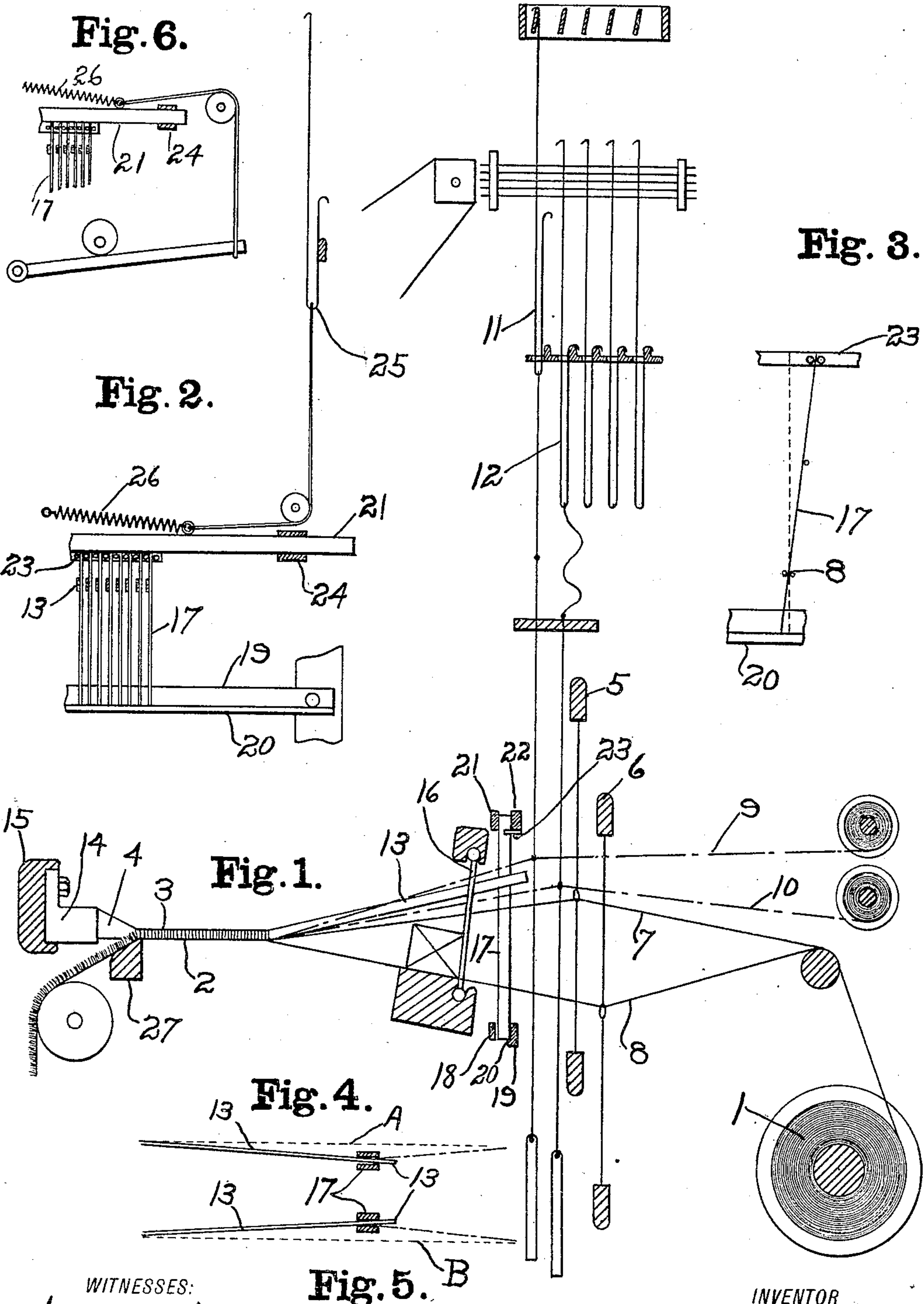


L. H. HARTLEY.  
 LOOM FOR WEAVING PILE FABRIC.  
 APPLICATION FILED JUNE 26, 1909.

960,171.

Patented May 31, 1910.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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LOOM FOR WEAVING PILE FABRIC.

960,171.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed June 26, 1909. Serial No. 504,457.

*To all whom it may concern:*

Be it known that I, LEONARD H. HARTLEY, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Looms for Weaving Pile Fabric, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improved construction of loom for weaving pile fabric, and has for its object to provide an efficient mechanism of simple, inexpensive and principal construction for forming loops over pile wires, the same being more particularly adapted for weaving such fabric as rugs, carpeting and the like.

My improved construction by which the loops are formed is to provide pile wires which are arranged to extend between a set of guide blades whereby the transverse movement of the latter will carry the ends of the former back and forth across the normal path of the pile thread, whereby said thread is caused, in its vertical movement, to pass on the required side of the pile wire to form the loops thereover.

An essential feature of my improved construction is that the lower ends of the guide blades are loosely mounted in transverse guiding bars whereby each blade is free to move laterally so as to accommodate or adjust itself independently to the gage of the reed and harnesses and therefore to the normal position of the ground warp.

Another feature of this construction is that as the lower ends of the guide blades are loose they are adapted to yield or swing slightly using the lower warp threads as the fulcrum or pivoting point, thus themselves giving way and obviating the necessity of carrying all of the lower warp threads out of their normal line at each movement of the upper end of the guide blades, which avoids undue chafing of the yarn.

Another advantage of loosely mounting the lower ends of the guide blades is that the same may be easily pressed aside or opened to permit the ready drawing in or mending of the yarn.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully de-

scribed and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1— illustrates the pile threads as being operated by the heddles, the view being a diagram in section looking at the end of the loom. Fig. 2— is a detail illustrating the slide bar or comb as being operated by a jacquard hook, and showing the guide blades as being loosely supported at their lower ends. Fig. 3— is a diagram illustrating the pivotal or swinging motion of the lower end of the guide blades, using the lower warp thread as the fulcrum point. Fig. 4— illustrates the lateral movement in one direction of the free end of the pile wire by means of the guide blades carrying the same, and also showing the pile thread as being carried out of its normal line or position. Fig. 5— illustrates the pile thread and wire carried to the opposite side from that illustrated in Fig. 4. Fig. 6— is a detail showing the shifting reed as being operated by a cam.

Referring to the drawings, 1 designates the usual yarn beam that carries the warp threads from which the ground fabric 2 is woven. On this ground fabric is formed the pile loops 3 which when cut with a knife 4 produce the velvet or plush effect, such as form the face of carpeting and the like. The heddles or harnesses 5 and 6 are shown as controlling the ground warp threads 7 and 8, while the pile warp threads 9 and 10 are shown as being controlled by the jacquard hooks 11 and 12, respectively, but any of these threads may be operated and controlled in any desired or convenient manner to produce the desired weave or pattern.

The pile wire 13 is supported at one end 14 in the cross bar 15, this fixed end being preferably provided with a knife 4 over which the loops are drawn and cut. The main arm of this pile wire is set on an angle a little greater than that of the upper shed of the warp threads when open and extends preferably unsupported through the reed 16 and guide blades 17.

An essential feature of my construction is the arrangement of these guide blades 17, the same being set upright to just clear the reed on its backward stroke, the lower ends of said blades being loosely supported between transverse guide bars 18 and 19, said



bar 19 having a lip 20 on which the lower end of the guide blades rest, the remaining space between said bars being left open to prevent the accumulation of waste therein.

5 The guide bars extend across the machine and may be fixed to the end frames.

The upper ends of the guide blades are supported between the transverse guide bars 21 and 22, said blades being separated and  
10 held the desired distance apart by the fingers of the comb 23, the body of which is secured to the under side of the bar 22. These bars are also adapted to extend across the machine and be slidably mounted in suitable  
15 bearings 24. A reciprocating motion may be imparted to these bars and the upper ends of the guide blades by a jacquard hook 25 (see Fig. 2), and by a returning spring 26, or by a cam (see Fig. 6), or by any other  
20 suitable means.

The operation of my improved device may be further explained as follows: When it is desired to obtain figured work in carpeting, the jacquard mechanism as shown may be employed to operate the different pile threads  
25 any desired number of which may be led from suitable spools in the rear of the loom through the eyes in the jacquard harness, thence through the reed 16 to the ground fabric 2, to which latter they are secured. The  
30 jacquard hooks are arranged to raise the pile threads at the required time above the pile wires. The jacquard hook 25 is then called into action in the usual manner to draw the sliding bars 21—22 endwise and the upper  
35 ends of the guide blades to one side, carrying with them the free ends of the pile wires 13. As the pile threads are led between these blades they are also moved to one side  
40 out of their normal line or path (which line or path is indicated by the dotted lines A and B in Figs. 4 and 5), whereby said threads are carried down on the opposite side of the pile wires to form a loop when the  
45 jacquard descends. On the next up stroke of the pile thread said blades and pile wires are moved to the reverse position by the sliding bar 22 through the action of spring 26 on being released by the jacquard, so that when  
50 drawn down again it will be on the opposite side of the pile wire forming another loop thereover. It will therefore be seen that by a slight movement of these guide blades the pile threads are guided to be carried down  
55 alternately, first on one side and then on the other of the pile wire where they are bound down in the usual way by the passing of the shuttle over them.

Another feature of my improved construction is that when a pile wire is used having one end free and unsupported it is not necessary to carry the pile thread back on the same side of the pile wire, but it may be carried completely around the wire, if desired.  
60 In this way I can carry the thread called for

over the wire forming the desired loop of the desired color, and then if not wanted again at that time I carry it beneath the wire to the opposite side, where it remains in readiness to be called again when desired. The  
70 pile threads are thus securely woven into the body of the fabric, the loops being formed over the wire and carried forward by the beating up of the reciprocating reed 16 where they are drawn to the proper size. This sequence of motion is repeatedly made and a  
75 series of loops 3 of the pile threads are formed over each wire 13, which loops are subsequently drawn over the knife 4 and cut as the cloth is carried forward over the breast beam 27 by the take-up motion (not shown.)  
80 Any number of pile wires 13 and corresponding pile threads may be used and any number of jacquard hooks or shuttles may be employed according to the style of goods desired, only enough of the loom being shown  
85 to illustrate the operation of my invention. By mounting these guide blades so that the lower ends are loose, a number of essential advantages, from a practical standpoint, are  
90 obtained. It will be seen that by this construction it is only necessary to drop the blades into position, no fastening whatever being required; if one or more of these blades should become injured they can be quickly  
95 removed and replaced by others; then again, the lower ends of these blades may be easily pressed to one side so as to facilitate drawing in the yarn or mending the threads when a break occurs. By this construction there  
100 is less friction or chafing of the yarn, as at each movement of the upper ends of the bars, the lower ends will yield and themselves give way without moving all of the lower shed of the warp threads. Then  
105 again, these loose blades are bound to line themselves up with the reed and the harness, again preventing undue friction or chafing of the passing warp threads.

This device is not confined to weaving of  
110 carpets alone, but may be used in weaving any plain or figured velvet or other pile fabric.

The mechanism for operating the different parts is not shown or described, as they are  
115 all well known, and no particular way is claimed. Any of the several varieties may be employed that may upon trial be found advisable.

I have shown the pile threads 9 and 10 as  
120 being operated by the jacquard mechanism, but the same, or any number of these pile threads, may be operated by the usual harness levers in a dobby head, cams, or any other of the various methods known to those  
125 skilled in the art of weaving.

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

1. A loom for weaving pile fabric, com- 130



prising a series of guide blades, the lower ends of said blades being free to move laterally independent of the movement of their upper ends, means for imparting a reciprocating motion to the upper portion of said blades, and pile wires extending between said blades to receive a lateral motion therefrom.

2. A loom for weaving pile fabric, comprising a series of guide blades supported at their lower ends, said ends being free to move laterally, a transversely moving bar for imparting a reciprocating motion to the upper portion of said blades, and pile wires extending between said blades to receive a lateral motion therefrom.

3. A loom for weaving pile fabric, comprising a series of guide blades supported at their lower ends, said ends being free to move laterally to automatically adjust themselves to the gage of the reed, a transversely movable bar for imparting a reciprocating motion to the upper portion of said blades, and pile wires, one end of which extends between said blades for the purpose of receiving a lateral motion therefrom.

4. A loom for weaving pile fabric, comprising a series of unattached loosely mounted upright guide blades, a cross bar on which the lower ends of said blades are supported, said ends being free to move laterally and accommodate themselves to the warp threads, a transversely movable bar for imparting a reciprocating motion to the upper portion of said blades, a comb attached to said bar for separating said blades, and pile wires,

one end of which extends between said blades for the purpose of receiving a lateral motion therefrom.

5. A loom for weaving pile fabric, comprising a series of unattached loosely mounted upright guide blades, a cross bar provided with a lip on which the lower ends of said blades rest, said ends being free to move laterally and accommodate themselves to the warp threads, means for imparting a reciprocating motion to the upper portion of said blades, and pile wires extending between said blades to receive a lateral motion therefrom.

6. A loom for weaving pile fabric, comprising a series of unattached loosely mounted upright guide blades, a cross bar provided with a lip on which the lower ends of said blades rest, said ends being free to move laterally and accommodate themselves to the warp threads, a transversely movable bar for imparting a reciprocating motion to the upper portion of said blades, a comb attached to said bar for separating said blades, and pile wires supported at their forward ends, the rear ends of said wires being unsupported and adapted to extend between said blades for the purpose of receiving a lateral motion therefrom.

In testimony whereof I affix my signature in presence of two witnesses.

LEONARD H. HARTLEY. [L. S.]

Witnesses:

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