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W. G. HARTLEY.

LOOM FOR WEAVING VELVET.

APPLICATION FILED MAY 29, 1903.

NO MODEL.

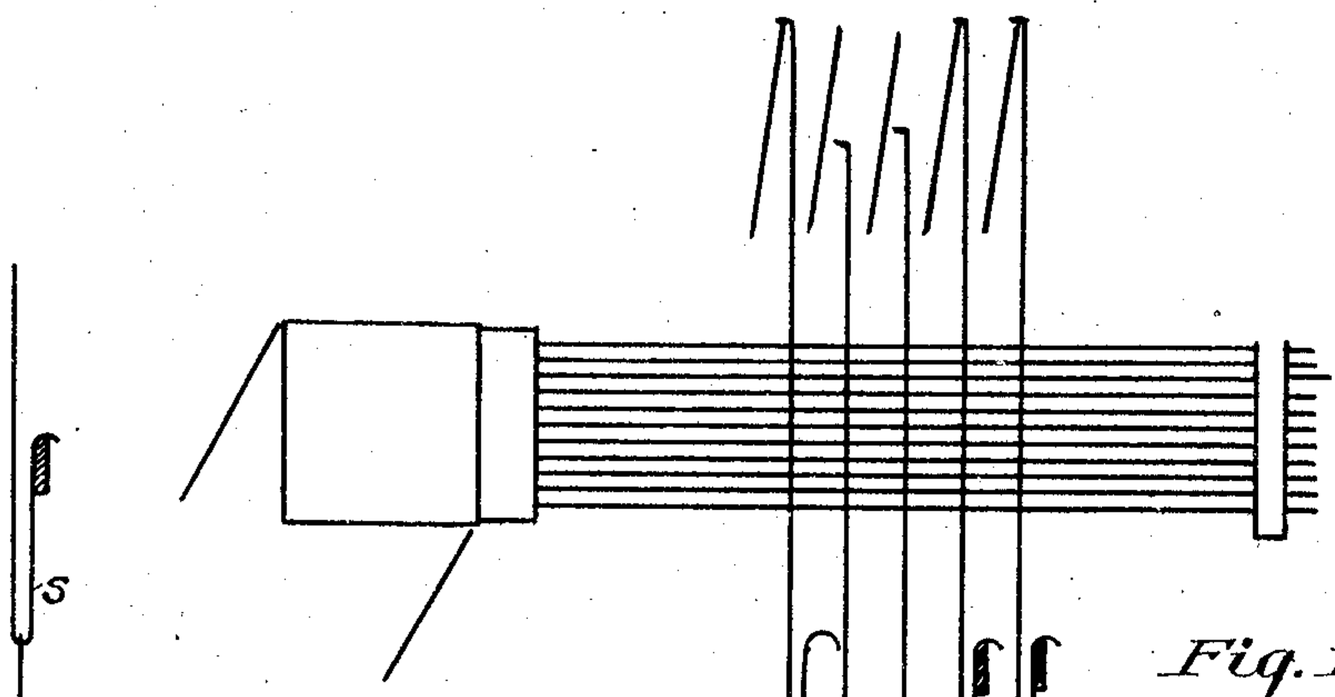


Fig. 1.

Fig. 2.

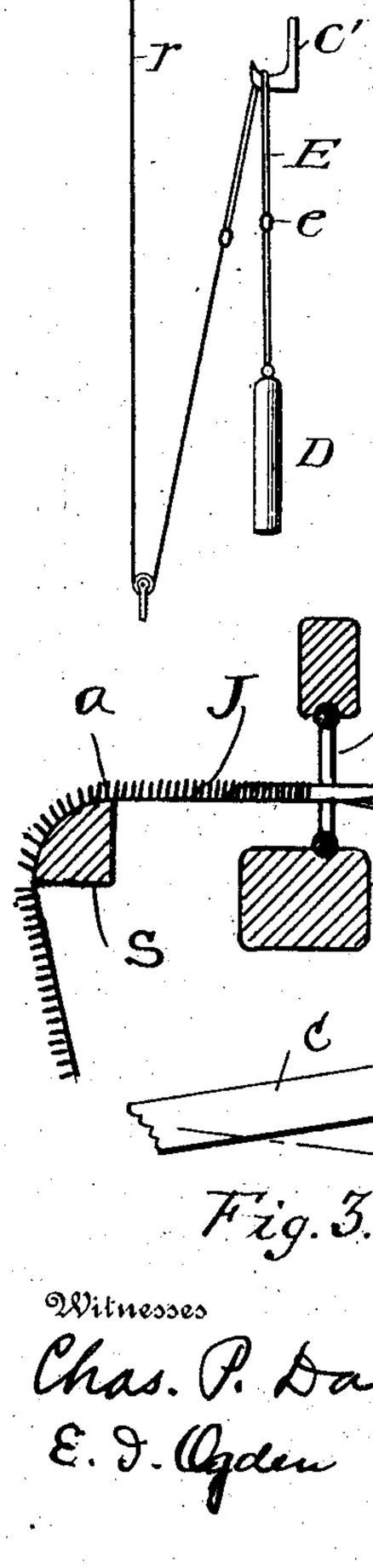
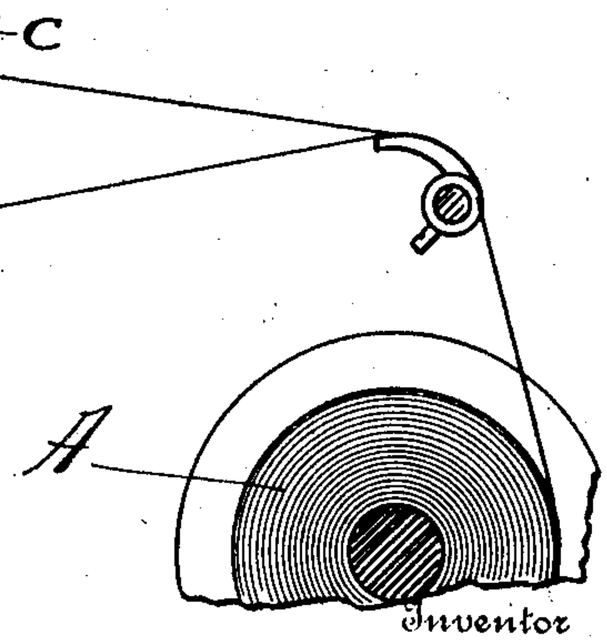


Fig. 3.



Witnesses
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No. 768,222. Patented August 23, 1904.

UNITED STATES PATENT OFFICE.

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LOOM FOR WEAVING VELVET.

SPECIFICATION forming part of Letters Patent No. 768,222, dated August 23, 1904.

Application filed May 29, 1903. Serial No. 159,273. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. HARTLEY, a resident of the city of Amesbury, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Looms for Weaving Velvets; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to looms for weaving pile fabric—such as velvets, plush, and the like—the object being to form and produce the loops which when cut make the face or pile thread of the velvet or plush. These loops are formed by drawing the pile-thread over a stationary wire by a looper or carrier, which carrier may be hung with weights on either or both ends and drawn back and forth over a finger or bar by the action of a single or double lift jacquard mechanism or by the action of a dobby-head or suitable cams. By the use of my device, which is extremely simple and practical, the weaving of this class of looped goods is greatly facilitated. It is capable of being operated in weaving velvets or the like on a plain or figured ground of the same or of a different material.

This invention is fully explained in this specification and illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view showing parts of the loom and illustrating the action of the flexible carrier hung at its ends by weights of different sizes to be drawn over the finger and pile wire or former and actuated by the double movement of jacquard-griffs shown above. Fig. 2 is a view showing how the carrier could be operated by a jacquard mechanism with the weight attached to one end only. Fig. 3 shows one means of supporting the loop-wire in front of the heddles on a depending leg.

Referring to the drawings, A is the usual yarn-beam that carries the warp-threads from which the ground fabric is woven. On this ground fabric are formed the pile-loops *a*, which when cut produce the velvet or plush effect.

D D′ are two weights of different sizes, one attached to each end of the carrier E.

C is the pile-wire, which is shown in Fig. 1 as passing through the heddles, but may be supported in front of said heddles in the manner illustrated in Fig. 3.

At *c′* is shown one of a series of short fingers or stationary hooks fixed to a bar extending across the loom on the front side of the heddles. These hooks are used in connection with the pile-wires, as illustrated. By drawing the flexible carrier over the hooks the pile-wires are relieved from the vibration which would be caused if the reciprocating looper were drawn back and forth over said pile-wire, the carrier E passing over the pile-wire and also the short stationary finger.

The principal feature of my invention is the forming of loops by carrying the pile-thread over the pile-wire by the use of a weighted flexible carrier actuated by jacquard mechanism, as shown; but any other suitable means may be employed for actuating the carrier. This looper or carrier E is constructed of a flexible cord, wire, leather, or any suitable material and has an eye *e* at or near its middle portion. The bight of the carrier is passed over the loop-wire C or finger *c′* and the ends secured to the weights D and D′, respectively. To operate this carrier, I construct the weights one heavier than the other and connect the heavier one, D, to the jacquard griff-hooks of the well-known construction S and R′ through the cord *d*, pulley *r′*, and flexible cord *r*, so that when the hook S is raised way up the weight D is drawn up halfway, bringing the eye *e* of the carrier up to the top edge of the pile-wire C. When it is desired to carry the pile-thread G down on the opposite side of the wire, the hook R′ is raised by one of the griffs, the weight D drawn away up, and the carrier-eye *e* is carried down by the gravity of the small weight D′. To return the loop to the opposite side, the reverse action takes place. As the hooks descend the heavier weight D overbalances the lighter

weight D′ and the carrier is transferred to the side from which it started. This reciprocating action of course may be repeated indefinitely. It is not necessary to have a double-lift jacquard, as shown, but a single lift may be used and vary the results obtained, if desired. By raising one of the hooks at a time this pile-thread may be held up on top of the wire any number of picks, thus making any desired distance between the loops, or the thread may be drawn down on either side of the wire and held as long as desired, in which latter position the pile-threads lie on the back of the web, or this thread may be carried up and down on the same side of the wire, thus forming a plain weave. By the use of this device only two jacquard-hooks are required to weave any desired pattern. The pile or loop thread G is led from a spool H on the rear of the loom over a spring tension-bar *g* down through the harnesses and through the eye *e* in the loop or carrier E, thence it runs through the reed R to the ground fabric J, to which it is secured. By means of the looper or carrier this thread is transferred alternately from one side of the loop-wire C to the other side and bound down by the passing of the shuttle over it. This thread is thus securely woven into the body of the fabric. The loops being formed over the wire, they are carried down by the beating up of the reciprocating reed R to the small end of said wire, where the loop is drawn to the proper size. This sequence of motions is repeatedly made and a series of loops of the pile-warp *a* are formed over each wire C, which loops are drawn off of the front end of the wires as the cloth is drawn forward over the breast-beam S by the take-up motion. (Not shown.) The mechanism for operating the different parts is not shown nor described, as they are all well known, and no particular way of operating the same is claimed. Any of the several varieties of looms or jacquards may be employed for this work that may upon trial be found advisable.

The operation of my device is further explained as follows: The flat loop-forming wires C are supported and fixed on a rod *c* at one end and extend forward through the reed with their front end, over which the loop is drawn, resting on the cloth. A flexible looper or carrier having an eye formed at its middle portion extends up over this wire C and has weights attached to its end.

I have shown a weight attached to both ends of the carrier; but the same result may be obtained by removing weight D and carrying its connecting-cord *d* down through a pulley fixed to the floor and back to the jacquard mechanism, to which it may be attached in the manner illustrated in Fig. 2.

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

1. In a loom of the character described, a flexible carrier, a pile-wire, said carrier being drawn from one side to the other of said pile-wire carrying the pile-thread to form loops thereover, said carrier containing an eye through which the pile-thread is rove, a weight attached to said carrier, and means for operating said carrier by raising and lowering said weight for the purpose of looping said pile-thread over said former.

2. In a loom for weaving pile fabric, a flexible carrier, a pile-wire, said flexible carrier being reciprocated from side to side over said pile-wire to carry the pile-thread to form loops over said pile-wire, said flexible carrier containing an eye through which the pile-thread passes, a weight attached to each end of said carrier, and means for raising and lowering said weights for the purpose of looping said pile-thread over said former, substantially as described.

3. In a loom for weaving pile fabric, a flexible carrier, a pile-wire, said flexible carrier being reciprocated from side to side over said pile-wire to carry the pile-thread to form loops over said pile-wire, said flexible carrier containing an eye through which the pile-thread passes, a weight attached to each end of said carrier, and a jacquard mechanism connected to one of said weights for raising and lowering it for the purpose of looping said pile-thread over said former.

4. In a loom for weaving pile fabric, a pile-wire, a flexible carrier arranged to be drawn back and forth and carry the pile-thread over said pile-wire from one side to the other thereof, a weight on said carrier for drawing it in one direction and means for drawing said carrier in the opposite direction.

5. In a loom for weaving pile fabric, in combination, a pile-wire, a finger or hook and a flexible carrier arranged to be drawn back and forth over said finger or hook and carry the pile-thread over said pile-wire from one side to the other thereof to form loops over the same.

6. In a loom for weaving pile fabric, in combination a pile-wire, a fixed finger or hook, a flexible carrier arranged to be drawn back and forth over said finger or hook and carry the pile-thread over said former from one side to the other thereof, a weight on said carrier for drawing it in one direction and means for drawing said carrier in the opposite direction.

In testimony whereof I have hereunto set my hand this 27th day of May, A. D. 1903.

WILLIAM G. HARTLEY.

In presence of—
DELLE W. DOLBIER,
ALICE LOCKE.