J. F. DOYLE.

METHOD OF AND APPARATUS FOR BEAMING YARN.

APPLICATION FILED MAR. 7, 1918.

1,301,665. Patented Apr. 22, 1919.

Fig. 1

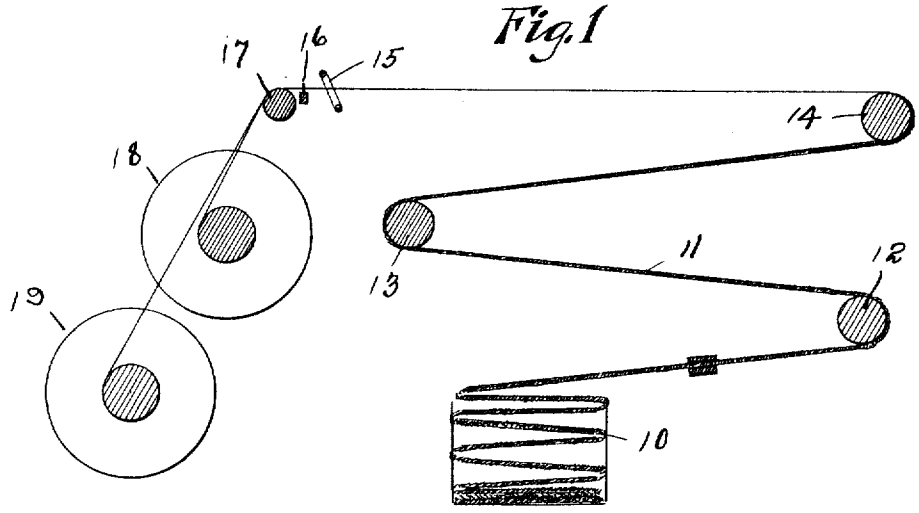


Fig. 2

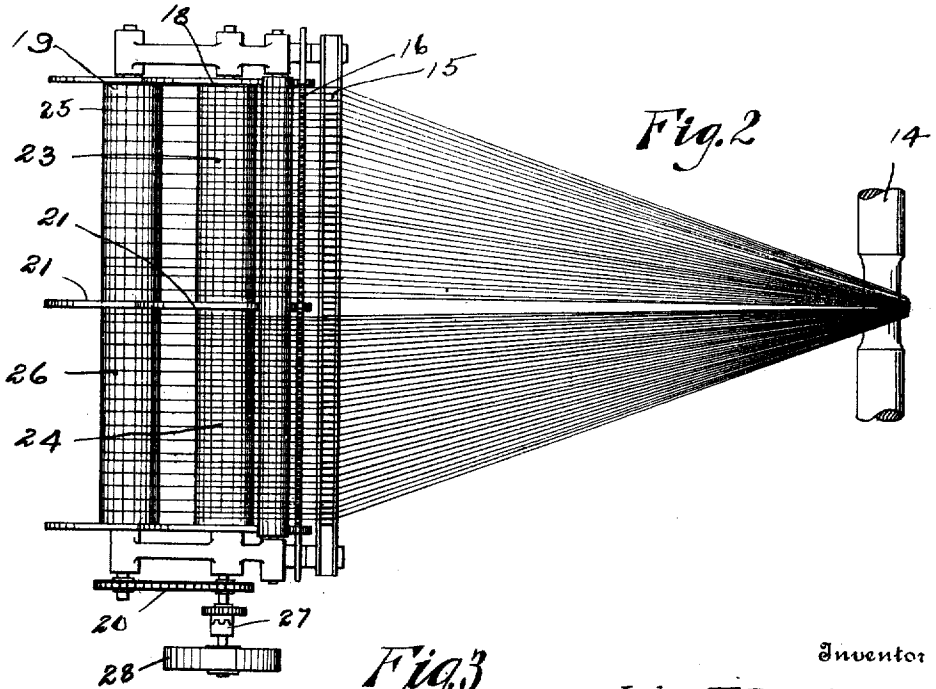
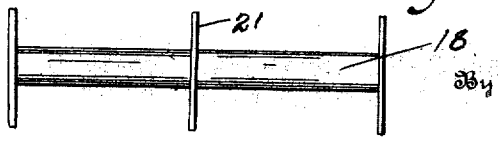


Fig. 3



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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR BEAMING YARN.

1,301,665. Specification of Letters Patent. Patented Apr. 22, 1919.

Application filed March 7, 1918. Serial No. 220,899.

To all whom it may concern:

Be it known that I, JOHN F. DOYLE, a citizen of the United States, and resident of the city of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Methods of and Apparatus for Beaming Yarn, of which the following is a specification.

This invention relates to improvements in yarn beaming machines and to an improved process of beaming the yarn.

The object of this invention is to provide a pair of yarn beams each having a partition intermediate its ends and on which the whole of the usual commercial chain of yarn may be wound and that without first splitting or dividing the chain, and by such a method that the warp will be divided into four separate parts more or less in the beaming machine, which parts are wound onto as many separate beam sections in the two different beams thereby completely filling both beams and so obviating the necessity of tying together and winding a second section of chain on the beam in order to fill it.

For reasons best known to the yarn manufacturers a standard chain of yarn is made by them approximately 6,000 yards long and contains 392 ends or threads and after being dyed or colored is baled and shipped to the different yarn braiding mills or other users.

The usual process of beaming yarn of this character is that each beam should have 98 ends or threads wound thereon to facilitate the general process of spooling, owing to the fact that there are that number of spools in the usual frame onto which these threads are wound before being presented to the braider or other machine.

A beaming machine of this character is usually provided with two warp beams and as the usual chain of yarn has 392 ends in order to wind each beam with 98 threads it has heretofore been necessary to first pass this chain through a splitting machine to divide it into two half chains of 196 ends, each. When one of these half chains is wound onto the two beams of the usual size each beam is but about half filled, and in order to completely fill them it is necessary to also wind thereon the second half, which is done by tying or otherwise joining each thread of the second half to those of the first and so obtain 12,000 yards on each of the beams in order that they shall be reasonably full for economic handling.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1— is a diagrammatic view illustrating the general arrangement of my improved machine for handling the chain of yarn and the arrangement of the warp beams onto which the four divisions of chain are wound in separate sections.

Fig. 2— is a plan view illustrating the general arrangement of the yarn beaming machine, and the arrangement of my improved divided rolls onto which the four separate parts of the chain are wound.

Fig. 3— is a side elevation showing one of my improved divided rolls.

Referring to the drawings, 10 designates the bale from which the yarn chain 11 is led over the various rolls 12, 13 and 14, to be spread out in fan shape and the ends passed through the reed 15 and comb 16 over the guide roll 17 to be wound onto my improved yarn beams 18 and 19 mounted in the machine to receive them, all being driven in time through the usual mechanism which includes the driving pulley 28, clutch 27 and sprocket chain 20.

In my invention I have divided each of the two rolls 18 and 19 transversely into two separate longitudinal sections by means of a partition or flange 21 in each, placed intermediate its ends. These flanges may be formed in any suitable way but are preferably of a diameter equal to that of the end flange, each having smooth faces so as not to injure the yarn which is wound against them.

It will be seen from this construction and arrangement of mechanism that a full chain of 392 ends may be led directly from the bale and fed into this machine and that these 392 ends may here be readily divided into four parts of 98 ends each by leading the alternate threads to the different roll compartments. One set of 98 ends being led to compartment 23 of roll 18, another set to compartment 24 of roll 18, another set to the compartment 25 of roll 19 and the fourth set to compartment 26 of roll 19, whereby the

whole chain of 392 ends has been accommodated, and by this alternate arrangement the threads are caused to completely fill all of the compartments of both of the two rolls 18 and 19 which are now ready to be removed and their contents transferred to the spools of the usual spooling or dressing machine.

By the use of my improved process of beaming and by the use of my improved construction of warp beams it is now apparent that I am enabled to pass the whole chain of 392 ends through my improved beaming machine without first being obliged to pass the same through a chain splitting machine as by my improved method of dividing the warp into four parts in the beaming machine by leading the alternate threads of the warp to the four separate sections of my improved beams I obtain 98 ends in each section. Then again it will be seen that the 98 ends of the 6,000 yard chain completely fills each section of each roll thereby obviating the necessity of splicing, twisting or tying the ends and winding on another half chain which has heretofore been necessary in order to properly fill the ordinary commercial roll.

Therefore it will be seen that by the use of my improved process I save three operations in the handling of the yarn; first, I avoid the necessity of passing the yarn chain through a splitting machine; second, I avoid the necessity of splicing or tying the ends of one half of the chain to those of the other half; and third, I save the operation of running the second 6,000 yards of chain onto the beam, each of which operations requires several hours of time. Then again at each handling of the yarn more or less of the threads become broken and must be knotted together which is also a disadvantage and a feature to be avoided. Therefore from the above it will be seen that by my improved method a chain of yarn may be beamed by but one handling and in about one-third the time usually taken for that operation. Then again by reducing the number of times the yarn is handled much breaking and piecing is avoided, and as a consequence the finished product made from this yarn is of a much higher quality.

Having thus described one illustrative embodiment of my invention and the best mode known to me for carrying out my method, I desire it to be understood that although specific terms are employed they are used in a generic and descriptive sense and not for the purpose of limitation, the scope of the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a yarn-beaming machine, a plurality of beams for each chain or set of threads each beam being provided with a partition intermediate its ends dividing it into sections, said beams being mounted to position the partitions in each substantially opposite each other, means for separating a single set of warp threads and leading each alternate thread of that set to the corresponding opposite sections in said opposite beams, and means for rotating said beams in unison.

2. A method of beaming yarn which consists in dividing each of a plurality of yarn beams into a plurality of separate sections, the corresponding sections of each beam being mounted in approximate transverse alinement with the corresponding sections of the opposite beam, winding a set of warp threads onto said beams by leading each alternate thread of this set to its corresponding section in its opposite beam and rotating all the beam sections in unison.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. DOYLE.

Witnesses:

HOWARD E. BARLOW,

JAMES H. HIGGINS.

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