(No Model.) 2 Sheets—Sheet 1.

J. L. ALDINGER.

WARP TENSION REGULATING DEVICE FOR LOOMS.

No. 398,017. Patented Feb. 19, 1889.

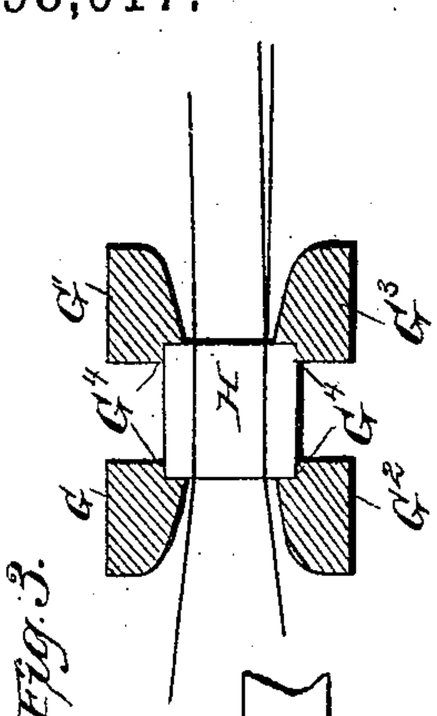

Fig. 3.

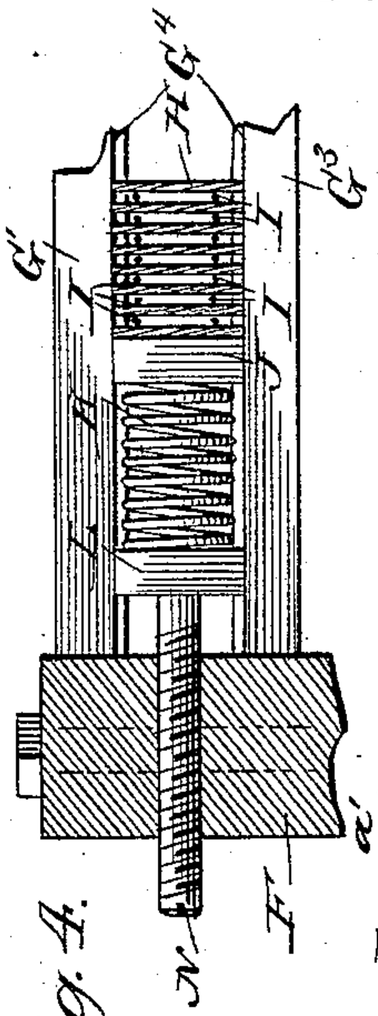

Fig. 4.

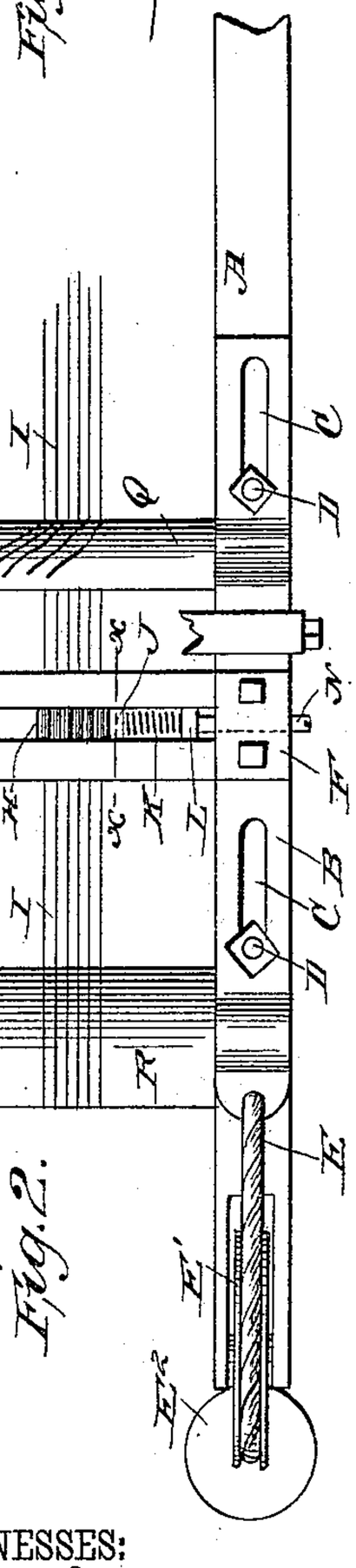

Fig. 2.

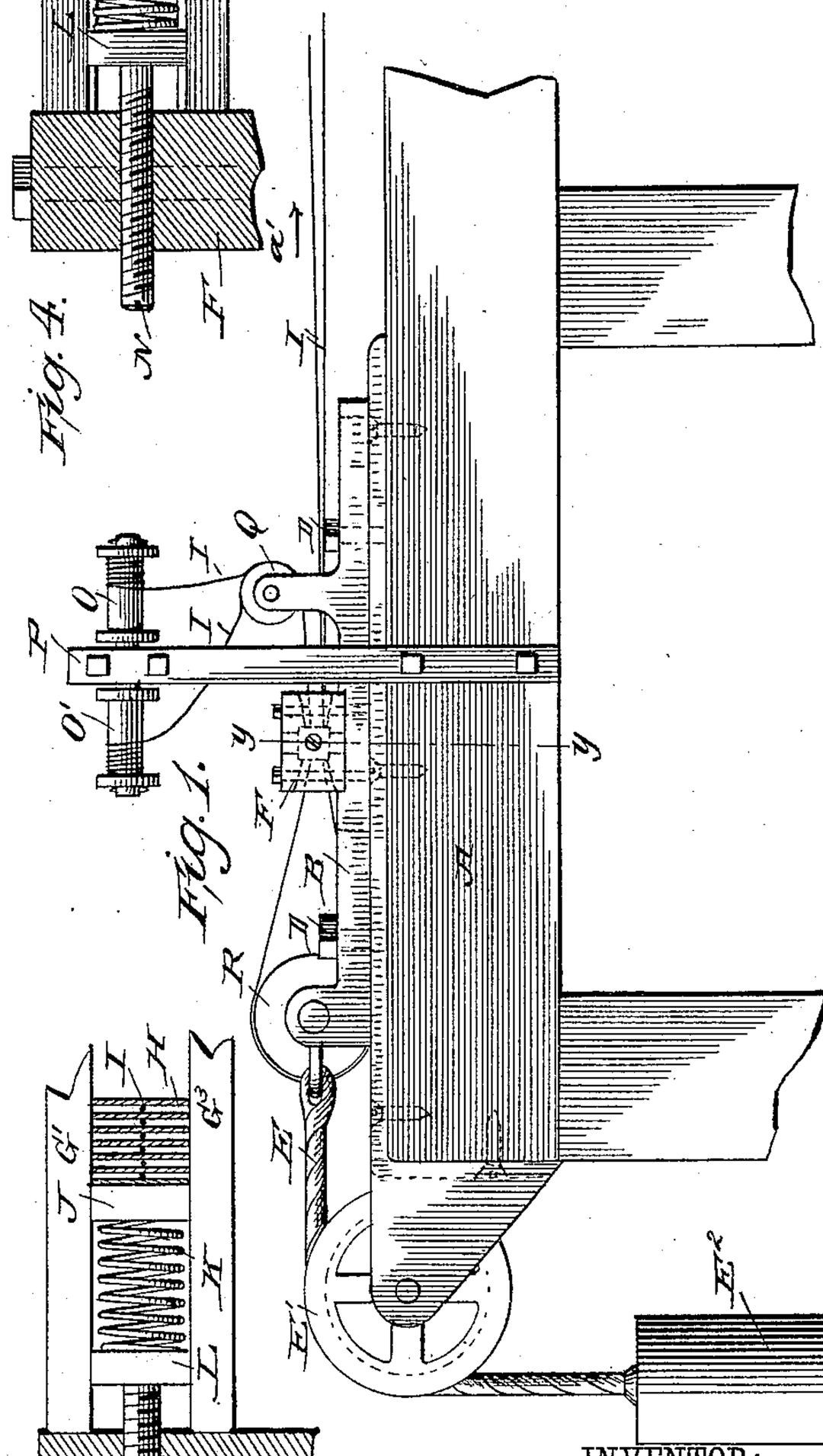

Fig. 1.

Fig. 5.

WITNESSES:

N. R. Davis.

C. Sedgwick.

INVENTOR:

J. L. Aldinger

BY Munn & Co

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

J. L. ALDINGER.

WARP TENSION REGULATING DEVICE FOR LOOMS.

No. 398,017. Patented Feb. 19, 1889.

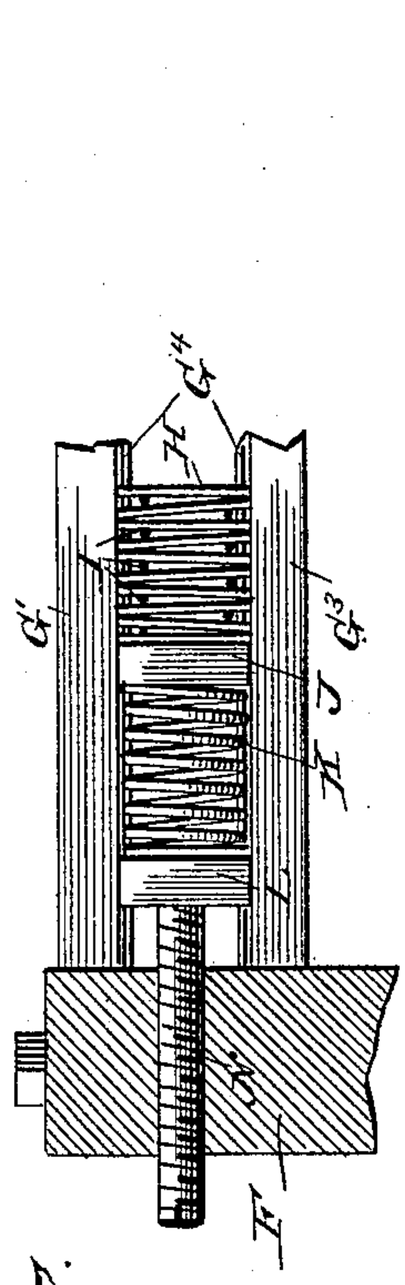

Fig. 7.

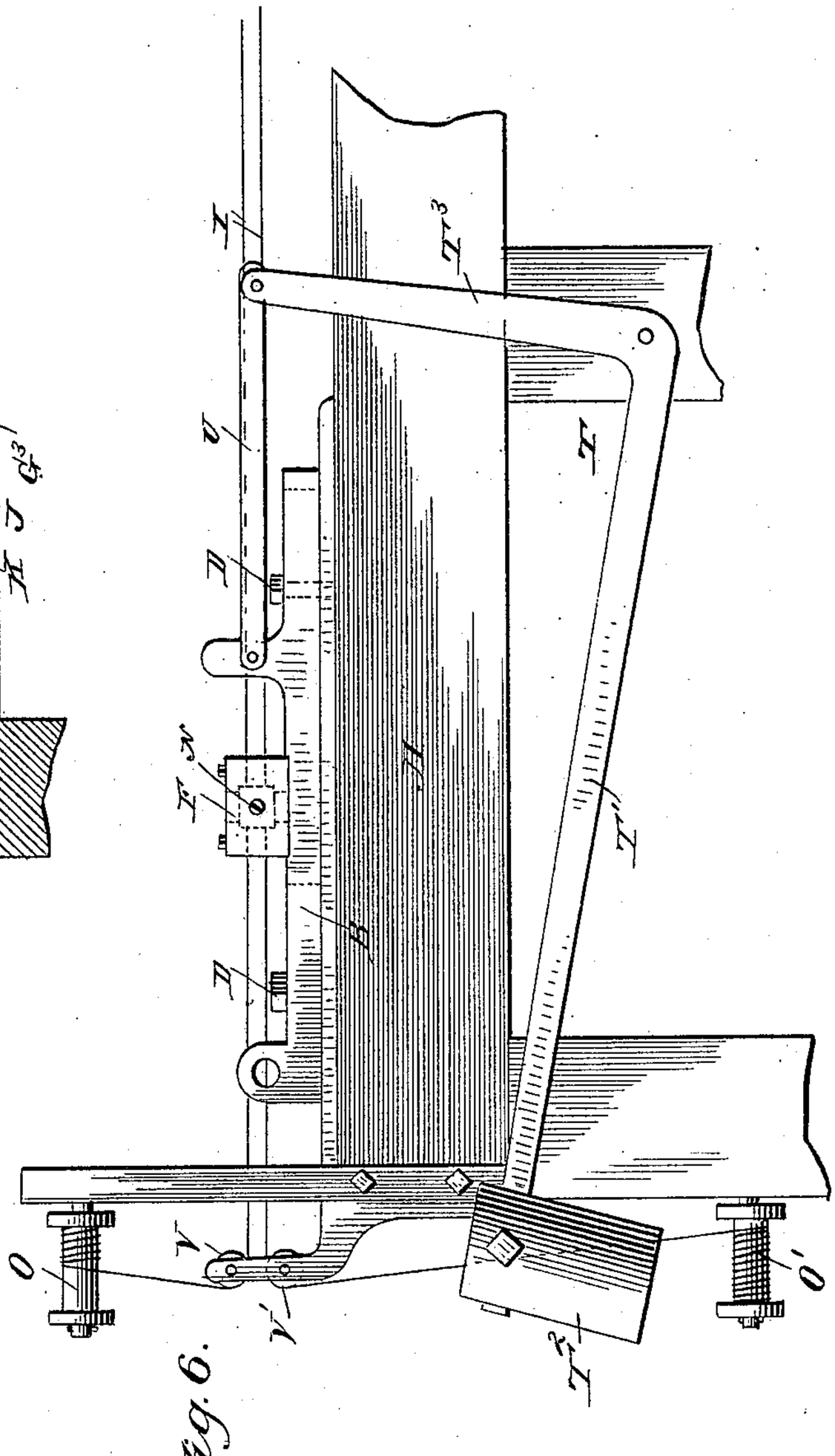

Fig. 6.

WITNESSES:

W. R. Davis.

C. Sedgwick

INVENTOR:

J. L. Aldinger

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN L. ALDINGER, OF SYRACUSE, NEW YORK, ASSIGNOR TO E. C. STEARNS & CO., OF SAME PLACE.

WARP-TENSION-REGULATING DEVICE FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 398,017, dated February 19, 1889.

Application filed December 21, 1887. Serial No. 258,549. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. ALDINGER, of Syracuse, in the county of Onondaga and State of New York, have invented an Improvement in Warp-Tension-Regulating Devices for Looms, of which the following is a full, clear, and exact description.

The object of the invention is to provide a certain new and useful improvement in warp-tension-regulating devices for looms, specially adapted for wire-looms, and by which the warp beam or drum is dispensed with, producing better and cheaper results and increasing the capacity of the loom.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement as attached to the loom. Fig. 2 is a plan view of one side of the same with the spool-frame removed. Fig. 3 is an enlarged sectional side elevation of part of the improvement on the line *x x* of Fig. 2. Fig. 4 is an enlarged cross-sectional elevation of part of the same on the line *y y* of Fig. 1. Fig. 5 is a like view of the same arranged for single threads or wires. Fig. 6 is a side elevation of a modified form of the improvement; and Fig. 7 is an enlarged cross-sectional elevation similar to Fig. 4, but having single wires passing alternately between the upper and lower ends of the plates.

In looms as heretofore constructed the warp had to be wound upon a beam or drum placed on the loom-frame, and then the warp was unwound as rapidly as required by the action of the loom. As soon as the warp was entirely unwound from the beam or drum the loom had to be stopped and the empty beam or drum removed, and the filled warp-beam was placed on the loom-frame and the warp thread or wires again adjusted. This mode of changing the warp beam or drum required considerable time and skilled labor for placing the warps on the beam. With my improvement, presently to be described, I dispense with the warp beam or drum entirely and run the warp-threads from the spool to the harness, and at the same time give the necessary tension to the warp threads or wires.

The loom is provided with the usual frame, A, on which are mounted the harness and other devices of the usual construction, and on the rear ends of the sides of the frame A are mounted to slide longitudinally the carriages B, each having longitudinal slots C, through which slots pass the bolts D, entering the sides of the frame A, and permitting a longitudinal movement of the said carriages B. To the rear end of each carriage B is fastened one end of a rope or cord, E, passing over a pulley, E′, mounted to rotate on the end of the frame A, and carrying on its lower end a weight, E^2, serving to impart a backward sliding motion to the carriages B.

The carriages B are placed opposite each other, and on them are secured the posts F, connected with each other by the four transverse beams G, G′, G^2, and G^3, placed at right angles to each other, as shown in Fig. 3, each having on its inner edge a right-angular groove, G^4, into which fit the tension-plates H, between which pass the warp wires or threads I. These beams constitute an open casing, and, in connection with the carriages and tension-plates, form what may be termed a "longitudinally-yielding" casing having laterally-yielding tension-plates. The tension-plates H are pressed toward each other to impart the necessary tension to the threads or wires I passing between them. This is accomplished by placing at the outer side of each of the end plates, H, a block, J, fitting into the grooves G^4, and against which presses a spring, K, the outer end of which spring rests against a block, L, also held to slide in the grooves G^4 of the transverse beams G, G′, G^2, and G^3. Against the outer face of this block L abuts a screw, N, screwing into the post F.

It will be seen that when the two screws N in the posts F are moved inward the springs K are compressed and exert a greater pressure against the blocks J and the tension-

plates H, and if the screws N are screwed outward the tension on the threads or wires I by the plates H is diminished.

The warp threads or wires I are held on the spools O and O′, which are held in a horizontal position on the spool-carrier P, extending across the loom above the posts F and secured to the sides of the frame A. The warp threads or wires I pass from the spools O and O′ over a roller, Q, extending transversely, and mounted to rotate in bearings formed on the carriages B. The threads or wires I pass rearwardly from the roller Q through the tension-plates H, as shown in the drawings, and then pass over a roller, R, also mounted transversely in suitable bearings on the carriages B. The warp threads or wires I, passing over the roller R, then pass forward and again pass between the tension-plates H, and then, in the usual manner, to the harness of the loom. The beams G, G′, G^2, and G^3 are slightly beveled at their under or top sides and rounded off at their outer corners, as shown in Fig. 3, and the tension-plates H may be slightly beveled and smoothed off, so as to permit the thread or wire to enter easily.

The operation is as follows: The warp threads or wires I are drawn forward in the direction of the arrow a' in the usual manner by the action of the loom, and as the said warp threads or wires I pass between the plates H the necessary tension is given to them, as the said plates H, on account of being pressed toward each other by the springs K, give the necessary resistance to the warp threads or wires I. All slack of the warp-threads I between the harness and the tension-plates H is taken up by the weight E^2 acting on the carriages B, so that the latter slide rearwardly in the inverse direction of the arrow a' as soon as the slack occurs. The weights E^2 are, however, so proportioned that when the loom feeds the warps I forward in the regular manner the carriages B are in the position shown in Figs. 1 and 2—that is, the bolts D are at the rear ends of the slots C. In the arrangement shown in Figs. 1 and 2 the warp-threads I are passed twice between the tension-plates H; but I may also run the threads but once between the plates H, as shown in Fig. 6, in which I dispense with the rollers Q and R and provide instead the rollers V V′, mounted one above the other transversely at the rear end of the frame A. The spools O are mounted above the roller V on a suitable extension on the main frame A, while the other row of spools, O′, is mounted on the frame A below the rollers V′. The warp-threads I pass from their spools O and O′ over the rollers V and V′, respectively, and then directly through the tension-plates H and to the harness, as shown in the said Fig. 6.

Instead of imparting the necessary sliding motion to the carriages B by the means shown in Figs. 1 and 2, I may employ the device shown in Fig. 6, in which a bell-crank lever, T, is fulcrumed on each side of the frame A, and carries on its long arm T′ a weight, T^2, and its other arm, T^3, is pivotally connected by a link, U, with its respective carriage B. It will be seen that the weights T^2, acting on the bell-crank lever T, have the tendency to move the carriages B rearwardly in the same manner as the weights E^2, above described.

The operation of the device shown in Fig. 6, and as above described, is the same as described in reference to Figs. 1 and 2, with the exception that the threads are passed only once between the tension-plates H, which are pressed toward each other by the adjustment of the screws N, as described. Only one of the warp threads or wires I may be passed centrally between two successive plates H, as shown in Fig. 5, or they may be passed alternately between the successive plates at their upper and lower ends thereof, as shown in Fig. 7, and in this case the plates assume a slightly-inclined position, as they (said warp threads or wires) pass alternately between the plates at their upper or lower ends. It can thus be seen that I dispense entirely with the warp beam or drum, and do not have to stop the loom in order to change the warp, as new spools can be inserted when the old ones are empty, and the respective threads or wires when broken can be connected again before passing between the plates H and while the loom is running. It is also seen that an even tension is given to all the warp threads or wires, as the tension-plates H are all pressed toward each other with equal force, according to the regulated tension of the springs K.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the casing open at the front and rear for the passage of the threads, of parallel plates mounted in said casing at right angles to its length, a spring pressing the plates together, a set-screw extending through the end of the casing, and a bearing block or plate between the inner end of said screw and the outer end of the spring, substantially as set forth.

2. The combination, with a casing having carriages or slides at its ends and ways therefor, of tension-plates within the casing at right angles to its length, and means for pressing the plates together, substantially as set forth.

3. The combination, with the loom-frame, of the longitudinally-yielding casing mounted to slide thereon, laterally-yielding tension-plates within said casing, a spring pressing said plates together, and a weight exerting rearward strain on said casing, substantially as set forth.

4. The combination, with the loom-frame, its spool or bobbin supports, and guide-rollers, of the sliding casing mounted on the said frame parallel with the rollers, tension-plates in said casing, means for pressing the plates

together, and a weight exerting rearward strain on said casing, substantially as set forth.

5. The combination, with the loom-frame, of the sliding casing mounted thereon and provided with laterally-yielding tension-plates, a spiral spring within the casing and pressing the plates together, a set-screw extending through the end of the casing and regulating the tension of the spring, and a weight exerting rearward strain on the said casing, substantially as set forth.

JOHN L. ALDINGER.

Witnesses:
FRANK A. AUSTIN,
JOHN P. HISLEY.