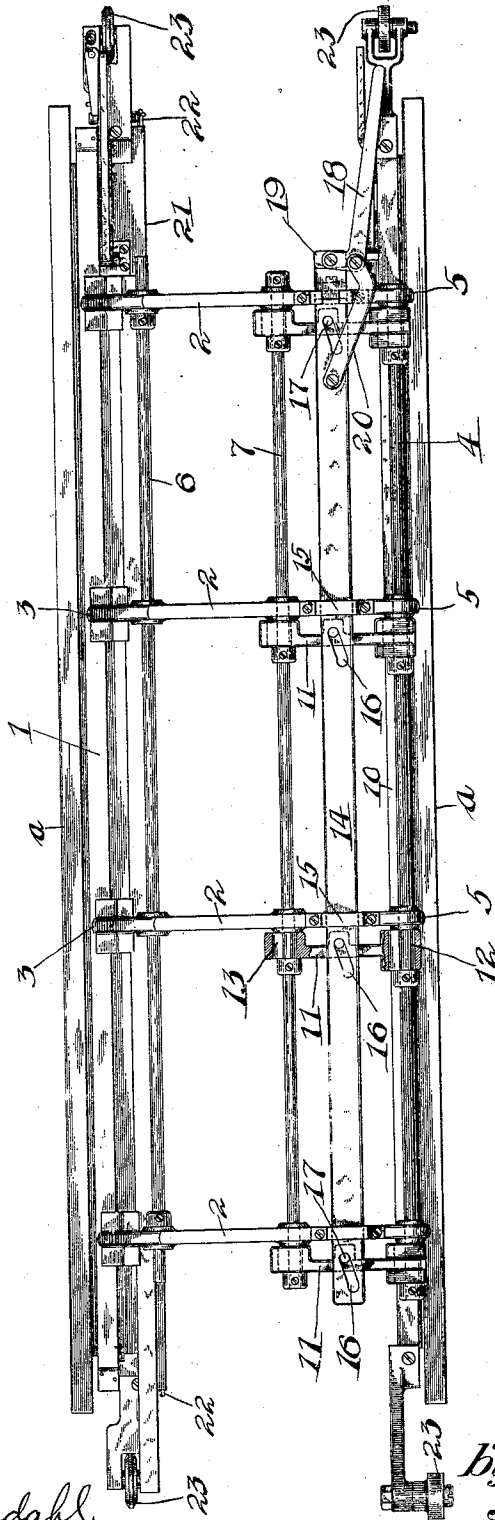


938,124.

Fig. 1.



Witnesses
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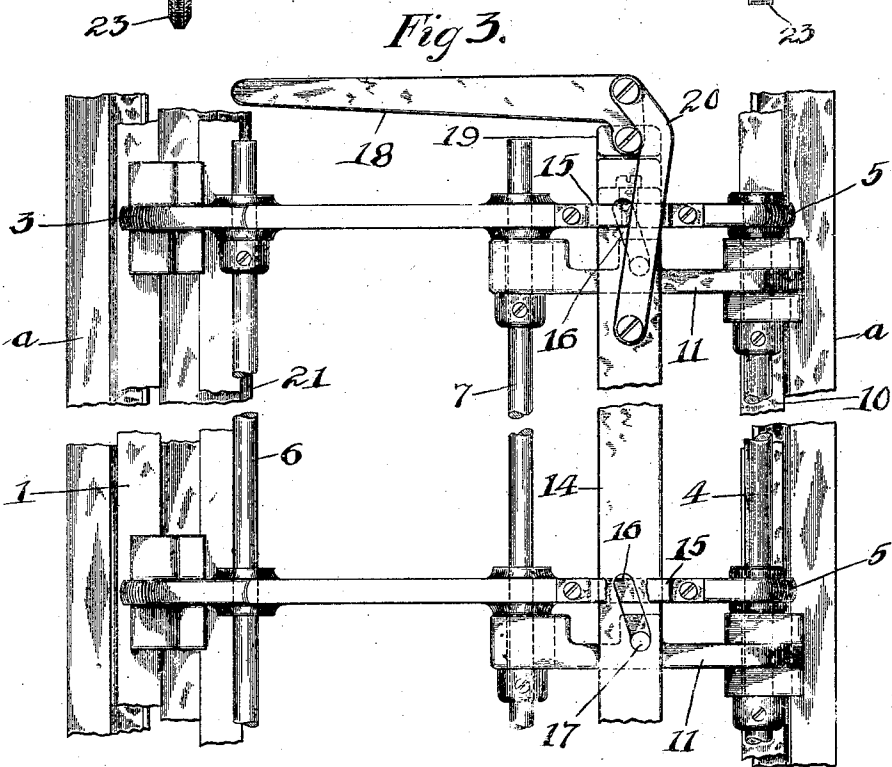
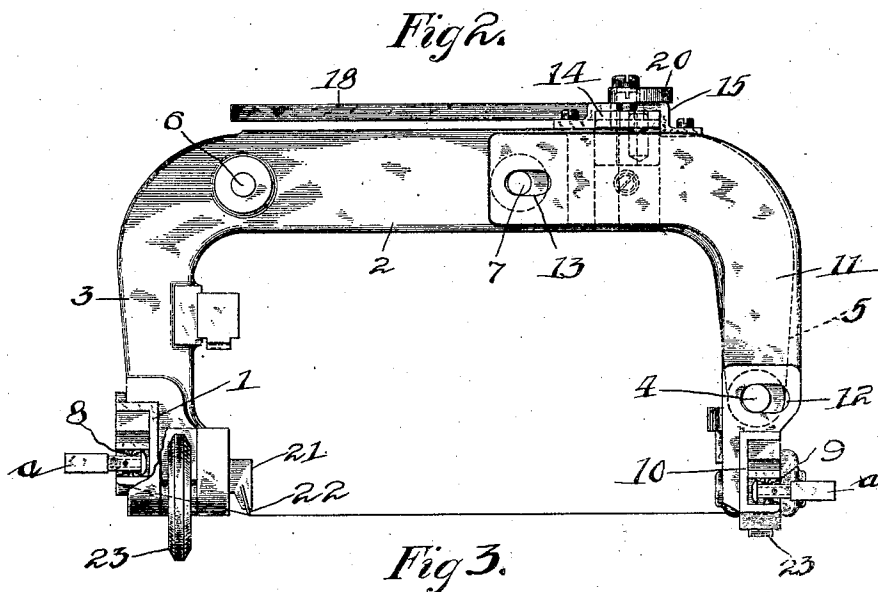
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H. D. COLMAN.
WARP CARRIAGE.
APPLICATION FILED OCT. 28, 1907.

938,124.

Patented Oct. 26, 1909.

2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

HOWARD D. COLMAN, OF ROCKFORD, ILLINOIS, ASSIGNOR TO BARBER-COLMAN COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

WARP-CARRIAGE.

938,124.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed October 28, 1907. Serial No. 399,438.

To all whom it may concern:

Be it known that I, HOWARD D. COLMAN, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvements in Warp-Carriages, of which the following is a specification.

This invention relates to improved means for clamping and stretching warp threads and the like, and refers particularly to such means in its application to the warp carriage of an automatic warp-tying machine or other warp-handling machine.

In the accompanying drawings Figure 1 is a top plan view of a warp carriage embodying the features of my invention. Fig. 2 is an end elevation, partly in section, of said carriage, one of the rollers for supporting the carriage being omitted from this view. Fig. 3 is a fragmental top plan view of the carriage.

The warp carriage in connection with which my invention is herein illustrated is adapted to be movably supported in a warp-tying machine and is provided with two clamps for securing a warp upon said carriage. In order to place tension upon the threads after they are secured in said clamps one of said clamps is made movable toward and away from the other clamp, as will appear hereinafter.

The framework of the carriage in this instance comprises a channel bar 1, a plurality of yokes 2, the arms 3 of which are rigidly secured to said channel bar; a rod 4 fixed in the lower ends of the arms 5 of said yokes; and two longitudinal rods 6 and 7 rigidly securing said yokes together. The channel bar 1 forms the frame of a warp clamp 8. The frame of the other warp clamp 9 consists of a similar channel bar 10 rigidly secured to a plurality of angular arms 11. Each of the arms 11 has an elongated opening 12 therein through which the rod 4 extends, and a similar opening 13 through which passes the rod 7.

The warp clamps 8 and 9 may be of any suitable construction adapted to firmly engage the warp threads. The construction of said clamps and of their operating means is not shown in detail herein.

The means for moving the warp clamp 9 toward and away from the clamp 8 com-

prises, in the present instance, a bar 14 extending longitudinally of the warp carriage and slidably mounted within guide loops or straps 15 secured to the yokes 2. In said bar is formed a plurality of slots 16 extending at an angle with relation to said bar. A pin 17 fixed to each of the angular arms 11 extends into each of the elongated openings 16. It will be seen that a longitudinal movement of the bar 14 will cause a movement of the clamp 9 in a straight line toward or away from the clamp 8.

The means herein shown for longitudinally moving the bar 14 and for locking the clamp 9 in the position in which tension is placed on the threads, comprises a hand lever 18 pivotally mounted upon a suitable bracket 19 fixed to the yoke 2 at one end of the carriage, and a link 20 connecting the bar 14 with said hand lever. The hand lever 18 is arranged to throw slightly "over centers" in order to hold the clamp 9 in the tension-applying position.

Secured to the channel bar 1 is a bar 21 in which is slidably mounted a serrated metallic deflecting-ribbon 22 over which the warp threads extend.

The warp carriage is supported in the warp-tying machine in any suitable way, as by means of the rollers 23. In Fig. 2 one of the rollers at the near end of the carriage has been omitted.

Assuming the clamp-operating devices to be in the position shown in Fig. 1, the operation is as follows: The warp threads are placed in the clamps 8 and 9 by any suitable means, as, for example, the insertion bars *a*, and said clamps operated to hold the threads tightly therein. The hand lever 18 is now swung from the position it is shown to occupy in Fig. 1 to the position illustrated in Fig. 3, thereby moving the operating bar 14 longitudinally (toward the right, Fig. 1) and moving the angular arms 11 to which the warp clamp 9 is secured, outward into position shown in Figs. 2 and 3. The sheet of threads secured in the clamps 8 and 9 is thus stretched, and substantially uniform tension placed upon all of said threads.

While I have hereinbefore described the present embodiment of my invention with some particularity, I recognize the fact that various changes may be made in the construction and arrangement of the parts

herein shown, therefore no undue limitation should be understood from the foregoing detailed description.

I claim as my invention:

5 1. A warp carriage comprising a warp clamp; a plurality of yokes rigidly secured to said warp clamp; members slidably mounted on said yokes; a warp clamp carried by said slidable members; and means
10 for sliding said members.

2. A warp carriage comprising a plurality of yokes; a clamp secured to said yokes; two rods connecting said yokes; arms having elongated openings therein through which
15 said rods extend; a clamp secured to said arms; and means for moving said arms.

3. A warp carriage comprising a plurality of yokes; a warp-clamp secured to one arm of each of said yokes; a rod extending

through the other arms of said yokes; a rod 20 extending through the middle portion of said yokes; angular arms having elongated openings therein through which said rods extend; a clamp secured to said arms; and means for moving said angular arms to move 25 said last mentioned clamp toward and away from the first mentioned clamp.

4. The combination, with two clamps, of means for moving one of said clamps comprising a bar having inclined slots therein; 30 pins connected with said clamp and extending into said inclined slots; and means for moving said bar.

HOWARD D. COLMAN.

Witnesses:

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HARRY S. SEVERSON.