

A. E. RHOADES.
TENSION MECHANISM FOR WARPING MACHINES.
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Fig. 1.

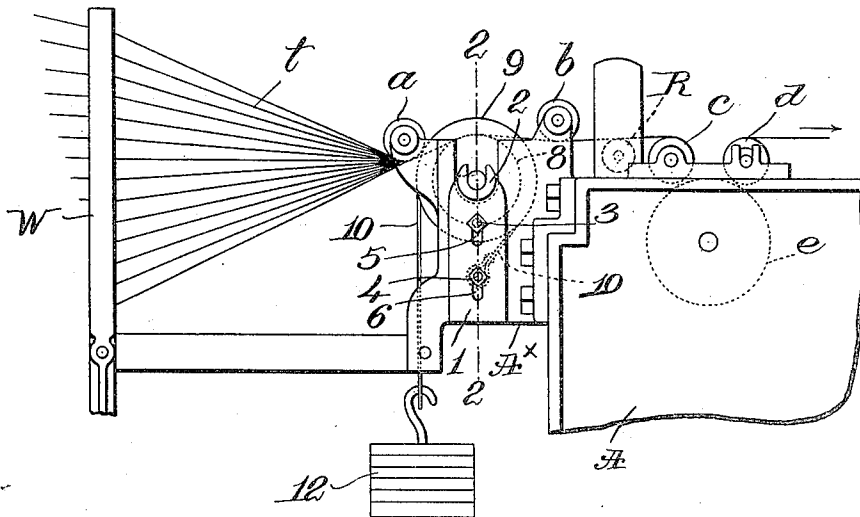
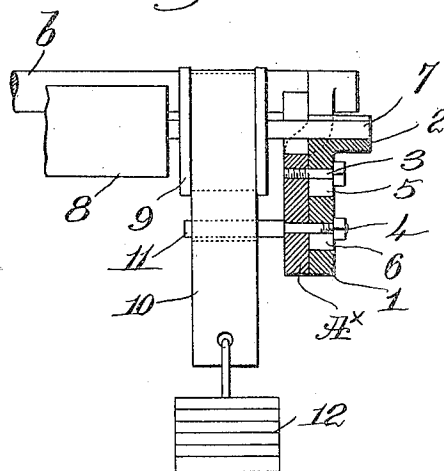


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

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TENSION MECHANISM FOR WARPING-MACHINES.

951,888.

Specification of Letters Patent. Patented Mar. 15, 1910.

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To all whom it may concern:

Be it known that I, ALONZO E. RHOADES, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Tension Mechanism for Warping-Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to warping machines, and it has for its object the production of novel, simple and effective mechanism for imparting sufficient tension to the warp threads, in order to take up slack in individual threads and in the sheet of warp as a whole, and cause the sheet of warp to travel evenly and smoothly, without twists or kinks in the threads.

It is customary in some forms of warping machines to cause the threads forming the sheet of warp to travel under fixed guide-rolls and over a rise-roll or bar which is caused to press upward, by weights or otherwise, against the sheet of warp to take care of the slack. Such an apparatus is shown in my Patent No. 500,541, dated June 27, 1893 and it will be apparent that while the rise-roll or bar therein shown will act to take up the slack of the sheet of warp, as a whole, it has very little if any control over individually slack threads, which may become slack from over-running of some of the spools in the creel, or from such spools turning too freely. When these individual slack threads occur they are apt to kink, twist or curl, and being carried along with the other threads in the sheet are very apt to give rise to trouble in subsequent operations.

My present invention is so constructed and arranged that while the warp as a whole is controlled and tensioned the slack or looseness of individual threads will be controlled and taken up.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a side elevation of a sufficient portion of a warping machine, with one embodiment of my present invention applied thereto; Fig. 2 is a partial vertical section on the line 2-2, Fig. 1, showing more clearly the construction of novel features of the invention.

The main frame A, guide-rolls *a*, *b*, *c*, *d* and *e*, Fig. 1, the journals of rolls *a* and *b* being supported in brackets, as A*, one at each side of the main frame, and the thread guide W through which the threads *t* pass to the warping machine from the creel-frame (not shown) may be and are all of usual construction, the threads forming the sheet of warp being shown as passing under the guide-rolls *a*, *b*, over and around guide-roll *c* and down around the roll *e* and thence up around and over the guide-roll *d*, the rise-roll R being shown in dotted lines, Fig. 1. This rise-roll or bar, lifted by a weight, is interposed between the guide-rolls *b* and *c*, to act upon the under side of and press upward the sheet of warp, as usual, and in my present invention I have provided a tension device which acts, in addition to the rise-roll, not only upon the sheet of warp as a whole but which acts also upon individual threads to take up slack. To this end I attach to each bracket A* a bearing-plate 1, having at its upper end an open seat or bearing 2, the plate being held on the bracket in vertically adjusted position by means of clamping bolts 3, 4 which pass through elongated upright slots 5, 6 in the plate.

The bracket A* is cut out to permit the journal 7 of a tension roll 8 to enter and seat in the bearing 2 at each side of the machine, said tension roll being covered with felt, flannel, or other suitable friction-producing material and as herein shown acting against the under side of the sheet of warp to hold the latter up against the guide-rolls *a* and *b*. The extent to which the warp is deflected from its path of travel by the tension roll 8 is determined by the vertical adjustment of the latter.

I have provided a friction detent, or retarding means, to act upon the roll 8 in opposition to the rotative force exerted thereupon by the pull of the warp threads as they travel over a portion of the periphery of the roll. At one end thereof a drum or sheave 9 is secured, and over such drum is passed a flexible belt or band 10, fixedly attached at one end to a prolongation 11 of the clamping bolt 4, the free end of the band having hung upon it an adjustable weight, as 12. The greater this weight the greater will be the drag exerted upon the sheet of warp, it being so arranged in practice that the pull of the warp sheet will effect rotative

movement of the tension roll, to equalize wear thereupon and to act more smoothly upon the warp.

It will be apparent that the tension exerted upon the sheet of warp as a whole is equal to the sum of the tension produced by the action of the tension roll 8 upon the individual warp threads forming the sheet, and if any of the threads slacken unduly between the creel-frame and tension roll the friction surface of the latter will act upon and take up the slack of such thread. Consequently all of the threads will be held taut and smooth as they leave the tension roll, so that no kinks, curls or twists can be carried along beyond such tension roll, and the objections due to their presence in subsequent operations will be completely obviated. The adjustments for height and drag or tension are made independently of each other, as will be obvious, so that the different requirements for warps of varying characteristics can be readily and easily provided.

Changes or modifications may be made by those skilled in the art in various details of construction and arrangement without departing from the spirit and scope of my invention as set forth in the claims annexed hereto.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a warping machine, in combination,

guide-rolls under which the sheet of warp threads passes and is guided in its passage, a rotatable tension member in coöperative engagement with the under side of and to press the sheet of threads up against said rolls, said member being adapted to be rotated by the pull of the warp threads thereon, and means to resist such rotative movement, to thereby take up slack in individual warp threads as well as slackness of the warp sheet as a whole, said tension member deflecting the warp sheet slightly as it passes from one to another of the guide-rolls.

2. In a warping machine, in combination, rolls to guide the sheet of warp threads in its passage, a vertically adjustable tension member in peripheral frictional engagement with the under side of the sheet of threads to hold the same up against said guide rolls and adapted to be rotated by the pull of the warp threads traveling thereover, means to maintain said tension member in adjusted position toward or from the normal path of travel of the sheet, and independent, adjustable means to coöperate with the tension member and resist its rotative movement.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALONZO E. RHOADES.

Witnesses:

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