Dec. 31, 1929. R. BRITTON 1,741,916

LOOM FOR WEAVING PILE FABRICS

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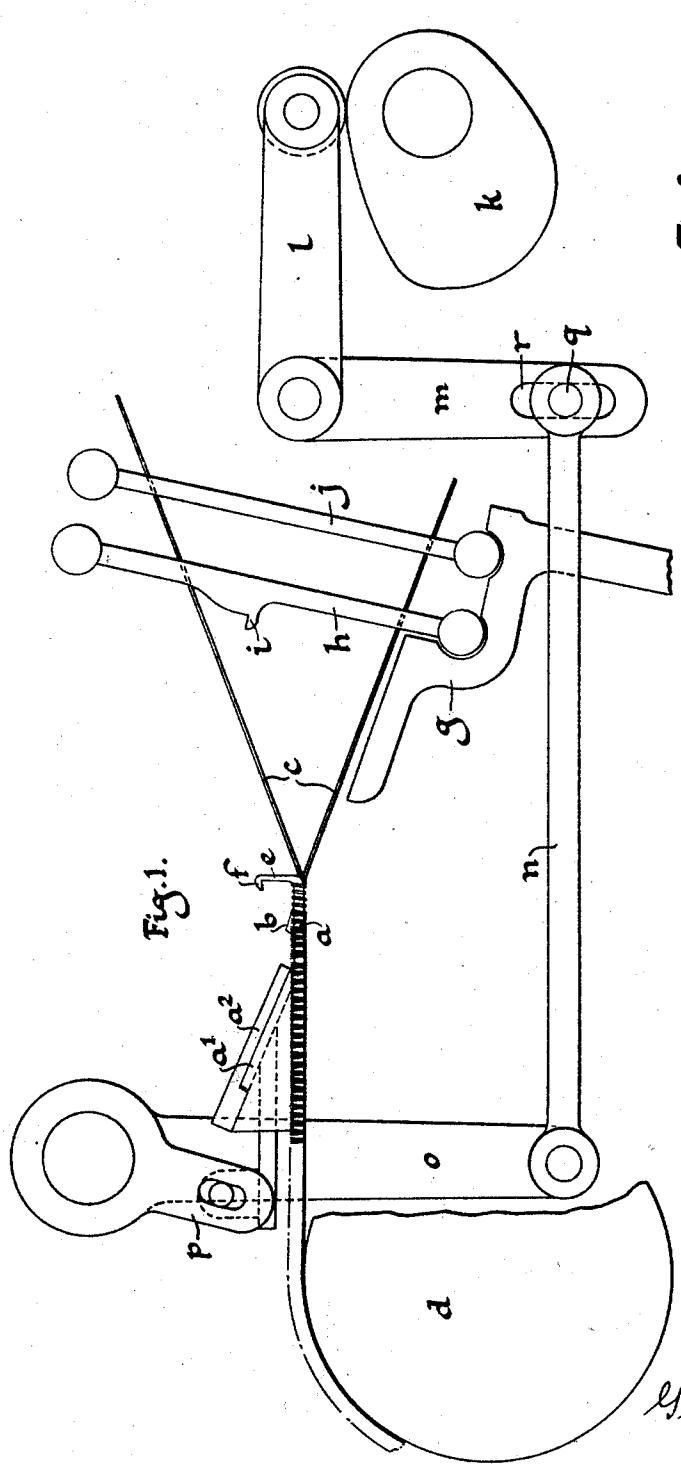


Fig.1.

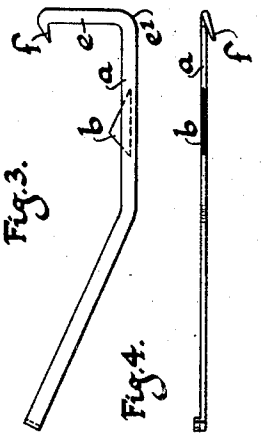


Fig.3.

Fig.4.

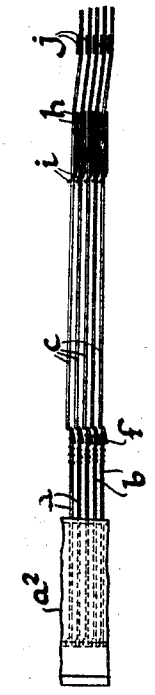


Fig.2.

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Fig.9.

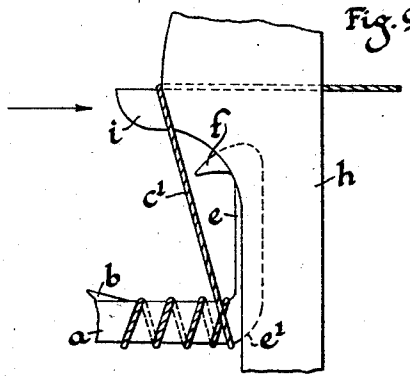


Fig.7.

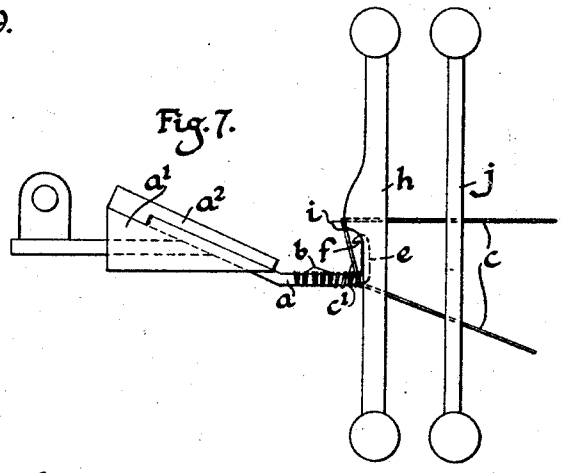


Fig.5.

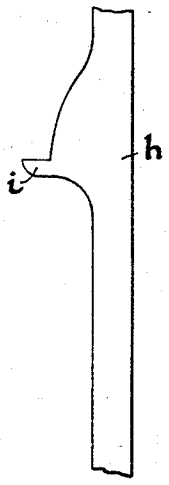


Fig.6.

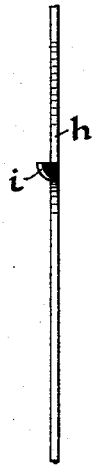


Fig.10.

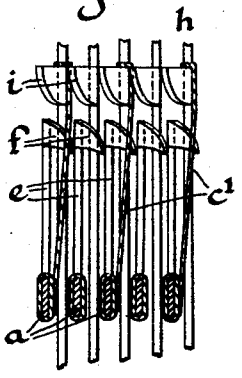
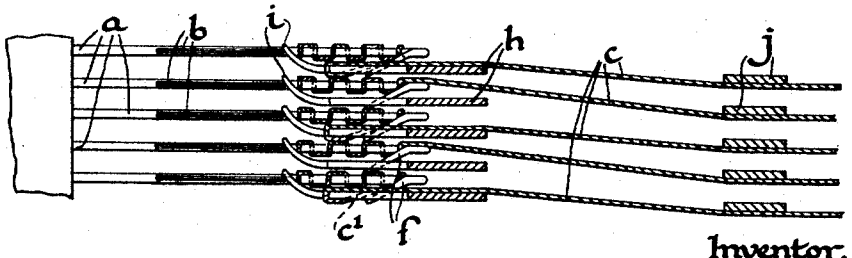


Fig.8.



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UNITED STATES PATENT OFFICE

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LOOM FOR WEAVING PILE FABRICS

Application filed June 4, 1928, Serial No. 282,781, and in Great Britain June 9, 1927.

This invention relates to looms for weaving pile fabrics, of the kind in which the pile is formed from warp threads which are wound spirally or looped upon wires extending in the direction of the length of the fabric being woven, by means carried by, or moving with, the sley and co-acting means on the said wires.

Hitherto, the presenting element carried by the sley has been moved relatively to the latter by auxiliary means to effect the co-action with the pile-wires. This relative movement has, however, necessitated the employment of special cam mechanism and it is the object of this invention to dispense with such mechanism and thus simplify the pile forming devices.

According to the invention, the means carried by the sley for co-action with the pile-wires is stationary with respect to the said sley and so formed that the movements of the sley, effect the spiral winding of the pile warps on the said pile-wires.

In a suitable arrangement for carrying out the invention, I extend the inner or rear end of each pile-wire upwardly and in the plane of the said wire, and then forwardly to form a short forward projection but bent laterally at a slight angle to the said plane, say, to the right, looking from the front of the loom. Each dent of the reed working in a plane to the right of each pile-wire is formed at the front with a short projection bent laterally at a slight angle to the left and designed to engage beneath an upper pile warp of the shed during the forward movement of the sley and form a bight therein above the pile-wire, the portion of the bight extending upwardly from the pile-wire to the projection on the dent being, by the forward movement of the sley, brought past the right side of the inturned end of the pile-wire in a vertical plane so as to brush and ride against the said inturned end, the said upward portion of the bight in the next rearward movement of the sley engaging with the left hand side of the said end which acts as a kind of switch. To ensure the engagement of the projections on the reed with the upper pile-warps of the shed, it is necessary to cause the latter to bear against the left sides of the dents. This is advantageously effected by the employment of a second sley or reed placed at the rear of the main sley or that having the projections, but with its reed spaces off-set or displaced with respect to those of the latter reed.

Each pile-wire is provided with a fixed cutting blade having an inclined cutting edge against which the loops of the pile-warps are drawn in the known manner, to be cut. Or, the pile-wires may be reciprocated longitudinally to obtain a more rapid cutting of the loops, and which movement may be such that the pile-loops may be formed on a slant on the pile-wires, thereby making them of greater length than the height of the said wires. For reciprocating the pile-wires a cam and lever mechanism are advantageously employed with means for varying such reciprocations and consequently the slant of the loops and the height of the pile.

To enable the invention to be fully understood I will describe it by reference to the accompanying drawing, in which:—

Figure 1 is a side view of a portion of a loom for weaving pile fabrics in accordance with the invention.

Figure 2 is a sectional plan of a part of the mechanism shown in Figure 1.

Figures 3 and 4 are, respectively, a side view and a plan view of one of the pile-wires.

Figures 5 and 6 are, respectively, a side elevation and a front elevation of one of the dents of the reed.

Figure 7 is a view similar to Figure 1, but illustrating another position of the parts and

Figure 8 is a sectional plan of Figure 7, but drawn to a larger scale.

Figure 9 is an elevation of a portion of Figure 8 and

Figure 10 is a view looking in the direction of the arrow, Figure 9.

a, *a* are the pile-wires having the cutting or knife-blades *b*, *b* the said wires being advantageously secured in grooves in a rack a^1 by means of a cover plate a^2. *c*, *c* are the pile warps and *d* is the usual breast-roller at the front of the loom, on to which the woven pile-fabric is wound in the usual manner.

e is the upward extension of the inner or

rear end of each pile-wire *a* arranged in the plane of the said wire and *f* is the short forward projection of the said end which is bent laterally to the right looking from the front of the loom, at a slight angle to the said plane, as clearly shown in Figures 4, 8 and 10.

g is the lathe bed, and *h*, *h* the dents of the sley carried thereby, for beating up the weft in the usual way. *i*, *i* are the projections on the fronts of the dents *h*, which projections are bent laterally at a slight angle to the left, as shown clearly in Figures 6, 8 and 10. *j*, *j* are the dents of the second sley or reed arranged behind the dents *h* but with its reed spaces off-set or displaced with respect to those of the said dents *h*, as shown clearly in Figure 8, so that the warps *c*, are caused to bear against the left sides of the dents *h*.

With the described arrangement, assume the parts to be in the position shown in Figures 1 and 2, in which the shed of the pile-warps *c*, *c* is open and the sley is in its rearmost position. If, now, a weft be shot through the open shed and the sley be moved forwards to beat it into the web of fabric being woven, it will be seen that the projections *i* will, owing to their inclination to the left, intersect the plane of the upper warps of the open shed, and engage or hook beneath the said upper warps and form bights therein, the portions c^1 of the bights extending from the said projections *i* to the pile-wires *a* coming into contact with and being slightly deflected laterally by the right side of the bent projections *f* of the said pile-wires in passing, the parts then assuming the position shown in Figures 7, 8, 9 and 10, in which the sley is at the limit of its forward movement, and the portions c^1 of the bights are in such a position that on the backward movement of the sley the said portions will come into contact with the left sides of the ends *f* of the pile-wires. In this position of the parts, it will be noticed that the projection *i* on each dent is arranged will in advance of the front edge of the latter in order, that the portion c^1 of the warp shall be forward of the projection *f* on the co-acting pile-wire *a*. As the pile-warps are reversed again to form the shed as the sley moves to its rearmost position, the upper set thereof in engagement with the projections *i* by the tension therein will become disengaged therefrom as the said set is moved down by such reversal. During such downward movement the upper pile-warps ride against the left sides of the extensions *e*. Another weft is now shot and the cycle of operations just described repeated, the beating up of the weft bringing the pile warps that have just been manipulated to form loops on the wires *a* against the rounded edges e^1 of the extensions *e* which guide them into the weaving position beneath the pile wires in the usual manner.

The racks a^1 may be stationary so that the loops c^1 on the pile-wires will be cut by the knife-blades *b* as the fabric is wound on to the breast-roller *d*. When the rack a^1 is designed to be reciprocated so as to move the pile-wires longitudinally in order to obtain a more rapid cutting of the loops as previously described, it is mounted on guides, not shown, and is operated by a rotary cam *k*, through the medium of a double-armed lever *l*, *m*, link *n* and a double-armed lever *o*, *p*. This cam *k* is driven at one third of the speed of the main loom crank-shaft when weaving a three-shot fabric and at one-half that speed when weaving a two-shot fabric. By this mechanism the pile-wires *a* are given a reciprocating movement, being moved towards the front of the loom immediately after the last set of pile loops is formed and then moved backwardly to impart a quick cutting stroke to the blades *b* prior to the next set of loops being formed. By causing the wires *a* to be moved rearwardly till the rounded edges e^1 thereof are beyond the weaving point, the loops c^1 will be formed on the slant so as to be of greater length than the height of the said wires. By varying the point of connection between the lever *m* and the link *n* it will be seen that the reciprocating movement of the wires *a* can be altered, the variation in the height of pile being governed by the extra traverse imparted to the said wires. The variable connection between the lever *m* and the link *n* is shown as comprising a pin *q* and a slot *r* in which the pin can be adjusted and clamped in position by a nut or other suitable means.

Claims:

1. In a loom comprising pile wires and a reciprocating sley, dents on said sley, and means on said dents, stationary with respect thereto and coacting with means on said pile wires, adapted to effect the spiral winding of the pile warps on said pile wires, with the movement of said sley.

2. A loom as claimed in claim 1, wherein the means on said sley comprise dents, the rear end of each pile wire being bent to form a forward projection, said dents also being provided with forward projections, the latter being adapted to engage the upper set of pile warps of each shed, and to coact during the forward and rearward movements of said sley, with said forward projections of said pile wires, to wind one of said pile warps spirally thereon to form pile loops.

3. In a loom of the kind described, comprising pile wires and a reciprocating sley, dents on said sley, said pile wires and dents being provided with forward projections bent laterally in opposite directions respectively.

4. A loom as claimed in claim 3, wherein a second sley is provided, the latter being offset with respect to the main sley, whereby the warps are caused to bear against one side of the dents.

5. A loom as claimed in claim 3, including

means to impart a reciprocating movement to said pile wires.

6. A loom as claimed in claim 3, including means to import a reciprocating movement to said pile wires, and further means for regulating the height of the loop to produce variations in the height of the pile.

7. A loom as claimed in claim 3, including means to impart a reciprocating movement to said pile wires, further means for regulating the height of the loop, to produce variations in the height of the pile, and knife blades secured in said pile wires.

8. A loom of the kind described, comprising pile wires and a reciprocating sley, dents on said sley, forward projections on said dents and pile wires, bent laterally in opposite directions respectively, and knife blades secured in said pile wires.

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