

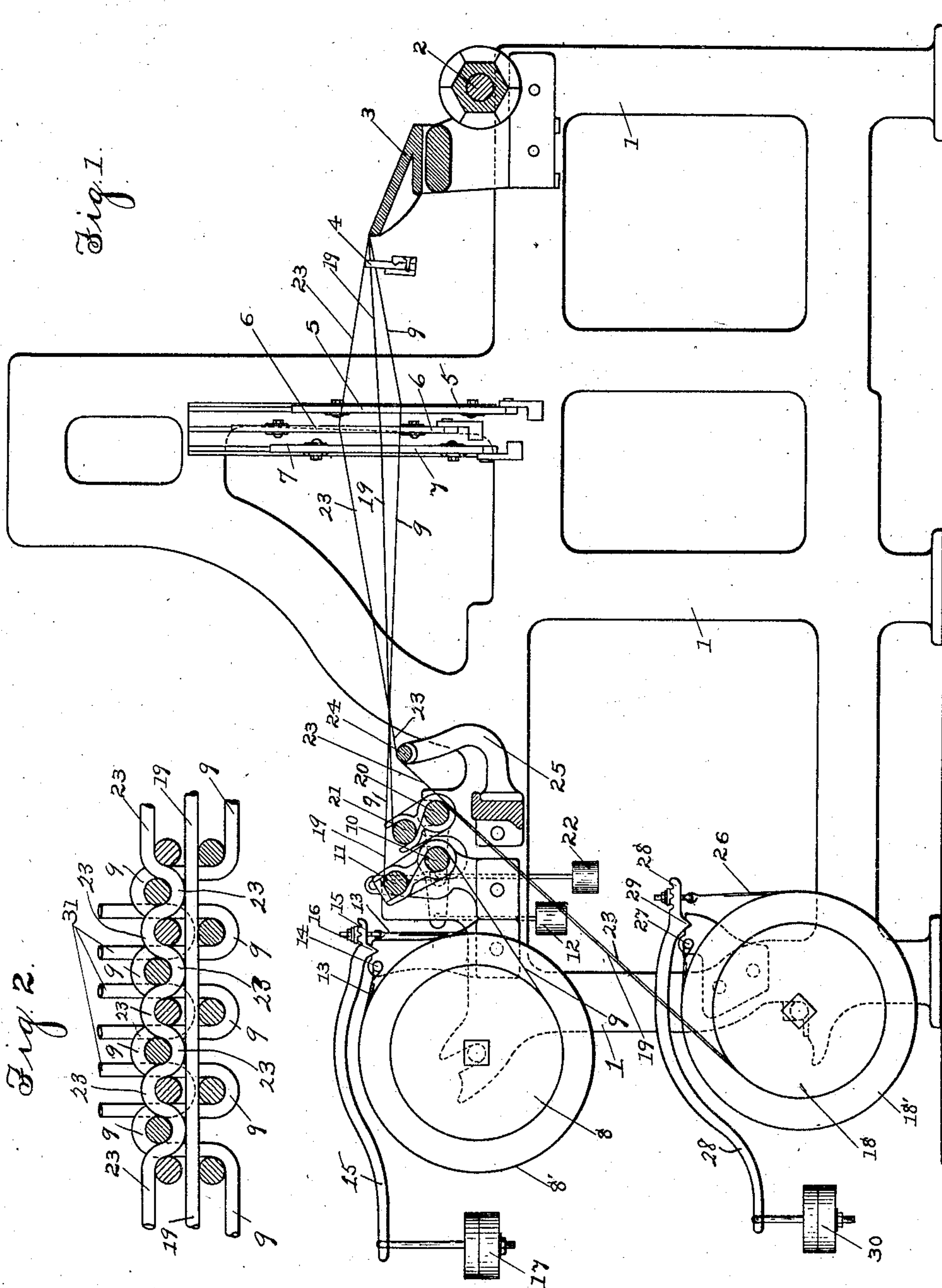
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T. COOPER.

LOOM FOR WEAVING AXMINSTER OR OTHER PILE FABRIC CARPETS.

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# UNITED STATES PATENT OFFICE.

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## LOOM FOR WEAVING AXMINSTER OR OTHER PILE-FABRIC CARPETS.

SPECIFICATION forming part of Letters Patent No. 791,404, dated May 30, 1905.

Application filed June 16, 1904. Serial No. 212,824.

*To all whom it may concern:*

Be it known that I, THOMAS COOPER, a subject of King Edward VII of England, residing at Kidderminster, in the county of Worcester, England, have invented certain new and useful Improvements in Looms for Weaving Axminster or other Pile-Fabric Carpets, of which the following is a specification.

My invention relates to improvements in looms for weaving Axminster or other pile-fabric carpets, and more particularly to that class of looms for weaving carpets in which there are three plies or divisions of warp—viz., the dead-warp, the tuft-binder warp, and the binder-warp—woven into the fabric in different lengths.

Heretofore it has been customary to have three beams, one for each division of warp, and a tension device provided for each division of warp. This arrangement requires the constant attention of the operator to keep the tension for the different divisions of warp properly adjusted. In my improvements I do away with one of the beams and only use two beams. On one beam I put the binder-warp, which may be of cotton, linen, or other suitable material, and on the other beam I put the dead or ground warp of linen, jute, or other hard-spun material and also the tuft-binder warp, preferably of cotton or other soft-spun material. In winding the dead or ground warp and the tuft-binder warp on the same beam I have the dead-warp under very heavy tension and the soft binder-warp put on very slack, so that in the process of weaving the dead-warp and the tuft-binder warp are each woven into the fabric under suitable tension with the dead-warp in a substantially straight line and the tuft-binder warp up and down between the picks of weft, and I obtain a firmer, more durable, and more evenly-woven fabric. By putting the dead-warp and the tuft-binder warp both on one beam with a slackness in the tuft-binder warp the relative slackness between the two warps as they are woven into the fabric will be maintained without further attention.

I have only shown in the drawings a de-

tached portion of a loom of the class referred to having thereon two warp-beams embodying my improvements.

Referring to the drawings, Figure 1 is a sectional elevation of a portion of a loom with my improvements applied thereto, and Fig. 2 is a detached section of a fabric such as is intended to be woven on looms provided with my improvements.

In the accompanying drawings, 1 is the loom side; 2, the take-up roll; 3, the breast-beam; 4, the reed; 5, 6, and 7, the harnesses, one for each division of warps.

8 is the beam on which in this instance the binder-warp 9 is wound. The binder-warp 9 passes partially around the rod 10 and up over the whip-roll 11 through the harness 5 and the reed 4 to the fell of the fabric. The whip-roll 11 has a weight 12 attached thereto to apply proper tension to the binder-warp 9. The beam 8 is provided with a suitable tension device, in this instance consisting of a strap 13, secured at 14 and passing around the head 8' of the beam 8 and attached at its other end to a lever 15, pivoted at 16 and having a weight 17 on its free end in the ordinary way. The second beam 18, in this instance the lower beam, has wound thereon the dead-warp 19, which warp passes from the beam 18 partially around the rod 20 and over the whip-roll 21 through the harness 7 and the reed 4 to the fell of the fabric. A weight 22 operates the whip-roll 21 to apply the proper tension to the straight warp. The tuft-binder warp 23 passes from the beam 18 over the loose roller 24, mounted in a stand 25, through the harness 6 and the reed 4 to the fell of the fabric. The drum 18 is provided with a friction device, in this instance similar to the friction device shown in connection with the drum 8, consisting of a flexible strap 26, fast at one end on the pin 27 and passing around the head 18' of the beam 18 and fastened at its other end to a lever 28, pivoted at 29, and having a weight 30 at its free end.

It will be seen that the dead-warp 19, having the tension of the whip-roll 21 thereon,



will lie straight in the fabric and that the tuft-binder warp 23, having no tension thereon and being put on the beam 18 slack and with an opportunity to stretch from the fell of the fabric to the beam 18, will work up and down in the fabric, as shown in Fig. 2.

In Fig. 2 the pile-tufts (marked 31) are inserted by means of fingers on spools ordinarily used in this class of looms.

10 It will be understood that the details of construction of the parts shown in the drawings may be varied without departing from the principle of my invention.

I have shown in the drawings and described herein the beams 8 and 18, each provided with a suitable tension or friction device, to regulate the turning of said beams; but in practice it will be desirable to provide each of the beams 8 and 18 with an ordinary positive worm-let-off mechanism.

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

1. In a loom for weaving Axminster, or

other pile-fabric carpets, a beam provided with two sets or divisions of warps wound thereon, one set of warps, the dead-warps, which pass over and are acted on by a tension mechanism before they pass to the harnesses, and the other set of warps, the tuft-binder warps, which pass over a roll directly to the harnesses, without being acted on by a tension mechanism, substantially as shown and described.

2. In a loom of the class described, a beam for the binder-warps, and a tension mechanism for said warps, independent of said beam, a second beam for the dead-warps, and the tuft-binder warps, and a tension mechanism for the dead-warps, independent of said beam, and the tuft-binder warps passing to the harnesses without any tension mechanism, independent of said beam, substantially as shown and described.

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