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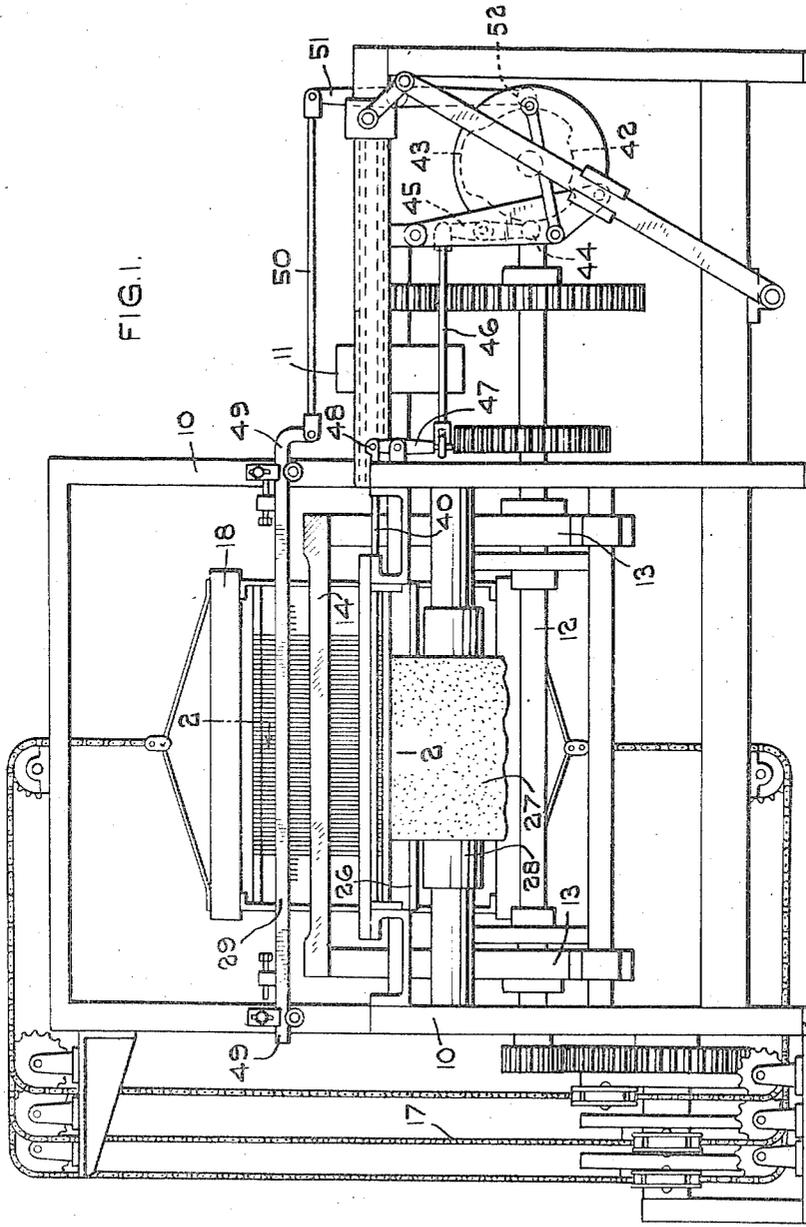
J. F. LOCKLEY

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LOOM FOR WEAVING PILE FABRICS

Filed July 29, 1947

3 Sheets-Sheet 1



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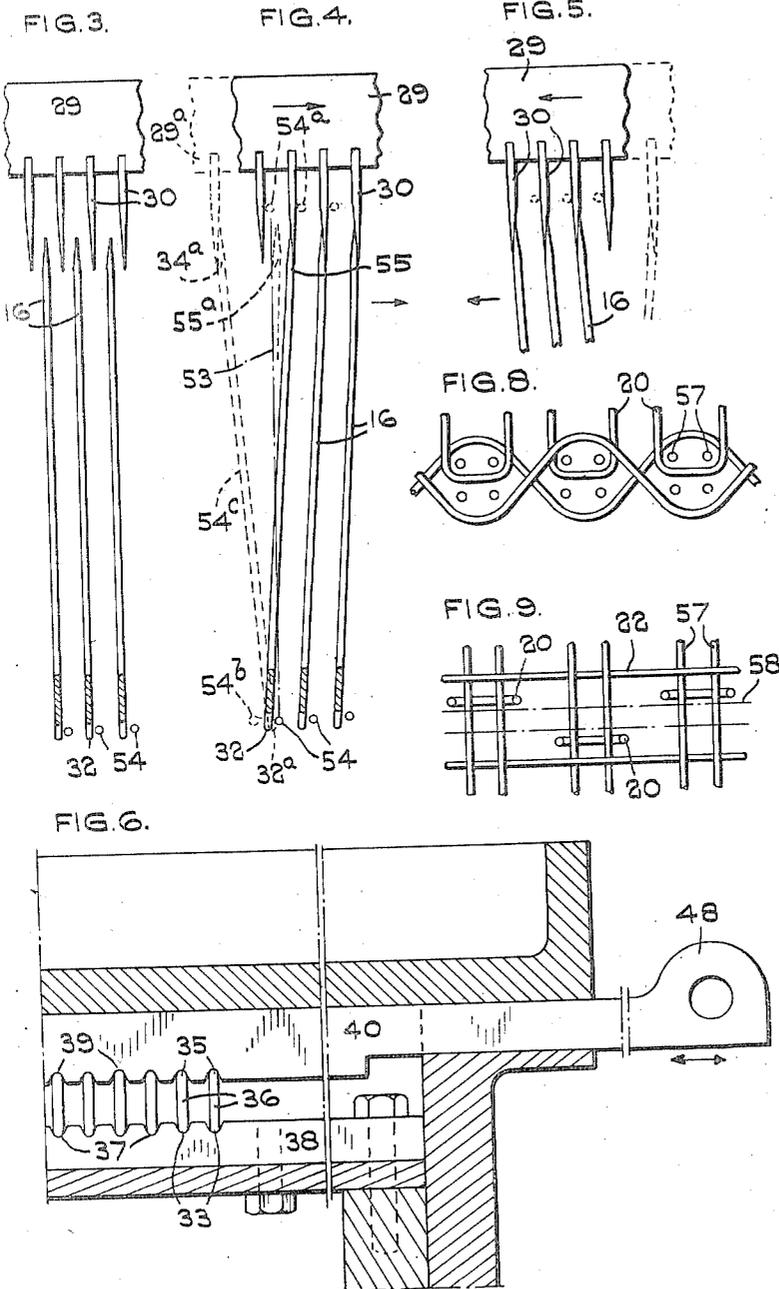
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## UNITED STATES PATENT OFFICE

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## LOOM FOR WEAVING PILE FABRICS

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This invention relates to looms for weaving pile fabrics and of the kind wherein the pile forming threads are brought to the fabric as warp ends and are engaged with longitudinally extending pile wires to form the pile loops, the threads being displaced, both vertically and laterally relative to the rear ends of the pile wires so as to bring the threads around the rear ends of the wires to form the pile loops.

In looms of the above kind it is already known to displace the pile forming threads laterally relative to the pile wires by providing the usual beat-up-sley with laterally movable dents, the displacement of which serves to bring the threads across their respective pile wires.

It has further been proposed in a loom of the above kind to effect the lateral displacement of the pile forming threads relative to the wires by providing a guide reed in which the latter is as a whole, or its guide wires are displaceable laterally of the loom to bring the pile threads across their respective pile forming wires, the guide reeds in such previously proposed arrangement extending for a vertical distance greater than the overall vertical travel of the warp end extending an appreciable distance below the level of the rear ends of the pile forming wires.

The primary object of this invention is to provide a new or improved means of effecting the aforesaid lateral displacement of the pile threads relative to the rear ends of the pile wires.

A further object of the present invention is to provide a loom in which there is less likelihood of the pile warp threads being looped around the wrong pile wire ends than is the case with existing looms of the above kind.

Still another object of the invention is to provide a loom of the above kind in which broken warp ends can more readily be fed through the loom than has heretofore been the case, so that any broken warp ends can be joined very readily and quickly and the duration of any stoppage of the loom consequent on the breaking of the warp ends is unusually short.

Other objects of the invention will be apparent from the following description accompanied by the drawings in which:

Figure 1 shows a front elevation of a Wilton loom for weaving a plain Wilton fabric in accordance with this invention.

Figure 2 is a sectional view on the line 2-2 of Figure 1.

Figure 3 is a detailed sectional view on the line 3-3 of Figure 2, depicting the pile wires and comb in a medial relative lateral position.

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Figure 4 is a view similar to Figure 3 showing the pile wires and comb in one extreme relative lateral position.

Figure 5 is a detailed view of the parts depicted in Figure 4 showing them in their other extreme relative lateral position.

Figure 6 is a detailed cross sectional view depicting the mechanism provided for displacing the pile wire ends laterally.

Figure 7 is a diagrammatic plan view depicting the one relative disposition of a pile warp thread and its corresponding pile wire.

Figures 8 and 9 are sectional and plan views respectively showing the form of the weave obtained with the loom depicted in Figure 1.

Referring to the drawings, the loom illustrated is of generally known form comprising a main framework 10 carrying a driving pulley 11 from which through gearing is driven the main cam operating shaft 12, which shaft serves to oscillate in the known manner the lay 13 carrying the usual beat-up-sley 14 between the dents 15 of which extend longitudinally of the loom the pile forming wires 16 which are formed as thin resilient metal strips disposed with their planes substantially vertical.

The cam operating shaft 12 serves further to operate through lifting mechanism 17 of known form the usual heald frames of which four in all are provided, although only one of these is depicted in the drawings, namely the pile warp head frame 18 carrying the pile healds 19 and through which pass the pile forming threads depicted at 20 in Figure 2. The remaining three head frames carry sets of healds 21 for the two sets of binding chain warps indicated at 22 in Figure 2, as well as a set of healds 23 for the stuffer which is indicated at 24 in the same figure. For clarity in the drawing only part of the stuffer warp is depicted. It will be understood that it extends up to the woven fabric in the actual weave.

The loom further includes the usual pile severing knives 25 for cutting the pile loops in the known manner, and is provided further with the usual breast plate 26 over which the woven fabric 27 passes to the usual roller 28.

The loom is further provided with guide means spaced laterally of the loom, which in the arrangement illustrated take the form of a guide comb 29 extending laterally for the full width of the weaving frame, the comb having dependent teeth 30 of flat form in cross section, the teeth being spaced laterally apart by a distance corresponding exactly to the spacing of the pile wires

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16, the teeth extending downwardly in a rearward direction as will be apparent from Figure 2.

The pile wires 16 extend horizontally in a forward direction from the weaving point 31 in the known manner and from a position a short distance to the rear of this point they are inclined downwardly to the horizontal so as to form therein a heel portion 32, which projects downwardly below the lower edge 33 of the front end of the flat strip pile wires while to the rear of the heel portion the wires are inclined upwardly in a rearward direction so that their rear ends 34 extend between and overlap with the extremities of the guide comb teeth 30. The total number of such teeth is one greater than the total number of pile wires so that the rear end 34 of each wire is overlapped on both of its vertical sides by a comb tooth.

The pile forming wires are mounted for angular movement so that their rear ends 34 are displaceable in a direction laterally of the loom i. e. laterally relative to the pile yarn 20 and its associated healds 19, and this lateral movement is obtained by making the upper and lower edges 35 and 33 of the front end 36 of each pile wire of semi-circular form in cross section, as shown in Figure 6, while the lower edges 33 are mounted within correspondingly spaced part circular grooves 37 formed in the upper face of a stationary fulcrum bar 38, and a further set of similar grooves 39 are provided similarly in the lower face of a pile wire driving bar 40, which grooves receive and engage with the upper edges aforesaid of the pile wires and this pile wire driving bar 40 is reciprocated laterally of the loom through a small distance, the effect of this being to oscillate the rear ends of the pile wires in a lateral direction, and about the fulcrum bar 38, i. e. about spaced parallel axes which are longitudinal of the loom.

The small amplitude of movement of the pile wire driving bar 40 is magnified at the rear ends of the pile wires by reason of the fact that these ends are situated a distance above the fulcrum bar 38 which is substantially greater than the vertical depth of the front ends 36 of the pile wires as will be apparent from Figure 2.

The pile wire driving bar 40 is operated from a main guide cam 41 which is driven from the shaft 12 aforesaid, the cam 41 being formed on one side with a dwell 42 and diametrically opposite thereto with a raised portion 43 both of similar circumferential length and both being adapted to engage with a follower 44 carried upon one end of a pivotally mounted arm 45, the other end of which is connected to one end of the rod 46 from which the motion is transmitted through a pivoted lever 47 to one end 48 of the driving bar 40.

The guide comb 29 is oscillated simultaneously with the rear ends of the pile wires and in the same direction, but through a lesser distance; such oscillation being effected by providing the ends of the comb with integral extensions 49 which are mounted slidably on the main framework of the loom, one of the extensions being connected to a comb driving rod 50 which is pivoted to one end of a pivotally mounted arm 51, the other end of which carries a further cam follower 52 disposed diametrically with respect to the follower 44, and adapted also to engage with the cam 41, such an arrangement ensuring simultaneous lateral displacement of the guide comb 29 and the rear ends 34 of the pile wires.

The amplitude of the movement of the pile

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wire driving bar 40 and of the guide comb 29 is such that in the two extreme positions of the pile wire rear ends and guide comb, the righthand and lefthand sides of the pile wire ends abut respectively with their adjacent comb teeth extremities as shown in Figures 4 and 5 which respectively depict these two extreme positions, and the wire ends are displaced laterally through an overall distance substantially greater than that of the guide comb, so that they pass through an intermediate position in which they are out of engagement therewith as shown in Figure 3.

Close engagement between the wire ends and the comb teeth in the two extreme positions is ensured by tapering the rear ends of the pile wires and the extremities of the comb teeth along their overlapping sides so that when the latter engage where they overlap they are substantially in close contact with one another.

The extent of the vertical travel of the pile forming warp in a vertical plane passing through the wire ends is indicated by the broken line 53 in Figure 4, such vertical movement being determined by the vertical travel of the corresponding heald wires 19, and the sequence of operations with the parts as so far described is as follows:

Initially each pile forming warp thread may be assumed to be in its lowest position indicated at 54 in Figure 4, with the pile forming wires and the guide comb both in their extreme righthand position also depicted in this figure. In this position the beat-up-sley is on the forward side of the heel portions 32, and is still completing its forward movement towards its extreme forward position indicated in Figure 2.

The pile warp healds 19 now commence to rise and the beat-up-sley completes its forward movement into the position indicated in Figure 2, so that the forward end of the warp 20 adjacent to the weaving point 31 is in the known manner held against lateral movement by its engagement between the dents of the sley and the adjacent sides of the pile wires, while the rear ends of the warp is held against lateral movement by the healds 19. Consequently as each warp thread rises it engages with the righthand side of its associated pile wire (when viewed in Figure 4) at a position displaced somewhat to the right of the plane of movement 53 of its respective heald as will readily be seen from Figure 7, and the tension in the warp consequent on this displacement bends the associated resilient pile wire in a lefthand direction from the extreme righthand position indicated at 55 in Figure 4, into the dotted position indicated at 55a in this figure, in which clearance is provided between the rear end of each pile wire and the tooth immediately to the right as shown in Figure 4, through which clearance each warp thread can pass into its fully raised position indicated in Figure 2.

In this position, each warp thread is above and clear of the rear end of its corresponding pile wires whereupon the wires immediately spring back under their resilience into their original position in which they are again in engagement with the comb tooth immediately to their right. Thus, the rear ends of the pile wires move in a righthand direction beneath their respective pile threads when the latter are in their fully raised position so that each pile warp, when in this position, is in effect brought across the upper side of its respective pile wire end, the final raised position of each warp thread being depicted at 54a in Figure 4.

As a result, when the warp threads are now

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lowered by the downward movement of their healds 19 which now commences, they are brought down on the lefthand side of their respective wires until they reach the ultimate bottom position indicated at 54b in Figures 2 and 4.

During this lowering of the warp threads, the beat-up-sley first moves to its rearward position to allow the weft to be inserted, insertion of the weft occurring just before the pile warp reaches its lowest position indicated at 54b in Figure 2, and while one of the binding chain warps is in its lowest position as indicated at 22a in this figure. Conveniently two needles are provided for inserting the weft above and below the pile forming warp as indicated at 56, each needle inserting two binding wefts as indicated at 57.

Immediately the weft is inserted the beat-up-sley again moves towards its forward position and simultaneously the pile warp completes its downward movement into the dotted position indicated at 54b in Figure 2.

As soon as the newly inserted weft has been beaten up by the sley to a position forwardly of the heel portions 32, the guide comb 29 and pile wire driving bar 40 are simultaneously operated by their respective operating mechanisms so as to oscillate the wires about axes which are longitudinal in relation to the loom and displace their rear ends 34 as well as the guide comb 29 into the extreme lefthand position indicated in dotted outline in Figure 4 at 34 and 29 respectively.

Owing to the fact that the heel portions 32 are disposed below the axes of oscillation of the pile wires the heel portions are simultaneously displaced in a righthand direction in Figure 4, i. e. into the dotted position indicated at 32a in this figure, and the displacement of the heel portions into this position ensures that they serve as guides which prevent the warp threads, when subsequently raised, from passing beneath their respective pile wires and being raised on the side of the wire opposite to that upon which they have just been lowered.

Thus when the pile threads are again lifted by their healds they will be raised on the same side (i. e. the lefthand side) of their respective wires.

The healds now commence to lift the pile warp threads which rise on the lefthand side of their respective wires with the latter in the dotted position indicated at 54c above referred to, so that as the warp rises each warp thread is now in tension engagement with the lefthand side of its respective wire, the rear ends of which are consequently bent in a righthand direction relative to the guide comb to permit of the warp passing between the righthand sides of the comb teeth extremities and the lefthand sides of the wire ends adjacent thereto so that the warp is again in the same way but in the opposite direction, brought across the upper side of the rear ends of the pile wires.

Finally the warp threads are now lowered on the righthand side of their respective wires until each warp thread has returned to its original position depicted at 54 in Figure 4. Simultaneously with the lowering of the warp threads the sley moves rearwardly; a further shot of weft is inserted after which the sley again moves towards its forward position as above described and finally the pile wires and comb are displaced in a righthand direction back to their original position depicted in full outline in Figure 4 so that the cycle of operations is now complete.

As will be apparent from the above description the weft is inserted each time the pile forming

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warp approaches its lowest position, and each pile warp thread is lowered and raised first on one side and then on the other side of its respective wire so that after the pile has been cut by the pile cutting knives 25 in the known manner the ultimate form of the weave for a plain fabric or patterned goods woven from a printed beam will be as depicted in Figures 8 and 9, in the latter of which figures, the position previously occupied by the pile wire is indicated in dotted outline at 58.

Instead, however, of lowering and raising each warp thread first on one side and then on the other side of its respective pile wire, it is within the scope of the invention that the warp will always be raised on one side of its respective wire and lowered on the other side, so that the warp is in effect wound around the wire, such a mode of weaving being used for patterned goods in which the pattern is controlled by Jacquard or other similar mechanism.

A loom constructed in accordance with the present invention possesses the advantage that by making the rear ends of the pile wires displaceable laterally of the loom the pile warp threads can very readily and effectively be looped around their respective wires, while with the arrangement described the comb teeth 30 in cooperation with the rear ends of the pile forming wires provide a continuously guided path for the pile forming threads during both their vertical and their lateral displacement around the rear ends of the pile wires, and there is no possibility of the warp threads being looped around the wrong wire.

Furthermore the guide comb 29 including the teeth 30 thereof is of very considerably less depth than the guide reeds which are provided with existing looms of the kind above specified, the depth of the comb being sufficient only to provide the requisite thickness to the base of the comb, as well as a space between the teeth roots of sufficient depth to accommodate the warp threads when in their uppermost position and sufficient overlap between the extremities of the comb teeth and the rear ends of the pile wires. Thus immediately beneath the comb there is provided a clear space whereby the operator can very readily obtain access to any broken warp ends so that when any warp threads break the duration of stoppage of the loom is reduced to the absolute minimum.

In addition to possessing the advantages already enumerated a loom constructed in accordance with the present invention is believed to effect weaving at a rate faster than is the case with the existing looms of the same kind, for instance, a two shot Wilton loom constructed in accordance with the present invention will have a substantially greater rate of weaving than is the case with an existing two shot Wilton loom, particularly where fabrics of wide width are being woven.

The invention is particularly applicable to the weaving of Wilton carpets plain or patterned and may be applied, for example, to the weaving of such carpets wherein a double needle is employed, i. e. for weaving a two shot carpet with one row of pile at every beat up of the sley i. e. in which the pile forming threads are raised at every beat up of the sley.

Alternatively, the invention may be applied similarly to the weaving of a three or four shot Wilton carpet in which the pile forming ends are raised every second beat of the sley.

What I claim then is:

1. In a loom of the kind specified, the provision

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of longitudinally extending pile wires mounted for angular movement so that their rear ends are displaceable in a direction laterally of the loom, and means disposed at the front ends of the wires for effecting said angular movement of said pile wire ends in co-ordination with the means for raising and lowering the pile warp, so that the pile threads are raised on one side of their respective pile wires and in their raised position the pile threads and their respective wire ends move relatively laterally of the loom whereby when the pile threads are again lowered they are on the opposite side of their respective wires, thereby effecting the requisite looping of the pile threads around their respective wires to form the pile loops.

2. In a loom of the kind specified, the provision of longitudinally extending pile wires the rear ends of which are displaceable in a direction laterally of the loom, and means for effecting lateral displacement of said pile wire ends in co-ordination with the means for raising and lowering the pile warp, a toothed guide member extending laterally of the loom and having dependent guide teeth between the lower ends of which the rear ends of the pile wires extend, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, the guide member being displaceable laterally of the loom and relative to the pile wire ends so that in one extreme relative position each of the pile wire ends are engaged on one of their lateral sides by an adjacent guide tooth, a clear space being provided between the disengaged lateral side of the wire end and the guide tooth opposite thereto and above the ends of the pile wires to permit of the free passage of the pile threads around the rear ends of their respective wires.

3. In a loom of the kind specified, the provision of longitudinally extending pile wires the rear ends of which are displaceable in a direction laterally of the loom, and means for effecting lateral displacement of said pile wire ends in co-ordination with the means for raising and lowering the pile warp, a toothed guide member extending laterally of the loom and having dependent guide teeth between the lower ends of which the rear ends of the pile wires extend, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, the guide member being displaceable laterally of the loom and relative to the pile wire ends so that in both extreme relative positions of the guide member and pile wire ends the latter are engaged on one or the other of their lateral sides by the adjacent guide tooth, a clear space being provided between the disengaged lateral side of the wire end and the guide tooth opposite thereto and above the ends of the pile wires to permit of the free passage of the pile threads around the rear ends of their respective wires.

4. In a loom of the kind specified, the provision of longitudinally extending pile wires each comprising a flat metal strip disposed with its plane substantially vertical, each of said wires being mounted at their front ends for pivotal movement about one of their longitudinal edges, the rear ends of the wires being disposed above said longitudinal edge of the strip to enable said ends to be displaced laterally of the loom, a plurality of laterally spaced guide means disposed ad-

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5 adjacent the rear ends of the pile wires and adapted each to engage with a side of a wire end when the latter are in one extreme lateral position, said guide means being adapted to limit the lateral displacement of the wire ends, means adapted to raise the pile threads on the side of their respective wire ends which are engaged by the guide means and to effect disengagement between the wire ends and guide means to permit of the pile threads passing therebetween, means for lowering the threads on the sides of the wires opposite to that on which they have been previously raised, and means adapted to pivot the wires about said longitudinal edge thereof so as to displace the rear ends of the pile wires and their respective threads laterally of the loom when the threads are lowered.

5. In a loom of the kind specified, the provision of longitudinally extending pile wires mounted adjacent their forward ends for pivotal movement about spaced parallel longitudinally extending axes, said pile wires having their rear ends disposed above said axes, means for oscillating said wires about said longitudinally extending axes thereby to displace their rear ends laterally of the loom relative to the pile warp in co-ordination with the means for raising and lowering the pile warp, and the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, said guide portion serving to control the side of their wire on which the pile threads are raised after they have been lowered.

6. A loom according to claim 5, wherein the pile wires comprise metal strips of flat form in cross section disposed with their planes substantially vertical, the strip-like wires being disposed with their front ends substantially horizontal and mounted for pivotal movement about their lower longitudinal edges, the rear portions of the strips extending upwardly at an inclination to the horizontal, and said guide portions comprising integral downward extensions of the strips formed at the junction between the horizontally extending front end of each wire and the said inclined rear portion thereof.

7. In a loom of the kind specified, the provision of longitudinally extending pile wires the rear ends of which are displaceable in a direction laterally of the loom, a guide member extending laterally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, and means for effecting later displacement of said pile wire ends in co-ordination with the means for raising and lowering the pile warp and relative to said guide teeth, so that the pile threads are raised on one side of their respective pile wires, and in their raised position the pile threads and their respective wire ends move relatively laterally of the loom whereby when the pile threads are again lowered they are on the opposite side of their respective wires, thereby effecting the requisite looping of the pile threads around their respective wires to form the pile loops.

8. In a loom of the kind specified, the provision of longitudinally extending pile wires the rear ends of which are displaceable in a direction laterally of the loom, a guide member extending lat-

erally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, said guide teeth being adapted to engage with the sides of said pile wire ends on which the pile threads are raised, and means for effecting lateral displacement of said pile wire ends in co-ordination with the means for raising and lowering the pile warp and relative to said guide teeth, so that the pile threads are raised on one side of their respective pile wires, and in their raised position the pile threads and their respective wire ends move relatively laterally of the loom whereby when the pile threads are again lowered they are on the opposite side of their respective wires, thereby effecting the requisite looping of the pile threads around their respective wires to form the pile loops.

9. In a loom of the kind specified, the provision of longitudinally extending pile wires the rear ends of which are displaceable in a direction laterally of the loom, a guide member extending laterally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, said guide teeth being adapted to engage with the sides of said pile wire ends when the latter are in both of their extreme lateral positions so as to limit the lateral displacement of said pile wire ends, and means for effecting lateral displacement of said pile wire ends in co-ordination with the means for raising and lowering the pile warp and relative to said guide teeth, so that the pile threads are raised on one side of their respective pile wires, and in their raised position the pile threads and their respective wire ends move relatively laterally of the loom whereby when the pile threads are again lowered they are on the opposite side of their respective wires, thereby effecting the requisite looping of the pile threads around their respective wires to form the pile loops.

10. In a loom of the kind specified, the provision of longitudinally extending pile wires the rear ends of which are displaceable in a direction laterally of the loom, a guide member extending laterally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, said guide teeth being adapted to engage with the sides of said pile wire ends when the latter are in both of their extreme lateral positions so as to limit the lateral displacement of said pile wire ends, said guide member being displaceable laterally of the loom relative to said pile wire ends, means for effecting lateral displacement of said pile wire ends and of said guide member relative to both one another and relative to the loom in co-ordination with the means for raising and lowering the pile warp, so that the pile threads are raised on one side of their res-

spective pile wires, and in their raised position the pile threads and their respective wire ends move relatively laterally of the loom, whereby when the pile threads are again lowered, they are on the opposite side of their respective wires, thereby effecting the requisite looping of the pile threads around their respective wires to form the pile loops.

11. In a loom of the kind specified, the provision of longitudinally extending pile wires mounted adjacent their forward ends for pivotal movement about spaced parallel longitudinally extending axes, said pile wires having their rear ends disposed above said axes, a plurality of laterally spaced guide means disposed adjacent the rear ends of the pile wires and adapted each to engage with a side of a wire end when the latter are in their extreme lateral positions, said guide means being adapted to limit the lateral displacement of the wire ends, the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, said guide portion being adapted to prevent the pile threads from passing beneath their respective pile wires when the threads are in their lowered position, and means for oscillating said wires about said longitudinally extending axes and relative to said guide means so as to displace the rear ends of the wires laterally of the loom relative to the pile warp in co-ordination with the means for raising and lowering the pile warp, whereby the pile threads are both lowered and raised first on one side and then on the other side of their respective pile wires so that the pile threads and rear ends of the wires move relatively laterally of the loom each time the threads are in their raised position, and the latter are looped around their respective pile wires.

12. In a loom of the kind specified, the provision of longitudinally extending pile wires mounted adjacent their forward ends for pivotal movement about spaced parallel longitudinally extending axes, said pile wires having their rear ends disposed above said axes, a guide member extending laterally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, said guide portion being adapted to prevent the pile threads from passing beneath their respective pile wires when the threads are in their lowered position, and means for oscillating said wires about said longitudinally extending axes and relative to said guide teeth so as to displace the rear ends of the wires laterally of the loom in co-ordination with the means for raising and lowering the pile warp, whereby the pile threads are both lowered and raised first on one side and then on the other side of their respective pile wires so that the pile threads and rear ends of the wires move relatively laterally of the loom each time the threads are in their raised position and the latter are looped around their respective pile wires.

13. A loom according to claim 12, wherein the pile wires comprise metal strips of flat form in cross section disposed with their planes substan-

tially vertical, the strip-like wires being disposed with their front ends substantially horizontal and mounted for pivotal movement about their lower longitudinal edges, the rear portions of the strips extending upwardly at an inclination to the horizontal, and said guide portions comprising integral downward extensions of the strips formed at the junction between the horizontally extending front end of each wire and the said inclined rear portion thereof.

14. In a loom of the kind specified, the provision of longitudinally extending pile wires mounted adjacent their forward ends for pivotal movement about spaced parallel longitudinally extending axes, said pile wires having their rear ends disposed above said axes, a guide member extending laterally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, said guide teeth being adapted to engage with the sides of said pile wire ends on which the pile threads are raised, means for oscillating said wires about said longitudinally extending axes and relative to said guide teeth so as to displace the rear ends of the wires laterally of the loom in co-ordination with the means for raising and lowering the pile warp, so that the pile threads are raised on one side of their respective pile wires and in their raised position the pile threads and their respective wire ends move relatively laterally of the loom whereby when the pile threads are again lowered they are on the opposite side of their respective wires, thereby effecting the requisite looping of the pile threads around their respective wires to form the pile loops, and the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, said guide portion serving to control the side of their wire on which the pile threads are raised after they have been lowered.

15. In a loom of the kind specified, the provision of longitudinally extending pile wires mounted adjacent their forward ends for pivotal movement about spaced parallel longitudinally extending axes, said pile wires having their rear ends disposed above said axes, a guide member extending laterally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, said guide teeth being adapted to engage with the sides of said pile wire ends when the latter are in both of their extreme lateral positions so as to limit the lateral displacement of said pile wire ends, said guide member being displaceable laterally of the loom relative to said pile wire ends, means for effecting lateral displacement of said guide member relative to the loom, means for oscillating said wires about said longitudinally extending axes and relative to said guide teeth so as to displace the rear ends of the wires laterally of the loom in co-ordination with the means for raising and lowering the pile warp, so that the pile threads are raised on one side of their respective pile wires and in their raised position the pile threads and their respective wire ends move relatively laterally of the loom whereby when the pile threads are again lowered they are on the opposite side of their respective wires, thereby effecting the requisite looping of the pile threads around their respective wires to form the pile

loops, and the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, said guide portion serving to control the side of their wire on which the pile threads are raised after they have been lowered.

16. In a loom of the kind specified, the provision of longitudinally extending pile wires each comprising a flat metal strip disposed with its plane substantially vertical each of said wires being mounted at their front ends for pivotal movement about one of their longitudinal edges, the rear ends of the wires being disposed above said longitudinal edge of the strip to enable said ends to be displaced laterally of the loom, a plurality of laterally spaced guide means disposed adjacent the rear ends of the pile wires and adapted each to engage with a side of a wire end when the latter are in one extreme lateral position, said guide means being adapted to limit the lateral displacement of the wire ends, means adapted to raise the pile threads on the side of their respective wire ends which are engaged by the guide means and to effect disengagement between the wire ends and guide means to permit of the pile threads passing therebetween, a pair of pile wire displacing members extending laterally of the loom, said displacing members being themselves displaceable relatively laterally of the loom, the front ends of pile wire strips being engaged between said members, means for lowering the threads on the sides of the wires opposite to that on which they have been previously raised, and means for effecting relative displacement of said members so as to displace the rear ends of the pile wires and their respective threads relatively laterally of the loom when the threads are lowered.

17. In a loom of the kind specified, the provision of longitudinally extending pile wires each comprising a flat metal strip disposed with its plane substantially vertical, each of said wires being mounted at their front ends for pivotal movement about one of their longitudinal edges, the rear ends of the wires being disposed above said longitudinal edge of the strip to enable said ends to be displaced laterally of the loom, a plurality of laterally spaced guide means disposed adjacent the rear ends of the pile wires and adapted each to engage with a side of a wire end when the latter are in one extreme lateral position, said guide means being adapted to limit the lateral displacement of the wire ends, means adapted to raise the pile threads on the side of their respective wire ends which are engaged by the guide means and to effect disengagement between the wire ends and guide means to permit of the pile threads passing therebetween, a pair of superposed pile wire displacing members extending laterally of the loom, said superposed members having opposed faces disposed in vertically spaced relationship and having each of said faces formed with a plurality of similarly laterally spaced grooves of part-circular form in cross section, the front ends of each of said pile wire strips having their longitudinal edges engaged in said grooves, one of said pile displacing members being fixed in relation to the loom and constituting a fulcrum, means for lowering the threads on the sides of the wires opposite to that on which they have been previously raised, and means for oscillating the other of said two members laterally of the loom so as to displace the rear ends of the pile wires and their

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respective threads relatively laterally of the loom when the threads are lowered.

18. In a loom of the kind specified, the provision of longitudinally extending pile wires each comprising a flat metal strip disposed with its plane substantially vertical and with its rear end extending upwardly in relation to its front end, a pair of pile wire displacing members extending laterally of the loom, said displacing members being themselves displaceable relatively laterally of the loom, the front ends of the pile wire strips being engaged between said members, the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, said guide portion being adapted to prevent the pile threads from passing beneath their respective pile wires when the threads are in their lowered position, and means for effecting relative displacement of said members so as to displace the rear ends of the pile wires laterally of the loom relative to the pile threads in co-ordination with the means for raising and lowering the pile warp, whereby the pile threads are both lowered and raised first on one side and then on the other side of their respective pile wires so that the pile threads and rear ends of the wires move relatively laterally of the loom each time the threads are in their raised position and the latter are looped around their respective pile wires.

19. A loom according to claim 18, wherein the pile wire strips are mounted for pivotal movement about their lower longitudinal edges, the rear portions of the strips extending upwardly at an inclination to the horizontal, and said guide portions comprising integral downward extensions of the strips formed at the junction between the horizontally extending front end of each wire and the said inclined rear portion thereof.

20. In a loom of the kind specified, the provision of longitudinally extending pile wires each comprising a flat resilient metal strip disposed

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with its plane substantially vertical, a guide member extending laterally of the loom, said guide member having a plurality of laterally spaced dependent guide teeth, the rear ends of the pile wires each extending between the lower ends of adjacent guide teeth, the lower ends of said guide teeth terminating at a level corresponding to that of said pile wire ends to provide therebeneath a clear space through which broken warp ends can readily be threaded, said guide teeth being adapted to engage with the sides of said pile wire ends on which the pile threads are raised, means adapted to engage the pile warp while it is being raised with the sides of said pile wire ends which are engaged by said guide teeth, so as to displace the rear ends of the resilient strip metal pile wires out of engagement with the guide teeth during the raising of the pile warp, means adapted to displace the rear ends of the pile wires and their respective warp threads relatively laterally of the loom when the pile warp threads are raised above the rear ends of their pile wires, means for lowering the threads on the sides of the pile wires opposite to that on which they have been previously raised, the wires at a position to the rear of the weaving point having each a guide portion which depends below their respective axes of pivoting, said guide portion serving to control the side of their wire on which the pile threads are raised after they have been lowered.

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