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DOUBLE INSPECTION JACK SPOOLER

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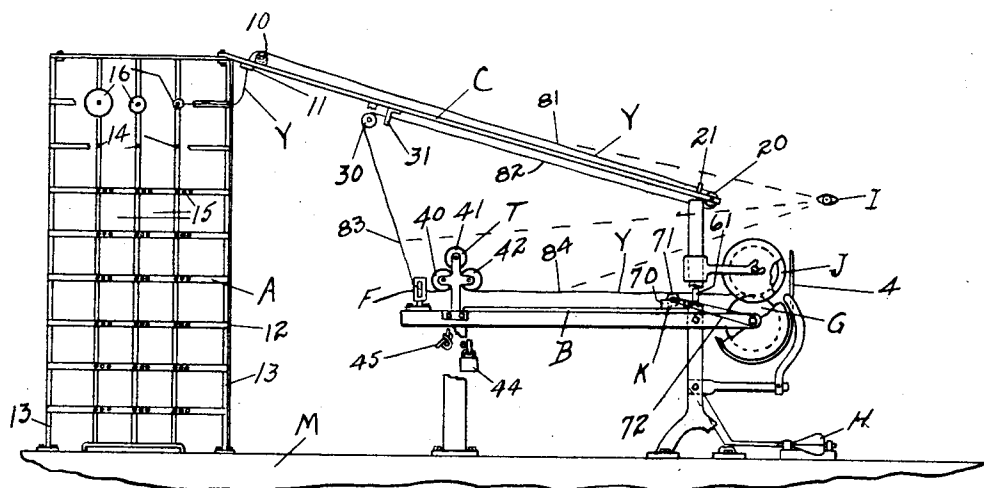


Fig. 1.

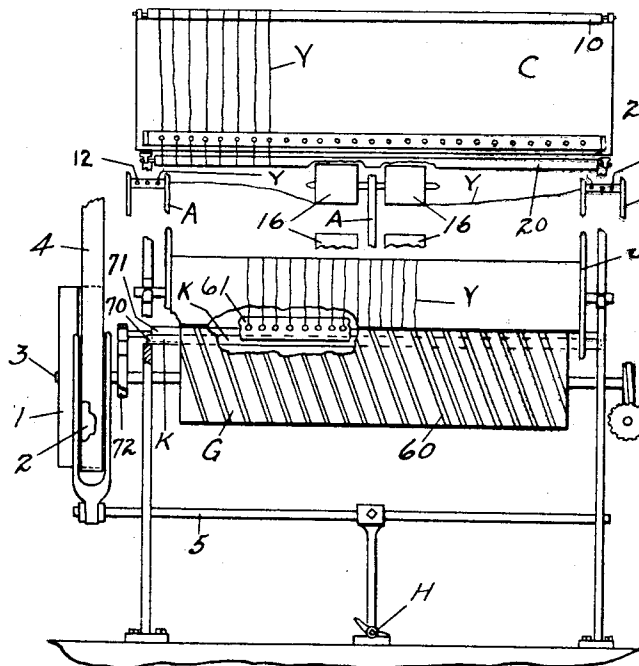


Fig. 2.

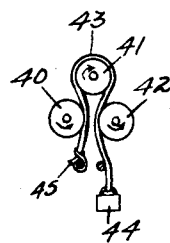


Fig. 3.

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DOUBLE INSPECTION JACK SPOOLER.

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This invention relates to what are known as jack spoolers such as are used in the textile industry for winding yarn on jack spools. Such jack spools are used for shipping yarn and on various machines and in various processes in textile mills.

As part of a jack spooler, there is what is known as a creel on which are placed a large number of spools, bobbins or cheeses, each carrying a great length of yarn. These bobbins, spools or cheeses are revolvably mounted on spindles and the yarn from each is conducted through suitable guides and around tension rollers, thence over a short inspection board to and partially around a jack spool drive roll, and thence on to and around a jack spool driven by such roll.

The jack spool is a relatively large spool with heads at each end, and is frictionally driven. From forty to fifty ends of thread or yarn are usually wound up side by side on a jack spool although more or less ends can be used according to the needs of manufacture.

On the jack spooler, ordinarily the thread or yarn is inspected by an operator as it is being unwound from the creel and wound on the jack spool, and the machine is provided with a shipper or stopping treadle within easy access of the operator so that when she sees a slub, or double piece of yarn or other defect, the machine can instantly be stopped and the defect remedied. The remedy may be applied by merely removing the slub or other defect or by breaking the yarn on each side and piecing the ends in some way.

When it is necessary to remove a flaw in the ordinary type, the thread must be broken between the tension rolls and the jack spool, and as it is not practical to take an outside piece of thread to bridge the gap, that particular thread is unwound sufficiently from the jack spool to allow piecing the ends.

This not only makes that particular thread shorter but causes a different tension on it from the others. This difference in length and tension is especially undesirable when a number of jack spools are assembled on a dresser such as is generally used for building up a warp on a warp beam. On such a warp beam there may be 500 ends, more or less, such ends being unwound from ten or more jack spools, and it is very desirable that each of the threads on all the

spools should be as nearly as possible of uniform length and tension.

Where some of the threads are substantially shorter than others, it is necessary to stop the dresser when the shortest threads are near their ends and to cut off the longer ends so that the starting ends of a new set of jack spools can be tied on to continue the work.

The ends of the longer threads are waste. In practical operation, it is much better to have the knots or splices of thread from the exhausted jack spools to the new jack spools come as nearly together as possible because in the resulting cloth, the defects caused by such knots are bunched, and that particular part of the cloth can either be cut off or more conveniently repaired at one time.

With ten jack spools on a dresser and 500 ends all running to a warp beam, it is much more difficult to piece a single run out end than on a creel where there is only one thread wound on a single cheese or a single spool or bobbin.

For the reason stated above, short threads mean uneven tension and uneven tension causes many breaks and difficulties in later operations.

The purpose of this invention is to provide a jack spooler on which the thread travels in a different and longer course, and in such a way that it can be watched or inspected for flaws in three different places, and so that in two or three places it can be pieced without shortening the thread and without changing the tension.

Another purpose is to bring the threads up close to the operator and then away before they pass around the tension rolls so that the operator will not only have an extensive view of the threads but can take out the imperfections before they reach the tension rolls and thereby avoid uneven spooling.

In the drawings, Fig. 1 is a side elevation of my machine.

Fig. 2 is a front elevation of my machine partly in section and with parts broken away to show the construction.

Fig. 3 is a detail view of the tension rolls.

In the drawings, A represents a creel which as shown comprises frames 13 which rest on the floor M and which support spindles 14, 14 adapted to receive a yarn or thread package 16. Those shown are known

as cheeses. Any type of creel and any type of yarn package may be used provided the thread is conducted through suitable friction devices which may be a plurality of
 5 guide eyes 15, 15 such as shown or any other well known device for the purpose of preventing the yarn from running off too fast from the package.

The thread or yarn Y from these packages
 10 is conducted through the eyes 15, 15 and thence through guide eyes arranged in rows such as 12, and thence to the top of the creel where all of the ends pass through individual eye guides arranged in a row 11 at the top
 15 of the creel and thence over a top guide roll 10 at the upper end of the top inspection board C.

This board C is of any suitable material and is preferably painted some light color
 20 or some color which contrasts with the color of the yarn so that defects can readily be seen by the eye of the operator indicated by the letter I.

The collected ends from the yarn packages 16 pass from roll 10 through a row of individual yarn guide eyes indicated by 21,
 25 thence down and over a bottom guide roll 20 and from there up underneath board C through another assembly of individual guide eyes 31 down over around the carrying roll 30, and thence to and through the
 30 usual traverse motion F and through the tension rollers indicated by T.

As shown, these tension rollers are positioned at the back of the bottom inspection
 35 board B and comprise rollers 40, 41, 42 frictionally driven by the thread Y at substantially the same surface speed as the jack spool drive roll G.

40 The purpose of these rollers is to keep the thread under uniform tension.

As shown, this tension is regulated by a brake band or rope 43 one end of which
 45 may be fixed and the other end of which may carry a weight 44. Band 43 as shown in Fig. 3 passes partly around all three rolls 40, 41, 42.

The bottom inspection board B is horizontally positioned and it, as well as the top
 50 inspection board, is in the direct line of sight of the eye I of the operator.

The thread or yarn Y passes from the tension rollers T over the bottom inspection
 55 board B, and thence preferably through another set of guide eyes 61, and thence over the drive roll G on to the jack spool J. Drive roll G may have grooves 60 to traverse the yarn on to the jack spool.

A drive belt 4 drives either fast or loose
 60 pulley 1 or 2 as guided by a shipper 5 operated by a treadle H within easy reach of the operator's foot whereby through drive shaft 3 for roll G, the winding up on jack spool J can be instantly started or stopped.

65 In operation, if a flaw appears while the

yarn is passing over the top inspection board, the spooler is stopped by treadle H and as the yarn is not under tension at that point, that particular strand can be pulled
 70 through the guides 10, 11, 12, 15 from its yarn package 16 and the ends can be pieced by unwinding from the creel instead of from yarn already wound under tension on the jack spool.

If such flaw or defect gets past the front
 75 guides 20 and 21, it can still, if necessary, be pieced before it reaches the tension rolls.

The yarn can be inspected at 81 over the top inspection board, and again at 83 between the top underneath guides 30, 31 and
 80 the traverse F or tension rolls T and again at 84 over the bottom or emergency inspection board B. This makes three possible inspections as shown by the dotted lines in Fig. 1.

It can be pieced at 81, over top board C
 85 or at 82 under it, or at 83 without unwinding from the jack spool J and therefore without affecting the length or tension of the ultimate yarn package or if necessary at
 90 84.

As there is a much longer stretch of yarn or thread within the reach and immediate control of the operator, the individual
 95 threads when wound on the jack spool will be more of a uniform length thus avoiding any uneven tension when the yarn is re-wound from the jack spool.

If a defect does occasionally escape the operator and passes the tension rolls, the defect can be corrected over the bottom inspection
 100 board B in the usual manner. This board B is therefore an emergency board, the use of which should be reduced to the minimum.

It is comparatively easy to remove a single yarn package 16 from the creel when its thread is substantially run out and to tie
 110 it on to a new yarn package, and there is no waste such as there is when it becomes necessary, as sometimes happens, to cut off the 500 ends, more or less, on a dresser because a number of the threads are short.

I prefer to interpose moistening means indicated by K between the tension rolls
 115 and the jack spool J to humidify the yarn before it is wound thereon. As shown, this includes a water trough 70 in which a partly submerged roll 71 is caused to revolve by a belt 72 at any desired speed.

120 The belt 72 can be disconnected if desired and the yarn Y will revolve it by friction.

I claim that by my machine, I produce a more perfect jack spool yarn package, all the threads of which have substantially the same
 125 length and tension.

I claim:

1. The combination in a single jack spooler having a creel at the back and a friction
 130 drive roller for a jack spool at the front to-

gether with driving mechanism and stop-
ping mechanism proximate the drive roller;
of an inclined top inspection board which
extends from near the top of the creel down
5 towards the drive roller; tension rolls posi-
tioned near the lower part of the creel; a
bottom inspection board which extends be-
tween the lower part of the tension rolls and
the drive roller; and thread guides which
10 direct the thread down over the top inspec-
tion board, thence back towards the creel
and down around the tension rollers, thence
over the top of the bottom inspection board
to the drive roller.

15 2. In a single jack spooler having at the
back a creel and tension rolls and at the
front, a jack spool drive roll; the combina-
tion of a top inspection board which slopes
down towards the top of the jack spool drive
roll; with a horizontal bottom inspection 20
board spaced from and under the top inspec-
tion board between the tension rolls and the
jack spool drive roll, there being a space
between the jack spool drive roll and the
lower end of the top inspection board where- 25
by both boards are within the view of an
operator located in front of the jack spool
drive roll.

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