J. L. WALSH.

UNWINDING DEVICE FOR SPOOLS.

APPLICATION FILED MAY 13, 1913.

1,132,050. Patented Mar. 16, 1915.

Fig. 1

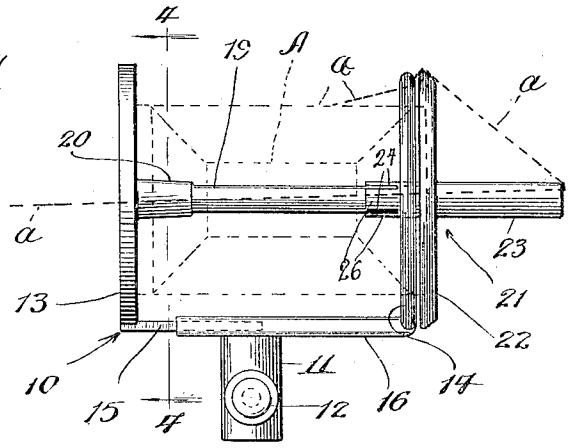


Fig. 2.

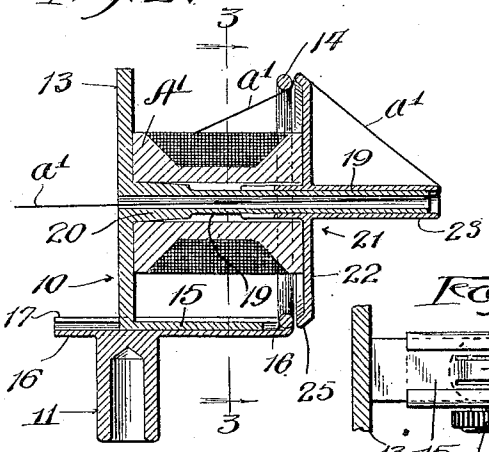


Fig. 3.

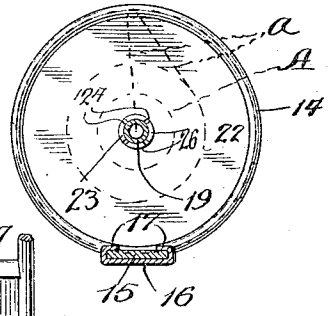


Fig. 6.

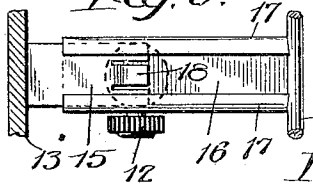


Fig. 4.

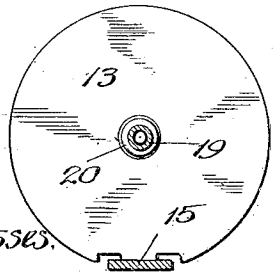
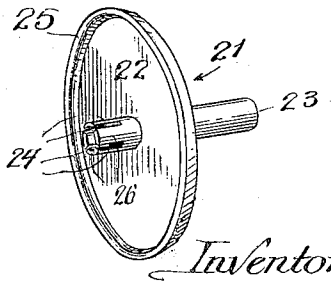


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

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UNWINDING DEVICE FOR SPOOLS.

1,132,050. Specification of Letters Patent. **Patented Mar. 16, 1915.**

Application filed May 13, 1913. Serial No. 767,420.

To all whom it may concern:

Be it known that I, JOHN L. WALSH, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Unwinding Devices for Spools, of which the following is declared to be a full, clear, and exact description.

This invention relates to unwinding devices for spools, bobbins and the like, and its main object is to provide an unwinding device of simple and improved construction, capable of use in connection with small and large spools of thread within certain limits.

Much difficulty is encountered in using a full spool of silk or other thread, upon a sewing machine, because of the tendency for the silk or thread to unwind too rapidly and become tangled around the spool or spindle upon which it is journaled, and the present invention designs to overcome this objectionable feature.

The invention consists in the several novel features of construction and arrangement hereinafter fully set forth and particularly defined in the claims.

The invention is illustrated in the drawing furnished herewith, of which—

Figure 1, is a side elevation of an unwinding device for spools, embodying the preferred form of the present invention, and showing a spool of thread in dotted lines, supported thereon with the thread threaded through the thread guiding devices; Fig. 2, is a central, vertical section of the unwinding device seen in Fig. 1, but showing the same applied to a much smaller spool; Fig. 3, is a detail, vertical cross section taken on the line 3—3 of Fig. 2; Fig. 4, is a detail vertical cross section taken on the line 4—4 of Fig. 1; Fig. 5, is a perspective view of a certain thread guiding device forming a part of the invention, and Fig. 6, is a detail view partly in plan and partly in horizontal section, showing certain adjustable supporting bars.

Referring to said drawing, 10, designates a spool support here shown as having a sleeve 11, arranged to be slipped upon the spool spindle of a sewing machine and provided with a thumb screw 12, for securely fastening the device upon said spindle. Said sleeve supports a flat spool supporting disk 13, and a check ring 14, parallel with said disk, and arranged to surround the free end of a spool of thread supported by said spool support; said disk and check ring may be adjusted toward or away from each other to accommodate different sizes of spools, and to provide adjustable connecting means between the disk and check ring, the disk 13, has a flat bar 15, secured to its lower edge, which is slidably mounted on a bar 16, secured to the sleeve 11, and to the check ring 14, and having flanges 17, which overlie the bar 15 and slidably connect the two parts together. The disk 13, is notched adjacent its bar 15, to permit the flanges of the bar 16, to pass by the same. Preferably the bar 15, is slit at its forward end to provide a tongue 18, which is bent downward slightly to frictionally engage with the upper face of the bar 16, and thereby prevent relative movement between the disk 13, and check ring 14, except when sufficient force is applied thereto to adjust them with respect to each other.

Centrally disposed with respect to the spool supporting disk 13, and projecting toward the check ring 14, is a tubular spindle 19, which is of sufficient length to extend through a spool A, of considerable length, and said spindle 19, is increased in diameter at its base and is of tapered formation as seen at 20, its largest diameter being located at the disk 13, and said tapered portion of the spindle 19, is adapted to be wedged into one end of the hole of a spool whereby the latter may be non-rotatively secured to the disk 13.

Slidably mounted upon the free end of the tubular spindle 19, is a thread guiding device 21, which, in the present form, comprises a circular disk 22, of greater diameter than the diameter of the flanges of any spool that may be used in connection with the device. The disk 22, if desired, may be dished to provide a circumferential flange 25, which overhangs and surrounds the adjacent flange of the spool. This overhanging flange prevents the thread from traveling around the wooden flange of the spool, thereby eliminating any danger of the thread being caught upon said wooden flange. Secured to said disk 22, at its center is a tubular member 23, which projects on each side of said disk and is provided on the side facing the spool, with longitudinal slits 24, which form tongues 26, that may be bent

a trifle toward the center of the tubular member to provide friction against the tubular spindle 19, and thereby hold said disk non-rotatively thereon and against relative longitudinal movement, except when sufficient force is applied to move the same against such frictional engagement. The internal diameter of the tubular member 23, is substantially the same as the external diameter of the tubular spindle 19, and fits fairly tight thereon. That part of the tubular member which projects beyond the outer face of the disk 22, acts as a guide for the thread and directs said thread from the marginal edge of the disk (over which it travels) to and through the spool.

In use, the device is secured on a sewing machine spindle and the thread guiding device 21, is first removed from the tubular spindle 19, after which a spool of thread is slipped over the tubular spindle 19, and forced upon the tapered end 20, thereof. The check ring 14, is then adjusted to bring it near the free end of the spool, (the thread at this time extending through the ring) after which the thread guiding device 21, is slipped upon the end of the tubular spindle 19, bringing the flat face of the disk into contact with the end of the spool. The end of the thread *a*, is brought around the peripheral edge of the disk 22, and threaded through the tubular member 23, and tubular spindle 19, thus passing through the center of the spool; it is then threaded through the tension devices of the sewing machine to the needle. To obtain more tension upon the thread, the check ring 14, is moved closer to the disk 22, but in some cases said check ring may be moved away therefrom or it may be dispensed with entirely with certain kinds of thread.

In Fig. 1, a large spool A, is shown and the thread *a*, is illustrated as leading from said spool through the check ring and over the disk 22, thence to the end of the tubular member 23, and through the same and tubular spindle 19.

In Fig. 2, a small sized spool A^1, is shown and in this case the check ring and disk have been moved closer to the supporting disk 13, so as to accommodate the small sized spool. In this case, also, the thread a^1, is shown as passing through the check ring 14, over the disk 22, and through the tubular member 23, and tubular spindle 19. In unwinding, the thread passes from the spool and travels around the smooth circular periphery of the disk 22, without becoming unwound too freely and tangled.

This invention is in the nature of an improvement upon the unwinding device for spools shown and described in my prior application, filed in the Patent Office the 21st day of December, 1912, Serial No. 737948. In the present construction, the tubular spindle 19, furnishes means for securing the thread guiding device 21, to the spool support, whereas in the device illustrated in my prior application, the thread guiding device depended upon the spool for its support.

The tubular spindle 19, has two principal functions to perform, namely, it assists in supporting the spool and supports the thread guiding device 21. Furthermore, it furnishes means whereby the thread guiding device may be adjustably supported with respect to the spool, and the friction element of the thread guiding device enables the latter to be held in any of its positions of adjustment on the spindle. The result is that the spool may be held either in a rotative or non-rotative condition on its support, as is found necessary, depending upon the winding of the spool, the action of the sewing machine and many other contingencies that may arise. Consequently, with the use of this device, a simple spiral unwinding of the thread on a stationary spool, may be effected, or a spiral unwinding on a rotating spool may be had, as is necessary, or brought about by the action of the machine. For instance, by moving the disk away from the spool far enough to release the latter from its fixed position, the spool is then free to turn when the thread is drawn with force or with great speed, thereby permitting the thread to unwind therefrom in a free and even manner, and when the pulling strain on the thread is lessened, the spool ceases to turn and the thread unwinds therefrom in a spiral fashion, with the same ease and freedom as before, so that irrespective of the tension on the thread or its speed of movement, the unwinding action remains practically constant. The results obtained are, even stitches, a continuous thread (the danger of breakage being practically eliminated) and the saving of time and labor. The necessity for this adjustment of the thread guiding device bevice becomes more apparent when the bulk of the thread has been unwound, and at such times it may be found, as a general rule, that the spool must be released from its fixed position to obtain the regular, even stitches necessary in perfect work. The open thread guiding end of the tubular member 23, and circular edge of the disk 22, form narrow track ways over which the thread passes from the outside of the spool to and through its central hole, and the thread is thereby kept from running on any wide surfaces. The end of the tubular member 23, is in fixed position with respect to the marginal edge of the disk, so that regardless of the length of the spool, the thread passes from the edge of the disk to the interior of the spool at a constant angle and with unvarying bends where it passes over those parts, consequently the tension remains approximately even and constant. Furthermore, the tubu-

lar spindle 19, provides a smooth channel through which the thread may be easily threaded through the center of the spool. When it is found that the thread is wound too tight on the spool, or when the greater part of the thread has been unwound from the spool, the thread guiding device may be moved outward on the tubular spindle, thereby releasing the spool from the tapered end of spindle and permitting the spool to turn on the spindle, to permit free and easy unwinding of the thread. The overhanging flange of the thread guiding device is important, since it prevents the thread from striking the wooden flange of the spool in being unwound therefrom.

It is to be understood that the proportions of the device may be varied to suit different requirements and that other alterations and modifications are possible without departing from the spirit of this invention; I do not, therefore, desire to limit myself to the exact details of construction shown and described, except as may be necessitated by the prior state of the art.

I claim as new and desire to secure by Letters Patent:

1. A spool unwinding device, comprising in combination a spool holder having a tubular spindle having a continuous straight passage therethrough from end to end, and adapted to extend through the hole of a spool from end to end, and a thread guiding device located at the free end of the spindle and having a smooth edged circular disk, around which the thread may pass from the outside of the spool, and a tubular centrally disposed thread guiding member, through which the thread may pass from the disk, said thread guiding member projecting from at least one side of said disk, and its outer end being in fixed relation to the edge of the disk, said edge and the end of said tubular member forming narrow, annular trackways for guiding the thread from the outside of the spool to and through its central hole, and frictional connecting means between the tubular spindle and thread guiding devices, whereby the latter may be forced down against the end of the spool to hold it stationary, or may be held away from the spool to permit turning thereof.

2. A spool unwinding device, comprising in combination a spool holder having a supporting disk and a tubular thread guiding spindle having a continuous straight passage therethrough from end to end, and adapted to extend through the hole of a spool from end to end, and a thread guiding device having a smooth edged circular disk around which the thread may pass from the outside of the spool, said disk being provided with a tubular, centrally disposed thread guiding stem, projecting from both sides of the disk and through which the thread may pass from the edge of the disk, said edge of the disk and outer end of the tubular stem forming narrow trackways over which the thread may pass from the outside of the spool to the central hole thereof, said stem being arranged to surround said tubular spindle and having slitted portions arranged to frictionally engage the spindles, whereby the disk may be moved toward or away from the spool; substantially as and for the purpose set forth.

3. A spool unwinding device, comprising a spool-holder provided with a tubular spindle having a continuous straight passage therethrough from end to end, and adapted to extend through the hole of a spool, and a thread guiding device located at and movably secured to move lengthwise on one end of the spindle, and having a smooth edged circular disk around which the thread may pass from the outside of the spool and having a tubular, centrally disposed, thread-guiding member, through which the thread may pass from the disk, said thread guiding member of the thread-guiding device, projecting outward from one side of the disk, said edge of the disk and the outer end of the tubular thread-guiding member forming narrow, annular trackways for guiding the thread from the outside of the spool, to and through its central holes.

4. In a spool unwinding device, a circular spool supporting disk and a check ring adjustably secured together, a centrally disposed tubular spindle secured to and projecting from said circular spool supporting disk toward said check ring, and a circular thread guiding device beyond said check ring, and having a centrally disposed tubular member surrounding and secured upon said tubular spindle.

5. In a spool unwinding device, a circular spool supporting disk and a check ring adjustably connected together, a centrally disposed, tubular spindle projecting from said spool supporting disk toward said check ring, and a thread guiding device having a circular smooth edged disk, and a centrally disposed tubular member projecting from both sides of said disk, said tubular member being arranged to surround and frictionally engage said tubular spindle and forming together, with said tubular spindle, a smooth, continuous passage for the thread of a spool, supported upon said spool supporting member.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."