(No Model.)

R. ETHERINGTON.

APPARATUS FOR PRODUCING RAISED FIGURES IN CARPETS.

No. 568,300. Patented Sept. 22, 1896.

Fig. 1.

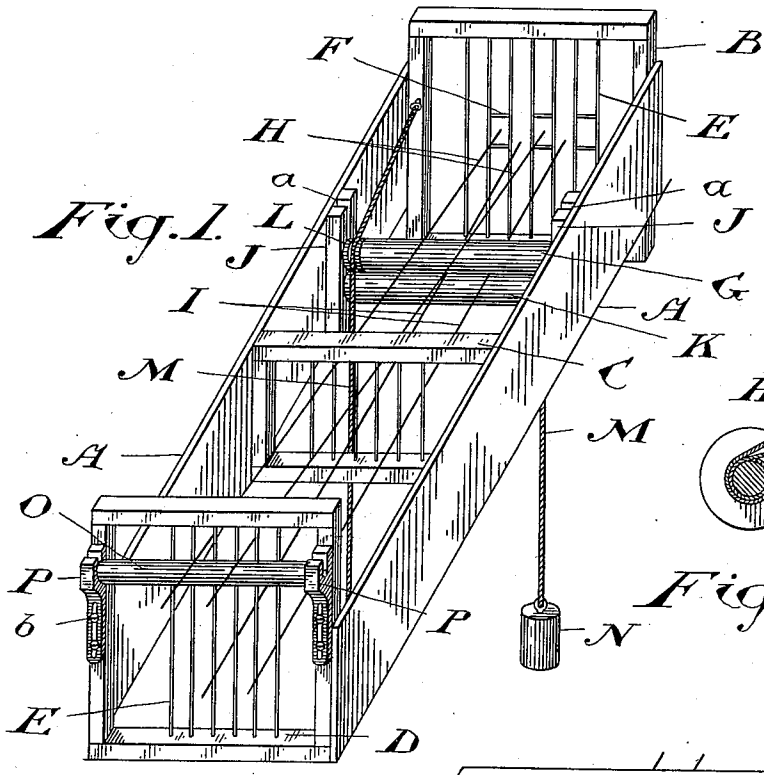


Fig. 3.

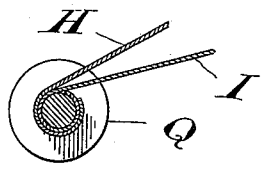
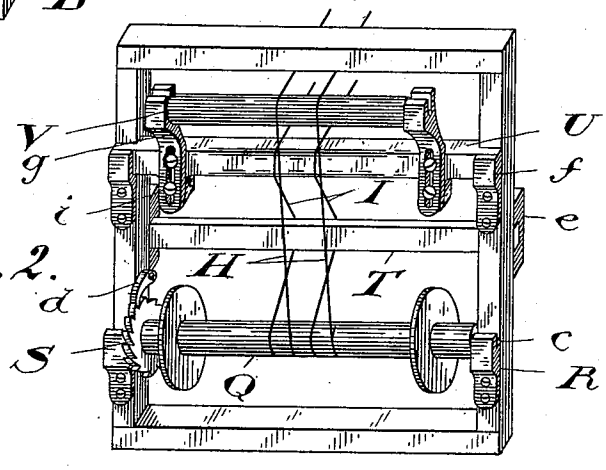


Fig. 2.



Witnesses

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ROBERT ETHERINGTON, OF PARIS, CANADA.

APPARATUS FOR PRODUCING RAISED FIGURES IN CARPETS.

SPECIFICATION forming part of Letters Patent No. 568,300, dated September 22, 1896.

Application filed February 28, 1896. Serial No. 581,162. (No model.)

To all whom it may concern:

Be it known that I, ROBERT ETHERINGTON, of the town of Paris, in the county of Brant and Province of Ontario, Canada, have invented a certain Apparatus for Producing Raised Figures in Carpets and Similar Woven Fabrics, of which the following is a specification.

The object of my invention is to devise an apparatus for producing raised figures in carpets and similar woven fabrics; and it consists, essentially, in the peculiar construction, arrangement, and combinations of parts hereinafter described and then definitely claimed for applying tension to the ground-threads of the warp, so that the figure-threads remain loose and permit the woof-threads in the figures to rise above the level of the ground to form a raised pattern or figure.

Figure 1 is a perspective view of a warping-box provided with my improvements. Fig. 2 is a perspective view of the loom end used in putting my process into practice. Fig. 3 is a cross-section of the warp-beam, showing the figure-threads overlying the ground-threads.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is a warping-box composed of suitable frames and side pieces.

B, C, and D are three reeds located, respectively, at the far end, the middle, and the near end of the warping-box. These reeds are formed by the vertical wires E, which run from top to bottom of each reed. In the drawings only six such wires are shown in each reed, but for a full "super-weave" about eight hundred and thirty-six wires would be used in reed B, or one for each warp-thread, but in the other two reeds fifteen or twenty warp-threads may be collected together and passed together between the wires. The warp-threads are passed from the spools on which they are usually wound between the wires of the reeds B; the figure and ground threads H and I between alternate wires. The figure-threads H are preferably confined as to vertical motion by the leads F, while the ground-threads I are free to pass up and down the full length of the reed. By so confining the figure-threads H the action of separating the figure and warp threads to pass on opposite sides of the roller G is much facilitated. This roller G has its spindle or bearing pieces sliding in the slot *a* in the bearing-blocks J. The roller G rests upon a roller K, which has its spindle or bearing pieces journaled in the bottom of the said slots.

L are two grooved pulleys journaled at each end of the spindle of the roller G. Only one of these is seen in the drawings.

Cords M are connected at one end to the reed B, pass over the grooved pulleys L, and have weights N hung at their other ends. These weights thus serve to impart a downward pressure to the roller G.

At the front of the reed D is located the roller O, journaled in bearings P, which are slotted, as shown, so as to be adjustable, by means of the bolts *b*.

It will be seen that after leaving the reed B the figure-threads H lead direct through the reeds C and D and over the roller O, while the ground-threads I pass between the rollers G and K and through the reeds C and D below the roller O. Considerable tension is thus applied to the ground-threads, causing them to tighten, while the figure-threads pass through the warping-box quite loosely and are then wound upon the warp-beam Q, which is shown in Fig. 2. As the figure and ground threads are separated by the roller O it follows that on the warp-beam the figure-threads overlap the ground-threads, as seen in Fig. 3.

In Fig. 2 is shown the end of the loom. Q is the warp-beam, the spindle *c* of which has been slipped into the bearings R. S is a ratchet-wheel on one end of the warp-beam, with which a dog *d* engages to hold the warp-beam from turning. T is the first dead-rail, and U is the second, both being attached to the loom end by the brackets *e* and *f*. V is a roller suitably journaled in the brackets *g*. These brackets, it will be noticed, are slotted, so as to be adjusted vertically on the rail U by means of the bolts *i*. From the warp-beam Q the figure-threads H are carried straight up and over the roller T, thence to the harness and working parts of the loom, which are of the ordinary construction, and, not forming part of my invention, are not shown in the drawings. The ground-threads I pass under the dead-rail T, then back and over the dead-

rail U, thence passing to the harness with the figure-threads. The result of this arrangement is that a still further tension is put upon the ground-threads and the figure-threads made much looser than before.

The essential parts of the mechanism used in my apparatus are the tension-rollers G and K, which tighten the ground-threads, the adjustable roller O, which may be set to permit the figure-threads to pass clear of the roller G and which also separates the figure and ground threads that they are wound in layers on the warp-beam, and the roller V, which guides the figure-threads into the loom with a minimum tension, while a strong tension is put upon the ground-threads by the dead-rails T and U. As a result of this treatment of the ground and figure threads the figure-threads, which are always brought to the upper surface of the carpet in the figured portion thereof, allow the filling or woof threads to rise above the general surface of the carpet, producing a raised pattern.

What I claim as my invention is—

1. An apparatus of the class described, comprising the loom end, a warp-beam journaled thereon two suitably-supported dead-rails and a vertically-adjustable roller to separate the ground and figure threads of the warp, substantially as and for the purpose specified.

2. In an apparatus of the class described, the combination with a warping-box A, of reeds B, C and D connected with said box, a journaled roller K, a vertically-movable roller G coacting therewith, means for applying pressure to said roller G, and a roller O adapted to separate the ground and figure threads of the warp, substantially as and for the purpose specified.

3. In an apparatus of the class described, the combination with a warping-box A, of reeds B, C and D connected therewith, a journaled roller K, a vertically-movable roller G coacting with said roller K, means for applying pressure to said roller G, and a vertically-adjustable roller O adapted to separate the ground and figure threads of the warp, substantially as and for the purpose specified.

Paris, February 21, 1896.

ROBERT ETHERINGTON.

In presence of—

JOHN F. BOULTBEE,
ROBERT CREEDEN.