

(No Model.)

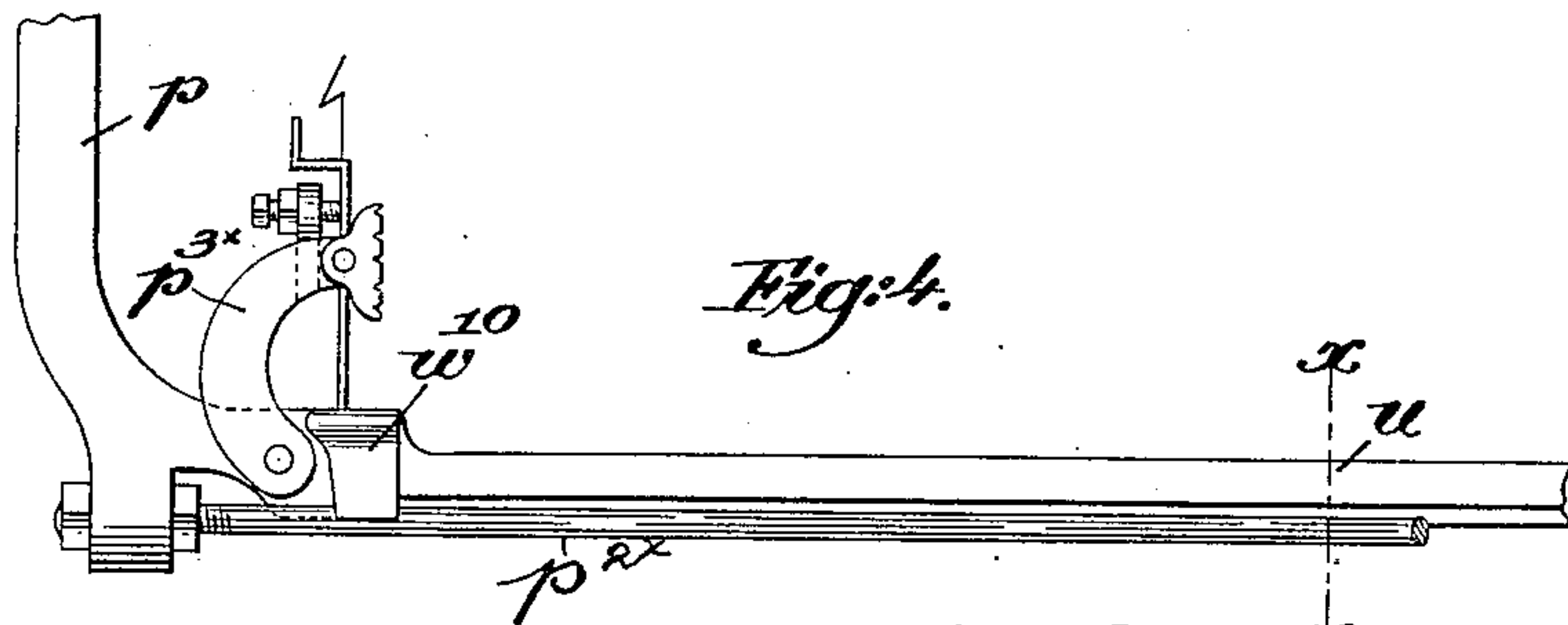
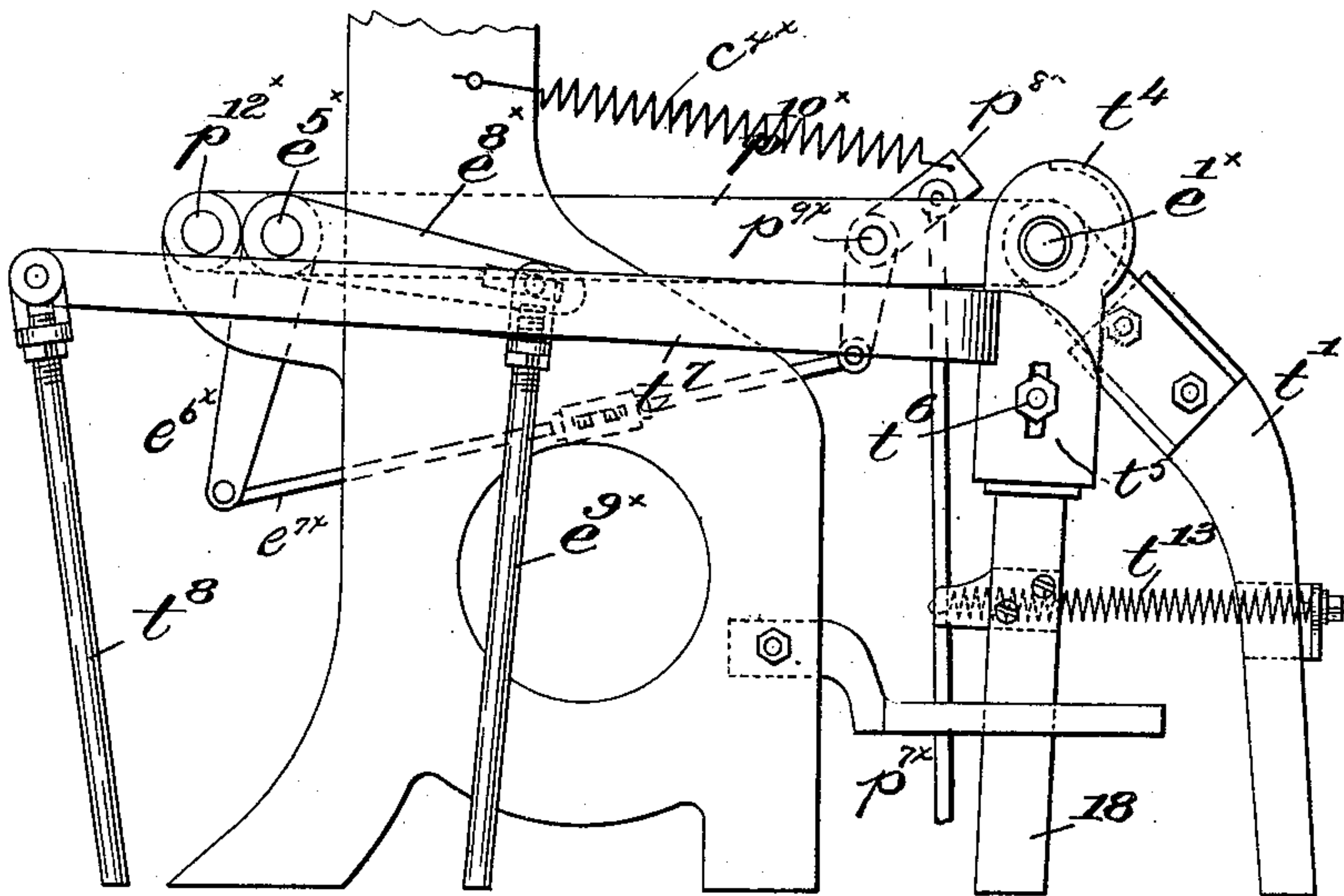
3 Sheets—Sheet 1.

H. WYMAN & J. A. CLARK.  
LOOM FOR WEAVING TUFTED FABRICS.

No. 566,957.

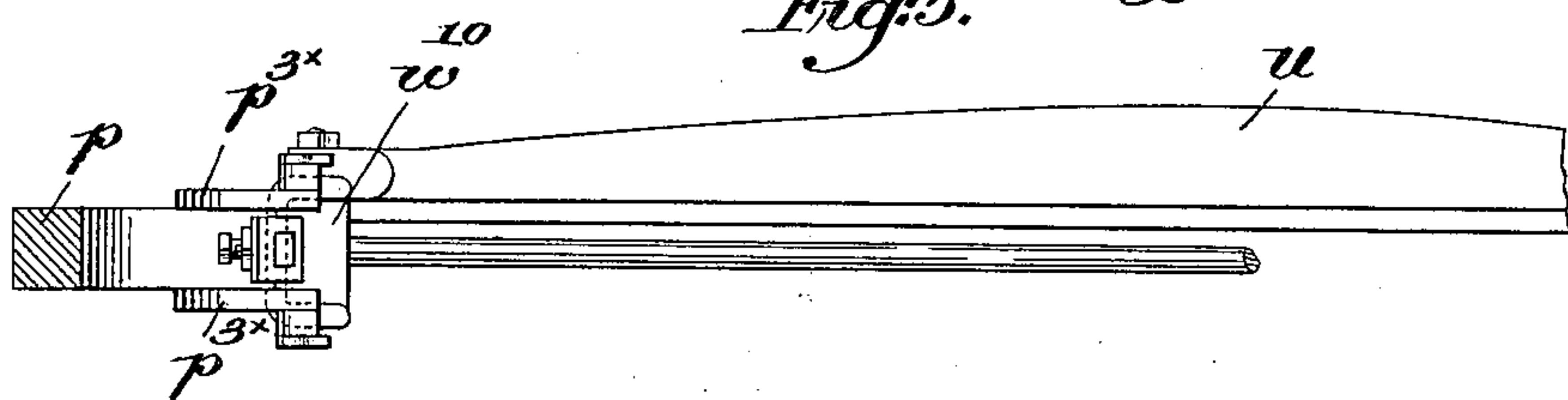
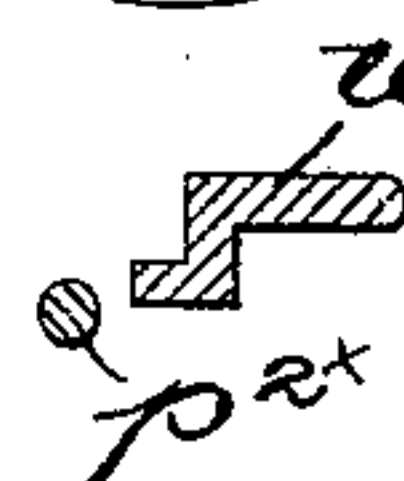
Patented Sept. 1, 1896.

*Fig. 1.*



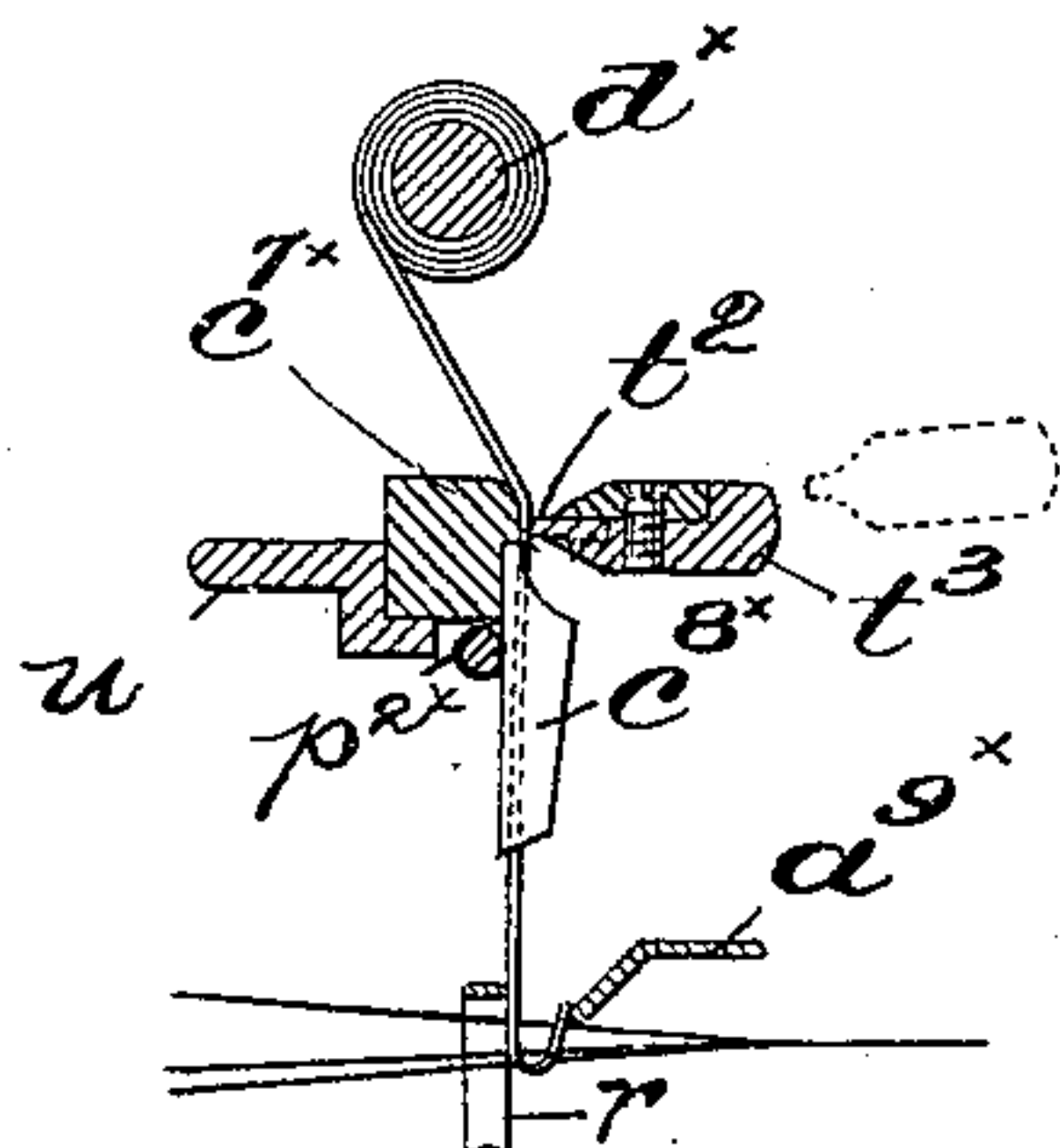
*Fig. 4.*

*Fig. 4.a*



*Fig. 5.*

*Fig. 6.*



Witnesses.

Frederic S. Grumbel.

Thomas J. Drummond

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John A. Clark.

by Crosby & Gregory, attys.



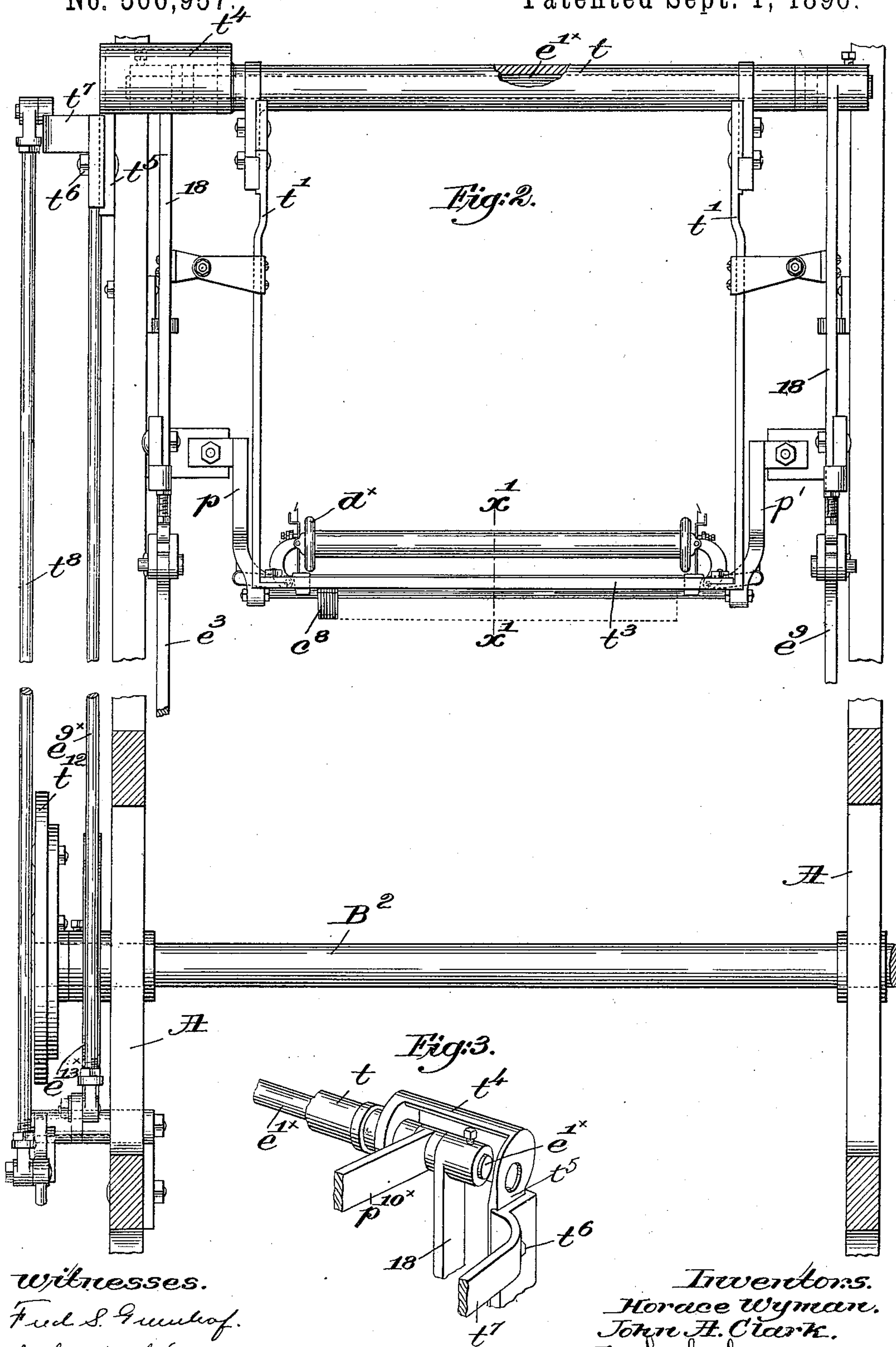
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3 Sheets—Sheet 3.

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LOOM FOR WEAVING TUFTED FABRICS.

No. 566,957.

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Witnesses.

Fred S. Gunkel.

Thomas J. Hammond.

Inventors.

Horace Wyman.

John A. Clark.

by Crosby & Gregory, attys.



# UNITED STATES PATENT OFFICE.

HORACE WYMAN AND JOHN A. CLARK, OF WORCESTER, MASSACHUSETTS,  
ASSIGNORS TO THE CROMPTON LOOM WORKS, OF SAME PLACE.

## LOOM FOR WEAVING TUFTED FABRICS.

SPECIFICATION forming part of Letters Patent No. 566,957, dated September 1, 1896.

Application filed January 3, 1895. Serial No. 533,711. (No model.)

*To all whom it may concern:*

Be it known that we, HORACE WYMAN and JOHN A. CLARK, 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 on the drawings representing like parts.

10 This invention relates to that class of looms for weaving tufted fabrics in which the tuft-yarns are wound upon beams, spools, or equivalent devices or holders journaled in suitable carriages mounted in endless carrying-chains, the carriages being provided with quills or tubes through which the tuft-yarns are drawn, and which, when the carriages are removed from the chains, serve to carry the ends of the tuft-yarns between the body-warps

20 into the shed to form tuft-loops, which are bound or held to the warps by usual weft-threads. Such a loom is represented in United States Patent No. 490,237, dated January 17, 1893. In the said patent the transferring

25 mechanism, which takes the beams from the chains and moves them to insert the tuft-loops in the shed, is provided with suitable clamping devices which, at the proper time, clamp and hold the beam to prevent unwinding of

30 the tuft-yarns during the formation of the tuft-loops and subsequent tightening of the same about the weft or filling.

The object of the present invention is to provide other clamping mechanisms to clamp and hold the tuft-yarns during the process of tightening the loops referred to, our improved clamp preferably acting directly upon the tuft-yarns instead of upon the beam or holder upon which they are wound, as in the

40 patent referred to.

Our improved clamp also preferably clamps the tuft-yarns on a line close to the tops of the tubes or quills through which the yarns are carried, thereby reducing the length and

45 stretch of the tuft-yarns between the line on which they are clamped and their ends forming the tuft-loops.

Our improved clamp, herein to be described, may or may not be used with and in addition

50 to the beam-clamp shown and described in Patent No. 490,237, referred to.

In the drawings, Figures 1 and 1<sup>a</sup> together represent the end frames of a loom provided with a sufficient number of the working parts to enable this invention to be understood; 55 Fig. 2, a right-hand or front elevation of the parts shown in Figs. 1 and 1<sup>a</sup>; Fig. 3, a perspective detail to be referred to; Figs. 4 and 5, front and top views, respectively, of a portion of the transferring-frame, showing the

60 tuft-yarn-frame support and clamp for the beam; Fig. 4<sup>a</sup>, a sectional detail on the dotted line  $xx$ , Fig. 4; Fig. 6, a sectional detail on the dotted line  $x'x'$ , Fig. 2.

To enable this invention to be understood, 65 we have illustrated the same in connection with a loom such as shown and described in United States Patent No. 490,237, referred to, although it should be understood that our said invention is not necessarily limited to use in

70 connection with the particular loom shown, and to facilitate the explanation of the invention and its operation reference may be had to said Patent No. 490,237 for a description

75 of the construction and working of parts cooperating with but forming no part of this present invention, the parts upon the present drawings being lettered, as far as possible, to correspond with similar parts in the patent

80 referred to.

Referring to the drawings, the frame A, having suitable bearings for the cam-shaft B<sup>2</sup>, the transferring-frame comprising the side bars 18, jointed at their lower ends to the slide-bars  $e^3$  and at their upper ends at  $e'^x$  to

85 the outer ends of the arms  $p^{10x}$ , fast on the shaft  $p^{12x}$ , journaled in suitable brackets on the frame, the pocket-arms  $p$ , adjustably attached to the arms 18 of said transferring-frame and provided at their lower ends with

90 usual pockets  $w^{10}$ , the rod  $p^{2x}$ , joining and separating the pockets  $w^{10}$ , the clamps  $p^{3x}$ , actuated through the rods  $p^{7x}$ , connected to the bell-crank levers  $p^{8x}$  on the pivot-shaft  $p^{9x}$ , journaled in the arms  $p^{10x}$ , and in turn con-

95 nected by links  $e^{7x}$  with the arms  $e^{6x}$ , fast on the shaft  $e^{5x}$ , also journaled in said arms  $p^{10x}$  and provided with an arm  $e^{8x}$ , connected by a rod  $e^{9x}$  with the cam-lever  $e^{10x}$ , fitted with a roller  $e^{12x}$ , actuated by the cam  $e^{13x}$  on the

100 cam-shaft B<sup>2</sup>, the tuft-yarn pusher  $a^{9x}$ , the tuft-yarn beams or spools  $d^x$ , their carriages,



(indicated at  $c^{7x}$ ), tuft-yarn quills or tubes  $c^{8x}$ , and the reed  $r$  are shown as similar or equivalent to the correspondingly-lettered parts in the said Patent No. 490,237, referred to, they  
 5 operating in precisely the manner therein described and well understood by those conversant with the art.

Referring now to Figs. 1, 1<sup>a</sup>, 2, and 6, we have herein slipped upon the shaft  $e^{1x}$ , between the arms  $p^{10x}$ , a long sleeve  $t$ , provided with two like downwardly-projecting clamping-arms  $t'$   $t'$ , carrying at their lower ends the clamping plate or strip  $t^2$ , preferably of rubber or other soft or yielding material held by a suitable supporting-piece  $t^3$ , (see Figs. 1<sup>a</sup> and 6,) said "clamping-strip" or "clamp," as we shall hereinafter designate it, extending entirely across the front of the loom, from one to the other of the pockets  $w^{10}$ , and adapted to press  
 20 against and clamp or hold the tuft-yarns on a line just above the tops of the tuft-yarn tubes or quills  $e^{8x}$ , said clamp acting against the tube-holding bars  $c^{7x}$  of the carriage.

Referring now to Figs. 1, 2, and 3, the sleeve  $t$ , at one of its ends, inside the arms  $p^{10x}$ , has cast upon or secured to it a hood  $t^4$ , which incloses the joint at the end of the arm  $p^{10x}$ , and outside the said arm the said hood is provided with a downwardly-extended arm  $t^5$ , to  
 30 which is adjustably connected at  $t^6$  the rearwardly-extended arm  $t^7$ , connected at its outer end by a rod  $t^8$  with a cam-lever  $t^9$ , fulcrumed at  $t^{10}$  and provided with a roller  $t^{11}$ , adapted to be acted upon by a suitably-shaped cam  $t^{12}$  on the cam-shaft B<sup>2</sup>. (See Fig. 1<sup>a</sup>.) The cam  $t^{12}$  is so timed that it, acting through its cam-lever  $t^9$  and connections, holds the clamping-arms  $t'$  and clamp  $t^2$  out or to the right, Figs. 1<sup>a</sup> and 6, as indicated in dotted lines, until  
 40 the transferring mechanism has taken a tuft-yarn beam and its carriage and tubes from the carrying-chains and holds said carriage in its pockets  $w^{10}$ , when the said cam  $t^{12}$  releases said clamp and permits the spring  $t^{13}$  (see Fig. 1) to draw it inwardly, or to the left, to clamp the tuft-yarns tightly against the bar  $c^{7x}$  of the carriage. The ends of the tuft-yarns having been looped into the shed of the warp and the weft or filling laid in the usual  
 50 manner, the transferring mechanism again raises the tuft-yarn beam and its carriage, with the tuft-yarns still held by the clamp  $t^2$  in order to tighten the loops of tuft-yarn about the weft or filling and to draw the ends of the yarn down to their proper position. As soon as the tuft-yarn loops have been properly drawn or tightened the cam  $t^{12}$  releases the clamp and permits the tuft-yarns to unwind from the beam, the ends being still held  
 60 in the warp to provide ends of sufficient length for a new series of tufts when the said beams shall be again presented to the warp, after which the tuft-yarns are severed by usual

shearing or cutting mechanism and the transferring mechanism replaces the beam in the chains to be fed forward to present the next beam or series of yarns to the warp.

To provide a firm back support for the carriage-bar  $c^{7x}$ , carrying the tuft-yarn tubes or quills and to prevent bending of the said bar when the clamp  $t^2$  is pressed against it, we have herein employed the back supporting-bar  $u$ , carried at its ends in and by the pocket-arms  $p$   $p'$ . This back support  $u$  is preferably angular, as shown in Fig. 4<sup>a</sup>, to constitute both a bottom and back support for the tube-carrying bar  $c^{7x}$  of the carriage. The novel clamp herein described acts directly upon and holds the tuft-yarns, thereby preventing any pull upon and to rotate the beam or spool upon which the tuft-yarns are wound, said clamp being thus distinguished from the type of clamp illustrated at  $p^{3x}$ , which acts upon the beam or spool and not directly upon the tuft-yarns. The distinction is important, for our improved clamp is necessarily more positive and certain, and by acting lower down, close to the tuft-yarn tubes or quills, the length of the tuft-yarns between the clamping line and the loops is very much lessened, and the excess of movement of the parts necessary to compensate for the stretching of the tuft-yarns in tightening the loops is correspondingly removed.

So far as known to us we are the first to directly clamp the tuft-yarns by a clamp pressing against the same and support the tuft-yarns in opposition to the pressure of the said clamp by a support independent of the carriage on which the tuft-yarns are mounted.

We claim—

1. The transferring-frame; the tuft-yarn beam; the tubes and holding-bar therefor connected to and movable with said beam, a clamp for and to hold said beam against rotation, and an additional clamp acting directly upon and to hold the tuft-yarns, substantially as described.

2. The transferring-frame carrying a series of tuft-yarn tubes; a holding-bar therefor and a tuft-yarn beam, and adapted to present the tuft-yarns to the warp; the clamping-arms and direct tuft-yarn clamp pivotally mounted upon said transferring-frame; and means to impart a relative movement to said transferring-frame and clamp, to operate, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HORACE WYMAN.  
 JOHN A. CLARK.

Witnesses:

JUSTIN A. WARE,  
 JOHN B. SYME.