

(No Model.)

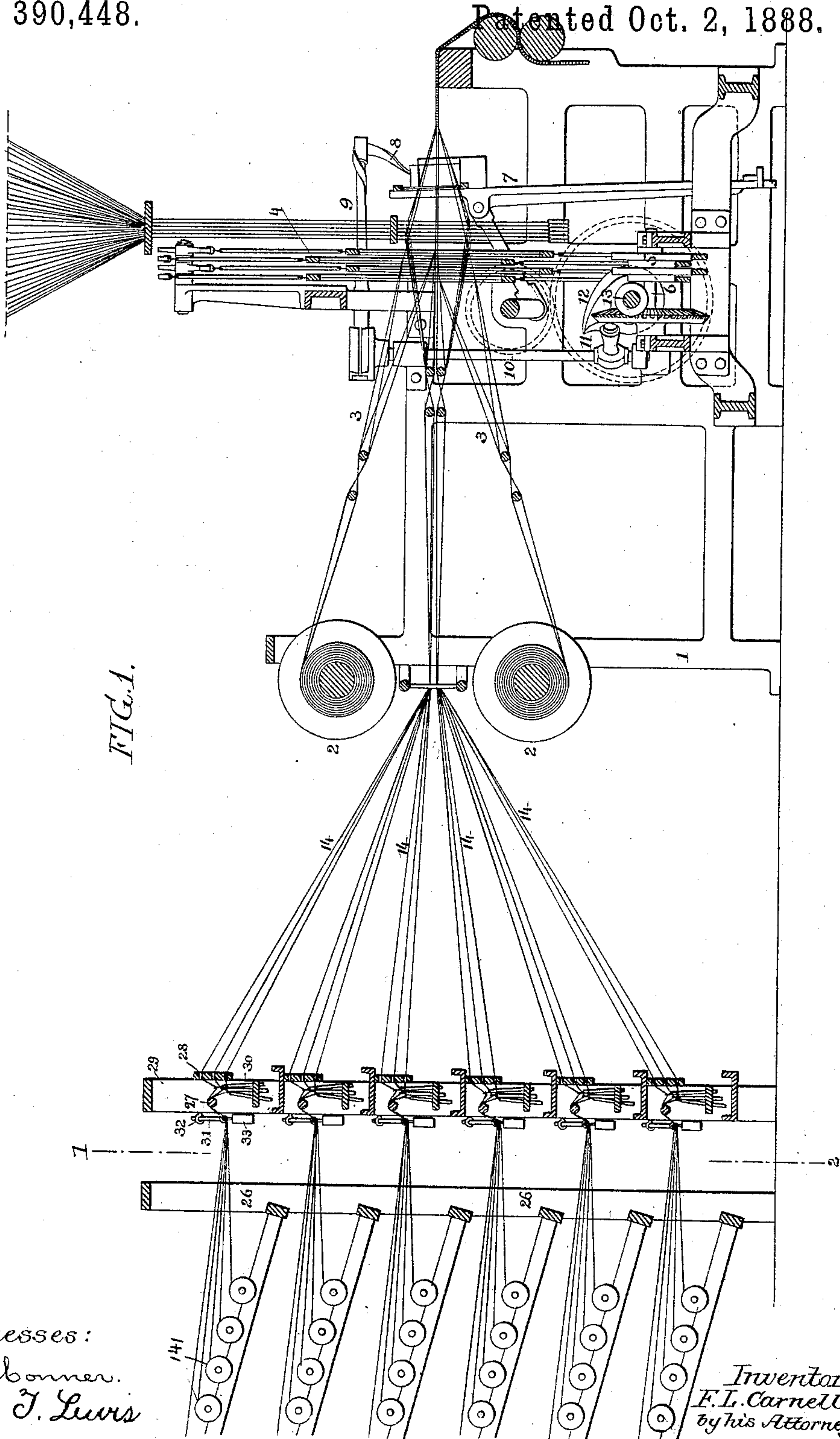
2 Sheets—Sheet 1.

F. L. CARNELL.

PILE WARP GUIDE AND TENSION DEVICE FOR LOOMS FOR WEAVING  
DOUBLE PILE FABRICS.

No. 390,448.

Patented Oct. 2, 1888.



Witnesses:  
 Mrs D. Bonner.  
 John T. Lewis

Inventor  
F. L. Carnell  
by his Attorneys

Howan x Howson

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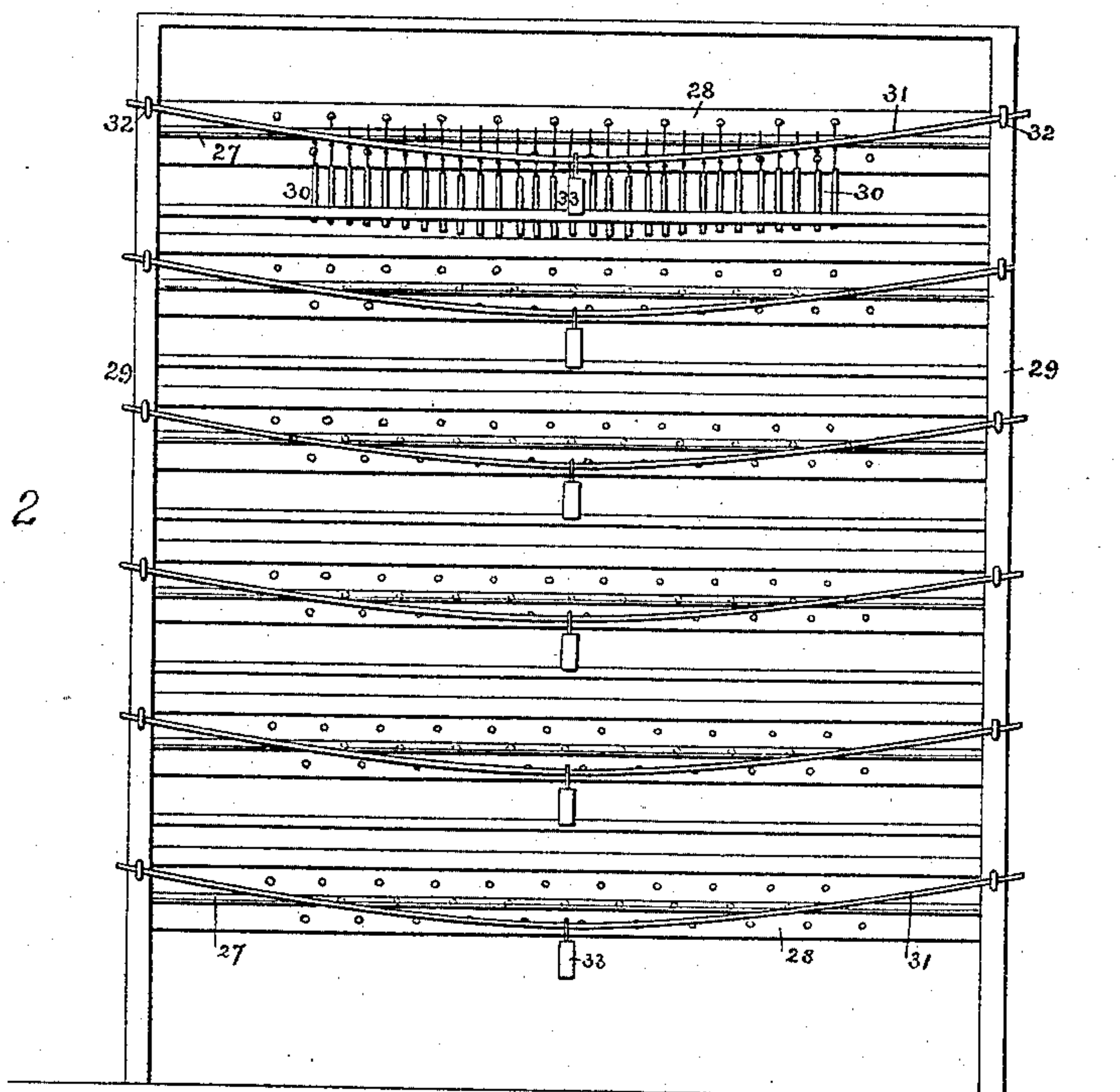
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FIG. 2



Witnesses:  
H. D. Bonner.  
John T. Lewis

Inventor:  
F. L. Carnell  
by his Attorneys  
Hudson & Howson



# UNITED STATES PATENT OFFICE.

FRANKLIN L. CARNELL, OF PHILADELPHIA, PENNSYLVANIA.

PILE-WARP GUIDE AND TENSION DEVICE FOR LOOMS FOR WEAVING DOUBLE PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 390,448, dated October 2, 1888.

Application filed November 23, 1887. Serial No. 255,986. (No model.)

*To all whom it may concern:*

Be it known that I, FRANKLIN L. CARNELL, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Pile-Warp Guides and Tension Devices for Looms for Weaving Double Pile Fabrics, of which the following is a specification.

My invention consists of certain improvements in looms for weaving double pile fabrics, the loom itself being of the same general character as that shown and described in my application for patent filed May 23, 1887, No. 239,085, the improvements relating, especially, to the construction of the guide and tension devices for the pile-warp threads.

In the accompanying drawings, Figure 1 is a longitudinal section of the loom with part of the spool-frame and the guide and tension devices for the pile-warp threads, the Jacquard machine of the loom being omitted. Fig. 2 is a transverse section on the line 1 2, Fig. 1, only a portion of the warp-threads being shown.

The side frames, 1, of the loom have at the rear bearings for the warp-beams 2, which carry the backing-warps 3, the latter being under the control of the heddles 4, operated by cams 5 on the shaft 6, as usual.

The lathe 7 is provided at each end with two shuttle-boxes, and both shuttles are thrown simultaneously from one side of the loom and then from the other side by means of the usual picking devices, comprising at each side of the loom a picker attached to a strap, 8, an arm, 9, and a vertical shaft, 10, having an arm, 11, acted on by a cam, 12, on the transverse shaft 13 of the loom, the heddles being so operated as to simultaneously form two sheds of backing-warp, one for the upper shuttle and the other for the lower shuttle, thus forming two independent fabrics, one some distance above the other.

The pile-threads pass from the upper fabric to the lower one and back again across the space between the two fabrics, and are then severed in the center, so as to separate the fabrics.

The figuring pile-warp threads 14 are drawn from spools 141 in a frame, 26, and pass over transverse rods 27, and through porcelain eyes in the bar 28, carried by a frame, 29, and suspended from each warp-thread between the rod and bar is a tension-weight, 30, these weights being preferably graduated and being heaviest in the middle and lightest at the outer edges of the warp, so that the tension on the warp will be differential and will not have a tendency to draw the two fabrics together at the edges in weaving. As a further means of accomplishing this result I use in the rear of each rod 27 a flexible tension-bar, 31, which is supported at its opposite ends in eyes 32 above the line of the warp-threads, and is provided at or about the center with a weight, 33, by which the center of the bar is depressed, and the bar caused to remain in the bowed form shown in Fig. 2, thereby imparting a gradually-increasing tension to the warp-threads from the outer edges of the line of warp to the center of the same.

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

1. The combination of the guides for the figuring pile warps, with tension weights applied thereto and graduated so as to reduce the tension upon the warp-threads at and near the edges of the line of warp, all substantially as specified.

2. The combination of guides for the figuring pile warps, with a flexible tension-rod supported at its ends above the line of warp and weighted in the center, all substantially as specified.

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

FRANKLIN L. CARNELL.

Witnesses:

WILLIAM D. CONNER,  
HARRY SMITH.