June 24, 1930. T. W. HEAD 1,767,758

LOOM FOR WEAVING TUFTED PILE FABRICS

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Fig. 1.

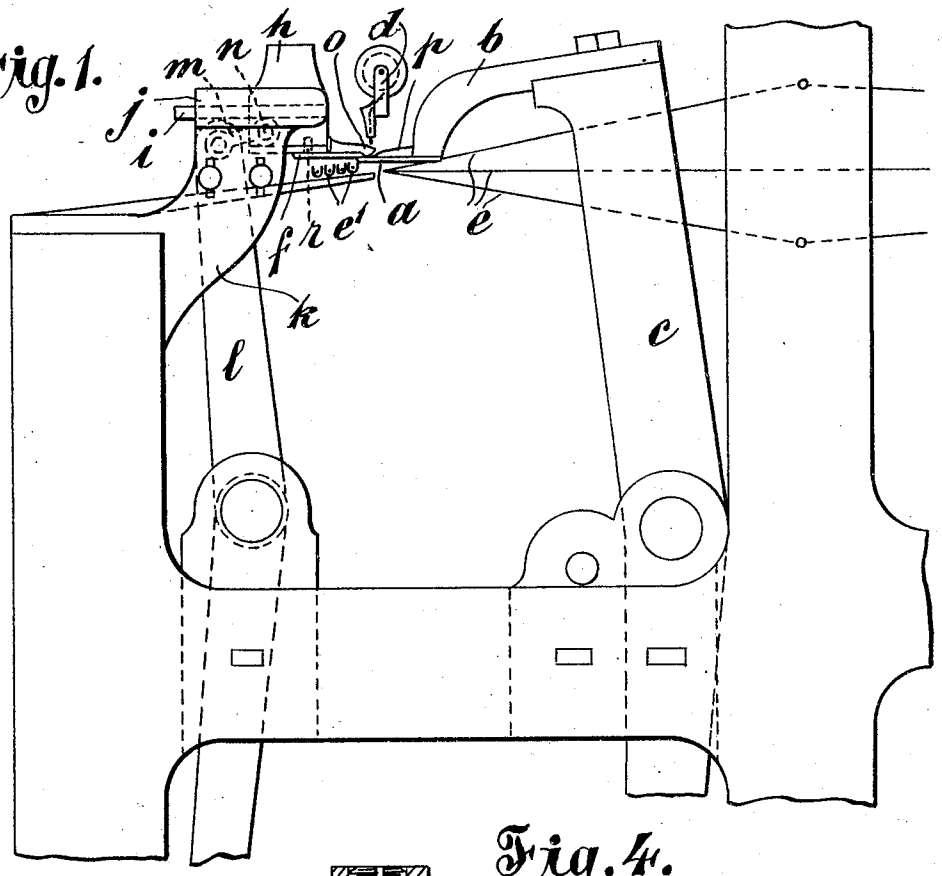


Fig. 4.

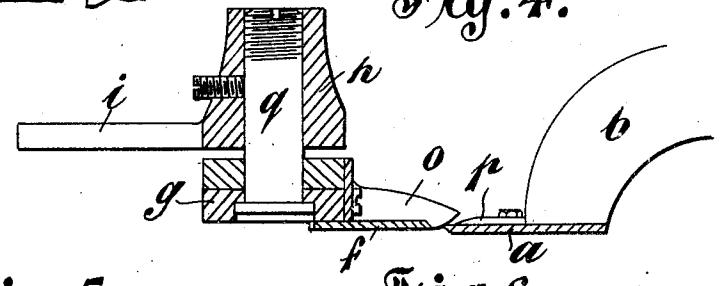


Fig. 5.

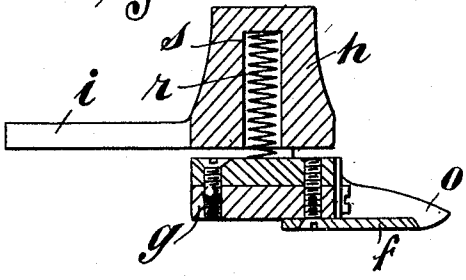
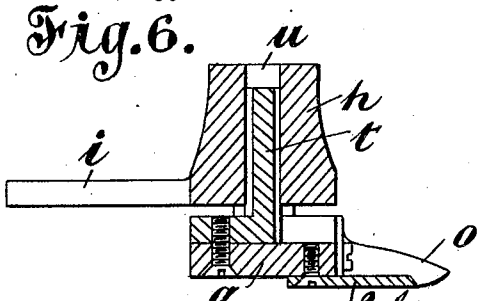


Fig. 6.



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LOOM FOR WEAVING TUFTED PILE FABRICS

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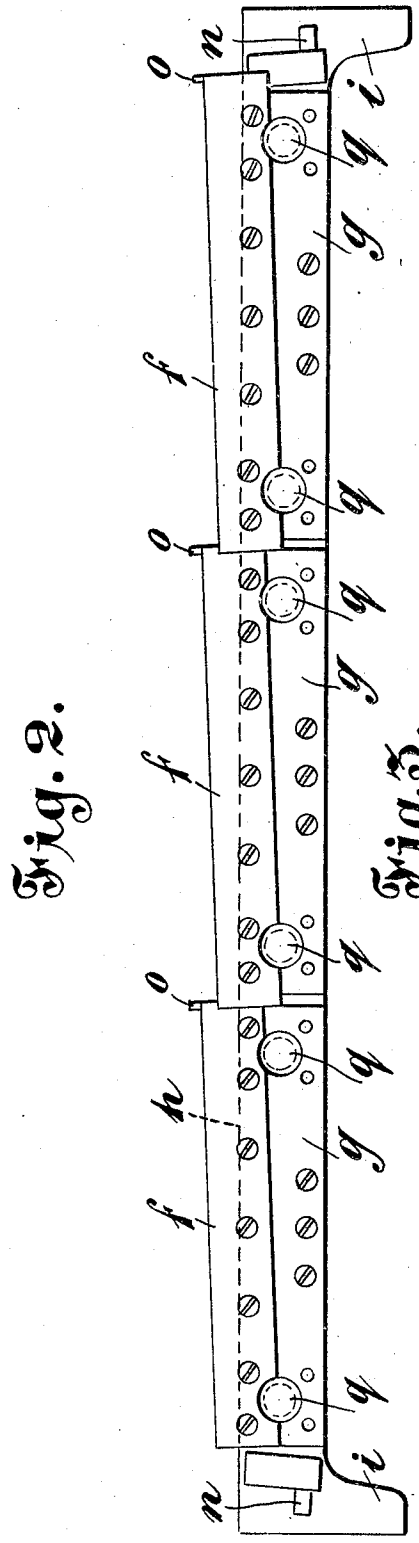

Fig. 2.

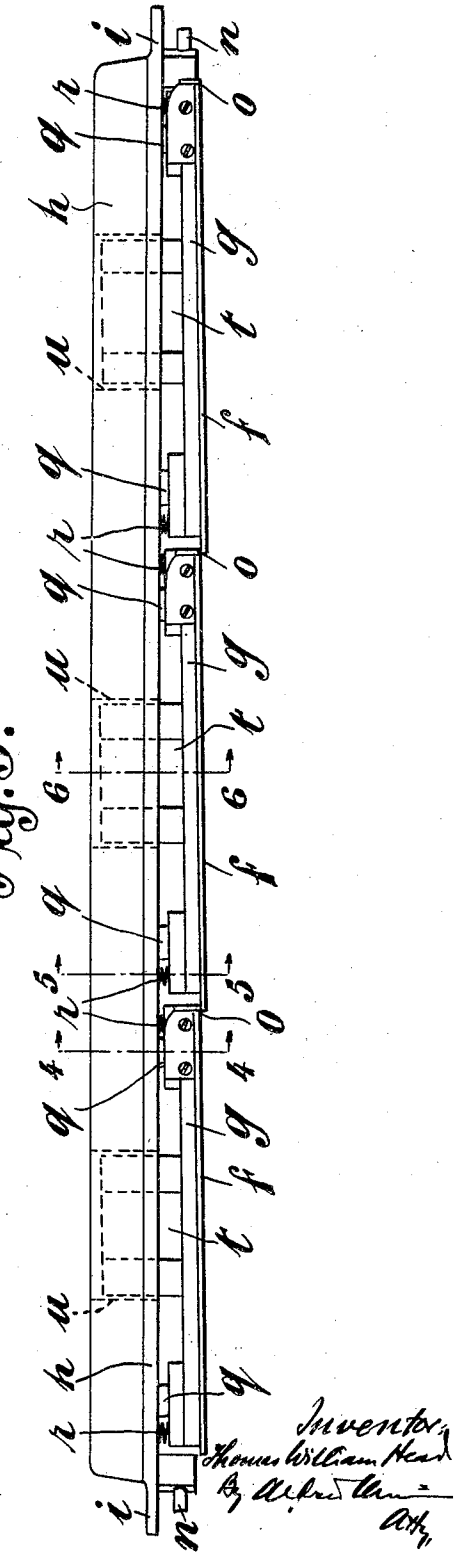

Fig. 3.

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LOOM FOR WEAVING TUFTED PILE FABRICS

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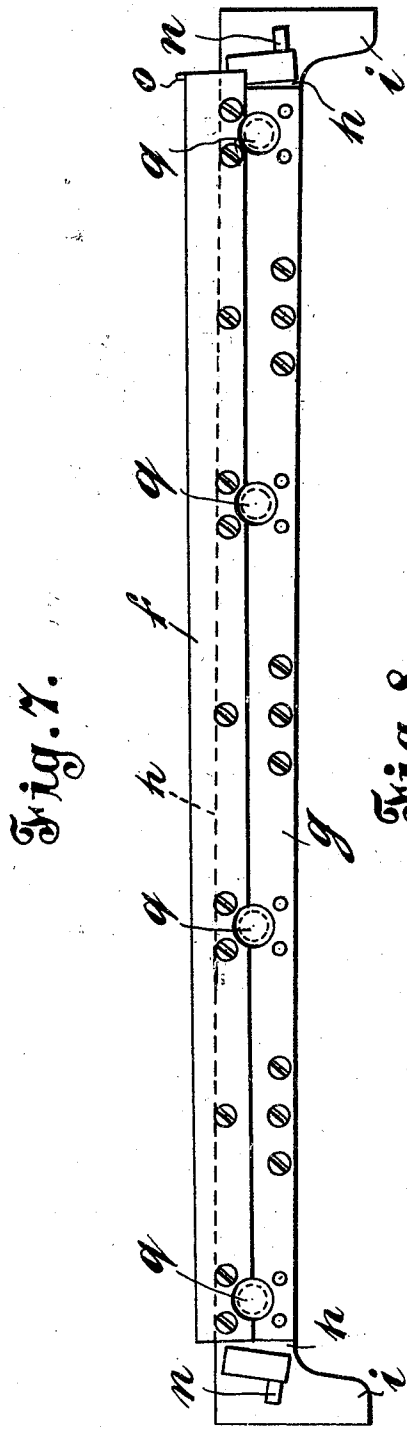

Fig. 7.

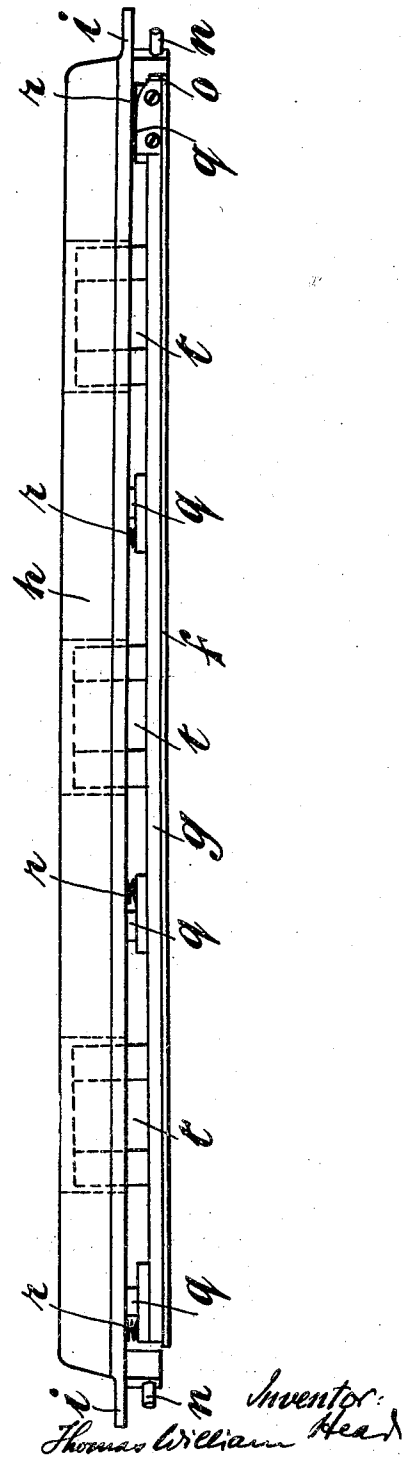

Fig. 8.

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Patented June 24, 1930 1,767,758

UNITED STATES PATENT OFFICE

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LOOM FOR WEAVING TUFTED PILE FABRICS

Application filed March 9, 1929, Serial No. 345,647, and in Great Britain April 13, 1928.

This invention is for improvements in or relating to looms for weaving tufted pile fabrics, and refers to looms of the kind wherein the tufts are inserted in rows across the fabric and are separated from their source of supply either before their insertion between the warp threads or after they have been bound into the backing of the fabric, and the invention applies more particularly to the cutter mechanism by which said tufts are severed from their source of supply.

In looms of the kind referred to, such severance of the tufts has hitherto usually been effected by means of inner and outer cutter blades mounted upon blocks which extend across the loom, these cooperating cutter blades being adapted to be brought together on opposite sides of the row of tufts to produce a shearing action, and this shearing action being generally dependent upon pressure applied to the blades at opposite ends of the supporting blocks.

Unless however the blocks are very strong and substantial or can be provided with auxiliary supports, there is always a danger of the intermediate parts of the blocks springing or giving way, and thus reducing the pressure on the cutter blades below that necessary for severance of the tufts.

This springing or flexing of the cutter blade blocks is more apparent in comparatively wide looms, as in this case the distance between the points at which pressure can be applied is greater than in the case of narrow looms, and owing to the restricted space available in the loom, the blocks cannot readily be strengthened or supported to the extent required by their increased length.

The present invention has for its object therefore to provide means whereby sufficient pressure to sever the tufts can be automatically applied to the cutter blades at all points across looms of wide widths without any undue strain or without unnecessarily increasing the size and weight of the cutter blade blocks.

The invention consists essentially in an arrangement wherein the shearing action of the cutter blades is governed by mutual spring pressure applied to the blades at spaced intermediate points in the width of the loom, this spring pressure being preferably applied to a plurality of blade sections disposed end to end to constitute one or other of the cutter blades.

In order that the invention may be clearly understood and readily carried into practice, reference may be had to the appended explanatory sheets of drawings, upon which:—

Figure 1 is a fragmentary side elevation illustrating the tuft cutter mechanism of a loom in accordance with the invention.

Figure 2 is an inverted plan of the sectional outer cutter blade and its supporting block.

Figure 3 is a rear elevation of the sectional outer cutter blade and its supporting block as shown in Figures 1 and 2.

Figure 4 is an end elevation of the outer and inner cutter blades and their supporting blocks, in part section through a supporting stud in a plane corresponding to the line 4—4 of Figure 3.

Figure 5 is a cross-sectional elevation of the outer cutter blade and its supporting block, the section being taken through a pressure spring on the line 5—5 of Figure 3.

Figure 6 is a cross-sectional elevation of the outer cutter blade and its supporting block, the section being taken through a slide on the line 6—6 of Figure 3.

Figure 7 is an inverted plan of the outer cutter blade and its supporting block in a modified form, while figure 8 is a rear elevation of the outer cutter blade and its supporting block as shown in Figure 7.

In a convenient method of carrying the invention into effect, as applied to a royal Axminster type of carpet loom, and as illustrated in Figures 1 to 6, a straight inner cutter blade *a*, either entire or divided, and of sufficient length to extend across the fabric, is fixed upon a corresponding inner supporting block *b* which is suitably mounted, for example on a pair of cam-actuated levers *c*, so as to be adapted for operation to bring the inner cutter blade *a* into position against the row of pile yarns delivered by the tube and spool carrier device *d* for insertion between the warp threads *e*, so

that at the proper time a row of tufts e^1 of the required length can be cut from the source of supply. The opposed part of the cutting apparatus consists of a series of outer cutter blade sections f attached respectively to a corresponding series of carrier plates g mounted end to end upon an outer supporting block h extending across the loom and adapted for operation as required, the block h having for example terminal slides i which are accommodated within fixed guides j of a pair of brackets k and are movable therein under control of a pair of cam-actuated levers l which are connected respectively by links m to end pins n on the block. These outer cutter blade sections f have their edges arranged in oblique or angular relation to the inner cutter blade a, and in slightly stepped formation as shown in Figure 2, thereby ensuring an easier and more effective shearing or guillotine action for severance of the tufts e^1 when the edges of the outer cutter blade sections f come into contact with the edge of the inner cutter blade a. At the foremost end of each of the outer cutter blade sections f a finger o is provided so that on the forward movement of the block h the edges of the outer cutter blade sections f are led into exactly correct shearing position over the edge of the inner cutter blade a so as to sever the tufts, and these fingers o are preferably arranged in cooperation with small fixed inclines p provided at correspondingly spaced positions on the inner blade a or block b so as to prevent longitudinal tilting of the outer blade sections f and any consequent variation of the cutting angle, especially during the latter part of the cutting operation. Each of the carrier plates g with its respective outer cutter blade section f attached is supported in a dependent position on the block h, preferably by means of a pair of headed studs q which pass upwardly through the carrier plate g and are then adjustably screwed into the block h, a pair or plurality of spiral or other springs r being interposed between the carrier plate g and the block, in recesses s located at longitudinally spaced points between or adjacent the pair of studs q, these springs r serving to keep the carrier plate g and its cutter blade section f flexibly pressed apart from the block h as far as the heads of the studs q will allow, as more particularly shown in Figures 4 and 5, the springs being of such a strength that when the edges of the outer cutter blade sections f come into contact with the edge of the inner cutter blade a, the tufts are severed without any undue strain on any part of either of the pair of blocks b and h. The series of separate spring-loaded sections f of the outer cutter blade also adapt themselves to any slight deformation or irregularity in the edge of the inner cutter blade a, and provide a corresponding series of independent but flexible and uniform shearing cuts operating simultaneously or substantially simultaneously across the entire width of the fabric, these several shearing actions being further facilitated by setting the studs q of each cutter blade section f at different levels so as normally to locate the series of cutter blade sections in slightly stepped planes as shown in Figure 3. The carrier plates g may each be provided with an upwardly projecting slide t which fits into a corresponding slot u in the block h, for the purpose of preventing transverse rocking of the cutter blade sections f and any consequent liability of the carrier plates g to bind on their supporting studs q.

In the modification, as illustrated in Figures 7 and 8, the outer cutter blade f, instead of being of the sectional form as above described, may be arranged in one continuous length, attached to a corresponding continuous carrier plate g, with a plurality of the springs r interposed at any desired longitudinal spacing between the carrier plate g and the block h, and with a corresponding plurality of the studs q and slide t, the construction being otherwise similar to that already described with reference to Figures 1 to 6.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a loom for weaving tufted pile fabrics, a two-bladed tuft cutter mechanism which comprises a straight cutter blade mounted on a movable supporting block on one side of the row of tuft yarns to be cut, a plurality of blade sections mounted end to end in stepped formation on an opposed movable supporting block on the other side of said row to constitute the complementary cutter blade, and pressure springs separately applied to the individual blade sections so as to ensure independent but flexible and uniform shearing actions of the plurality of blade sections extending across the fabric.

2. A tuft cutter mechanism for looms as claimed in claim 1, wherein each spring-loaded blade section is fixed to a separate carrier plate which in turn is suspended from the supporting block by adjustable studs or the like, and wherein the pressure springs are interposed between the carrier plate and the block to ensure a yielding or flexible and adjustable support of the carrier plate and blade section upon said studs.

3. In a loom for weaving tufted fabrics, a two-bladed tuft cutter mechanism comprising a movable supporting block on one side of the row of tuft yarns to be cut, a cutter element carried thereby, a complementary cutter element, an opposed movable supporting block on the other side of said row of tuft yarns, and means for adjustably and

flexibly mounting said complementary cutter element upon said last mentioned block, said means comprising a plurality of headed studs adjustably carried by said last mentioned block, a carrier plate suspended from said studs, and a plurality of pressure springs interposed between said carrier plate and its supporting block at spaced intervals in the width of the loom, said complementary cutter element being attached to said carrier plate.

4. A tuft cutter mechanism for looms as specified in claim 1, including a series of projecting guide fingers provided on the respective spring-loaded sections of the one blade, in co-operation with fixed inclines provided at correspondingly spaced positions on the complementary blade, for further controlling the shearing action of the cooperating blade.

In witness whereof I have hereunto set my hand.

THOMAS WILLIAM HEAD.