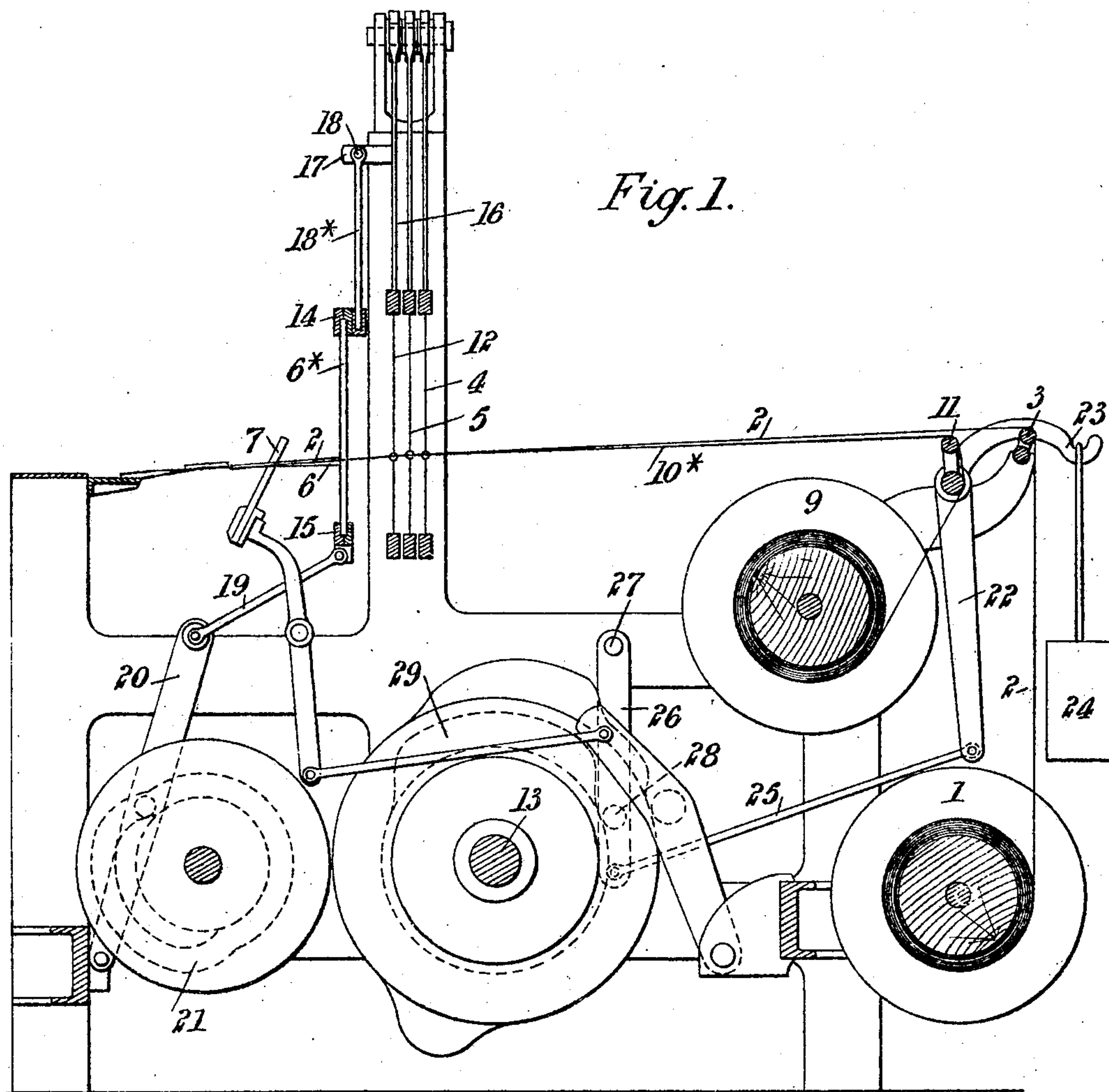


No. 799,563.

PATENTED SEPT. 12, 1905.

T. W. HEAD.
LOOM FOR WEAVING TUFTED FABRICS.
APPLICATION FILED NOV. 28, 1904.

3 SHEETS—SHEET 1.



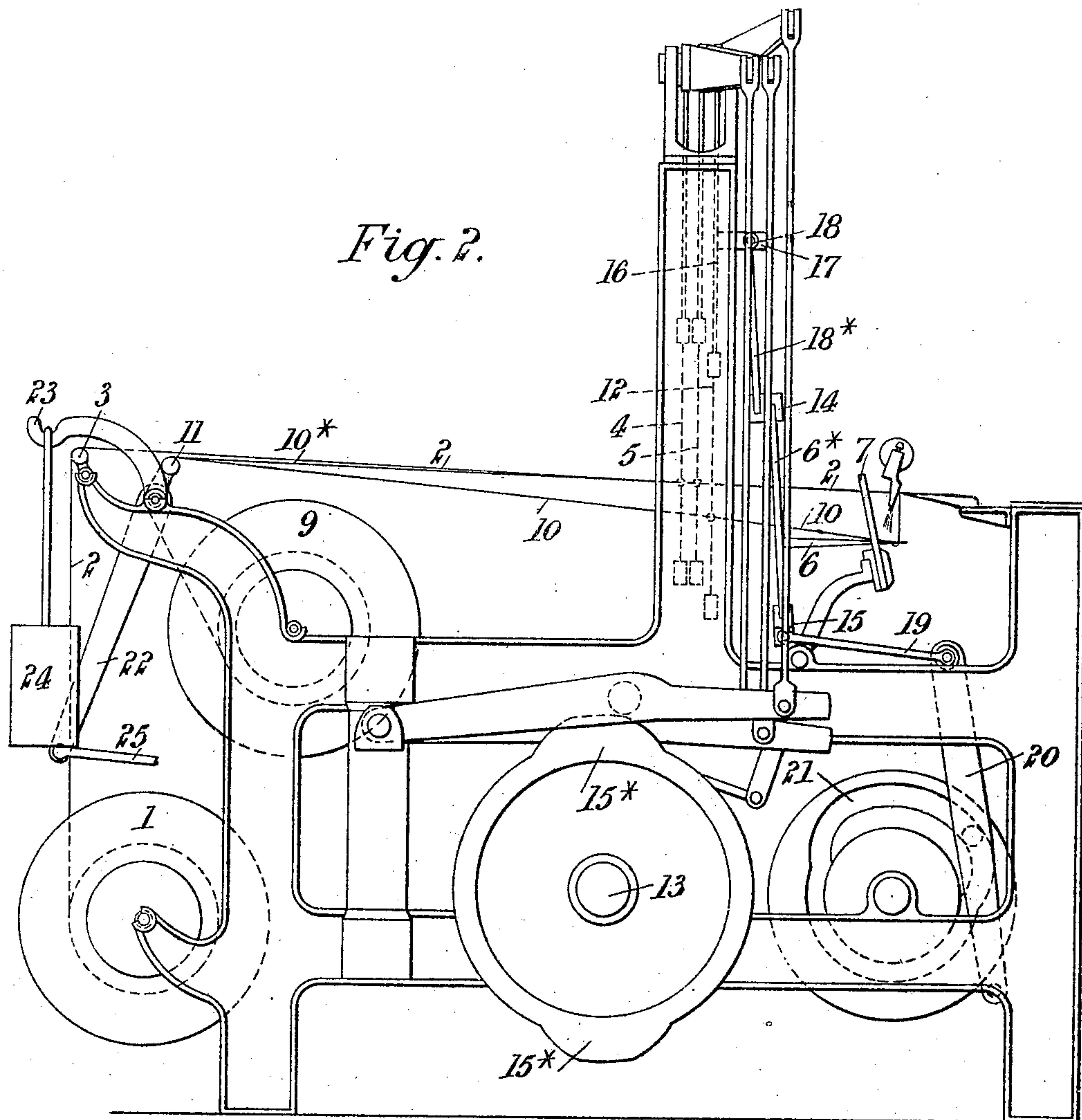
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

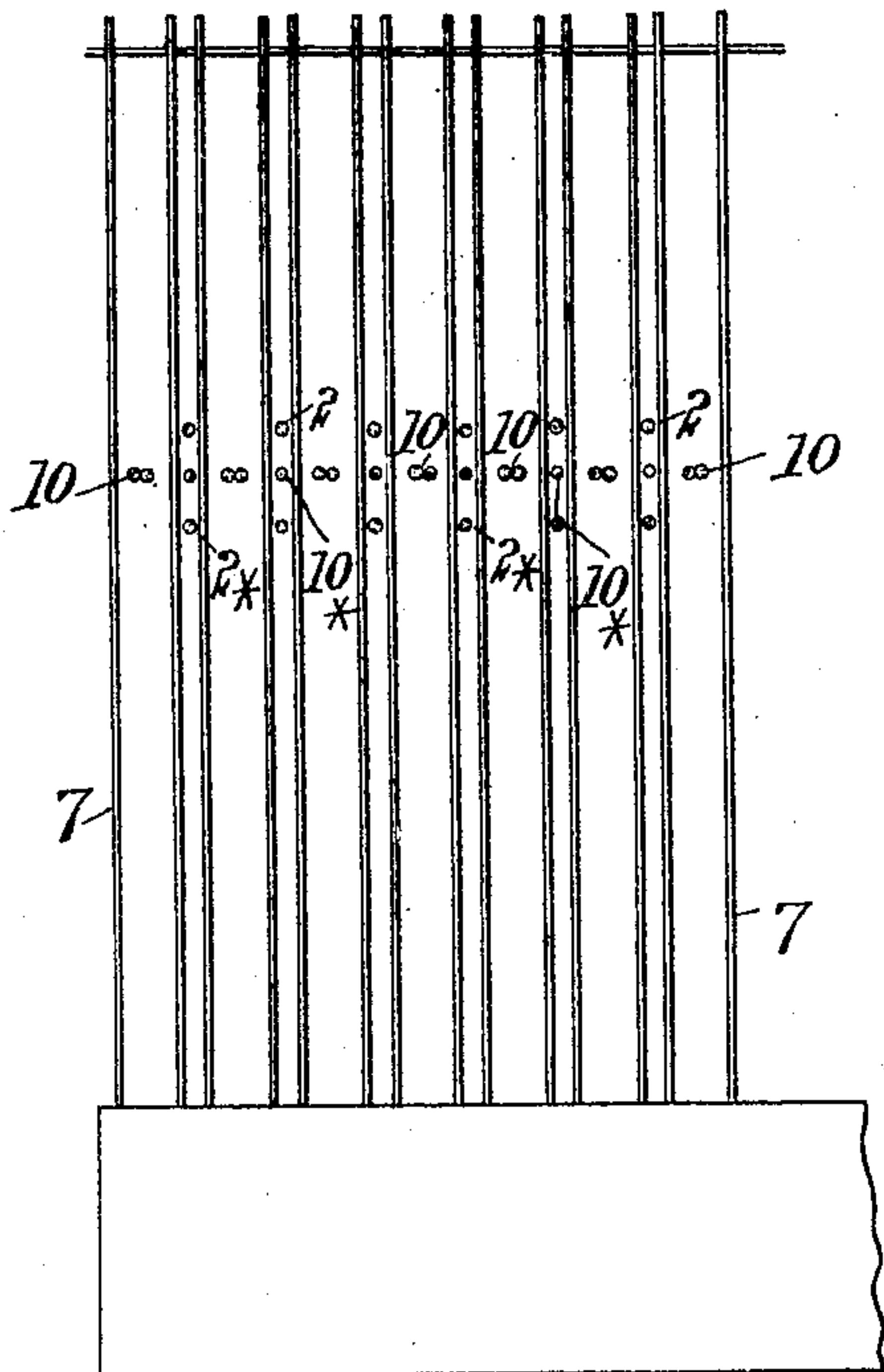


Fig. 4.

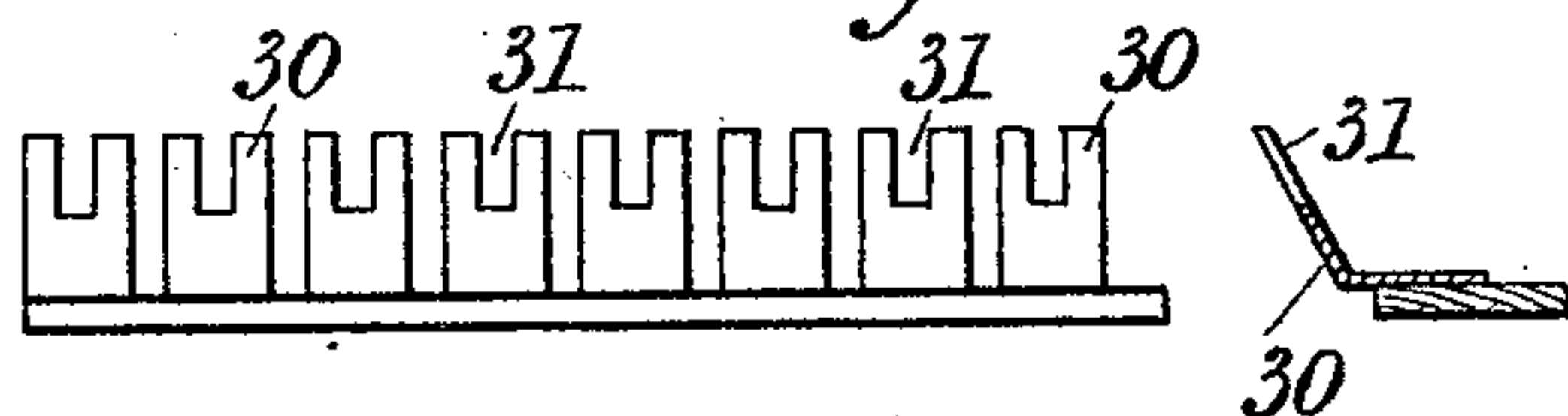


Fig. 5.

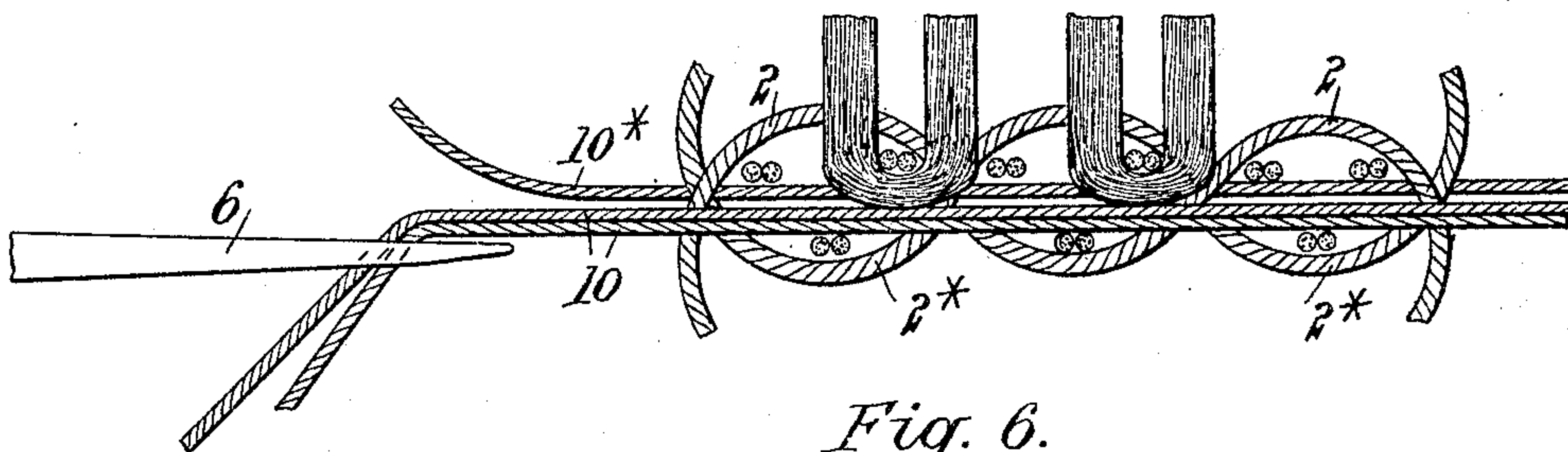
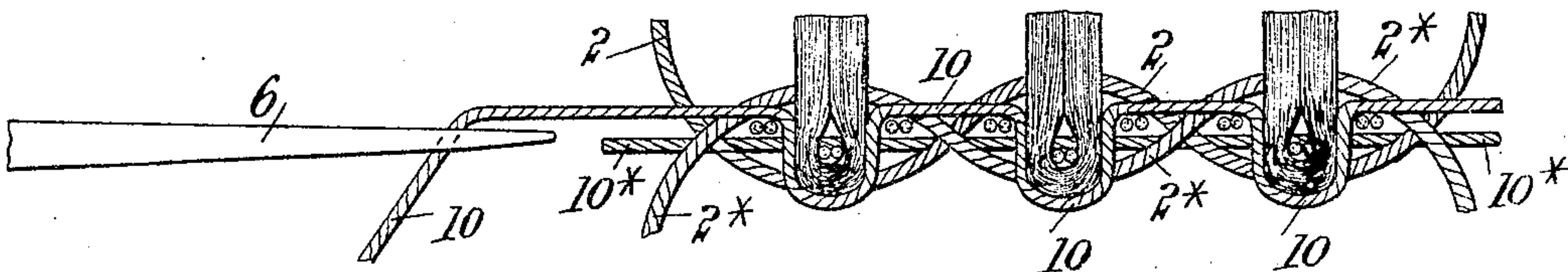


Fig. 6.



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UNITED STATES PATENT OFFICE.

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LOOM FOR WEAVING TUFTED FABRICS.

No. 799,563.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed November 28, 1904. Serial No. 234,592.

To all whom it may concern:

Be it known that I, THOMAS WILLIAM HEAD, foreman of carpet-works, a subject of the King of Great Britain and Ireland, residing at 39 Whitburn street, Bridgnorth, in the county of Salop, England, have invented new and useful Improvements in Looms for Weaving Tufted Fabrics, of which the following is a specification.

10 This invention relates to improvements in looms for weaving tufted fabrics, and especially to that class of carpets or other fabrics wherein tuft-yarn is inserted in spaces between the warp-threads and are then bound
15 by weft-threads being passed across them through openings or sheds between the said warp-threads, the said weft-threads being then beaten up to the fell of the fabric. In looms for making this description of fabric
20 it is necessary that the warp-threads be fine and that the spaces between them be large enough to admit tufts of a size sufficient to cover well the surface of the fabric and leave the position of the warp-threads unmarked—
25 that is, conceal them completely. The use of fine warp-threads necessitates the insertion of a great amount of weft to give body to the fabric, and the result is that an unevenly-balanced fabric is produced, owing to the said
30 warp and weft threads being out of proportion; and the object of this invention is to remedy this objection, which is done by weaving extra threads longitudinally in the back of the fabric and in the spaces between the
35 ordinary warp-threads where the tufts are inserted, the said extra threads being manipulated, as hereinafter described, so that they cause no obstruction to the insertion of the tufts.

40 In carrying out this invention I employ divisions or spaces in or between the reeds of the slay used for beating up the weft, through which divisions or spaces the aforesaid extra threads pass, so that they alternate with the
45 ordinary warp-threads, as will be more fully hereinafter described, with reference to the accompanying drawings.

50 In the drawings, Figure 1 represents a longitudinal section of part of a loom for weaving tufted fabrics sufficient to illustrate my invention. Fig. 2 represents an elevation of the same looking in the opposite direction while the tufting-yarns are being inserted.

Fig. 3 represents a front elevation of a portion of the slay. Fig. 4 represents a front
55 elevation and transverse section of a portion of the comb, and Figs. 5 and 6 represent enlarged longitudinal sections illustrating the fabrics having the additional longitudinal
60 threads woven therein.

Referring to Figs. 1 and 2, 1 is the beam, on which the ordinary warp-threads 2 and 2* are wound, the said warp-threads passing from the beam 1 round the whip-roll 3 to the
65 healds 4 5, thence between the controllers 6 of the extra longitudinal or warp threads and through the slay 7 to the fell of the fabric. 9 is a beam on which the extra longitudinal or warp threads 10 and ordinary stuffing-
70 threads 10* are wound, the said threads passing from the beam 9 round the whip-roll 11 to a heald or heddle 12, thence the threads 10 passing through the controllers 6 and also through the slay 7 to the fell of the fabric.
75 The controller-rods 6* extend a sufficient distance both upward and downward from the controllers 6 to allow the ordinary warp-threads to operate between them, and they are held at the necessary distance apart at their
80 upper and lower ends, respectively, in cases or clamps 14 and 15. The healds 4 and 5 for manipulating the ordinary warp-threads 2 and 2* are operated in the usual manner by cams on the cam-shaft 13, which shaft also carries the
85 cam 15* for operating the heald 12, through which the extra longitudinal or warp threads 10 pass. Connected to the frame 16 of the heald 12 are arms 17, from which studs 18 project. On these studs 18 are suspended rods 18*, fastened at their lower ends to the upper case or
90 clamp 14 of the rods 6*, carrying the controllers 6, while the lower case or clamp 15 is connected by rods 19 to the upper ends of levers 20, pivoted at their lower ends to the frame of the machine and acted upon by cams 21, suitably
95 timed to give at the required periods oscillating movements to the controllers 6. The extra longitudinal or warp threads 10 normally occupy the spaces between the ordinary warp-threads 2, 2*, and 10*, and when used in what
100 is known as a "two-needle" loom they (the threads 10) separate the upper and lower sheds and constitute extrastuffing-threads extending straight through the fabric, as shown in Fig. 5. When tufts are about to be inserted, the
105 heald 12 descends and through the rods 18*

depresses the controller 6, and at the same time the cams 21 by acting on the levers 20 cause the controllers 6 to move forward, whereby the portions of the extra longitudinal or warp threads 10 between the whip-roll 11 and the fell of the fabric are carried downward and forward from between the ordinary warp-threads to the position shown in Fig. 2, so that the tuft-yarns can be inserted between the ordinary warp-threads. The whip-roll 11, round which the extra warp-threads 10 pass, has an arm 23, carrying a weight 24, which tends to maintain the extra longitudinal or warp threads taut. To the whip-roll 11 is also attached a lever 22, and the lower end of this lever 22 is connected by a rod 25 to a lever 26, suspended on a stud 27 on the frame of the loom, the said lever 26 carrying an anti-friction bowl or roller 28, acted on by a cam 29 on the cam-shaft 13. The cam 29 is timed to come into action at the same time that the controllers 6 are moving downward and forward, so as to take the pressure of the weight 24, and thus remove the strain of the extra longitudinal or warp threads from the controllers 6 while the said extra warps are being depressed into the position shown in Fig. 2. When the tuft-yarns have been inserted between the ordinary warp-threads, a shot of weft is beaten up by the slay against the fell of the fabric. The depending ends of the inserted tufts may be bent upward round the beaten-up weft by any suitable means. If a comb be used for the purpose, the teeth 30 of the comb, as shown in Fig. 4, have recesses 31 therein, into which recesses the extra longitudinal or warp threads enter while the comb is pressing upward the depending ends of the tufts, and thus prevent the said comb from pressing upward either the ordinary warp-threads or the fabric, after which the tufts are severed from the tuft-yarns. When a fabric with extra longitudinal or warp threads, as hereinbefore described, is woven in what is known as a "single-needle" loom, the controllers 6 are raised and lowered at the same time that the ordinary thin warp-threads are operated to form the sheds therein, the extra longitudinal or warp threads in addition being operated to clear the spaces between the ordinary warp-threads, in the manner hereinbefore described, to admit of the insertion of the tuft-yarns.

I claim as my invention—

1. A loom for weaving tufted fabrics wherein tuft-yarn is inserted in spaces between the warp-threads and bound by weft-threads, comprising means for carrying and manipulating the ordinary warp-threads, means for carrying extra threads in the spaces between the ordinary warp-threads, and means for operating the extra warp-threads to move them both vertically and longitudinally to admit of

the tuft-yarn being inserted in the spaces between the ordinary warp-threads.

2. A loom for weaving tufted fabrics wherein tuft-yarn is inserted in spaces between the warp-threads and bound by weft-threads, comprising means for carrying and manipulating the ordinary warp-threads, means for carrying extra warp-threads in the spaces between the ordinary warp-threads and means for lowering and raising the extra warp-threads and means for simultaneously moving said extra warp-threads longitudinally to admit of the tuft-yarn being inserted in the spaces between the ordinary warp-threads.

3. A loom for weaving tufted fabrics wherein tuft-yarn is inserted in spaces between the warp-threads and bound by weft-threads, comprising means for carrying and manipulating the ordinary warp-threads, means for carrying extra warp-threads in the spaces between the ordinary warp-threads, a heald, and means for operating said heald for lowering and raising the said extra warp-threads, in combination with a series of controllers working in conjunction with the heald for moving the extra warp-threads longitudinally.

4. A loom for weaving tufted fabrics wherein tuft-yarn is inserted in spaces between the warp-threads and bound by weft-threads, comprising means for carrying and manipulating the ordinary warp-threads, means for carrying extra warp-threads in the spaces between the ordinary warp-threads, a heald, and means for operating said heald for lowering and raising the said extra warp-threads, in combination with a series of controllers of the extra threads working in conjunction with the heald, and means for operating the controllers, so as to cause them to move the said extra threads in a longitudinal direction while they are being lowered and raised by the heald.

5. A loom for weaving tufted fabrics wherein tuft-yarn is inserted in spaces between the warp-threads and bound by weft-threads, comprising means for carrying and manipulating the ordinary warp-threads, means for carrying extra warp-threads in the spaces between the ordinary warp-threads, means for lowering and raising the extra warp-threads, means for simultaneously moving said threads longitudinally and means for removing the strain of the extra warp-threads, from the controllers, while the said extra warp-threads are being moved into position to admit of the tuft-yarns being inserted between the ordinary warp-threads.

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

THOMAS WILLIAM HEAD.

Witnesses:

H. EMERY FULLER,
E. HARKER.