

No. 681,520.

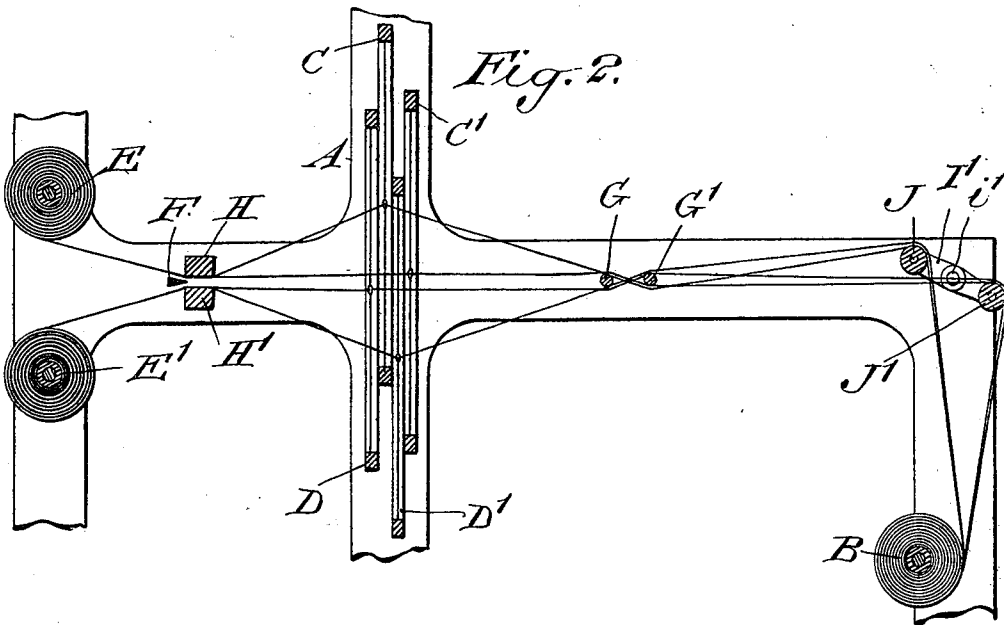
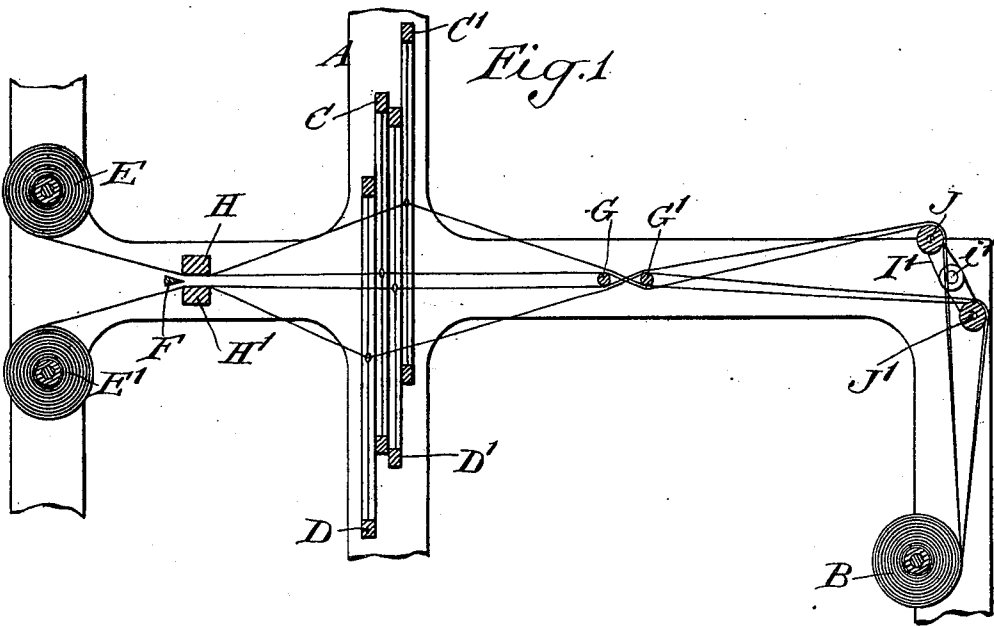
Patented Aug. 27, 1901.

F. STOLZENBERG.
WARP TENSION DEVICE FOR LOOMS.

(Application filed June 1, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:-

George Barry Jr.
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Inventor:-

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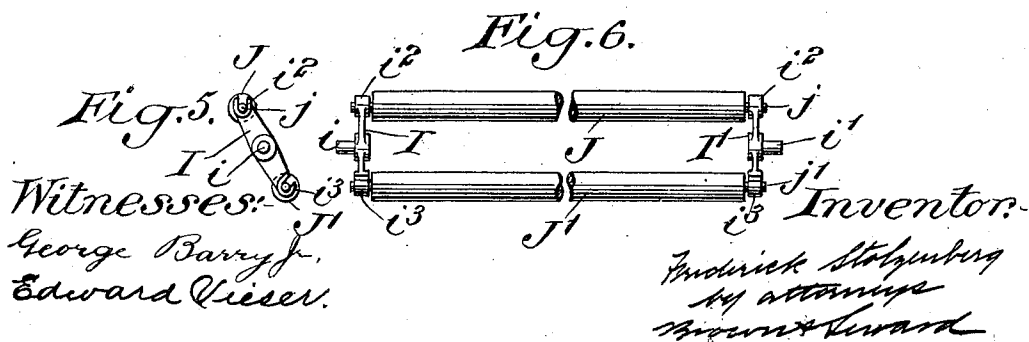
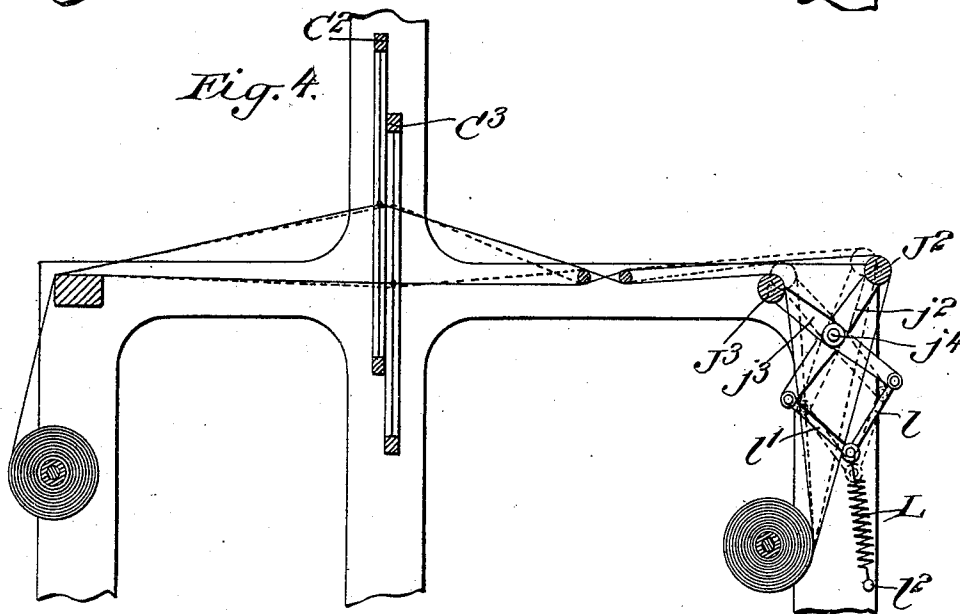
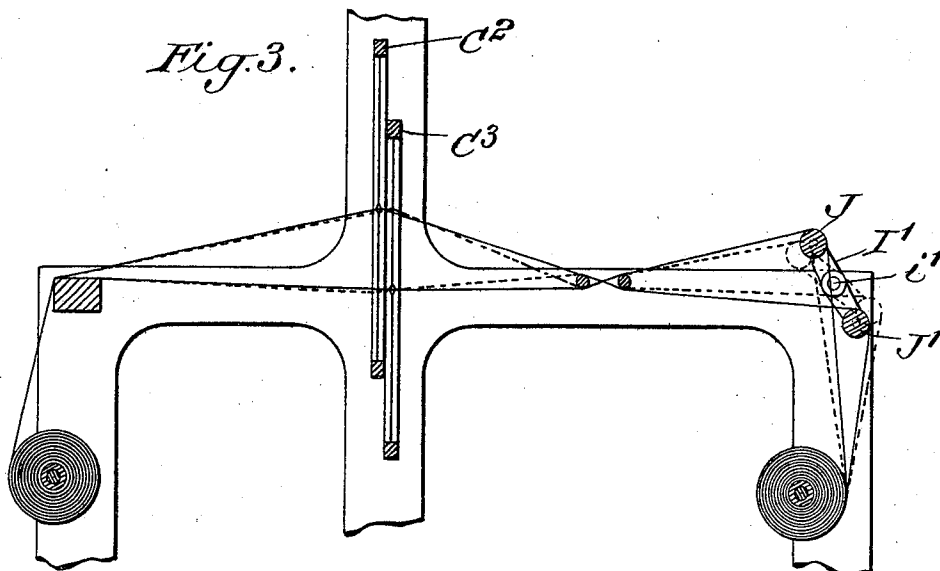
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

FREDERICK STOLZENBERG, OF SHELTON, CONNECTICUT, ASSIGNOR TO
SIDNEY BLUMENTHAL & COMPANY, OF SAME PLACE.

WARP-TENSION DEVICE FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 681,520, dated August 27, 1901.

Application filed June 1, 1900. Serial No. 18,707. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK STOLZENBERG, a citizen of the United States, and a resident of Shelton, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Warp-Tension Devices for Looms, of which the following is a specification.

My invention relates to an improvement in warp-tension devices for looms, and has for its object to provide a device which is adapted for use in connection with looms in which one portion of the shed of warp is brought into a substantially straight position while the other portion of the shed is at a considerable angle thereto, the tension device being so arranged that it will take up all the slack on the warp which forms the substantially straight portion of the shed and will permit a sufficient quantity of warp to be released to form the other portion of the shed at an angle to the straight portion of the shed.

My warp-tension device is more particularly applicable for use in connection with looms in which a double shed of warp is formed for weaving double-faced pile fabrics.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents in vertical section from front to rear so much of a loom as will enable a clear understanding of my improved tension device, the tension device being shown in the position which it assumes when two of the groups of warps are arranged to form the straight portions of the sheds. Fig. 2 is a similar view showing the position of the tension device when the other groups of warps form the straight portions of the sheds. Fig. 3 is a view of a portion of a loom arranged for weaving a single-faced fabric, showing the position of my improved tension device in full lines when one set of warp-threads forms the substantially straight portion of the shed and in dotted lines the position which it assumes when the other group of warp-threads forms the substantially straight portion of the shed. Fig. 4 is a similar view of a portion of a loom, showing a modified form of tension device; and Figs. 5 and 6 represent, respectively, end and face views of the rocking ten-

sion-device frame which is set forth in Figs. 1, 2, and 3.

In the accompanying drawings I have not shown means for operating the heddles, neither have I shown any portion of the weft mechanism, nor the slay-beam, as these features form no part of my present invention and are not necessary to the clear understanding thereof, my invention being devoted to the warp-tension device solely.

The side frame of the loom is denoted by A, and the warp-supply beam by B.

In the form shown in Figs. 1 and 2 I have represented four heddles, one set, which forms the upper shed of warp, being denoted by C C', and the other set, which forms the lower shed of warp, by D D'. The winding-beam for winding the fabric woven by the upper shed of warp is denoted by E and the winding-beam for winding the fabric woven by the lower shed of warp by E'. A suitable knife is conventionally shown at F between the heddles and the winding-beams for severing the tufts in the usual manner. A warp-guide is located a short distance to the rear of the heddles, which guide is engaged by the warp which lead from the warp-supply beam. This guide in the present instance consists of a pair of heddles G G', extending transversely of the loom and located in a plane about half-way between the extreme positions of the eyes in the heddles. The breast-beam is divided into upper and lower portions H H', extended transversely to the loom at a point a short distance in front of the heddles and also in a plane about half-way between the extreme positions of the eyes in the said heddles. It will thus be seen that when the heddles are in the position shown in Fig. 1 one portion of the upper shed and one portion of the lower shed of warps lead directly from the guide at the rear of the heddles through the eyes in the heddles C and D' to the breast-beam at the front of the heddles in a substantially straight line, while the other portions of the upper and lower sheds are led from the guide through eyes in the heddles C' and D and from thence to the breast-beam at a considerable angle to the straight portions. The tension device for automatically letting up on the straight threads and tightening the

angular threads of the warp as the position of the heddles is reversed, so as to keep an even strain upon all of the threads, comprises a rocking frame which is pivoted at one end 5 in the side frame A of the loom and at its other end in the corresponding side frame. (Not shown.) This tension device is located at any suitable point between the warp-guide and the warp-supply beam. The ends of the 10 rocking frame of the tension device are denoted by I I' and have projected outwardly therefrom hinge-pintles $i i'$, which are mounted in suitable bearings in the side frame of the loom. These ends I I' have correspond- 15 ing open sockets $i^2 i^3$ upon opposite sides of the hinge-pintles $i i'$ for receiving therein the axes $j j'$ of long roller J J', over which the warp-threads pass. One set of threads of each shed passes over one of the rollers J or 20 J' and the other set of threads of each shed passes over the other of the rollers J or J' of the tension device. The threads which pass through the eyes in the heddles C and D' are shown as passing over the upper roller J and 25 the threads which pass through the eyes in the heddles C' and D pass over the roller J'. As the heddles are operated the rollers J and J' are caused to be brought nearer to and farther away from the warp-supply beam B, so 30 as to automatically compensate for the increase and decrease of the length of warps in the sheds between the guide and the breast-beam. The pulling upwardly of the straight portions of the two sheds will tend to swing 35 the roller J nearer to the warp-supply beam, thus pulling the roller J' away from the warp-supply beam and taking up the slack caused by bringing the angular portions of the sheds into a substantially straight position.

40 In the form shown in Fig. 3 I have represented a single shed of warp, in which one portion of the warp is brought down into a substantially straight position. The tension device in this form works exactly the same 45 as in the form shown in Figs. 1 and 2.

In Fig. 4 I have shown a modified form of tension device applied to a single shed, although it could be equally well applied to the double shed represented in Figs. 1 and 2. 50 In this form of tension device the rollers $J^2 J^3$ are mounted in the upper ends of two pairs of rocking arms $j^2 j^3$ at one side of the loom and in a similar pair (not shown) in the other side of the loom. These rocking arms $j^2 j^3$ 55 are pivoted on the same axis j^4 , and the lower ends of the arms are connected with a counterbalance-spring L by a pair of arms $l l'$, the other end of the counterbalance-spring L being secured to the side frame A, as shown at 60 l^2 . This spring L serves only as a counterbalance to the tendency of the rollers $J^2 J^3$ to come together under the strain of the warp.

In the arrangement of the heddles as shown in Fig. 4 the straight portion of the

shed of warp passes over the roller J^2 and 65 from thence to the warp-supply beam, while the angular portion of the shed of warp passes over the roller J^3 and from thence to the warp-supply beam. As the heddle C^3 is raised it will draw the substantially straight 70 portion of the shed upwardly, thus drawing the roller J^2 inwardly to compensate for the additional amount of thread required. This inward movement of the roller J^2 will also draw the roller J^3 inwardly toward the roller 75 J^2 , thus drawing in the slack in the angular portion of the shed as the heddle C^2 is lowered to bring the angular portion of the shed down into a substantially straight position. As the heddle C^2 is again raised it will cause 80 the roller J^3 to be pulled outwardly, and thus also force the roller J^2 outwardly.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts without departing from the 85 spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. In a loom the combination of a warp- 90 beam, shedding mechanism for simultaneously forming two sheds in the warp-threads led from said beam, said sheds having the adjacent sides approximately in a common plane, a tension device for transmitting the 95 strain of the warp-threads in the outer plane of the shed to the threads in the common plane to secure uniform tension on all the threads, said tension device comprising loosely-piv- 100 oted arms at the sides of the loom-frame, rolls joining said arms, the warp-threads coming from the beam being divided into two sets each of which passes over and engages one of said rolls.

2. In a loom, means for forming a shed of 105 warp in which the set of warp which forms one portion of the shed is substantially straight, and a warp-tension device comprising a rocking frame carrying a pair of rollers, one of the rollers arranged to engage one 110 set of warp and the other roller arranged to engage the other set of warp, the rocking movement of the rollers, for letting off on one set of warp and taking up on the other set of warp when the shed is being formed, being 115 under the control of the means for forming the shed, whereby an even tension is imparted to both of the sets of warp, substantially as set forth.

In testimony that I claim the foregoing as 120 my invention I have signed my name, in presence of two witnesses, this 29th day of May, 1900.

FREDERICK STOLZENBERG.

Witnesses:

J. TOMLINSON,
SIDNEY BLUMENTHAL.