

(No Model.)

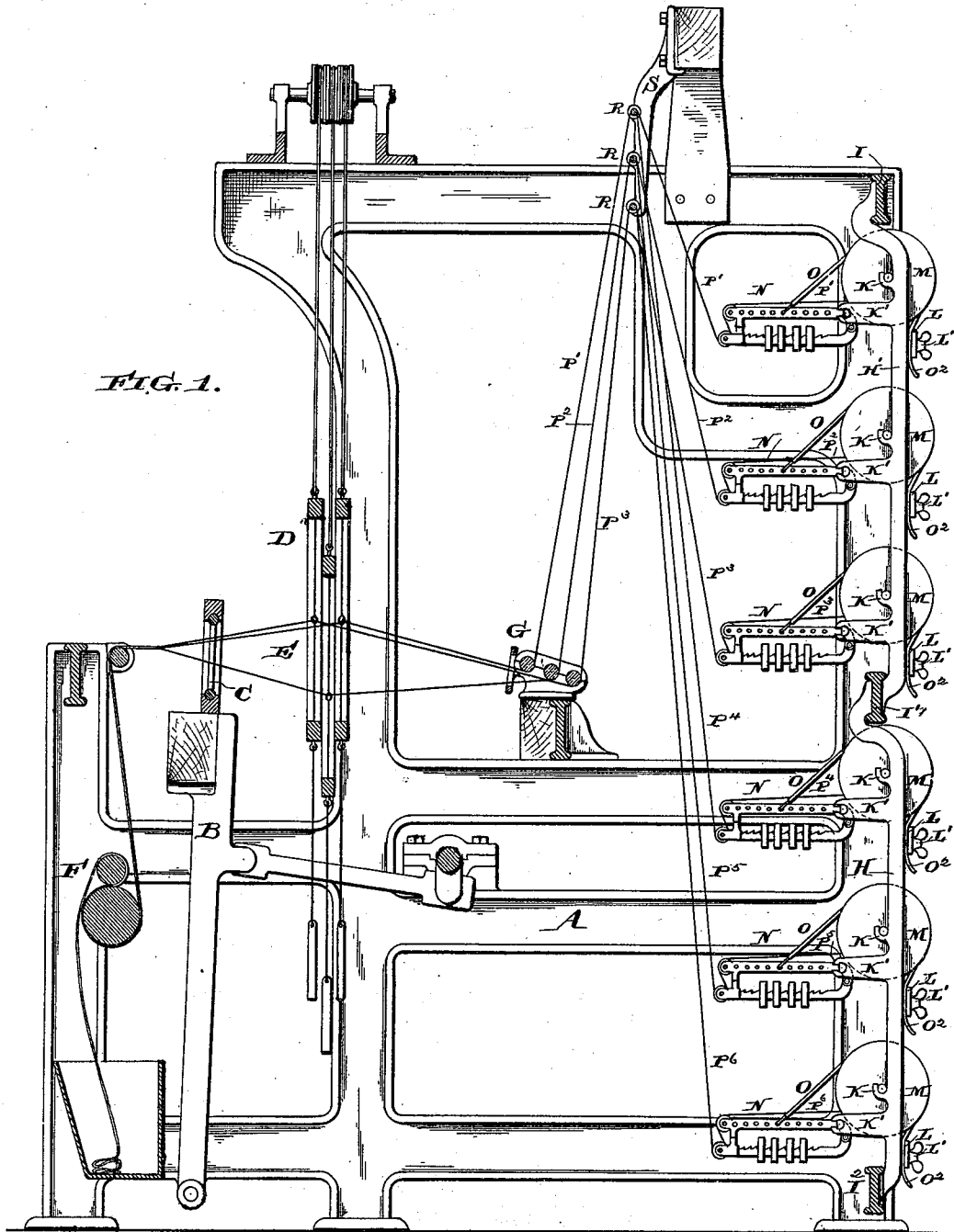
2 Sheets—Sheet 1.

O. W. SCHAUM.

TENSION AND LET-OFF DEVICE FOR LOOMS.

No. 550,294.

Patented Nov. 26, 1895.



Witnesses:

Henry D. Dwyer
Jesse Heller

Inventor:

Otto W. Schaum

(No Model.)

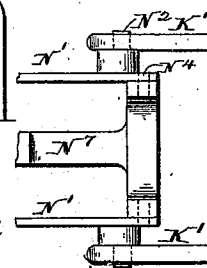
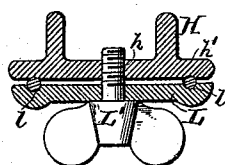
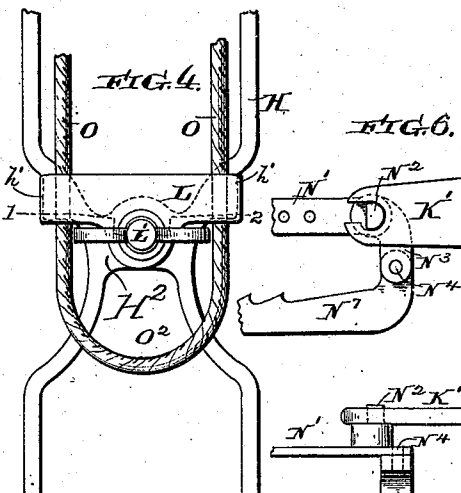
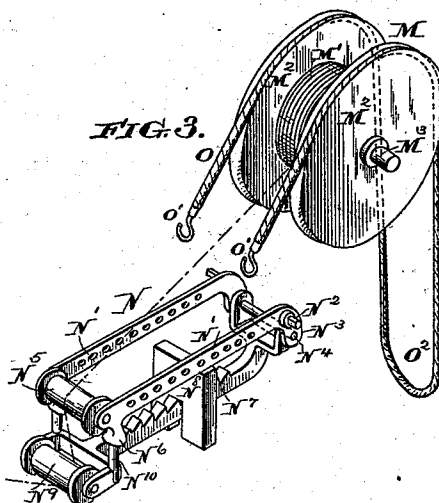
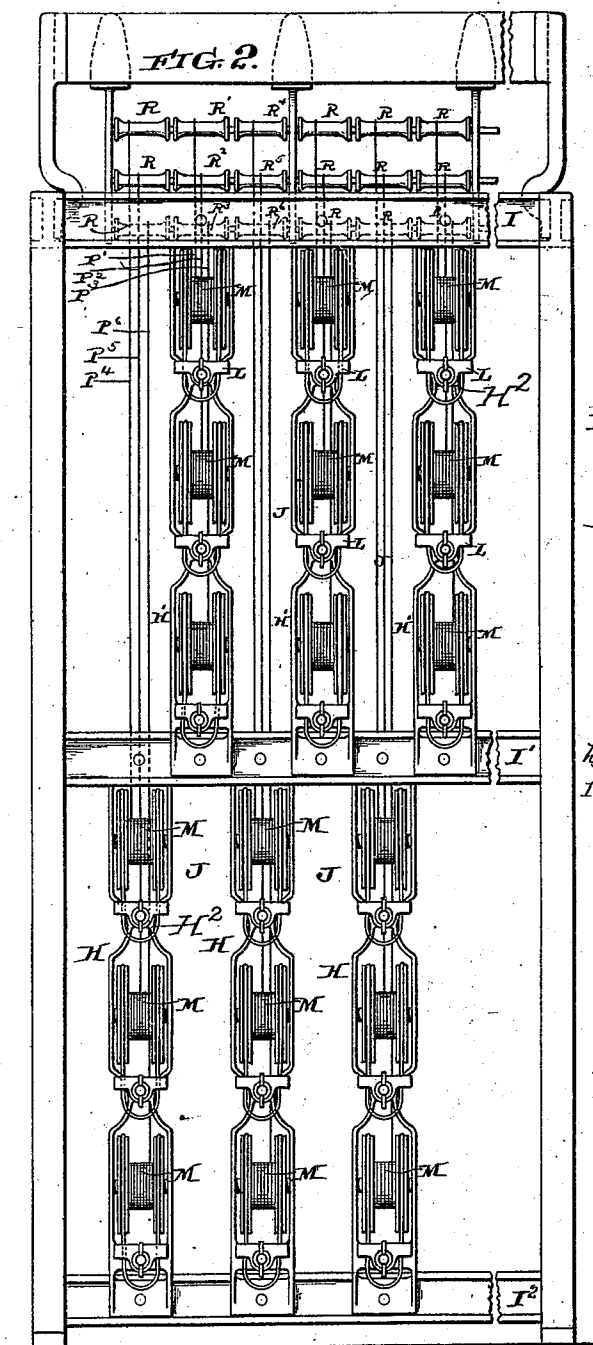
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UNITED STATES PATENT OFFICE.

OTTO W. SCHAUM, OF PHILADELPHIA, PENNSYLVANIA.

TENSION AND LET-OFF DEVICE FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 550,294, dated November 26, 1895.

Application filed May 20, 1891. Serial No. 393,476. (No model.)

To all whom it may concern:

Be it known that I, OTTO W. SCHAUM, of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improved Tension and Let-Off Devices for Looms, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improved construction and arrangement of the tension and let-off devices of looms, especially those designed for weaving ribbons or other narrow ware, and has for its object to generally improve the construction of this part of the loom mechanism, and more particularly to provide a beam frame or rack which is so arranged as to be adapted for use with almost any width of warp made on such looms, instead of having to be rearranged or altered, as is commonly the case with the beam-racks commonly used.

The nature of my improvements will be best understood as described in connection with the drawings, in which they are illustrated, and in which—

Figure 1 is an elevation, partly in section, of a loom provided with my improvements; Fig. 2, an elevation of a portion of the beam-frame; Fig. 3, a perspective view showing a warp-beam or spool in connection with my improved let-off and my improved brake-cord. Fig. 4 is an enlarged view showing a portion of one of the beam-brackets and illustrating the way in which the brake-cord is secured thereto. Fig. 5 is a cross-section on the line 1 2 of Fig. 4; Fig. 6, an enlarged view showing my preferred mode of connecting the two levers of the let-off device, and Fig. 7 a plan view of the device shown in Fig. 6.

A is the frame of the loom; B, the lay; C, the reeds; D, the heddles; E, the shed; F, the take-up; G, glass rods over which the warps pass to the heddles.

H and H' are the warp-beam brackets, which are arranged in two rows, those in the lower row being indicated by the letter H and those in the upper row by the letter H'. Preferably, and for reasons hereinafter stated, the two rows of brackets are staggered with respect to each other, as shown in Fig. 2, and the brackets

are preferably formed with a narrow neck beneath each beam, as indicated at H².

I, I', and I² are cross-beams of the frame to which the brackets H and H' are secured. By staggering the two rows of brackets, as described above, spaces J J, &c., are left between each adjoining pair of brackets, by which the operator is given abundant room to reach in between them, and the narrowing of the bracket beneath the beam is intended to enlarge this space, so as to give the operator more freedom of movement. On each beam-supporting bracket bearings K are provided for the journals of the warp-beams, and, as shown, the brackets are provided beneath each pair of bearings K with projecting arms K', situated beneath the bearings K at a distance therefrom less than the radius of the rims of the beams and extending out so as to provide a bearing at their ends, which will be beyond the rim of the beam-spools. On the back of the brackets and just above the narrowed necks H², where they occur, faces h' are provided, and in or close to such faces is formed a threaded perforation h, in which works a thumb-screw L', the function of which is to support and actuate a clamping-plate L, having preferably vertical grooves l, and which acts in conjunction with the plane h'.

M M, &c., are the beams, having a spool M', upon which the warps are wound, heads or rims M² M², and journals M³, which rest in the bearings K of the brackets. The rims M² are peripherally grooved in the usual way.

N is the automatic tension and let-off device, consisting of a lever N', having journals N², which are supported in the ends of the arms K', said lever supporting a roller N⁵ at its outer end and being counterweighted at its inner end, the counterweighting being effected by extending arms N³ beyond the journals N² and securing to such arms a weight sufficient to substantially balance the lever.

N⁷ is the usual coacting weighted lever of tension devices of the general character to which mine belongs; N⁸, an adjustable weight supported on said lever; N⁹, a roller journaled at its end; N¹⁰, upwardly-extending fingers which, when the lever N⁷ is drawn up, come in contact with faces N⁶ of the lever N⁷. This

lever may be supported in any of the usual well-known ways, but preferably is pivoted at N^4 to the ends N^3 of the lever N^1 in such a way that the weight of the said lever N^1 acts as
 5 the counterweight to balance the lever N^1 .

The tension device is applied to the warp-beams in the usual way by means of brake-cords secured to the lever N^1 and extending over the grooved peripheries of the end plates
 10 M^2 of the beam. These cords in my device are secured in position by means of the clamping-plate L , and preferably instead of using two cords, as is commonly the practice, I use a single cord O , having hooks $O^1 O^2$ at its end
 15 which engage in perforations formed in the lever N^1 , and which when applied to the beam, as shown in Fig. 3, has a loop O^2 extending down on the back of the bracket between the plane h' and the clamp L . It will be seen
 20 that by simply placing the finger in the loop O^2 and drawing down on it the proper arrangement of the let-off lever with regard to the beam can be readily effected and with a perfectly even tension on both sides of the
 25 spool or beam, and this is maintained by simply turning the thumb-screw L' and clamping the cord, as shown in Fig. 5.

$P^1 P^2 P^3$, &c., represent the warp-threads drawn from each beam, the thread passing
 30 from the beam over the roller N^3 , then under the roller N^2 , and thence, as shown in the drawings, over a series of spools $R R$, &c., of which I prefer to provide one for each beam, and which are arranged in series above each
 35 bracket, each series of spools corresponding to the number of beams supported in the bracket. After passing over the spools, which are preferably curved so as to have their outer edges higher than their center, the warp-threads pass under the glass rods G and
 40 thence to the heddles. I have found that by arranging the brackets $H H'$ as shown and described it is practicable to cant the warp-threads somewhat on their passage from the
 45 spools to the rods, so as to provide for different arrangements of warp-threads corresponding to the various widths of the material to be woven.

It is, I believe, an original feature of my construction to arrange the left-off levers on the inside of the warp-beam frame—that is to say, so that they extend toward the shed and lay. By so arranging them I avoid the inconvenience of having them extend out in front of the
 55 frame and of having to carry the warp-threads over the top of the frame; and I am also enabled to rig the loom for work with a less expenditure of the material. By my arrangement it will be seen that abundant room is
 60 provided between the brackets to enable the operator to insert his arm when it is necessary for him to get at the let-off levers or the warp-threads passing over them.

By supporting the let-off levers in bearings
 65 which in a vertical line are closer to the beam-bearings than the distance equal to the radius

of the beam-rims, but which in actual distance are further from the beam-bearings than the said radial length, I am enabled, as
 70 will at once be seen, to place the beams closer together and thus to use more beams for a given size of beam-rack than has heretofore been practicable. It is convenient and
 75 advisable to secure the let-off levers to an arm K' , extending out from the brackets H , but it is possible, of course, to pivot them in an independent bracket or frame.

In let-off devices of a generally similar kind to that shown and described by me, the upper lever N^1 has heretofore not been counterbalanced, and therefore when the lower lever N^7
 80 has been allowed to fall for some distance and is then again drawn up the tension is altered or changed as soon as the said lower lever comes in contact with and raises the upper
 85 lever, because in addition to its own weight the weight of the upper lever is then added to the strain upon the warp-threads. The result of this difference in the tensions is an inequality in the breadth of the ribbon woven by
 90 the loom, but by counterbalancing the upper lever it will be obvious that no change in the tension will take place when the said counterbalanced lever is brought into play, and the
 95 obvious advantage of effecting the counterbalancing by the weight of the lower lever need not be commented upon.

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

1. The combination with brackets and a warp beam supported thereon, of a let off lever, a single brake cord O^2 arranged to fasten at its ends to the let off lever and having its
 105 central loop below a clamp bar L and said clamp bar L arranged to grip the brake cords on each side of the loop substantially as and for the purpose specified.

2. The combination with a warp beam and let off lever, of a clamp bar L and a single
 110 brake cord O^2 adapted to be gripped by the clamp bar L and having hooks O^1 at its ends to engage the let off lever and having its central loop below clamp L , substantially as and for the purpose specified.
 115

3. The combination with a warp beam of a let off device consisting of a pivoted lever N^1 to which the brake cords are attached, and a
 120 coacting lever N^7 pivoted to the rearwardly extending arms N^3 of the lever N^1 so as to counterbalance it.

4. The combination with a warp beam of a let-off device consisting of a pivoted lever N^1 having heel extensions N^3 and a coacting
 125 weighted lever N^7 pivoted at one end on said extensions so as to counterbalance lever N^1 and adapted to be sustained at the other end by the warp threads.

OTTO W. SCHAUM.

Witnesses:

GEORGE HOUSE,
 JOSHUA MATLACK, Jr.