Aug. 14, 1934. W. B. COOPER ET AL 1,970,443

LOOM FOR WEAVING WEFT PILE FABRICS

Filed Sept. 14, 1933

Fig. 2

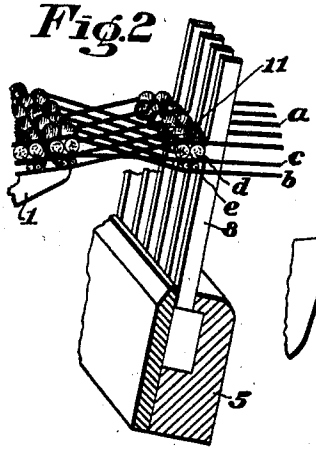


Fig. 1

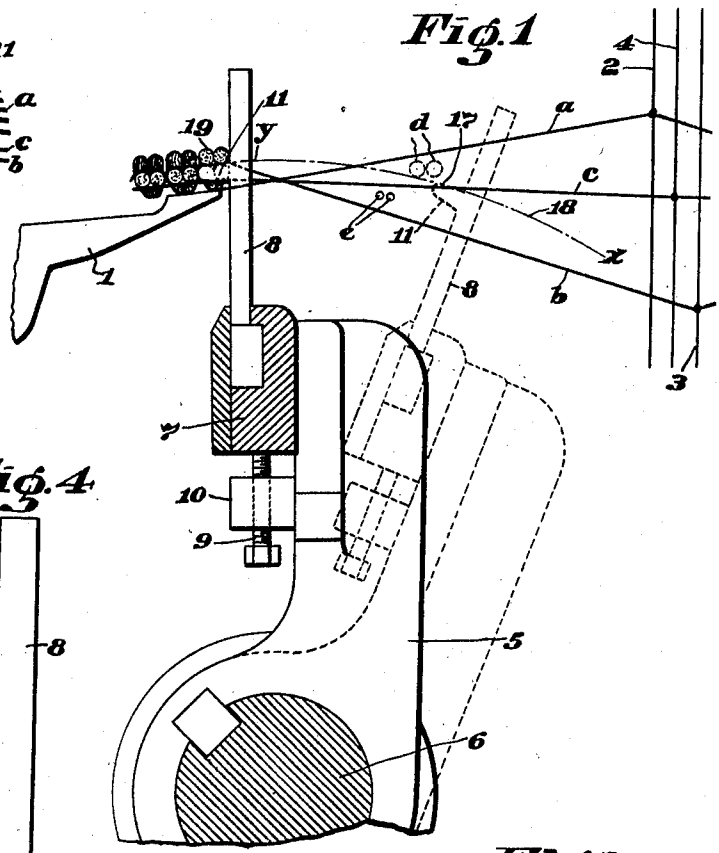


Fig. 3

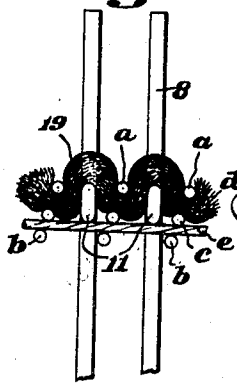


Fig. 4

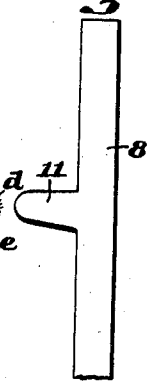


Fig. 7

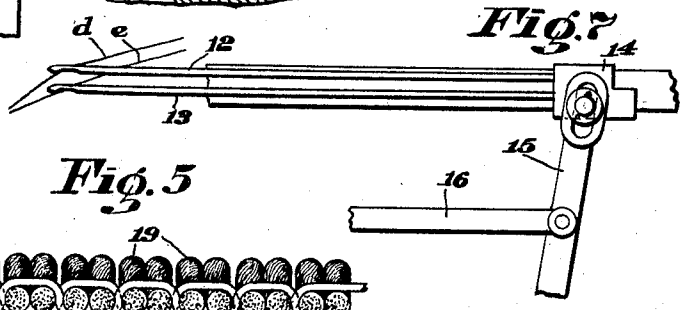


Fig. 5

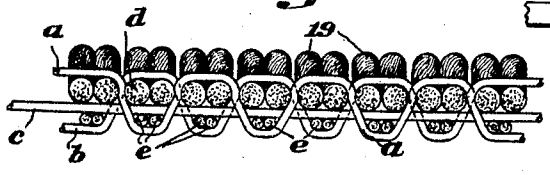
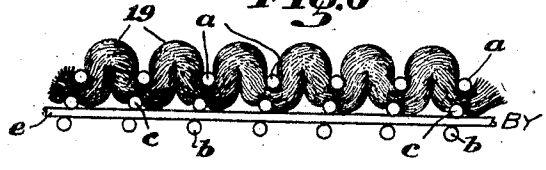


Fig. 6



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LOOM FOR WEAVING WEFT PILE FABRICS

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6 Claims. (Cl. 139—21)

This invention relates to looms and is more particularly directed to looms for weaving weft pile fabrics wherein the pile is produced by loops of weft extending upwardly from the body fabric.

In the production of weft pile fabrics it has heretofore been the practice to provide the loom with wires which extend in substantial parallelism with the warp threads and to raise and lower these wires alternately for the passage of the weft inserting mechanism, first above and then below such wires. The former practice has necessitated the use of mechanism for raising and lowering the wires thereby adding to the complication of the loom structure and destructive wear of parts.

One of the objects of the present invention is to provide a loom wherein a weft pile fabric may be produced by means wherein strength and durability of construction are combined with ease and efficiency of operation. More particularly stated the invention consists in providing the dents of the reed each with a weft loop forming member which extends frontwardly from the reed dents and by which the weft thread which is to form the pile surface is looped over the loop forming members and bound to the body fabric by binder warp threads.

Inasmuch as the pile forming wefts are thus looped it is desirable that there shall be also a backing fabric and so the present invention contemplates the formation of two sheds, preferably an upper and a lower shed, and mechanism for introducing weft shots in each shed, so that on the beat up the weft shot in the upper shed will be looped over the weft loop forming members and secured by the binder warps to the backing fabric.

The invention and novel features thereof will best be made clear from the following description and accompanying drawing of one good form thereof.

In the drawing:—

Fig. 1 is a sectional side elevation of certain loom parts showing the present invention associated therewith;

Fig. 2 is an enlarged detail showing the relation of parts and the thread structure as the lay moves to the beat up;

Fig. 3 is a detailed elevation looking from the front of the loom towards the reed when the pile forming weft has been looped over the loop forming members and bound to the backing fabric by the binder warps;

Fig. 4 is a side elevation of one of the reed dents showing a feature of the invention associated therewith;

Fig. 5 is a longitudinal section of a weft pile fabric produced in accordance with the present invention;

Fig. 6 is a transverse section of the fabric showing more particularly the weft pile loops and the manner in which they are bound to the backing fabric; and

Fig. 7 is a side elevation of an usual form of needle mechanism for simultaneously introducing a weft shot in each end.

Only sufficient portions of the loom are illustrated to make clear the construction and mode of operation of the present invention illustrated therewith.

In Fig. 1 the breast plate 1 may be of usual construction and extend transversely of the loom so that the fabric as woven moves over the breast plate.

As shown in the present instance the fabric is of the so-called two plane type in which the binder warps *a*, *b* are operated by the shedding mechanism to produce an upper and a lower shed with the stuffer warps *c* between.

The shedding mechanism may be of any usual type and, as indicated, comprises movable heddle frames 2 and 3 for raising and lowering the binder warps *a*, *b* and a fixed heddle frame 4 for controlling or holding the stuffer warp in a fixed position, so that on the formation of the upper and lower sheds the stuffer warps *c* remain in a plane between the two sheds.

The lay 5 is mounted for rocking movement on the shaft 6 and is actuated from any usual going part of the loom to impart to the lay beat up movements.

Mounted on the lay is the reed carrier 7 in which are secured the reed dents 8 and, as shown, the reed carrier 7 and consequently the reed dents may be adjusted vertically by an adjusting device such as the screw 9 which may be threaded into a bearing 10 carried by the lay. The mounting of the lay is such that as it is given its frontward or beat up movement the reed is caused to travel towards the front of the loom in an upwardly curved arc substantially as indicated by dash and doted lines *x y*.

Each of the reed dents 8 is provided with a weft loop forming member 11 which extends frontwardly from each reed dent a distance substantially equal to the transverse dimension of an upper weft shot.

As hereinbefore indicated it is desirable in weaving certain types of fabric that a weft shot

shall be placed in the upper shed and simultaneously a weft shot shall be placed in the lower shed and as one means for effecting this end a needle mechanism is employed comprising the two needles 12 and 13, Fig. 7, one of which as 12 carries the upper weft thread *d* and the other of which 13 carries the lower weft thread *e*. Each needle is secured to a carriage 14 to which they may be detachably secured and the carrier 14 is given its reciprocating movements by an arm 15 from a rod 16 actuated from a going part of the loom, the result being that when the needle mechanism is operated the upper weft thread *d* will be carried into the upper shed and the lower weft thread *e* will be carried into the lower shed or, in other words, the two weft shots *d* and *e* will be simultaneously introduced into their respective sheds, at which time, of course, the lay is in its back position, as indicated by dotted lines in Fig. 1.

When the lay is in its back position, dotted lines, Fig. 1, the upper surface 17 of the loop forming members carried by the reed dents will be substantially in the plane of the stuffer warps *c* or below the upper weft shot, and as the lay moves toward the front of the loom during the beat up such surface will travel in the arc 18, or in other words, will travel in an upwardly curved arc towards the fell of the cloth, with the result that the loop forming members 11 will engage beneath the upper weft shot on the first part of the beat up movement and as the lay completes its beat up the upper weft shots will be lifted to form loops 19 therein. This condition is indicated in Fig. 2 where the lay is part way in its travel towards the fell of the cloth and at such times it will be noted that the warp binder threads *a*, as shown, will by their tension engage the upper weft shot between the loop forming members 11 and depress the same towards the stuffer warp *c*, as shown in Fig. 3, while the other binder warp *b* will securely anchor the lower weft shot *e* to form the body fabric. The thread structure is well indicated in Fig. 6 where a transverse section of the completed fabric is shown, and it will be seen that as the lay goes back from the beat up the loop forming members 11 are withdrawn from under the loops of the pile forming weft, so that the latter takes the condition as indicated in Fig. 6.

In the longitudinal section of the completed fabric, as shown by Fig. 5, the course of the binder warps *a* and *b* and the position of the stuffer warps *c* is shown, and it will be noted that the binder warp *a* passes over an upper weft shot *d*, then down about the lower weft shot *e* in alternating relation with the binder warp *b* which takes a similar relation in the thread structure.

Variations in the height of the weft loops may be had by adjustment of the reed upwardly or downwardly under the manipulation of the adjusting screw 9.

What is claimed is:—

1. In a loom for weaving weft pile fabrics, the combination of shedding mechanism for dividing the warp into an upper shed and a lower shed separated by a dead stuffer warp, the lay having a reed, the dents of which are provided with frontwardly extending loop forming members, the upper surfaces of which are substantially in the plane of the stuffer warps when the lay is in back position, and means for introducing a weft shot in the upper shed and a weft shot in the lower shed that the loop forming members may pass under the weft shot in the upper shed and form loops therein as the lay beats up both weft shots.

2. In a loom for weaving weft pile fabrics, the combination of shedding mechanism for dividing the warp threads into an upper and a lower shed, means for introducing a weft shot in the upper shed and a weft shot in the lower shed, a lay having a reed, the dents of which have weft loop forming members extending frontwardly therefrom, and means for supporting the lay for frontwardly swinging movement in an upwardly curved arc that the loop forming member may engage beneath the upper weft shot and form loops therein as both weft shots are beaten up.

3. In a loom for weaving weft pile fabrics, the combination of shedding mechanism for dividing the warp threads into two sheds, means for introducing a weft shot in each shed, a lay mounted for beat up movement in an upwardly curved arc, and a reed carried by the lay and provided with dents having weft loop forming members extending frontwardly from the dents a distance substantially equal to the transverse dimension of the upper weft shot that as the reed moves frontwardly the loop forming members will be engaged beneath the upper weft shot and lift portions thereof to form loops therein as both weft shots are beaten to place.

4. In a loom for weaving weft pile fabrics, the combination of shedding mechanism for dividing the warp, means for introducing a weft shot in the shed, the lay having a reed, the dents of which are provided with weft loop forming members rigid therewith and extending frontwardly therefrom a distance substantially equal to the transverse dimension of a weft shot.

5. In a loom for weaving weft pile fabrics, the combination of shedding mechanism for forming an upper and a lower shed, needle mechanism for introducing simultaneously a weft shot in each shed, a lay, a reed mounted on the lay and comprising a series of dents each of which is provided with a weft loop forming projection extending frontwardly below the upper weft shot to engage the latter and form weft pile loops therein as both weft shots are moved towards the fell of the cloth on the beat up.

6. In a loom for weaving weft pile fabrics, the combination of shedding mechanism for forming an upper and a lower shed, needle mechanism for introducing simultaneously a weft shot in each shed, a lay, a reed mounted on the lay and comprising a series of dents each of which is provided with a weft loop forming projection extending frontwardly below the upper weft shot, and means for supporting the lay for frontward movement in an upwardly curved arc to cause the weft loop forming members to raise portions of the upper weft shot and form loops therein as the lay beats up both weft shots.

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