

July 28, 1936.

H. D. CLINTON

2,048,995

SPOOL OR BOBBIN FOR YARN END FASTENING

Filed Oct. 4, 1935

2 Sheets-Sheet 1

Fig. 1.

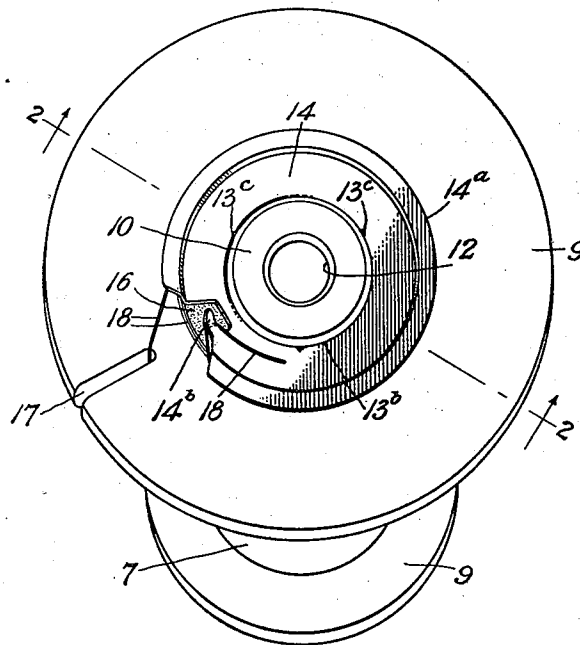


Fig. 2.

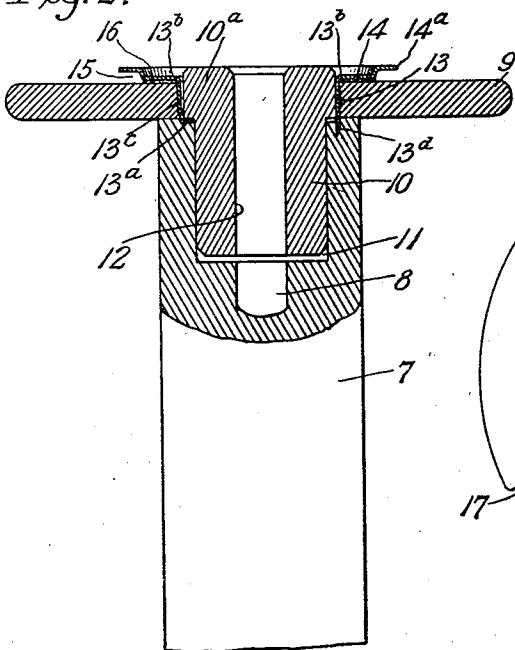
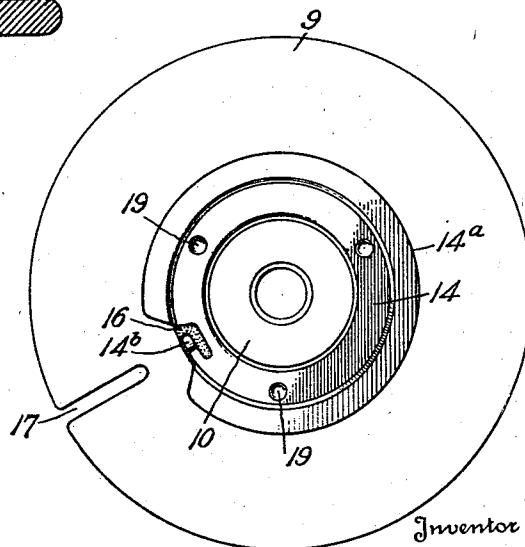


Fig. 3.



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Fig. 4.

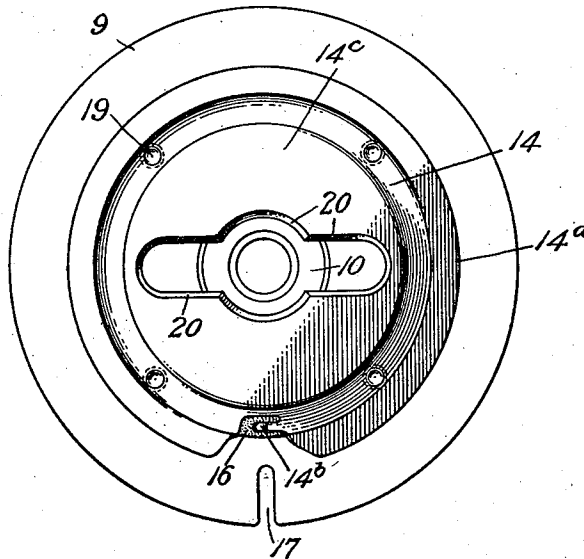


Fig. 5.

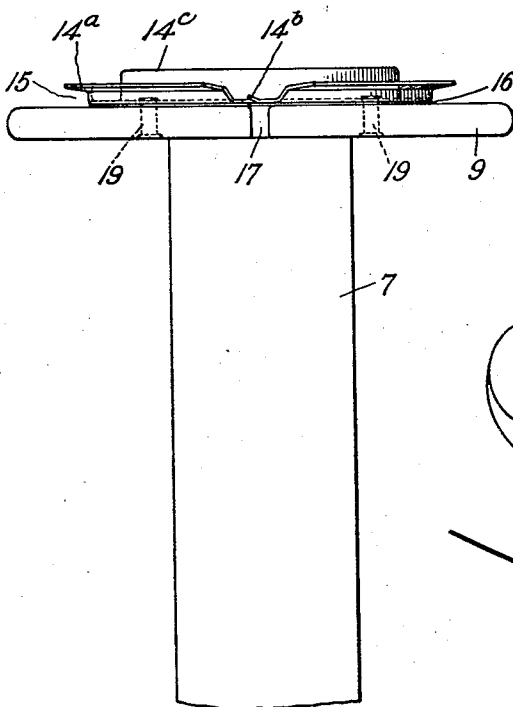
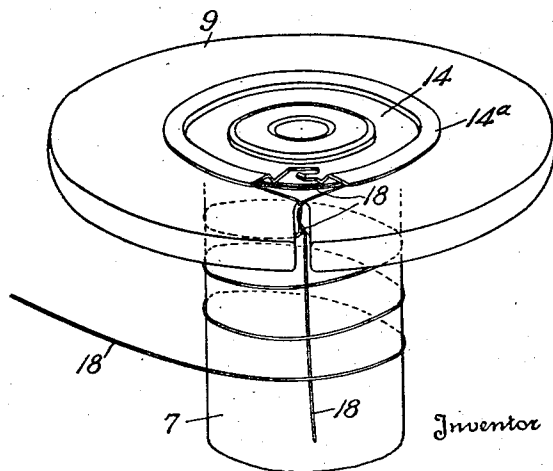


Fig. 6.



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UNITED STATES PATENT OFFICE

2,048,995

SPOOL OR BOBBIN FOR YARN END
FASTENING

Harry D. Clinton, Johnson City, N. Y.

Application October 4, 1935, Serial No. 43,625

12 Claims. (Cl. 242—125)

This invention relates to spools and bobbins, and more particularly to those of such elements which are designed for the securing of the ends of thread or the like loaded by winding thereonto. Specifically it has reference to means for fastening an end of yarn or silk strand on the outside of the loader free from its windings.

In certain textile mill operations, such as "warping" according to the method described in my prior Patent No. 1,639,927 dated August 23, 1927, a continuous feed of yarn or silk strand from one point or element to another is necessary to maintain. The strands are loaded upon spools or bobbins of different design accommodated to the different operations, not only for the convenience of handling and transporting, but because no endless supply storer is practicable. Consequently, the feed must be effected by an expansion from consecutive loaders, with an uninterrupted transfer from one loader to another as each gives off the length of strand spooled thereon. This requires a connection or "tying" of the tail-end of the strand on one loader to the lead-end of the next loader in its series. Therefore, the tail-end, as each spool or bobbin is loaded, must first of all be made accessible outside of the covering windings for the tying, and secondly, must be held where it will not be caught by or interfere with said windings either in the loading or in their spend-off before it. Special loaders or means for so fastening said end of the strand are accordingly essential to proper operation.

An object of the invention is to provide such a loader or means of improved and more efficient character, wherein the tail-end of the strand will be held free and readily accessible thereon at a point outside or away from the covering windings, and taut in its place therebeneath so as not to loosen or become entangled with the same.

Another object is to provide such a loader or means of simplified and more durable construction, so as to reduce the cost of manufacture and replacement in the mills, in addition to increasing the facility of use.

The invention will be described by reference to an illustrative embodiment thereof in the form of a spool shown in the accompanying drawings, from which and from the following specification, other objects as well as the general concept and advantages of the same will be apparent.

In said drawings:

Fig. 1 is a perspective view of the exemplary spool embodying the improved construction;

Fig. 2 is a partially sectional view thereof, taken on the line 2—2 of the first figure, as seen

from the side or longitudinally, the lower part being omitted;

Fig. 3 is a plan end view of an obvious modification;

Fig. 4 is a similar view of another modification adapting the spool to a "twister" member;

Fig. 5 is a side or longitudinal elevation of the modification of the preceding figure, the lower part of the spool being omitted; and

Fig. 6 is a perspective view of the first shown form, illustrating an alternative method of fastening a strand thereon.

Referring first to Figs. 1 and 2, the illustrated loader includes a conventional barrel 7 forming the main body part, which is usually made of wood, although other materials are suitable. This barrel has an axial bore or partial bore 8 for lightening and adapting it to engage upon a pin or gudgeon as is common to devices of the kind.

Heads 9 on opposite ends of the barrel form it into a spool of the instant embodiment, the head at one end in this instance being larger, i. e. of greater diameter, than that at the other. These heads are disc-shaped members, composed preferably of hard vulcanized fibre, which experience has demonstrated to be highly practicable because of its enduring and unbreakable qualities, but they may be made of steel, bakelite or some other appropriate material if preferred, as in some instances will indeed be the case. The peripheries of the heads, and especially the one at the end from which the loadings on the barrel are to be drawn off—being the smaller one in this instance—, are made rounded and smooth so as to prevent any snagging or frictioning of the load strand thereupon, in its feeding or drawing off, that might cause a break.

The head at either end of the barrel is secured thereto by a fastening plug 10 fitted into a counter-bore 11 of the barrel through a center opening in the head. This plug, formed of hard wood or the like, has an enlarged head-portion 10^a, which desirably is slightly tapered, fitting with a circumferential compression within said opening in the head through which its shank extends, and seating upon the barrel end, as here shown, or upon a shoulder formed in said end, so as to pinion and hold the head tight to the barrel. Glue may advantageously be applied to the plug before it is driven into place thus drawing the head to the barrel, in order to insure against loosening and dislodgement. Said plug has an axial bore 12 registering with the bore 8 of the barrel and provides a strong bearing for the same

on the pin or gudgeon to which the loader is applied.

If desired, a more effectual and secure fastening of the head to the barrel may be made by fitting a metal ring 13 around the head-portion 10^a of the plug as a liner between it and the head proper, said ring having a lower inward flange 13^a engaging under said portion and an upper outward flange 13^b engaging over the edge of the opening in the head. Ribs 13^c formed upon the wall of this ring and teeth 13^d formed dependently on the lower flange thereof impress or bite respectively into the surrounding wall of the head and the underlying wall of the barrel as the plug is driven into place. The ring accordingly serves to lock the head both against separation from and against rotation on the barrel.

Formed as a part of such ring in this instance by the extension of its upper flange 13^b, is a metal plate member or disc 14 applied on the outer face of one of the spool heads, the same being the larger one of the illustrated construction. Said member has a peripheral rim-forming flange 14^a bent upwardly and outwardly away from the head, and therewith forms a groove 15 coaxial with and in axial extension of the spool. In its periphery a portion of the member is cut out as shown, or similarly, to form a short finger 14^b, extending preferably in the direction of its edge and bent to act in spring fashion, providing a catch under which a strand of yarn or silk may be engaged to hold firmly.

A washer 16 of felt or other adapted material may advantageously be placed under the aforesaid plate member, between it and the spool head upon which it rests, in order to cushion and tighten the same, as also to aid the hold of the strand by its catch finger or piece.

The spool head to which the plate member 14 is applied is provided with an edgewise slot 17 cut entirely through the same and leading toward the catch element or finger 14^b of said member, preferably in a radial direction. This slot need not extend all the way to said catch nor to the periphery of the barrel, although it should reach to or nearly to the circumferential edge line of the plate member. The purpose of said slot will appear from the description that follows.

In loading the loader or spool, the end of the yarn or silk strand 18 which is the first to go on but the last to come off, and which is therefore called the "tail-end", is drawn through the slot 17 in the head, looped two or more turns around the plate member 14 within the groove 15, and then engaged frictionally under the catch 14^b so as to be held firmly. This is very easily done, the strand being first given a turn or two around the barrel, or not, as preferred. Said "tail-end" is thus held readily accessible on the outside of the loader, where it cannot become entangled or interfere with the subsequent windings on the barrel, either in the loading or in the feeding therefrom. The "tail-end" may accordingly be disengaged easily and quickly for tying onto the "lead-end" of the strand of another spool, so that the feed of the yarn may transfer from the one to the other, when it is emptied, without any interruption of the feed.

The flat form of the plate member 14 resting on the spool head and extending only a short distance beyond the end or axis of the loader, avoids any obstruction or inconvenience in handling, even when the loader is used in ordinary practice without engaging the strand outside. It serves for a positive fastening and holding and

for the protection of the strand on the outside of the spool, away from the main windings, coaxially with and in axial extension of the loader. It is easily and inexpensively applied to the loader and affords a most desirable means of engaging the "tail-end" free and accessible for release and tying onto another strand. The loadings can be drawn off the main body of the loader without any catching of the end thus held on the outside or below the loader when the same is placed on its unloading pin or gudgeon.

Referring now to the modifications:

In the embodiment of Fig. 3, the plate member 14 is applied to the spool head as a separate member, rather than as a part of the locking ring 13. In this instance, it comprises simply the annular plate disposed centrally with respect to the loader axis and secured thereto as by rivets 19 inserted through its flat portion into the head. In all other respects, it is the same as the plate already described with reference to the preceding figures. This provides for those cases wherein it is preferred not to have the member formed as a part of said locking ring, or where said ring is not utilized in the spool assembly. The spool head is, of course, slotted as in the other construction and the washer 16 is desirably placed thereunder for the same purpose.

In the modification of Figs. 4 and 5, the plate member 14, applied in this instance also as a separate member, is formed with a central raised surface portion 14^c. This may be, and preferably is, integral with the plate itself, and accordingly may be integral also with the locking ring 13 shown in the first described construction. Said raised surface portion, which is made of a height or axial thickness desired for the plate to add to the thickness of the spool head itself, provides for a twister head attachment similarly to that described in my co-pending application, Serial No. 43,626, executed and filed of even date herewith. A diametric slot 20 with a central bore enlargement is formed in this raised surface portion 14^c, for fitting upon the driving lug of a twister spindle, portions of the plate surface opened to form said slot being turned inward to provide sides therefor and bear upon the spool head so as to strengthen and rigidify the plate. In all other respects, the plate member is the same as before described. However, due to the greater diameter with which it is formed in this instance, the slot 17 in the head may be shorter than in the other constructions.

Fig. 6 illustrates a method of applying the "tail-end" of the yarn or silk strand 18 around the fastening plate without engaging it under the catch 14^b, if so desired. In this method, the extremity of the strand is held upon the spool and a loop back or doubling therewith is passed through the slot 17. This loop is given a single twist in either direction and a single bend or part of the loop is then wrapped around said plate 14 within the groove 15 until the greater part of its slack is taken up. The two parts of the loop are then drawn back together through the aforementioned slot 17 toward the barrel, until the windings around the plate member become tight. Subsequent windings of the strand around the barrel over said extremity end serve to hold it against slippage. When desired to free the "tail-end" for tying onto the strand of another loader, the extremity end is simply broken at the juncture of the slot, thereby releasing the remainder. This method has been found useful in some cases,

although the intended employment of the plate member is ordinarily preferred, and this method forms no part of the invention per se.

It will be understood that this fastening means may be made in various forms and embodiments, and that various changes in construction and arrangement, with different combinations and sub-combinations of its parts, may be made without departing from the spirit and scope of the invention. For such reason, the appended claims are not intended and are not to be construed to limit the invention to the specific construction herein illustrated and described.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a spool or bobbin, a barrel, a head on an end of the barrel, a circular plate applied to the outer face of the head having a central portion resting flat upon said head and a surrounding peripheral portion raised from the head in an overextending parallel relation thereto so as with said head to form a groove extended beyond and coaxial with the barrel, and means formed in said plate providing a friction catch to engage a strand of yarn or thread wound therearound in the groove.

2. In combination with a spool or bobbin embodying a barrel having end heads, a tail-end holder for yarn strand wound thereonto, comprising a metal plate member having a central surface portion resting flat on one of the heads and a peripheral another portion spaced from said head and therewith forming an extended co-axial groove on the outer side of the head, said plate member having means formed therein providing a friction catch with which to engage the strand after looping therearound; the yarn so looped around the plate being led thereto from the spool barrel through a slot formed in said barrel.

3. In combination with a spool or bobbin, a tail-end holder for yarn strand wound thereonto, comprising a metal plate member centrally faced upon an end of the spool and formed with an upwardly and outwardly extended peripheral flange parallel with the surface of the spool end so as therewith to form an extended coaxial groove on the outer end of the spool, said plate having means formed in the edge thereof for frictionally engaging the strand passed therearound in lead from the barrel of the spool.

4. In a spool or bobbin, a barrel, a head on an end of the barrel, a circular plate applied to the outer face of the head having a central portion resting flat upon said head and a surrounding peripheral portion raised from the head in an overextending parallel relation thereto so as with said head to form a groove extended beyond and coaxial with the barrel, means formed in said plate providing a friction catch to engage a strand of yarn or thread wound therearound in the groove, and a slot formed in the head from its periphery toward the plate through which the inner winding end of yarn or thread may be led from the barrel to said plate.

5. A tail-end holder for yarn strand wound onto a spool or bobbin, comprising in combination with the spool or bobbin, an annular metal plate member applied to an end of the same, said member having a central portion resting flat upon the end and an upwardly and outwardly bent peripheral portion spaced slightly from said end and therewith forming an extended co-axial groove around which the strand

may be looped, a part of the peripheral portion of said member being cut out to form a catch under which the strand may be frictionally engaged to hold it accessible after the looping therearound.

6. A tail-end holder for yarn strand wound onto a spool or bobbin, comprising in combination with the spool or bobbin, an annular metal plate member applied to an end of the same, said member having a central portion resting flat upon the end and a flanged peripheral portion spaced from said end in a parallel relation and therewith forming an extended co-axial groove around which the strand may be looped, a part of the peripheral portion of said member being cut out to form a catch under which the strand may be frictionally engaged to hold it accessible after the looping therearound; the end of the spool or bobbin to which the member is applied being provided with an edgewise slot through which to lead the strand to said member from the body or barrel part.

7. In a spool or bobbin including a barrel having a disc-like head, a tail-end holder for yarn strand wound thereonto, comprising a thin metal disc member applied to the outer face of the head, said member having a central portion faced upon the head and an offset outward peripheral flange spaced slightly from said head and therewith forming an extended co-axial groove around which the strand may be looped, said member being formed with a peripheral cut-out part providing a catch under which the strand may be frictionally engaged close to the head to hold it accessible after the looping therearound, and said head being formed with an edgewise slot through which the strand may be passed or led from the barrel to said member on its outer face.

8. A spool or bobbin, comprising a barrel, a head on an end of the barrel, an edgewise slot formed in the head and a metal plate member applied to the face of the head having an offset outward peripheral flange spaced from said head so as therewith to provide an extended co-axial groove; said plate member having a peripheral portion cut way to form a spring catch under which to engage the end of the yarn strand after passing around said member.

9. In an attachment for a spool or bobbin, means for engaging the tail-end of yarn wound thereonto, comprising in combination with a barrel and a head on an end thereof, a metal disc applied to the face of the head having a central portion resting on the head and an upwardly and outwardly formed peripheral flange spaced from said head and therewith forming an extended co-axial groove around which the yarn may be looped, a portion of said plate being cut out to form a catch finger near the periphery thereof under which the yarn may be engaged and held by friction.

10. In a spool or bobbin, means for engaging the tail or inner winding end of yarn accessibly on an outer end thereof, comprising, in combination with the spool or bobbin head, a metal plate fastened to the head, having a central portion resting close upon the head and a peripheral flange portion raised from and extending in parallel relation to the head, so as therewith to form an extended coaxial groove around which the yarn end may be wound, the peripheral or edge portion of the plate being cut out to form a catch finger to engage the yarn hooked thereunder and the head being provided with an edgewise slot directed toward said plate through

which the yarn end may be led to and around the plate from the spool or bobbin barrel.

11. In a spool or bobbin, including a barrel and a head on an end thereof, a member for engaging the end of a loading strand on the outside thereof combined with a locking ring formed as a part thereof for attaching the head the barrel, said member comprising a metal disc having a central portion resting on the outer face of the head and a peripheral portion spaced slightly from said head and therewith forming a groove coaxial with and in axial extension of the barrel, together with a catch formed in the edge of the disc to releasably hold the strand looped around the same; and the locking ring comprising a liner sleeve fitting within an opening of the head and having a flange at one end engaging over the edge of said opening and another flange at the other end engaging under a shoulder in the barrel end, together with teeth on the latter flange engaging in the wall of the barrel and ribs on the sides of the sleeve engaging in the surrounding wall of the head, both in the direction of the barrel axis.

12. A spool or bobbin, comprising, in combination, a barrel, a head on an end of the barrel, a plug extending through the head for fastening it to the barrel, a metal ring fitting around the

plug for locking the head fastened to place by the plug, and a metal extension member applied on the outer face of the head for engaging the tail-end of a yarn strand wound onto the spool or bobbin accessibly on the outside thereof; said ring comprising a liner sleeve having a lower flange engaging under a shoulder of the plug and having depending teeth engaging into the end wall of the barrel against which it is pressed by the plug, and an upper flange engaging over the edge of the opening of the head through which the plug extends and having ribs on the sides engaging into the surrounding wall of said head against which it is expanded by the plug; said extension member being formed as an extension of the upper flange of the ring and comprising a disc having a central portion resting on the head and a peripheral flange portion bent upward and outward away from the head so as therewith to form a groove coaxial with the barrel, together with a cut out portion in its peripheral surface providing a catch to hold the strand looped around said groove; and an edge-wise slot in the head extending toward said catch on the extension member proximate to the edge of said peripheral flange portion.

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