(No Model.) 2 Sheets—Sheet 1.

B. HAYTOCK.

MECHANISM FOR CROSS WEAVING.

No. 457,117. Patented Aug. 4, 1891.

Fig. 1.

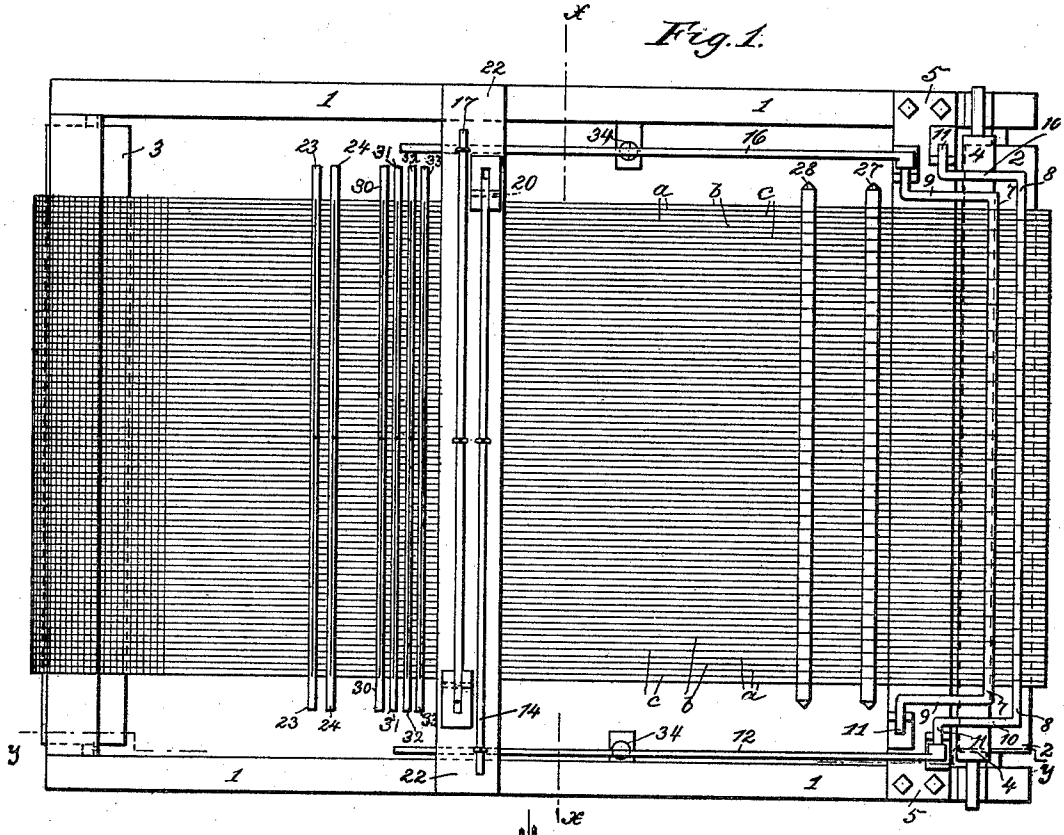
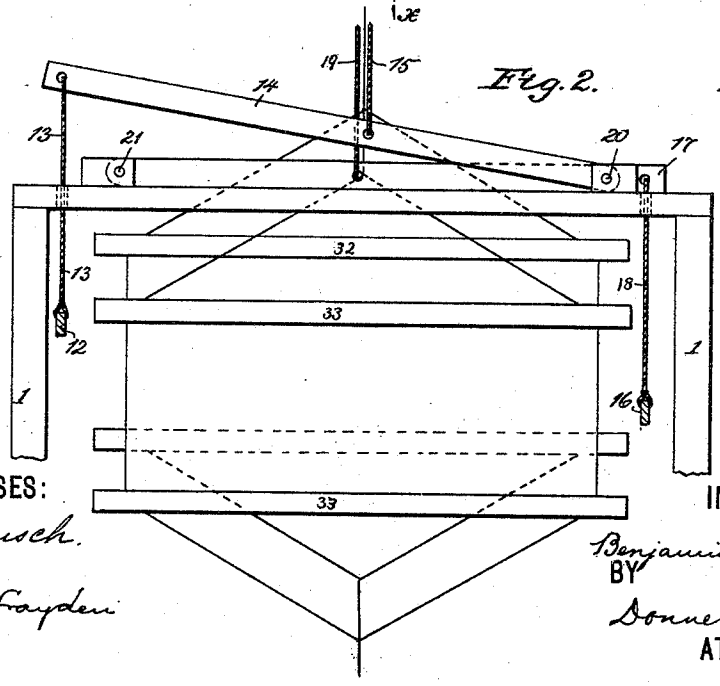


Fig. 2.



WITNESSES:

D. C. Reusch.

Martin Frayden

INVENTOR

Benjamin Haytock

BY

Donnelly & Elbel

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

B. HAYTOCK.

MECHANISM FOR CROSS WEAVING.

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Fig. 3.

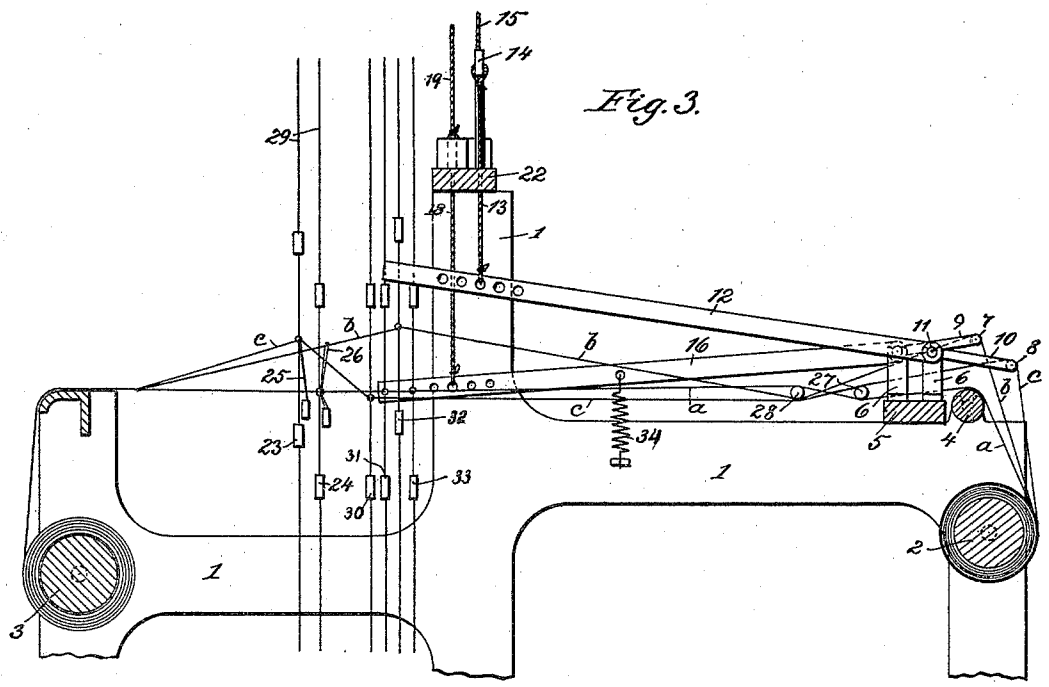
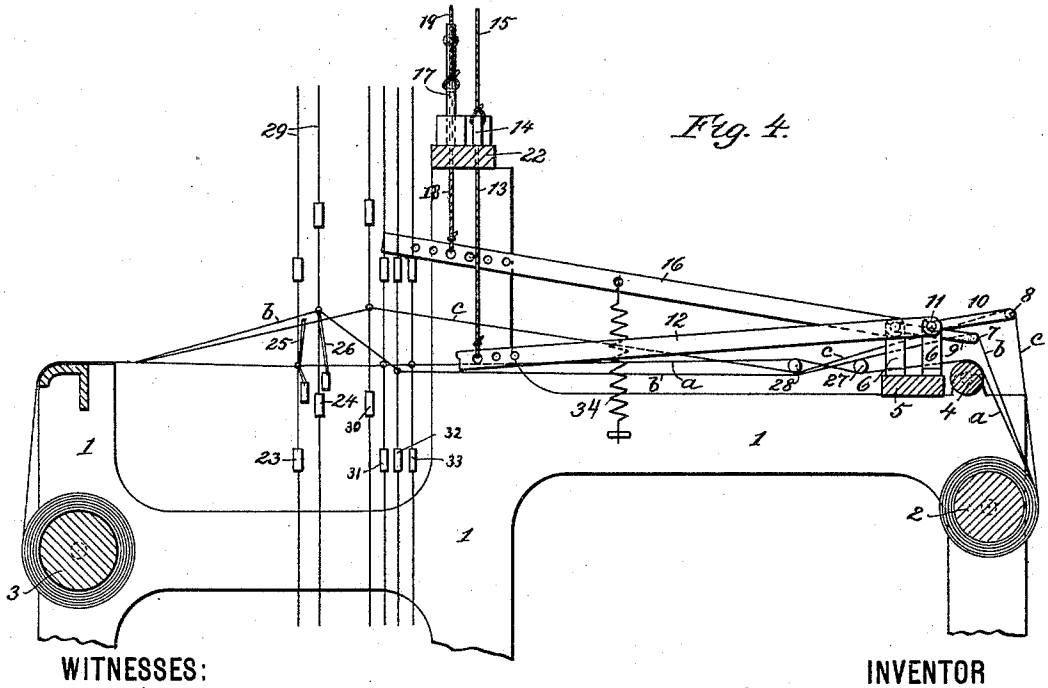


Fig. 4.



WITNESSES:

D. C. Reusch

Martin Snyder

INVENTOR

Benjamin Haytock

BY

Donnelly & Felbel

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

BENJAMIN HAYTOCK, OF PATERSON, NEW JERSEY, ASSIGNOR TO HESS, GOLDSMITH & CO., OF NEW YORK, N. Y.

MECHANISM FOR CROSS-WEAVING.

SPECIFICATION forming part of Letters Patent No. 457,117, dated August 4, 1891.

Application filed September 6, 1890. Serial No. 364,106. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN HAYTOCK, a citizen of the United States, and a resident of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Mechanism for Cross-Weaving, of which the following is a specification.

My present invention in looms has for its main object to relieve the warp and cross threads as well as the harness of all undue strain or tension in doing that class of work known as "cross-weaving," and which is performed in the manufacture of gauze, grenadine, &c.

To this end my invention consists in the features of construction and combinations of devices hereinafter more fully described, and particularly set forth in the appended claims.

In the accompanying drawings, Figure 1 is a plan view of so much of a loom as is necessary to illustrate my invention. Fig. 2 is a cross-section of the upper part of the loom, taken at the line *x x* of Fig. 1 and partly broken away. Fig. 3 is a vertical longitudinal partial section taken at the line *y y* of Fig. 1. Fig. 4 is a similar section with some of the parts in different positions.

In the several views the same part will be found designated by the same numerals and letters of reference.

1 is the main frame, 2 the warp-roller, 3 the take-up roller, and 4 a guide-roller.

5 is a fixed cross-bar, on which is mounted at each end two brackets 6, which serve as the bearings for two cross rods or levers 7 and 8. These rods are bent forwardly to provide arms 9 and 10 and laterally to provide pivots or journals 11 and are preferably arranged as closely together as practicable. The arms 9 and 10 of each rod are the same in length, so that each rod may have the same amount of motion. To one pivot of the rod 8 is attached a lever 12, which near its free end is attached by a cord 13 to a transverse lever 14, which in turn is connected by a cord 15 to the Jacquard or other pattern mechanism. To the pivot of the rod 7 is secured a lever 16, which near its free end is attached to a lever 17 by a cord 18, the lever 17 being connected to the Jacquard or other like mechanism by means of a cord 19. The pivots of the levers 14 and 17 are respectively designated by the numerals 20 and 21. The cords 13 and 18 pass through and are guided in perforations in a cross-beam 22, which also serves to support the levers 14 and 17.

30, 31, 32, and 33 are four heddles connected with the Jacquard or similar mechanism through which the warp-threads pass, and 23 and 24 are two additional heddles to perform the "slinging" or "crossing" of certain of the warp-threads, 25 and 26 being the "slings" of said heddles. The slinging or crossing heddles are constructed and arranged to operate in the customary manner, and those skilled in the art will need no further description of the same. The heddles 30 and 32 are lifting-heddles, while 31 and 33 are stationary or non-lifting heddles. The heddles 30 and 32 lift alternately, the heddle 30 lifting simultaneously with the "sling" heddle 24 and heddle 32 lifting simultaneously with the sling-heddle 23.

The warp-threads are employed or arranged in groups or sets of three, one set *a* running from the warp-roller 2 over the guide-roller 4, under a round rod 27, over a similar rod 28, and alternately through the heddles 31 and 33; the second set *b* running from the warp-roller over the cross-bar 7, over the rod 27, under the rod 28, through the heddle 32, and through the sling 26; the third set *c* running from the warp-roller over the cross-bar 8, over the rod 27, under the rod 28, through the heddle 30 and sling 25. The threads *a* are never lifted. The threads *b* and *c* are lifted and slung or carried under the threads *a* to effect the crossing. The threads *b* and *c* are arranged to sling alternately.

In order to relieve the tension or stress on the threads *b* and *c* and the harness 29, as well as the weft-threads previously woven, when the threads *b* and *c* are raised, or while the slinging is taking place, I provide the cross bars or levers 7 and 8. When the threads *b* are being raised by the heddle 24 to sling, the lever 17 is lifted by the cord 19 and lever 16 is elevated through the connection 18. The raising of the lever 16 effects the depression or lowering of the cross-rod 7, and thus reduces the tension of said threads for

their whole length and obviating the liability of breakage thereof and of the heddles, harness, &c. When the threads *c* are being raised by the heddle 23 to sling, the lever 14 is raised by the cord 15 and the lever 12 is pulled up by the cord 13, which action causes a depression of the cross-rod 8 and a consequent diminution of tension on the threads, the heddles, the harness, &c.

I have illustrated my invention to show two sets of sling-threads *b* and *c*, in which case there should be employed the two pivoted cross rods or levers 7 and 8; but it will of course be understood that my improvement is applicable to machines in which there is only one set of sling-threads, and in such a machine it will be necessary to employ only one of the cross rods or levers 7 8.

The levers 12 and 8, it will be understood, may be said to be one continuous lever with the fulcrum at 6, and the same may be said of the levers 16 and 7.

The levers 12 and 16 may be perforated at different points for attachment of their cords, so that the amount of lift of said levers may be regulated in accordance with the desires of the weaver. These levers may also be provided with springs 34 at suitable points to effect their return to normal position after having been lifted.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a loom, the combination, with the warp-roller and the heddles, of a transverse vibratory bar over which the warp-threads run, a longitudinally-arranged lever connected to said bar, and a cross-lever connected to the Jacquard mechanism and also to the said longitudinally-arranged lever, as set forth.

2. In a loom, the combination, with the warp-roller and the lifting and slinging heddles, of a transverse vibratory bar between the warp-roller and the lifting-heddles over which the warp-threads run, a longitudinally-arranged lever connected to said bar, a cross-lever connected to the Jacquard mechanism, and a vertical connection between the longitudinal lever and the cross-lever, as set forth.

3. In a loom, the combination, with the warp-roller and the lifting and slinging heddles, of two parallel transverse vibratory bars, two longitudinally-arranged levers connected one to each of said bars, two cross-levers connected to the Jacquard mechanism, and a vertical connection from each of said cross-levers to one of said longitudinal levers, as set forth.

Signed at New York city, in the county of New York and State of New York, this 4th day of September, A. D. 1890.

BENJAMIN HAYTOCK.

Witnesses:
JACOB FELBEL,
LOUIS GOLDSMITH.