A. L. REMINGTON.

WARP BEAMING MACHINE.

APPLICATION FILED JAN. 25, 1915.

1,234,693.

Patented July 24, 1917.

3 SHEETS—SHEET 1.

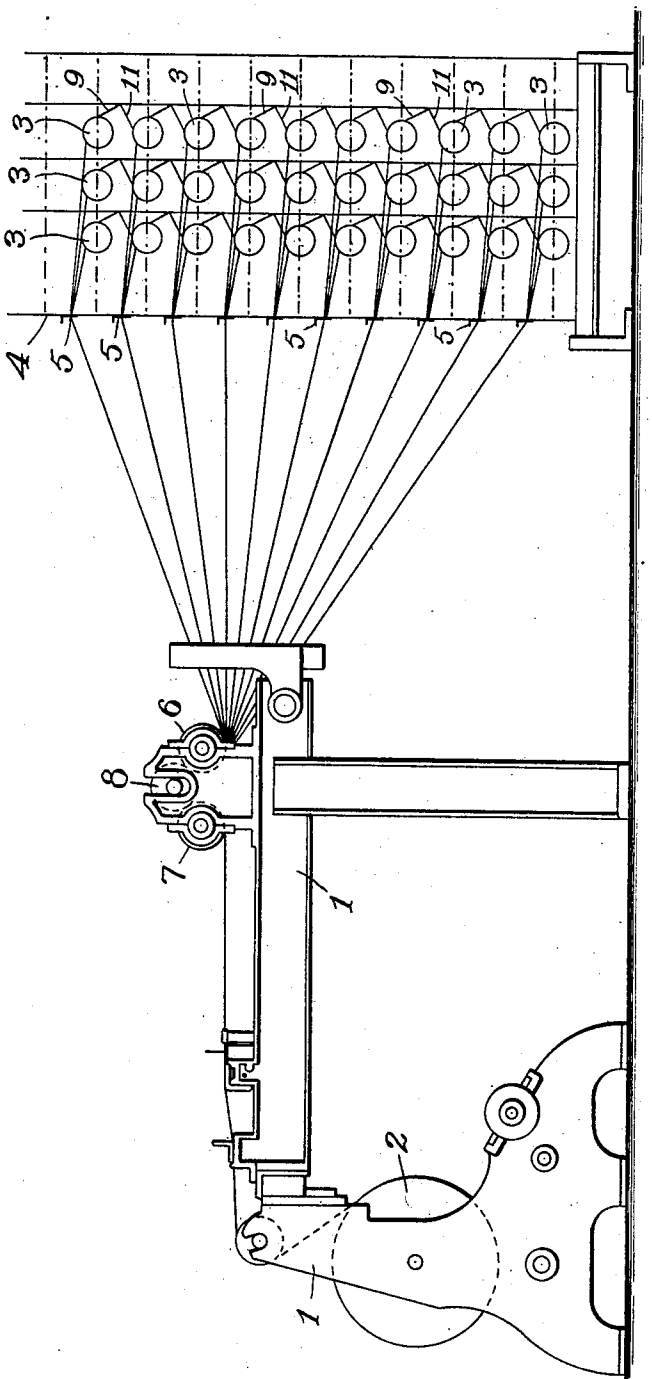


Fig. 1.

Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

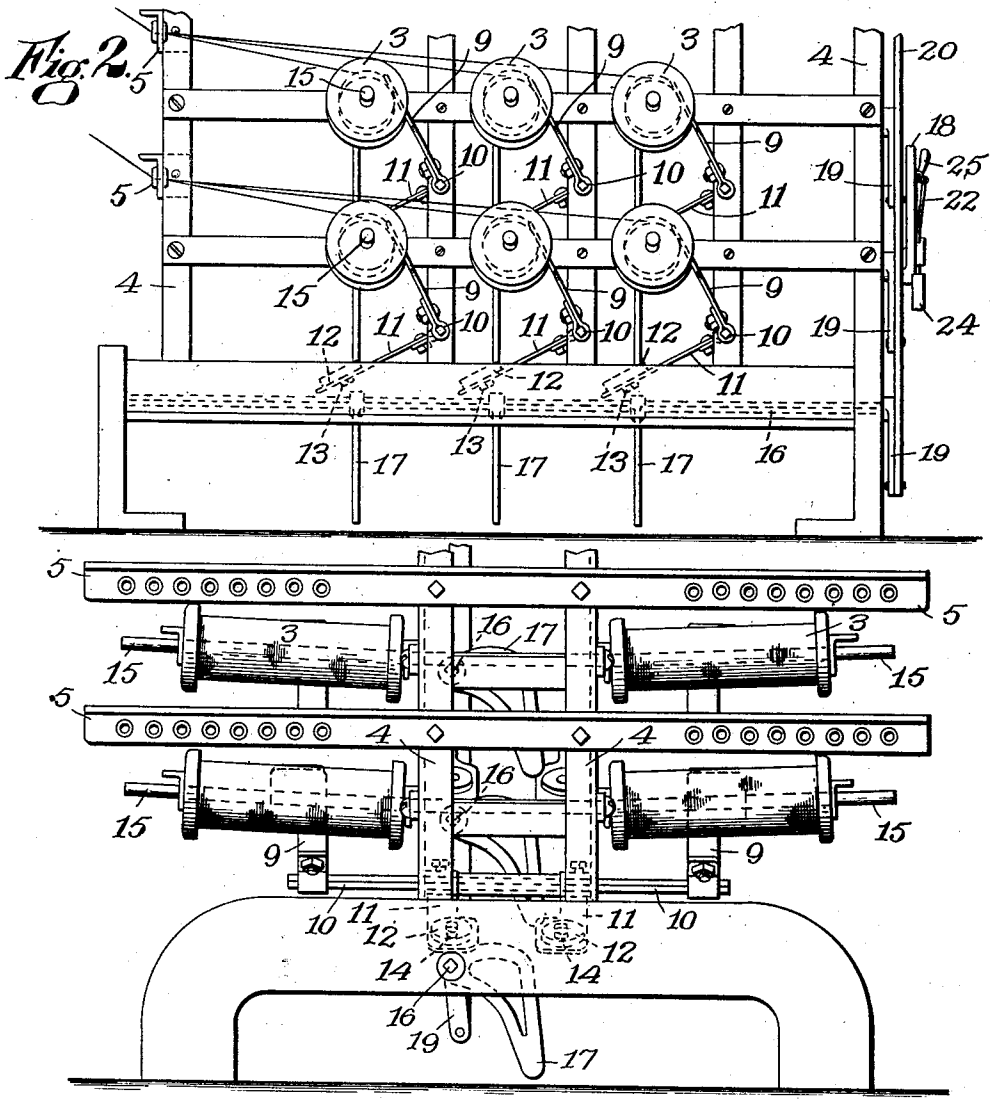


Fig. 3.

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3 SHEETS—SHEET 3.

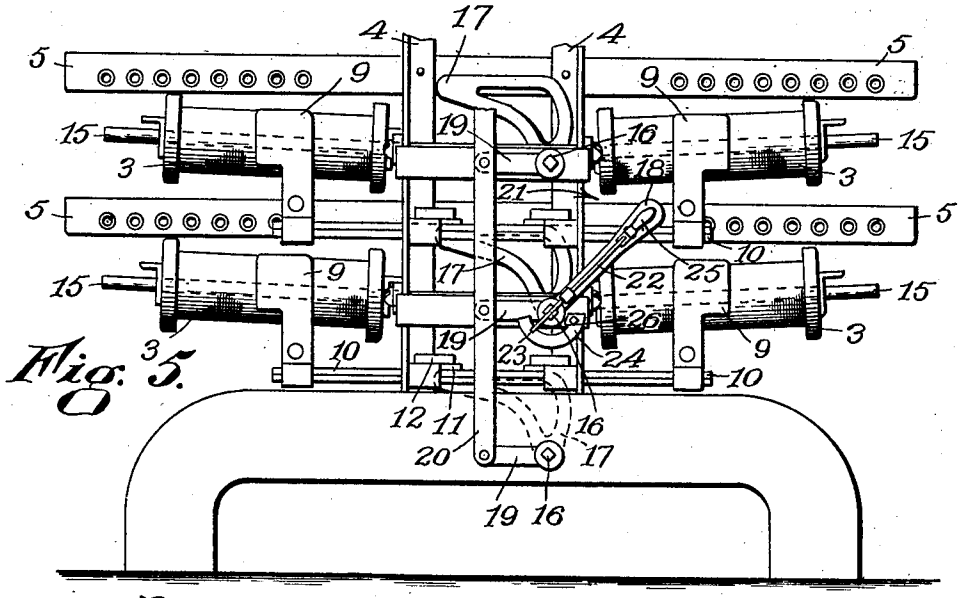


Fig. 5.

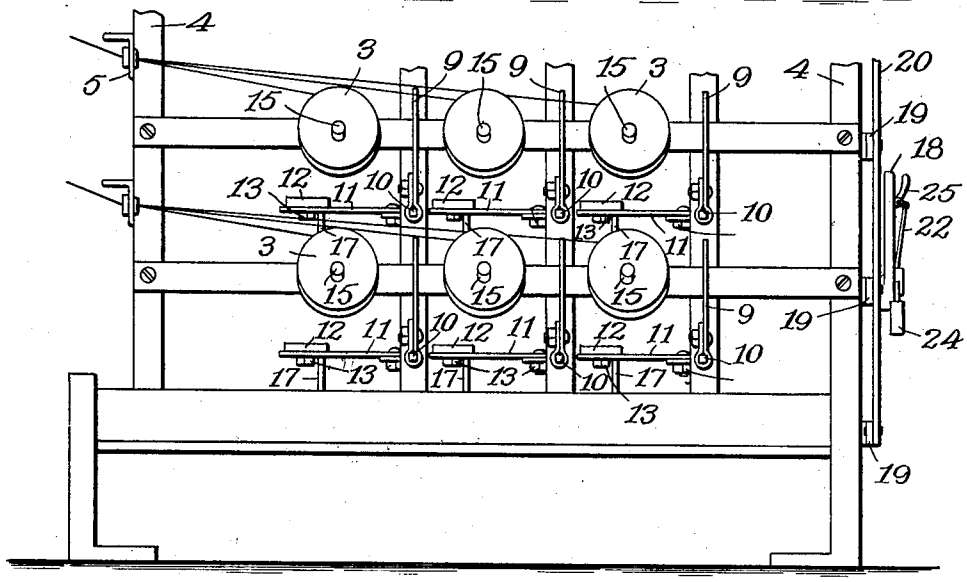


Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

ARTHUR L. REMINGTON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO WARP COMPRESSING MACHINE COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WARP-BEAMING MACHINE.

1,234,693. Specification of Letters Patent. Patented July 24, 1917.

Application filed January 25, 1915. Serial No. 4,134.

To all whom it may concern:

Be it known that I, ARTHUR L. REMINGTON, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Warp-Beaming Machines, of which the following is a specification, accompanied by drawings forming a part of the same.

The objects of my present invention are to provide means for producing a uniform tension upon the individual strands as they are wound upon a warp beam; for adjusting the tension, and for facilitating the replenishing of the strand spools. These objects, among others, I accomplish by the construction and arrangement of parts as hereinafter described, the novel features being pointed out in the annexed claims.

Referring to the accompanying drawings,

Figure 1 represents a side view of my improved warp beaming machine.

Fig. 2 is a side view of a portion of the framework carrying the strand spools.

Fig. 3 is a front view of that portion of the machine represented in side view in Fig. 2.

Fig. 4 is a side view similar to that shown in Fig. 2, but with the devices for imparting an initial tension to the individual strands in their inoperative positions, and

Fig. 5 is a rear view of the same portion of the machine shown in Fig. 4.

Similar reference characters refer to similar parts throughout the different figures.

Referring to Fig. 1, 1 denotes a framework in which a rotating warp beam 2 is supported, the usual means being provided for rotating the beam, but not shown, as they form no part of my present invention. The individual strands which are to form the warp are wound upon the beam side by side and the filled beam is then transferred to a weaving loom. It is extremely desirable that the multiplicity of strands should be uniformly wound upon the beam with a uniform tension applied to the strands. It is one of the objects of my present invention to provide means for imparting a uniform tension to the strands of the wound beam and also to accurately control the amount of tension imparted.

According to my present invention, each strand is taken from a strand spool 3, supported in a framework or creel 4 placed in proximity to the rotating warp beam 2, as represented in Fig. 1. From the strand spools 3 the strands are conducted through guide bars 5 beneath the rolls 6, 7, and over the roll 8, resting by gravity upon the periphery of the rolls 6 and 7. Resting upon the yarn of the strand spools 3 are friction levers 9 held upon squared sections of shafts 10 which are journaled in the framework of the creel. The shafts 10 also carry levers 11 provided with weights 12, attached to the levers 11 by bolts 13. The weights 12 are radially adjustable upon the levers 11 by means of slots 14 in the levers. The weights 12 cause a slight pressure to be exerted upon the yarn of the strand spools 3 by the free ends of the levers 9. By means of the friction levers 9 an initial tension is applied to each individual strand which may be delicately adjusted by the adjustment of the weights 12 on the levers 11. The initial tension applied to the individual strands is very much less than the tension required as the strands are laid upon the rotating warp beam 2.

I secure the requisite tension at the warp beam by multiplying the initial tension imparted at the strand spools by means of the rolls 6, 7 and 8, which cause the initial tension to be multiplied many times by the passage of the strands beneath the rolls 6 and 7 over the roll 8 and between the rolls 6 and 8 and 8 and 7. The strand spools 3 are loosely mounted upon the spindles 15 rigidly held in the framework of the creel 4 and at an oblique angle to a horizontal plane, as represented in Fig. 3, which maintains the strand spools at the lowest ends of the spindles by gravity, thereby permitting the strand spools to be removed from the free ends of the spindles when the spools have been disengaged from the friction levers 9.

The disengagement of all the strand spools is simultaneously accomplished by means of a series of rocking shafts 16 which carry arms 17 extending beneath the levers 11, so that the rocking of the shafts 16 will raise the arms 17 beneath the levers 11 and rock the shafts 10 to swing the friction levers 9 away from the strand spools. One of the shafts 16 is provided at the rear of the creel with a lever handle 18, Fig. 5, and the shafts 16 are also coupled together by the radial arms 19 and link 20 by which all

the shafts 16 are simultaneously rocked by means of a single lever handle 18. By swinging the lever handle 18 in the direction of the arrow 21 all the shafts 16 are rocked to raise the arms 17, as shown in Fig. 4, and release by a single movement all the friction levers 9 from their engagement with the strand spools. The lever handle 18 carries a spring actuated latch 22 which engages a notch 23 in the latching plate 24 in order to hold the arms 17 in their raised position and support the weight of the tension devices. The latch 22 is connected with one arm of a bell crank 25 arranged to be rocked by the compression of the bell crank against the end of the lever 18 to withdraw the latch 22 from the notch 23, thereby allowing the shafts 16 to rock in the opposite direction until the end of the latch 22 is brought into contact with a shoulder 26 on the latching plate 24. When the latch engages the notch 23, the lifting arms 17 are held in their elevated position, supporting the levers 11 and weights 12 and holding the levers 9 out of contact with the yarn upon the strand spools 3; the shafts 16 are then held from rotation in either direction. By releasing the latch from the notch 23, the lifting arms 17 are permitted to drop until the end of the latch strikes the shoulder 26, when the shafts 16 are held from rotating in one direction.

I claim:

1. In a warp winding mechanism, a rotating warp beam for receiving a multiplicity of warp threads, a creel for supporting a strand spool for each individual strand, means for imparting an initial tension to the strand as it leaves its strand spool, comprising a rocking shaft, a friction lever carried by said shaft bearing directly upon the strand wound upon the strand spool, a second lever carried by said rocking shaft, and a weight adjustable on said second lever and adapted to hold by gravity said friction lever in contact with the strand on the strand spool, and means for simultaneously rendering all of said friction levers inoperative.

2. In a warp winding mechanism, a warp beam for receiving a multiplicity of warp threads, a creel for supporting a plurality of strand spools, means for imparting an initial tension to each strand, comprising a rocking shaft, a friction lever arranged to bear against the strand wound upon the strand spool, a second gravity lever carried by said rocking shaft, and means for simultaneously raising all of said gravity levers and holding them in an inoperative raised position.

3. In a winding mechanism for winding a plurality of strands from individual strand spools, a frame for supporting the strand spools, a friction device for each spool, comprising a rocking shaft journaled transversely to said frame, a friction lever carried by said shaft and arranged to bear against the strand wound upon said strand spool, a gravity lever carried by said rocking shaft, a second rocking shaft journaled longitudinally in said frame and below said transverse shafts, and lifting arms carried by said longitudinal shaft and arranged to support said gravity arms when in their raised position.

4. In a winding mechanism for winding a plurality of strands from individual strand spools, a tension device for each strand, comprising a frame for the strand spools, short rocking shafts journaled transversely to said frame, friction levers carried by said shafts, gravity levers carried by said shafts, a second rocking shaft journaled longitudinally in said frame and beneath said transverse shafts, lifting arms carried by said longitudinal shaft for raising said gravity levers, and means for locking said longitudinal shaft from movement.

Dated this twentieth day of January, 1915.

ARTHUR L. REMINGTON.

Witnesses:

PENELOPE COMBERBACH,

NELLIE WHALEN.

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