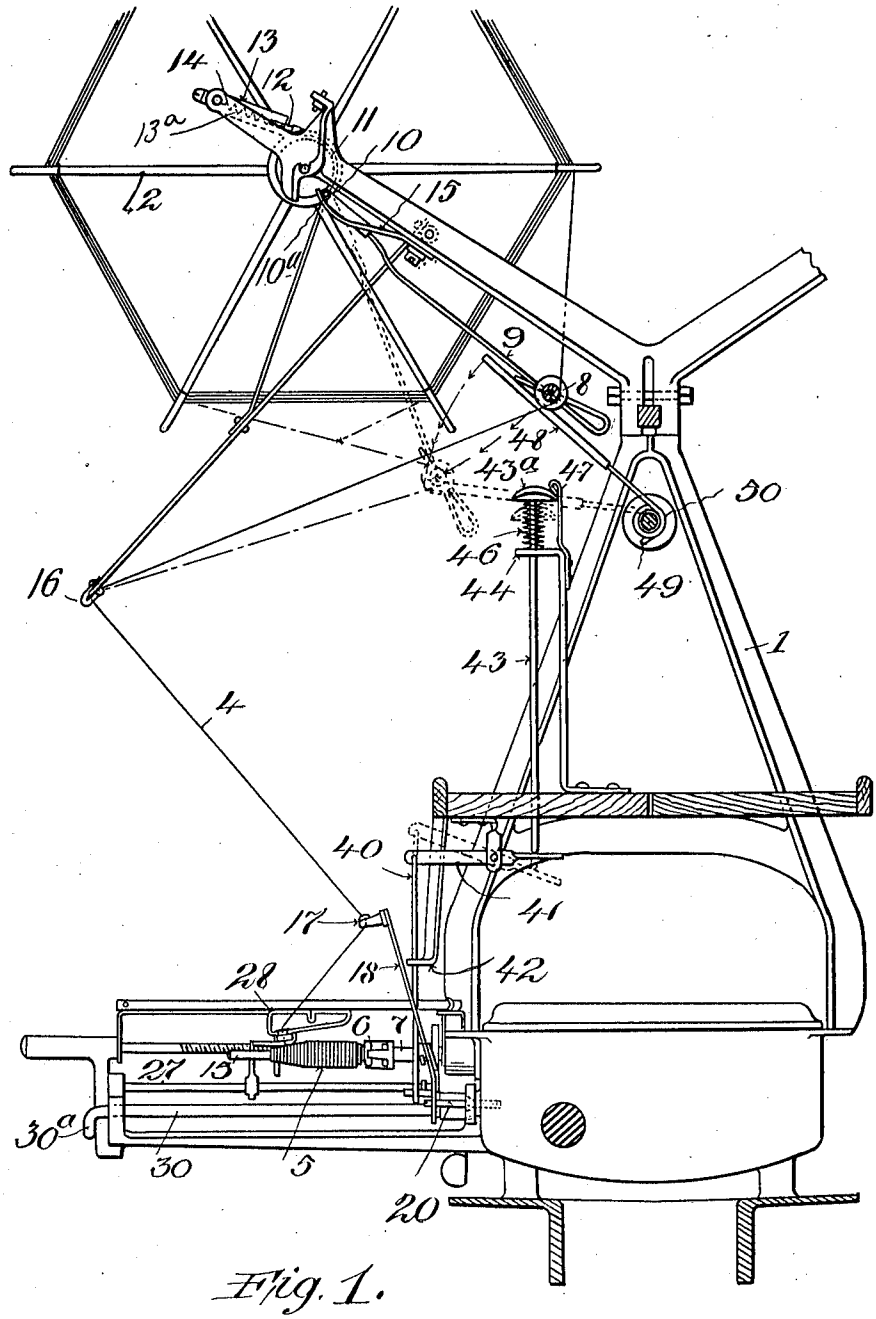

Fig. 1.

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4 SHEETS—SHEET 2.

Fig. 6.

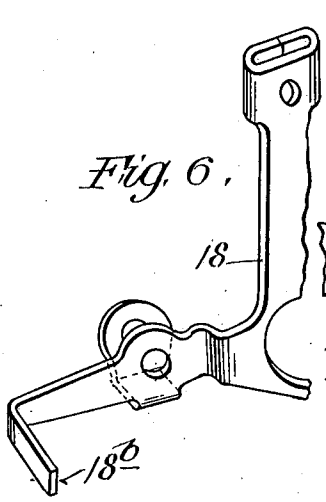


Fig. 7.

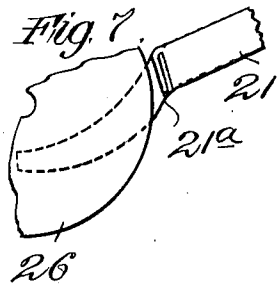
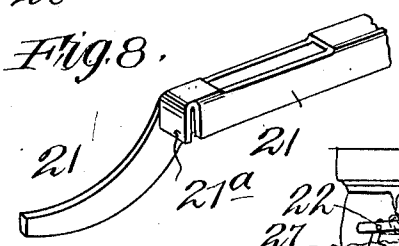


Fig. 8.



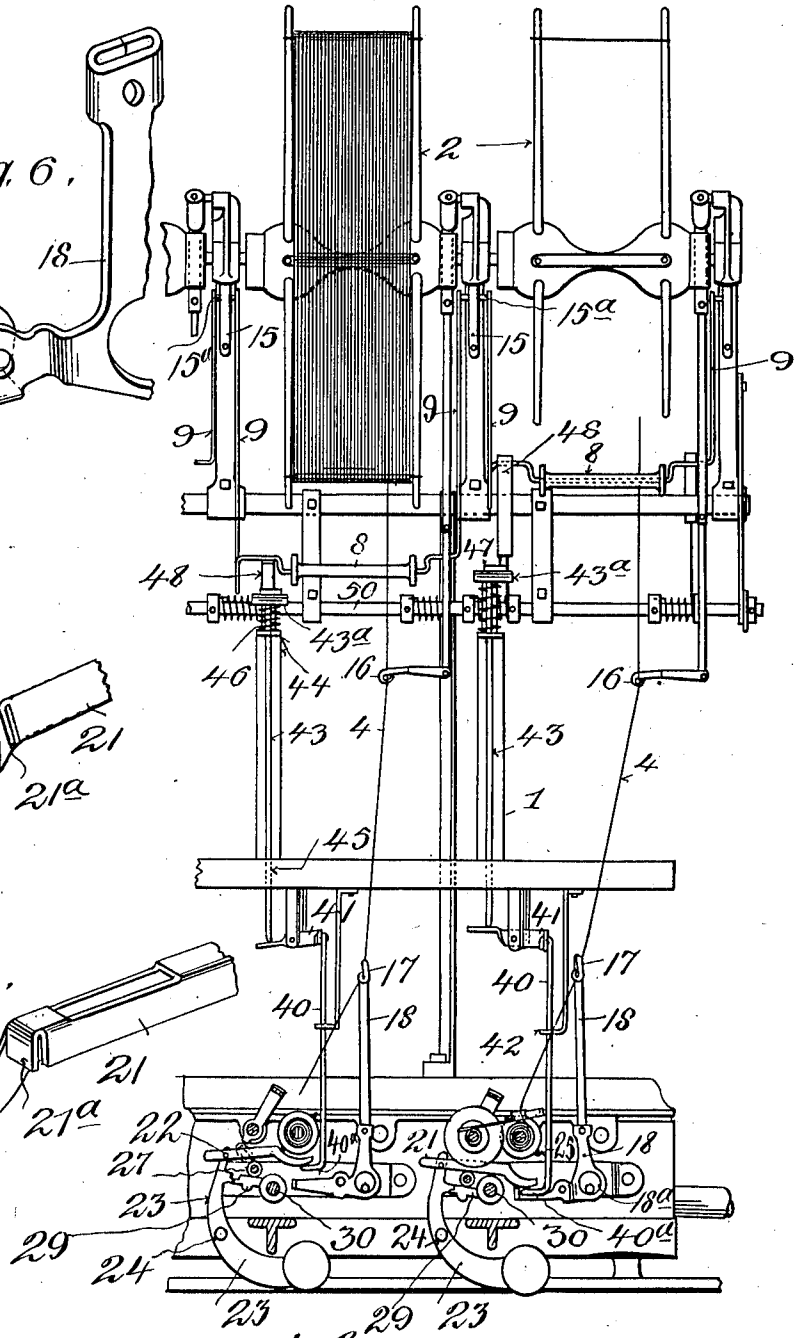


Fig. 2.

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4 SHEETS—SHEET 3.

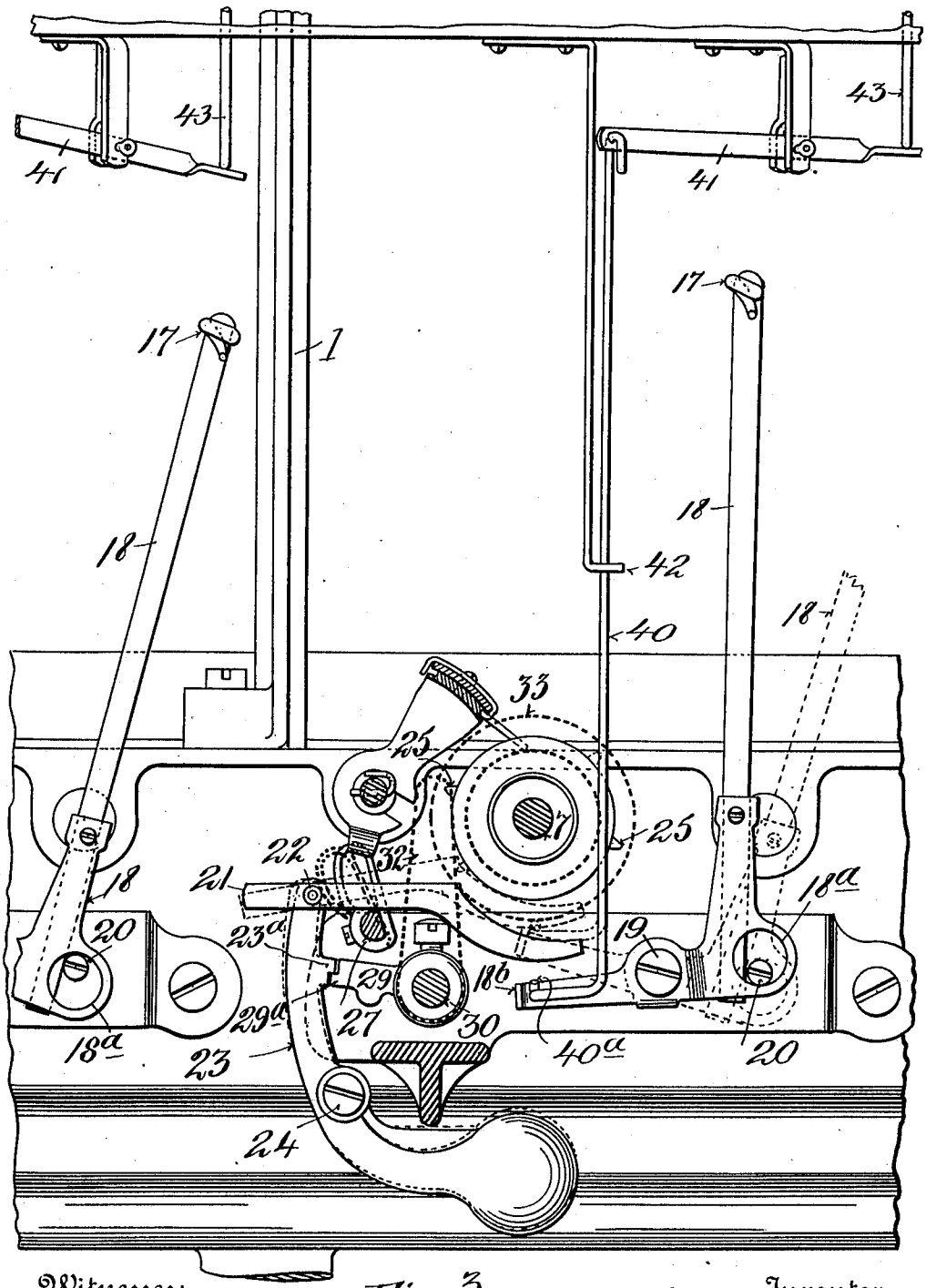

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Fig. 3.

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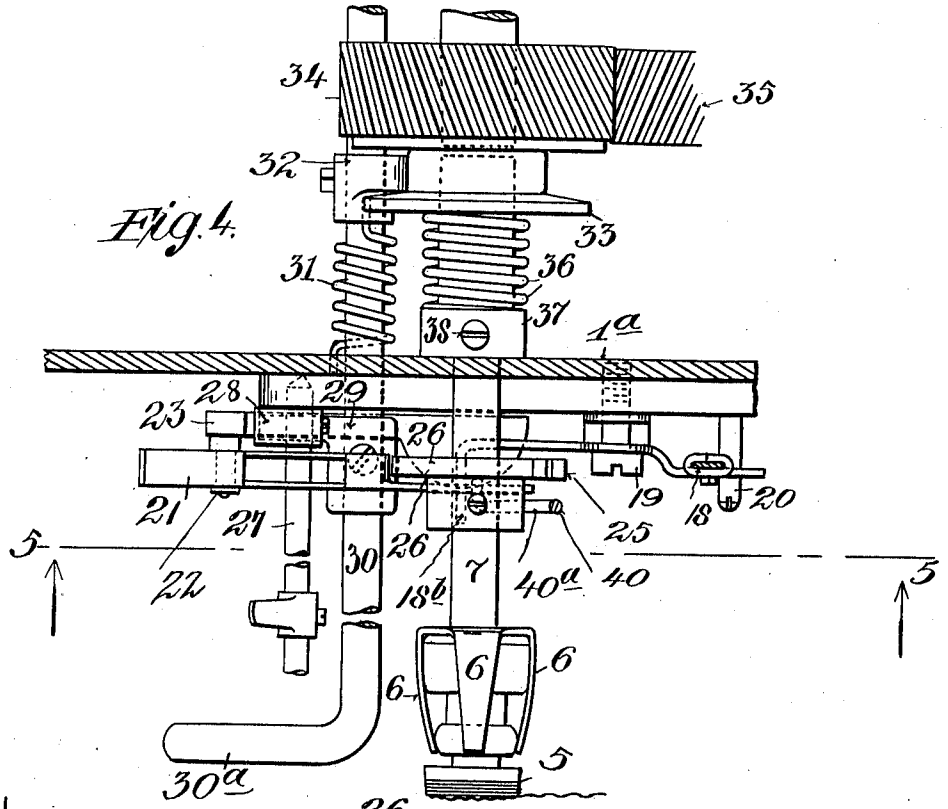
4 SHEETS—SHEET 4.

Fig. 4.



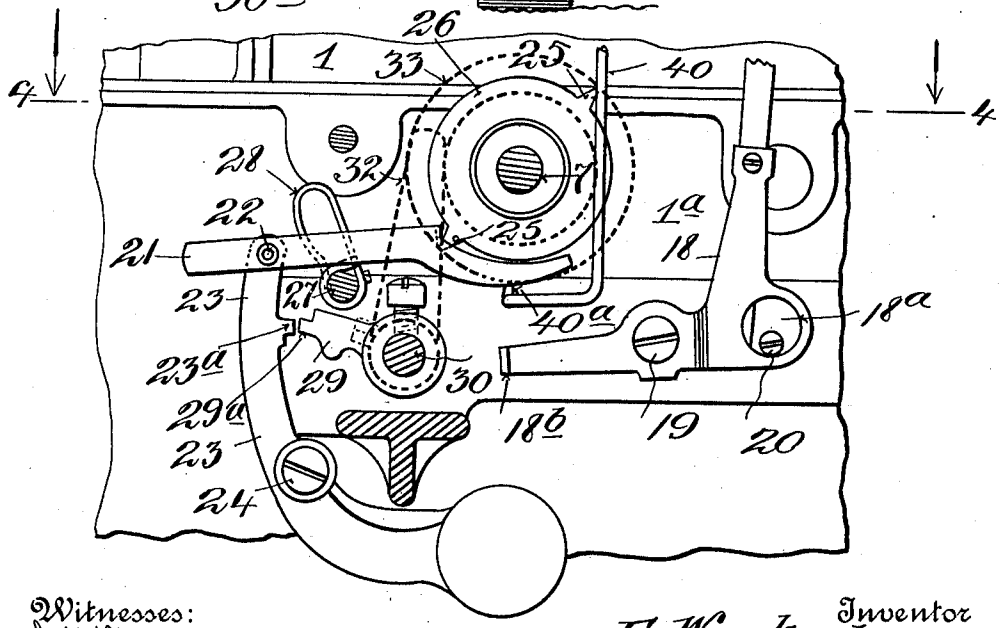


Fig. 5.

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SPOOL OR BOBBIN WINDING MACHINE.

1,031,213. Specification of Letters Patent. Patented July 2, 1912.

Application filed September 10, 1910. Serial No. 581,347.

To all whom it may concern:

Be it known that I, EDWARD WACKERHAGEN, a citizen of the United States, and resident of Fort Lee, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Spool or Bobbin Winding Machines, of which the following is a specification.

The object of my invention is to stop the rotation of the bobbin or spool if the thread, silk or the like being wound, becomes broken or snarled.

My invention comprises novel details of improvement and combinations of parts that will be hereinafter more fully set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein, Figure 1 is an elevation, partly in section, of a thread winding machine embodying my invention; Fig. 2 is a side elevation of Fig. 1, partly in section; Fig. 3 is an enlarged sectional detail view, Fig. 4 is a horizontal section on the line 4, 4, in Fig. 5; Fig. 5 is a section on the line 5, 5, in Fig. 4; Fig. 6 is a detail of rocker 18; Fig. 7 is detail, partly broken, of parts 21 and 26, and Fig. 8 is a detail of part 21.

Similar numerals of reference indicate corresponding parts in the several views.

Upon a suitable part of frame 1 of the machine one or more reels 2 are mounted in any suitable or well known manner for carrying thread, silk or the like 4 to be wound on the cop or spool 5. The latter is detachably mounted in any suitable holder 6 carried by shaft 7 journaled in suitable bearings in the part 1^a of the main frame, there being a holder 6 and shaft 7 corresponding to each reel 2. My improvements embrace means for stopping the rotation of shaft 7 if the thread 4 becomes broken or if snarled or knotted while being wound on cop or spool 5. Thread 4 as delivered from reel 2 passes under a roller or guide 8 journaled upon a floating or swinging member 9, the upper ends of which are connected with straps 10 that lie upon suitable bearings 11 and connect with pistons 12 in cylinders 13 containing adjustable springs 13^a connected with pistons 12 in any suitable or well known manner. Springs 15 carried by the main frame bear up against pins 10^a of supports 9. Thread 4 passes from roller 8 to a suitable guide 16 and thence through an eye or guide 17 on rocker 18, pivotally supported at 19. Rocker 18 is shown provided with an opening 18^a receiving a stop 20 to limit the play of said rocker. Rocker 18 has a projection 18^b adapted to engage an arm 21 pivotally supported at 22 upon a weighted lever 23 pivoted at 24. Arm 21 has a suitable abutment 21^a adapted to be engaged by a tooth or finger 25, there being two of such teeth shown projecting from disk 26, secured upon shaft 7. Arm 21 normally rests upon a support 27. The thread guide 28 may be arranged in any well known manner for laying thread upon the cop or spool, which latter parts form no portion of my present invention and will be understood by those skilled in the art. The lever 23 normally bears against a catch 29 shown having a projection 29^a under a projection 23^a of lever 23, the catch 29 being secured to a shaft 30 having a handle 30^a, said shaft being under normal tension of a spring 31 (Fig. 4) shown engaged at one end with frame part 1^a and at the other end connected with shaft 30, as by connection with a suitable brake-arm 32 on said shaft. Brake-arm 32 is normally disengaged from but adapted to engage a clutch disk 33 loose on shaft 7, which clutch is adapted to make frictional engagement between shaft 7 and gear 34 that is suitably driven, as by gear 35. A spring 36 surrounding shaft 7 and bearing against friction disk 33 and a disk 37 secured upon shaft 7 as by screw 38, tends normally to cause frictional connection between shaft 7 and gear 34.

The arrangement of the parts so far described is such that when thread 4 is unbroken and is being properly wound upon cop or spool 5, the tension of said thread will be sufficient to keep rocker 18 raised out of coaction with arm 21, as at the right in Figs. 2 and 3, and at such time catch 29 will be in engagement with lever 23 and thereby arm 32 will be held out of engagement with the conical flange 33′ of friction disk 33. If thread 4 breaks, then rocker 18 will be released and will move to the right (as shown at the left in Fig. 3,) thereupon raising its projection 18^b into engagement with and lifting arm 21 into the path of teeth 25, and one of said teeth will then engage and move arm 21, to the left as shown in Fig. 5, causing lever 23 to release catch 29, whereupon spring 31 will rotate shaft 30 and swing arm 32 into engagement with disk 33, and thereby cause

disk 33 to slide from gear 34, thus releasing shaft 7 from gear 34, and at the same time, by frictional contact of said arm and said flange, will bring shaft 7 and cop or bobbin 5 to rest. After such broken thread has been adjusted rocker 18 will be released from arm 21, lever 23 will be adjusted again to engagement with catch 29, arm 21 will be set out of the path of teeth 25, arm 32 being released from disk 33, and winding of the thread may proceed as before.

In addition to checking the rotation of the cop or spool if the thread breaks, I also provide means for checking the rotation of the cop or spool if the thread becomes tangled at or near its reel 2. To accomplish this result, I utilize part of the mechanism before described, and I provide a rod 40 having a projection 40^a, which rod is connected with a lever 41 and guided by a suitable guide 42 to move up and down. Projection 40^a lies under arm 21 and is adapted to raise the same in the path of teeth 25 for the same purpose that said arm is raised by rocker 18. Lever 41 is adapted to be engaged by a plunger 43 suitably guided in the machine, as by guides 44, 45, plunger 43 being normally raised by a spring 46 shown bearing against head 43^a on said rod and against guide 44, a suitable stop 47 limiting the upward movement of plunger 43. Head 43^a is adapted to be engaged by an arm 48 which is normally held against and beneath member 9 by a suitable light spring 49 (Fig. 1), arm 48 being journaled upon a suitable shaft 50.

In the normal positions of the parts just described, arm 48 will be raised from head 43^a of plunger 43 and in engagement with member 9 (see Fig. 1), plunger 43 will be elevated, and rod 40 will be depressed. If the thread upon the reel becomes snarled or tangled, as illustrated in dotted lines in Fig. 1, further winding of the thread upon the cop or spool 5 will cause member 9 to swing downwardly, and thereby carry arm 48 into engagement with head 43^a, whereupon plunger 43 will be depressed, lever 41 will be swung to raise rod 40 (see dotted lines in Fig. 1 and full lines at the left in Fig. 2 and in Fig. 5) and projection 40^a will raise arm 21 in the path of teeth 25, whereupon lever 23 will be swung to release catch 29, and thereupon arm 32 will be swung by spring 31 into engagement with friction disk 33 to release shaft 7 from gear 34 and stop the rotation of cop or spool 5, in manner before described. After the thread has been disentangled and again properly adjusted, the parts will be restored to their normal positions for further winding of the thread on the cop or spool.

While I have described my invention in connection with a single reel and a single cop or bobbin, it will be understood that the machine may contain as many sets of the devices before described as necessary, each of which will operate independently of the other, so that while the thread of one cop or spool is being adjusted, winding of the threads upon the other cops or spools may proceed.

It will be understood that if the thread should be entangled so that it would operate member 9 and the tension upon the thread should be such as to thereupon cause the same to break, the spool would be stopped from rotating, either by reason of the action of rod 40 or rocker 18.

Changes may be made in the details of construction shown and described, within the scope of the appended claims, without departing from the spirit of the invention.

Having now described my invention, what I claim is:

1. A thread winding machine comprising a frame, a thread support above said frame, a spool support embodying a rotatable shaft, a drive gear on one end of said shaft and a clutch associated with said gear, a thread guide comprising a rocker arm pivotally supported by the frame, a weighted lever having an arm pivoted to one end thereof, one end of the arm engaging the rocker arm, and the said arm and rocker arm adapted to be thrown out of engagement with each other when the thread is broken, whereby the clutch is thrown out of engagement with said drive gear.

2. A thread winding machine comprising a frame, a thread support above said frame, a spool support embodying a rotatable shaft, a gear wheel on said shaft, and a clutch on said shaft associated with said gear wheel, a thread guide comprising a rocker member pivotally supported by said frame, a second shaft supported by said frame, a catch arm and brake arm mounted on the said second mentioned shaft, a weighted lever carrying an arm near one end of, associated with the catch arm, and engaging with the rocker arm, the said arm and rocker arm adapted to disengage each other when the thread is broken so that the said brake arm will engage said clutch member and throw the same out of engagement with said gear.

3. In a thread winding machine comprising a frame, a thread support above said frame, a spool support embodying a rotatable shaft, a gear on one end of said shaft, a cone-shaped clutch on said shaft associated with said gear, a disk provided with teeth mounted on said shaft, a second shaft mounted in said frame, the said second-mentioned shaft having a catch member and brake arm rigidly mounted thereon, a weighted lever provided with a lug, pivotally supported on said frame, the said catch member adapted to engage said lug and hold the said brake arm out of engage-

ment with said clutch member, an arm having an abutment, pivotally supported on said weighted lever, the said abutment adapted when the thread breaks to engage said teeth on said disk and release said catch member and cause the said brake to rotate and throw the said clutch out of engagement with said gear.

Signed at New York city, in the county of New York, and State of New York, this 9th day of September, A. D. 1910.

EDWARD WACKERHAGEN.

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