G. HUTCHINSON.

SPOOL FOR WINDING WARPS AND OTHER PURPOSES.

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1,378,412. Patented May 17, 1921.

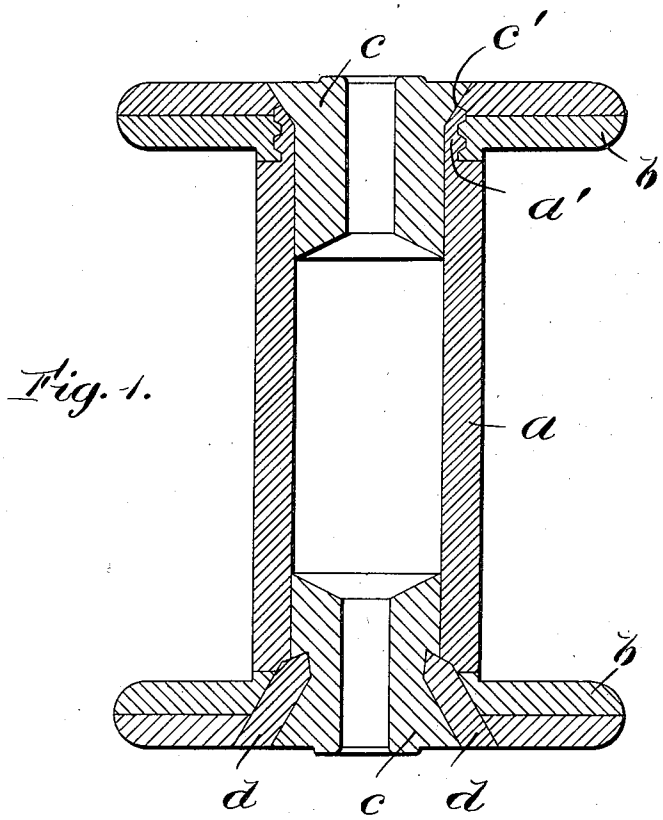


Fig. 1.

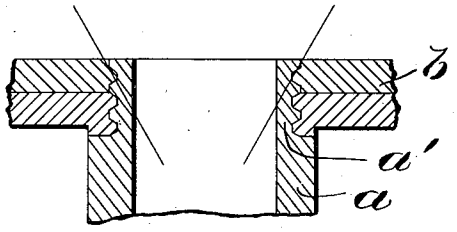
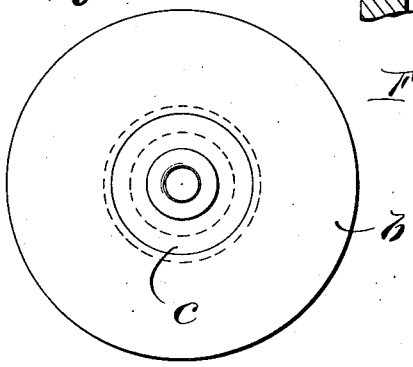


Fig. 2.

Fig. 3.



Inventor:
George Hutchinson
by Geo. N. Goddard atty.

UNITED STATES PATENT OFFICE.

GEORGE HUTCHINSON, OF FALL RIVER, MASSACHUSETTS.

SPOOL FOR WINDING WARPS AND OTHER PURPOSES.

1,378,412. Specification of Letters Patent. Patented May 17, 1921.

Application filed June 9, 1920. Serial No. 387,580.

To all whom it may concern:

Be it known that I, GEORGE HUTCHINSON, a citizen of the United States, and resident of Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Spools for Winding Warps and other Purposes, of which the following is a specification.

This invention relates to the construction of spools particularly such spools as are used for the winding on of warp threads in textile mills and for other purposes and which are characterized by a tubular barrel to the opposite ends of which are secured separate disks or heads.

For many years such spools have been commonly made according to the construction shown in U. S. Patent to Guy 163,483 dated May 18, 1875 in which the tubular barrel has been threaded at its opposite ends to receive a screw thread disk at each end, an ordinary bearing bushing being inserted at each end when the center bore of the barrel is too large to fit on the supporting spindle or rod. Inasmuch as the barrel is almost universally made of soft wood for reasons of economy and otherwise, the threads forming the interlocking engagement between the heads and the barrel are frequently stripped when the heads are subjected to considerable lateral pressure as in the case of very tight winding of warp threads. Moreover, the porosity of the soft wood results in a roughness or ragged appearance of the projecting ends of the barrel so that it is the common practice to fill the irregular pits and cavities with some filler such as putty or the like in order to produce a smooth finished end for the spool. This involves additional material and labor and adds to the expense beside giving an imperfect article.

It is the object of the present invention to overcome these difficulties by providing a construction of parts that will prevent the stripping of the threads and will also result in leaving a smooth finished end of the spool without the necessity of resorting to filling material to cover up the cracks and pits that are incidental to the present method of making these spools. To this end the invention comprises, generally speaking, a spool embracing in its construction a tubular barrel having rabbeted ends to form stop shoulders which ends are threaded to form interlocking connection between the heads or disks and the tubular barrel, the end of the spool thus formed being counter-bored and a tight fitting bushing being inserted in each end of the tube, said bushing being formed with a flared conical end portion arranged to engage the conical surfaces of both the head and the barrel members to reinforce the threaded connection thereby preventing stripping of the threads.

This and other features of the invention will be more particularly explained in this specification and will be defined in the claims hereto annexed.

In the accompanying drawings—

Figure 1 is a longitudinal central section showing the completely assembled spool made in accordance with this invention.

Fig. 2 is a detail central section illustrating the counter boring of the end head and barrel preparatory to inserting the reinforcing bushing in position.

Fig. 3 is an end view of the completed construction.

According to the practice of this invention according to the form illustrated in the drawings, I employ a cylindrical tube *a* whose opposite ends are rabbeted or turned down and threaded to form reduced neck portions *a'* having external screw threaded or suitable interlocking means to form an interlocking and holding engagement directly with the internally threaded heads or disks *b* which are usually of laminated construction as shown to prevent warping and to increase their strength.

After the internally threaded heads *b* are tightly screwed down against the stop shoulders adjacent to the thread end of the tubular barrel *a* each end of the spool is counter-bored to form a conical seat to receive the conical flared end portion *c'* of the centrally bored plug or bushing *c* which is preferably made of hard wood. This counter-boring is sufficiently deep to entirely cut off the extreme end portion of the tubular barrel so that the conical seat for the tapered end of the reinforcing bushing or plug is formed partly by the head or disk *b* and partly by the counter-sunk end of the barrel *a* which terminates a substantial distance short of the outside surface of the head *b*.

After such counter-boring operation the plugs *c* are forced snugly into the opposite ends of the built-up spool, after the application of glue or the like to the contacting surfaces, so that the flared conical end por-

tion c' of the plug c fits tightly against the conical seat formed in the other two members of the spool and at the same time covering up the end surfaces of the tubular barrel a so as to prevent the exposure of any rough or ragged surface on the outside end of the spool.

To prevent any possible rotation of the disk b in relation to the barrel a I may bore one or more diagonal holes along the conical joint between the plug c and the other members of the spool to receive anchoring pins d as indicated in Fig. 1.

I have found that with the construction above described the stripping of the interlocking threads is entirely avoided, and since the plugs c are made of hard wood whose ends readily machine with a smooth clean surface the ragged effect produced when the soft end wood of the barrel projects entirely through the disk is entirely avoided thereby doing away with the necessity of applying a filling paste to fill the pits and recesses as in the present day practice.

What I claim is:

1. A spool for winding warps or the like embracing in its construction a tubular barrel whose opposite ends are rabbeted to form stop shoulders, the rabbeted ends being threaded, end heads having threaded engagement with said rabbeted ends and reinforcing plugs secured in the opposite ends of the barrel and having outwardly flared conical portions engaging countersunk conical surfaces formed in both the barrel and the end heads to reinforce the threaded connection and prevent stripping the threads under endwise strain, substantially as described.

2. A spool for warp threads or the like embracing in its construction a tubular barrel having rabbeted ends, end heads having central apertures adapted to fit over the rabbeted ends of the barrel, both the rabbeted ends and the apertured heads being machined to form positive interlocking engagement with each other, both being interiorly countersunk to conjointly form conical seats and cylindrical bushings, whose outer ends are conically flared to fit said conical seats, secured inside the opposite ends of the barrel with their conical ends forming a reinforcing contact with said conical seats, substantially as described.

3. A spool for warp threads or the like embracing in its construction a tubular barrel, circularly bored heads fitting over the opposite ends of the barrel and having positive direct interlocking connection therewith to prevent endwise movement of the heads, the heads and the adjacent ends of the barrel being counter-bored interiorly to form conical bearing seats, and cylindrical bushings having outwardly flared conical ends adapted to fit snugly in contact with said conical seats to form positive holding engagement with the countersunk ends of the barrel and of the heads, when the bushings are secured in the opposite ends of the barrel, substantially as described.

4. A spool for warp threads or the like embracing in its construction a tubular barrel member, disk members interlockingly connected directly with the ends of the barrel member, the outer ends of the barrel and of the disks being counter-bored to leave the conical ends of the barrel terminating a substantial distance inside the outer surface of the disks, cylindrical bushings whose outer ends are flared to fit against the counterbored ends of both barrel and disks to completely cover over the ends of the barrel and also the counter-bored surfaces of the disks, substantially as described.

5. A spool for warp threads or the like embracing in its construction a barrel and disk like end, heads having direct interlocking connection therewith to prevent endwise displacement of the heads, both barrel and heads being counterbored to conjointly form conical bearing seats for coöperating bushings, cylindrical bushings adapted to fit snugly into the bore of the barrel and having flared end portions having thrust engagement with the aforesaid conical seats, and means for positively preventing rotation of the end heads in relation to the barrel, substantially as described.

In witness whereof I have subscribed the above specification.

GEO. HUTCHINSON.