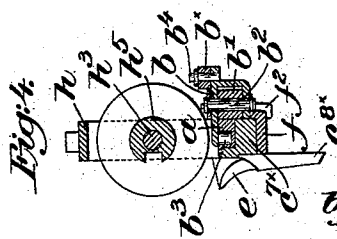
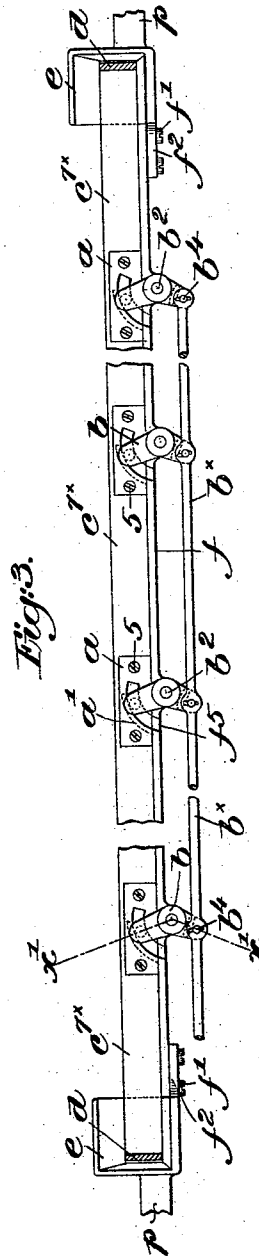
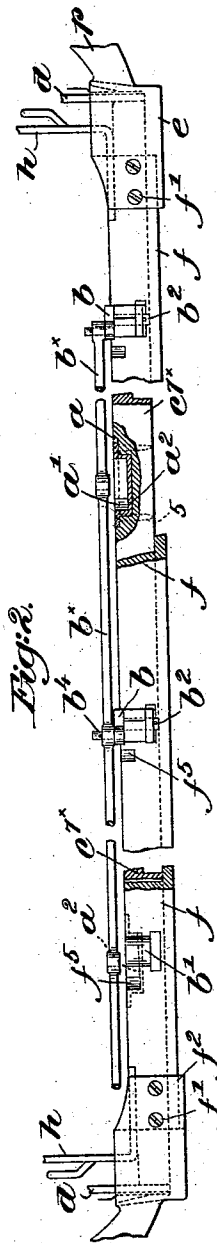
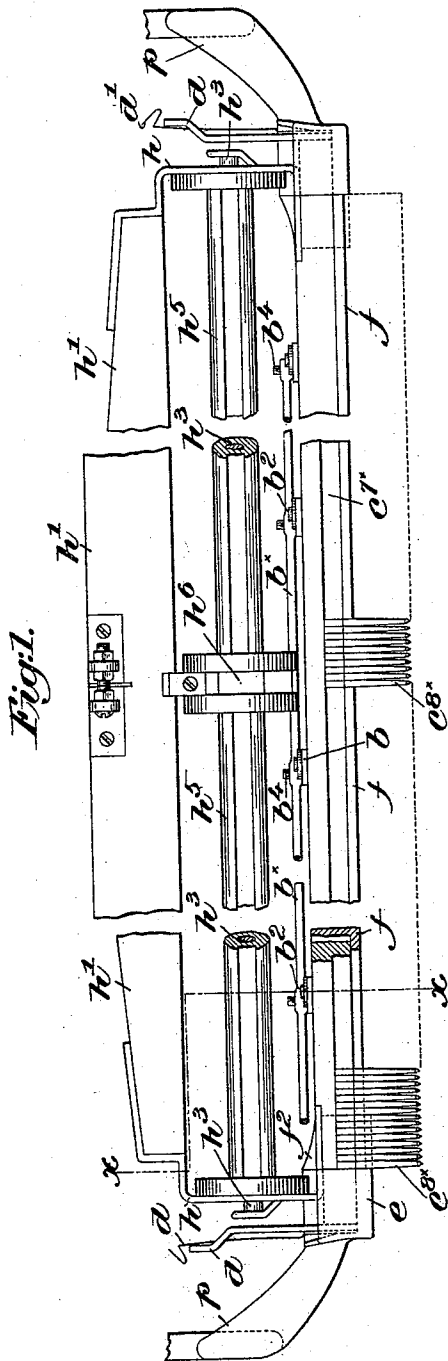


2 Sheets—Sheet 1.

No. 543,825.

Patented July 30, 1895.



Witnesses.
 Fred S. Grumbaf.
 Thomas Drummond.

Inventor:
Charles Crompton
by Crosby Gregory.
attys

(No Model.)

2 Sheets—Sheet 2.

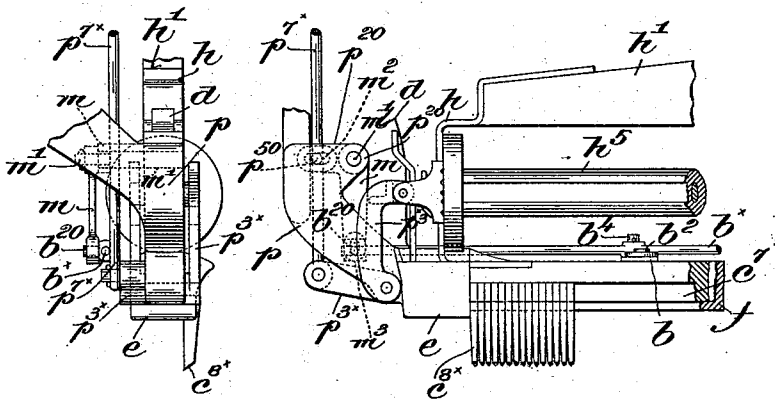
C. CROMPTON.
LOOM FOR WEAVING TUFTED FABRICS.

No. 543,825.

Patented July 30, 1895.

Fig. 6.

Fig. 5.



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Fred. S. Grunleaf.
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Inventor.
Charles Crompton.
by Aubrey Legony, attys.

UNITED STATES PATENT OFFICE.

CHARLES CROMPTON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE CROMPTON LOOM WORKS, OF SAME PLACE.

LOOM FOR WEAVING TUFTED FABRICS.

SPECIFICATION forming part of Letters Patent No. 543,825, dated July 30, 1895.

Application filed December 29, 1894. Serial No. 533,277. (No model.)

To all whom it may concern:

Be it known that I, CHARLES CROMPTON, of Worcester, county of Worcester, State of Massachusetts, have invented an Improvement in Looms for Weaving Tufted Fabrics, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 In the production of tufted fabrics wherein the tuft-yarns are contained on beams or spools of small diameter held in tube-frames which are taken from carrying-chains and moved down to the warp, one tube-frame after
15 another, for the production of different rows of tufts, and then put back again, difficulty is often encountered by the springing or sagging of the tube-frame, due to several causes, as, in some instances, the warping of the wood
20 bars or the sagging by the weight of the parts or the strain put upon the frame; and my invention consists in providing a support both vertically and laterally for the bar of the tube-frame, between the ends thereof, when
25 the frame is engaged by the locking-arms and the tubes are being inserted into the warps and moved to form a series of tuft-yarns in the fabric.

Figure 1 in front elevation shows a tube-
30 frame having two tuft-yarn beams or spools, together with a support consisting of an angle-bar carried by suitable actuating-arms, said parts being broken out intermediate their ends at places to thus save space upon
35 the drawings. Fig. 2 is a rear elevation of the support shown in Fig. 1, the beams or spools being omitted and also broken out to save space. Fig. 3 is a top or plan view of the angle-iron support for the tube-frame
40 with the tube-frame clamped therein; and Fig. 4 is a section looking to the left of the line $x x$, Fig. 1, the lower portion of said figure being taken on the line $x' x'$, Fig. 3. Fig. 5 in front elevation shows the left-hand end of
45 the mechanism illustrated in Fig. 1 with one form of means for moving the actuator, and Fig. 6 is a left-hand end view of the parts shown in Fig. 5.

50 I have herein chosen to illustrate my invention as applied to a loom, substantially such as shown in United States Patent No. 490,237,

dated January 17, 1893, the tuft-yarn frame herein having a plurality of tuft-yarn spools, although it is equally applicable to one with a single spool, as in said patent, and it will
55 be obvious to one skilled in the art that my said invention may be applied to other well-known forms of tuft-fabric looms with but slight alteration. I have also herein shown my invention as provided with a locking de-
60 vice to securely lock the tuft-frame to said support, although the invention may be practiced by simply allowing the frame to rest on the support. I have also herein shown the support as attached to the carrying-arms; but
65 any method whereby the support will move in unison with the arms will be within the spirit and scope of my invention.

In the patent referred to a series of tube-frames, provided each with a tuft-yarn beam,
70 is carried by a pair of endless rotating chains, and the tube-frames are taken singly from the chains by or through a swinging frame composed of like side arms connected from one to the other side of the loom by a round rod,
75 said arms having pockets which are entered by the end of the tube-frame, the backs of the tubes containing the tuft-yarns resting against the said rods. The arms p may be considered to be substantially the same as the
80 arms designated by like letter in said patent, and said arms may in practice be actuated, all as therein provided for, to take a tube-frame, as c^{7x} , from the usual chains, (not herein shown, but therein fully described,) caus-
85 ing the tubes c^{8x} to be passed into the spaces between the body warp-threads in the process of weaving a tufted carpet, as stated.

As herein shown, I desire to use a plurality of tuft-yarn beams or spools in order to thereby
90 make a fabric broad enough for rugs and other uses.

The tube-frame consists essentially of a bottom bar c^{7x} , it having at its opposite ends suitable stiff metallic arms d to enter the spaces
95 in the usual links of the carrying-chains, and spring-catches d' to engage the upper sides of said link.

As herein shown, the tube-frame has at each end bearings h , which at their upper
100 ends are joined to a top bar h' , said bearings serving to support a rod h^3 , constituting the

center of motion for the two tuft-yarn beams h^5 , said rod serving for the purpose of journals for said beams, the rod having a central bearing at h^6 .

5 The tube-frame described is, it will be understood, a long frame capable of making wider goods than ordinarily produced upon looms for weaving tufted fabric.

As herein shown, the pockets e , at the lower 10 ends of and forming parts of the arms p , are changed somewhat in shape to thereby enable them to have joined to them firmly an angle-bar f , having the upper side of its horizontal flange so located with relation to the interior of the pocket as to sustain the under 15 side of the bar c^{7x} substantially from end to end, so that said bar cannot be any strain upon the tuft-yarns while being locked into the fabric or while the spools are being rotated by the pull on the tuft-yarns. The upright 20 portion of the angle-bar is chiefly to give strength and stiffness to the horizontal part thereof, yet the upright part is useful in that it prevents any lateral bending or deflection of the bar c^{7x} . The angle-bar is connected with the pockets in this instance by or through bolts or screws f' , extended through 25 ears f^2 , connected to or forming part of the arms p , said arms and bar making a rigid frame, the angle-bar f being so stiff that it cannot be bent by strains to which the tuft-frame will be subjected during the operation of weaving, and consequently the ends of the tubes may be kept in alignment and the bar 30 c^{7x} be kept horizontal and substantially parallel with relation to the axis of rotation of the tuft-yarn beams used, thus enabling the tuft-yarns to remain projected when cut off equally from the ends of the tubes, which 40 could not be done if one part of the tuft-frame should spring or yield during the operation of drawing the tufts into the fabric and rotating the beams to give off a supply of yarn preparatory to cutting the yarns off.

45 While the angle-bar will keep the bar c^{7x} horizontal and also prevent lateral displacement in the direction of the upright portion of the angle-bar, it will not unaided prevent bending of the bar c^{7x} laterally in the opposite 50 direction nor springing upwardly, and I have provided means for clamping the bar c^{7x} to the angle-bar at intervals between its ends, so that it is impossible for the bottom bar of the tube-frame to spring or bend out of alignment.

55 The bottom bar c^{7x} is recessed at intervals in its upper side to receive therein metal plates a , having each a curved slot a' therein, with an inclined bottom a^2 , (see Fig. 2,) the 60 open end of each slot registering with slots f^5 in the upright portion of the angle-bar f when the bar c^{7x} is in position thereon, the plates a being shown as secured to the bottom bar by suitable screws 5. A series of 65 rocker-arms b are pivotally mounted in supports b' , projecting from the rear side of the angle-bar f , the pivots b^2 of the rocker-arms

being slightly eccentric to the curved slots a' in the plates a when the bottom bar is in place. One arm of each rocker has a depending 70 lug or finger b^3 , (see Fig. 4,) adapted to enter its adjacent slot f^5 and thence into the slot a' , the bottom of the finger riding on the inclined bottom a^2 and forcing the bottom bar c^{7x} against the flange of the angle-bar. 75 Owing to the eccentricity of the centers of the rocker-arm and its adjacent curved slot the finger b^3 also forces the bottom bar tightly against the upright portion of the angle-bar, whereby the bottom bar c^{7x} is tightly clamped 80 at several points to the angle-bar and its displacement is positively prevented.

The outer arm of each rocker-arm b is pivotally connected at b^4 to an actuator, (shown 85 as a rod b^x ,) movement thereof in the direction of the arrow 10, Fig. 3, causing the rocker-arms to move simultaneously into operative position, as shown, locking or clamping the bottom bar c^{7x} and the angle-bar together. Reverse movement of the actuator withdraws 90 the fingers b^3 from the slots a' into the slots f^5 of the angle-bar, releasing the bottom bar, so that it may be removed and a new one substituted.

In Figs. 5 and 6 I have shown a convenient 95 form of mechanism by which the actuator may be moved to lock or unlock the bottom bar c^{7x} and the angle-bar f , utilizing for such purpose the link p^{7x} , (shown in the patent referred to,) which operates suitable spool-clamping devices at times by or through the 100 elbow-lever p^{3x} , pivoted to the arm p .

Referring now to Figs. 5 and 6, an elbow-lever m , pivoted at m' on an ear p^{20} of the 105 arm p , is connected to the link p^{7x} by a pin p^{50} thereon entering a slot m^2 in the lever, the opposite end of said lever being slotted at m^3 to be entered by a pin b^{20} on the actuator or rod b^x . The rod p^{7x} may be raised and lowered, as shown and described in the said patent, to clamp or unclamp the spools, the same 110 movement being utilized to move the actuator by the mechanism described to lock or unlock the bottom bar.

It will be obvious that if desired the elbow-lever m could be rocked by an independently- 115 moved link or in other suitable manner.

The slotted plate a and its co-operating rocker-arm provided with the engaging-finger form the fixed and movable members of a 120 locking device for the bottom bar, and my invention is not restricted to the precise construction and arrangement thereof herein shown.

Having described my invention, what I 125 claim as new, and desire to secure by Letters Patent, is—

1. A tuft-yarn frame with a series of tuft-yarn tubes, and carrying arms for the same, combined with an intermediate support for the tuft-yarn frame co-operating with said 130 arms to prevent the sagging or bending of the frame during weaving, substantially as described.

2. In a loom for weaving tufted fabrics, a tuft-yarn frame having a series of tuft-yarn tubes, and carrying arms for the same, combined with an intermediate support connecting said arms, to provide a stiff and unyielding support for the tuft-frame, and thereby prevent sagging or bending of the latter during weaving, substantially as described.

3. In a loom for weaving tufted fabrics, a tuft-frame, having a series of tuft-yarn tubes, combined with carrying arms for said frame, an intermediate support connecting the arms, to rigidly support the tuft-frame, and thereby prevent sagging of the same during weaving, and a locking device to securely lock the tuft-frame to the intermediate support, substantially as described.

4. In a loom for weaving tufted fabrics, a tuft-frame, and a series of tuft-yarn tubes, combined with carrying arms, an angle-bar, connecting said arms, to rigidly support the

bottom-bar of the tuft-frame and thereby prevent sagging, a plurality of locking devices to lock the bottom-bar to the angle-bar, and means to simultaneously operate the locking devices, substantially as described.

5. In a loom for weaving tufted fabrics, a tuft-frame, having a slotted bottom-bar and a series of tuft-yarn tubes, combined with carrying arms connected by an angle-bar, to rigidly support the bottom-bar of the tuft-frame, and a rocker arm mounted on said angle-bar, to co-operate with the slot in the bottom-bar and thereby lock it to the angle-bar, substantially as described.

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

CHARLES CROMPTON.

Witnesses:

JUSTIN A. WARE,
JOHN B. LYME.