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THREAD GUIDE FOR SPOOLING AND WINDING MACHINES

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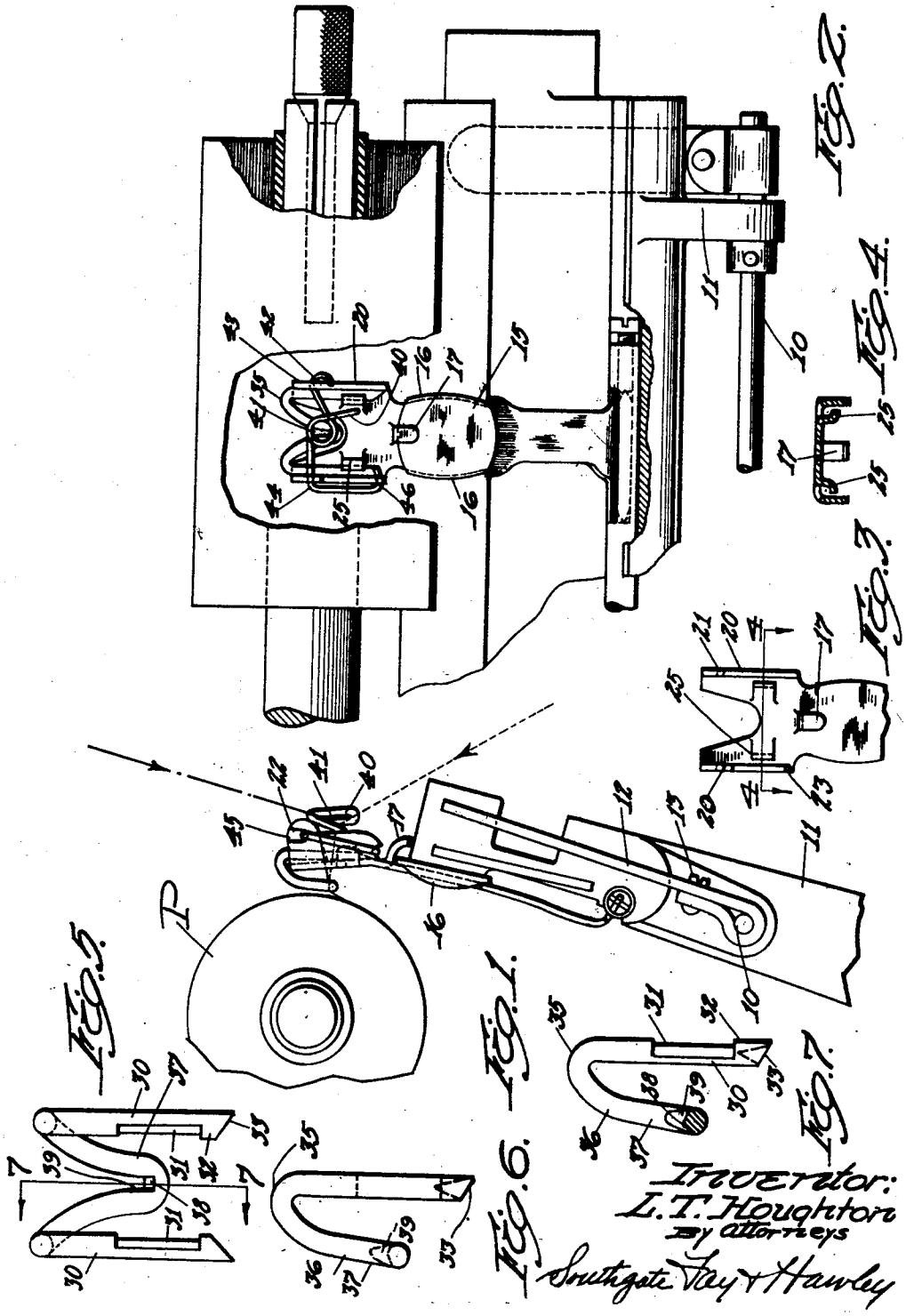


Fig. 2.

Fig. 4.

Fig. 3.

Fig. 5.

Fig. 1.

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE

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THREAD GUIDE FOR SPOOLING AND WINDING MACHINES

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This invention relates to a metallic thread guide adapted for spooling, winding and similar purposes. The principal objects of the invention are to provide a guide of such construction that the first or outer end strand of the yarn can be wiped back on the tube or package under the whole pressure of the guide against the tube in the winding operation; to provide a construction in which the yarn is carried to the extreme end of the yarn package at each traverse, thus avoiding the rising of the yarn in the guide at the end of the traverse when it has a rounded bottom surface and also avoiding the variation in the lay of the end of the strand of yarn in accordance with the position of the yarn in a guide having a rounded surface; to provide a construction in which the first or end strand of yarn has its point on the package and receives a greater pressure than the subsequent layers, thus providing for the winding of the yarn package or tube uniformly along the center so that the packages cannot be produced in a concave condition, but will be straight across or slightly convex, thus better serving the handling which they have to be subjected to in the mill, also to provide a guide in which the guiding surface at the bottom of the V will hold the yarn in proper position as it leaves the guide and prevent its riding up the surface above.

Other objects of the invention are to make a guide, preferably of wire, with the surfaces in the front held in vertical position, and so formed with respect to the guide holder that it engages the upper edge thereof at the front and back so that it cannot be shifted back in the holder by its pressure against the yarn package; and to provide a convenient way of holding the guide in position on the holder. These wire ends are also held between the lugs and a pair of integral flanges on the holder. The easy removability is an important point because it does away with the loss of time ordinarily required to replace these guides which necessarily wear in practice. The guide is not only less expensive to manufacture, but less expensive to install or renew.

Another object of the invention is to provide a simple means of avoiding the necessity of putting in a new guiding loop or eye and changing the V-shaped guide when the machine is to be run with the yarn coming in from above instead of below. The guide is more securely held in position than has been the case heretofore and yet the guide eye is so located that it can be threaded easily and quickly and the eye is mounted so that when it has worn, as it necessarily will, it can be detached and replaced by a new one very readily. This guide eye guides the yarn either from above or below to the V-shaped guide and it prevents the yarn from rising materially in the guide.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is an edge view of the traverse mechanism of a winding machine with a holder in the iron guide constructed in accordance with this invention;

Fig. 2 is a front elevation of the same;

Fig. 3 is a similar view of the top of the holder;

Fig. 4 is a sectional view of the same on the line 4—4 of Fig. 3; and

Figs. 5, 6 and 7 are enlarged front, edge and sectional views respectively of the yarn guide in detail.

In winding or tubing machines the guide moves from end to end of the tube or cone being wound while it revolves and pulls the yarn through the guide. The traverse motion of the guide and the rotation of the tube or cone together lay the yarn on the tube in a series of helices. The pitch of the yarn path is regulated by the number of tube revolutions to the traverse, generally two or more. So this traverse motion is very rapid and when the reversal of traverse occurs, as the guide reaches the end of tube, the yarn is forced up the sides of the guide above its normal bearing with the guides in general use. This causes it to cross the adjoining strand of yarn at the end of the package.

I provide a guide having a flat bearing and vertical sides to hold the yarn in its normal position, absolutely preventing the yarn from jumping up in the guide, as it does fre-

quently in general practice, or crossing the adjoining strand of yarn. Therefore a flat bottom guide with vertical sides forms a better yarn package or tube. The bottom of the V of my guide is flattened and formed parallel with the traverse motion and the side supports are nearly vertical to prevent the yarn from climbing up the V sides.

I have shown the invention as applied to the usual transversing mechanism for traversing the thread or yarn while winding it on a rotary tube or the like to form the thread or yarn package P. The usual traverse rod 10 is shown for a traverse frame 11. On this rod is fixed a holder 12 by means of a screw 13, as usual.

I have shown the traverse frame as provided with a detachable plate 15 formed of sheet metal and having side flanges 16 for engaging the sides of the holder and keeping it in position. In this case the holder is shown convex on the opposite sides so that these flanges will hold the plate against movement up and down as they partake of the shape of the edge of the holder. This holder is also shown as provided with an integral tongue 17 extending out over the plate 15 for limiting its position as usual.

The holder is provided with two parallel side flanges 20 at its edges perpendicular to the front wall of the holder. One of these has a perforation 21 therethrough near the top and the other has a slot 22 opening down from the top and a notch 23 at the bottom. Also punched out at the front of the holder are a pair of lugs 25 having their feet extending toward the flanges to form passages for a purpose which will now be described.

The thread or yarn guide is formed of a single piece of wire bent into the shape shown in Figs. 5, 6 and 7. This is provided with two legs 30 at the ends. These are parallel with each other and provided with notches 31 and with projections 32 beyond the notches. They are sharpened at 33 beyond these projections 32.

It may be stated at this point that the legs of the wire thread guide is forced in behind the lugs 25 until the projections 32 come beyond them. The parts are originally so designed that in driving these legs in they are spread so that the resiliency of this wire will hold the legs in position. At any rate the sharp projections at 32, coming beyond the edges of the lugs 25, prevent withdrawal of the legs without exertion of more force than is applied to the guide ordinarily in practice. In other words, they are detachable but not likely to be detached accidentally. These legs 30 extend up parallel with each other and are bent over at the point 35 and formed into a V-shaped guide 36 spreading out from the legs and spaced therefrom. The curve between the legs and the V 36 is sufficient to allow the guide to project over the edge of the holder and to have the V-shaped guiding member 36 spaced considerably therefrom so as to come into contact with the thread package P.

At the front surface this V guide has two vertical surfaces 37 which will be tangent to the package P. It can be flattened a little. Also in the angle of the V there is a flat surface 38. This flat surface receives the yarn and guides it directly to the yarn package. It can be slanted more or less as desired. At the sides there are two inner substantially vertical parallel surfaces 39 spaced apart at the ends of the guiding surface 38. These are formed by flattening the round wire and they extend up only a short distance, but that is sufficient to prevent the yarn riding up along the inner surfaces of the V when the traverse changes at the ends of the package.

I have also provided a very simple guide for bringing the yarn in either from above or below without changing the location or shape of the guide which is threaded in the same way in either case. This guide consists of a piece of wire doubled on itself at the center to form a double projecting end 40 curved on all its outer surfaces so as to guide the yarn in under it. It is bent around to form a complete circle or eye at 41 which is spaced from the end or projecting tongue 40 at the rear of the latter.

It will be seen that the eye 41 is formed of two wires, one of which goes all the way around the circle and forms a hook 42 at the end which passes through the perforation 21 in one of the flanges 20 for anchoring the eye 41 in position. The other end 44 passes through the slot 22 in the other flange 20 and the end of it is formed into a hook 46 which enters under the notch 23 at the bottom of that flange. This eye 41 performs the functions of a pig-tail as the yarn can be threaded through it very readily from the side under the projecting end 40 and it is thoroughly anchored in place at its two ends, thus utilizing these ends in a new way. It is extremely inexpensive and simple to make and apply and when worn, as it must be eventually, it can be replaced without affecting the other parts or involving any great expense.

It will be seen that this construction provides a very simple guide which will hold the thread or yarn down on the surface 38 where it will have plenty of room to play back and forth a little and will lay the yarn on the package where the traverse changes without wiping it back over the next thread and producing an irregular end. It also provides, on account of the two surfaces 39, means for preventing the yarn riding up in the guide under all sorts of conditions, as stated. The method of anchoring the V-shaped guide is also a simple neat and inexpensive construction which makes the

V-shaped guide easily replaceable but not accidentally detachable.

The eye 40 is of simple construction strongly anchored in place and yet easily replaceable, involving very little expense in manufacture and yet capable of guiding the yarn into the V-shaped guide either from above or below. By the provision of all these features in a single guide I secure economy in manufacture and repair and greatly improve the uniformity of the yarn package.

Although I have illustrated and described only one form of the invention I am aware of the fact that modifications can be made therein without departing from the scope of the invention as expressed in the claims.

Therefore I do not wish to be limited to the details herein shown and described but what I do claim is:—

1. As an article of manufacture, a V-shaped guide of round wire for the purpose described having a flat inclined surface at the bottom for guiding the thread or yarn and having flat side surfaces extending upwardly therefrom and spaced apart substantially in vertical position and connected by said inclined surface, which forms the bottom of the V, said round wire diverging on the two sides of the V gradually beyond the two flat surfaces.

2. As an article of manufacture, a vertical V-shaped guide for the purpose described having a pair of opposite inner side surfaces spaced apart and located substantially in vertical position for preventing the yarn rising in the guide, said guide diverging gradually outwardly on both sides from said side surfaces, and a flat slanting surface for receiving the yarn located between said flat surfaces and at right angles thereto.

3. In a guide for a winding or spooling machine, the combination of a holder formed of sheet metal and having a pair of lugs projecting to the rear, with a wire guide formed with a V-shaped guiding part and having two legs separated and secured against said lugs.

4. In a yarn guide for the purpose described, the combination with a holder having a pair of lugs extending slightly away from each other and a pair of side flanges, of a wire yarn guide having opposite legs projecting along said flanges and under the lugs to slightly spread the legs and hold their ends against the lugs by the action of the legs.

5. In a yarn guide for the purpose described, the combination with a sheet metal holder having a pair of lugs integrally projecting from the rear thereof, extending slightly away from each other, and a pair of side flanges also extending to the rear parallel with each other, of a wire yarn guide having opposite legs parallel and projecting along said flanges and driven under the lugs to slightly spread the legs and hold their ends against the lugs by the action of the legs.

6. In a guide for a winding or spooling machine, the combination with a holder formed of sheet metal and having a pair of outwardly spreading lugs projecting to the rear, of a wire guide formed with a V-shaped guiding portion and having two legs separated and secured on the opposite sides of said lugs, the ends of said legs beyond the lugs being slightly enlarged to prevent accidental displacement, but the wire guide being removable for replacement.

7. In a yarn guide for the purpose described, the combination with a holder having a pair of flanges on the back and a pair of lugs between the flanges, of a wire guide comprising a pair of legs between the respective lugs and flanges to hold it in position, and a yarn guide for guiding the yarn to the wire guide having its two ends projecting therefrom to the flanges to hold it in position.

8. In a yarn guide for the purpose described, the combination with a sheet metal holder having a pair of flanges on the back and a pair of lugs between the flanges spaced slightly therefrom, of a V-shaped wire guide comprising a pair of legs driven between the respective lugs and flanges to hold it in position, one of said flanges having a perforation and the other a notch, and a yarn guide for guiding the yarn to the V-shaped wire guide formed by doubling it around a circle and having its two ends projecting therefrom, one through the perforation and the other over the notch, and the end of the latter being hooked under the flange to hold it in position.

9. In a yarn guide for the purpose described, the combination of a wire V-shaped guide for directing the yarn against the yarn package, and an eye for directing the yarn either from above or below into the V-shaped guide, said eye being formed of a piece of wire doubled over and bent into shape with a projecting central doubled prong having a rounded surface at the end, the wire ends being separated and one passing around under the prong and spaced therefrom to form a space for threading the yarn into it, the two ends being used to anchor it in place.

10. In a yarn guide for the purpose described, the combination of a guide for directing the yarn against the yarn package, and an eye for directing the yarn either from above or below into the guide, said eye being formed with a projecting central doubled prong having a rounded surface at the end, the wire ends being separated and one passing around under the prong and spaced therefrom to form a space for threading the yarn into it.

11. In a yarn guide for the purpose described, the combination of a V-shaped guide

for directing the yarn against the yarn package, and an eye for directing the yarn either from above or below to the V-shaped guide without any change.

In testimony whereof I have hereunto affixed my signature.

LEWIS T. HOUGHTON.