Jan. 7, 1947. G. E. SCHULZ ET AL 2,414,064

PILE FABRIC LOOM AND PILE WIRE THEREFOR

Filed July 26, 1945 3 Sheets-Sheet 1

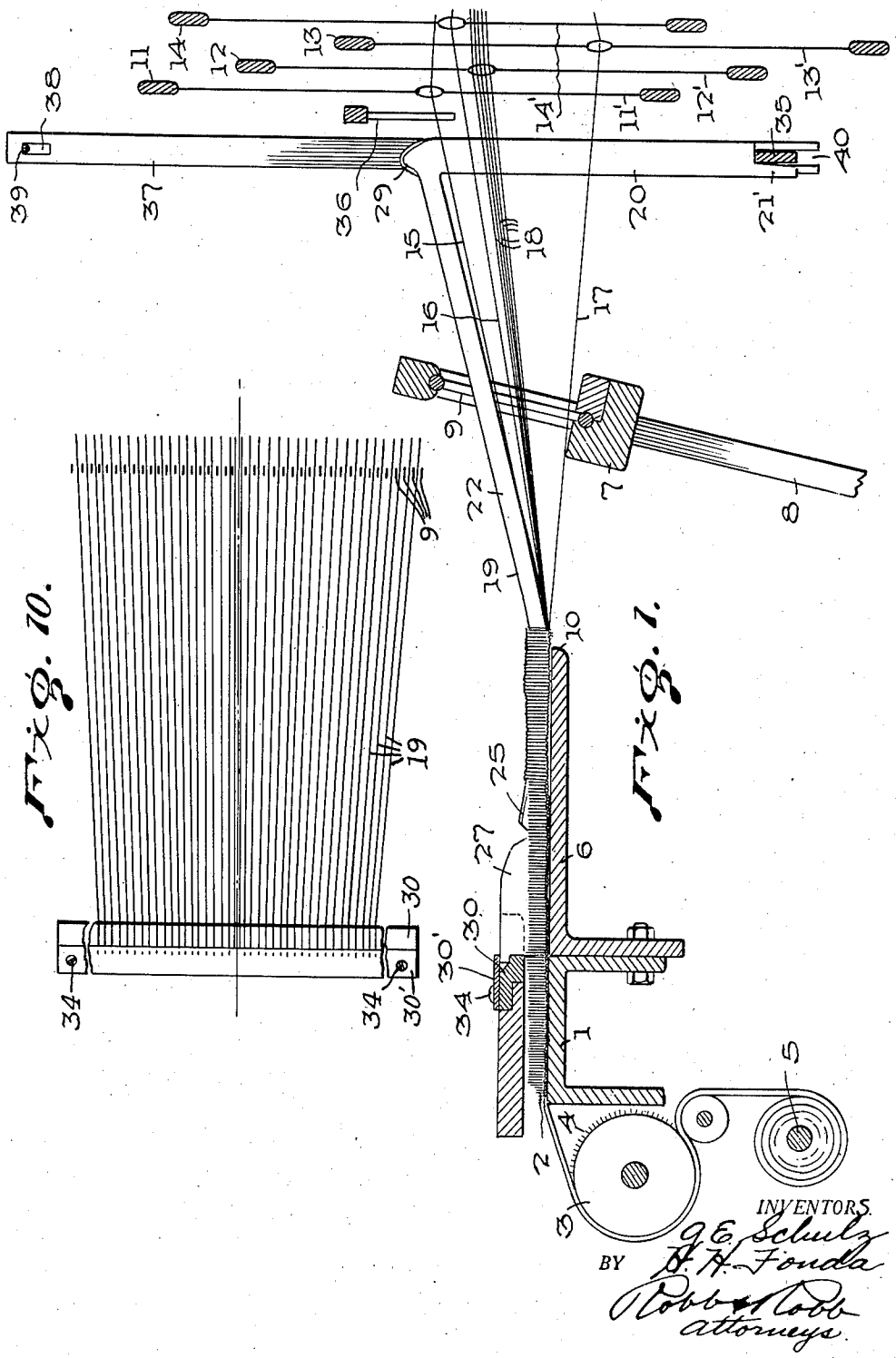


Fig. 1.

Fig. 10.

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PILE FABRIC LOOM AND PILE WIRE THEREFOR

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Fig. 3.

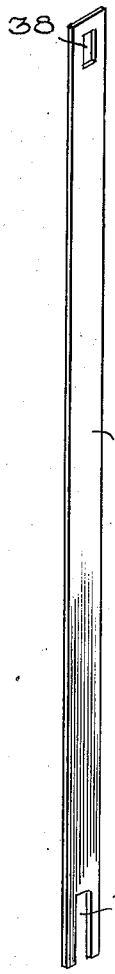


Fig. 4.

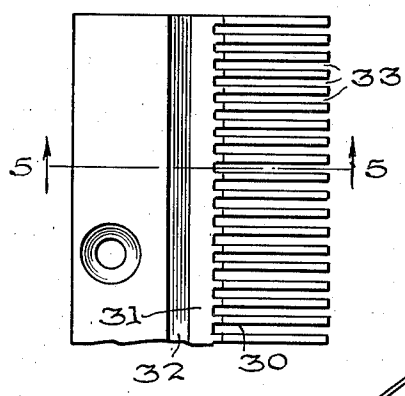
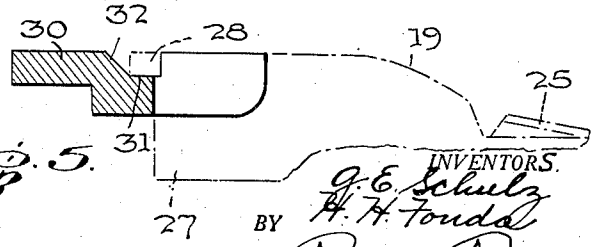


Fig. 2.

Fig. 5.



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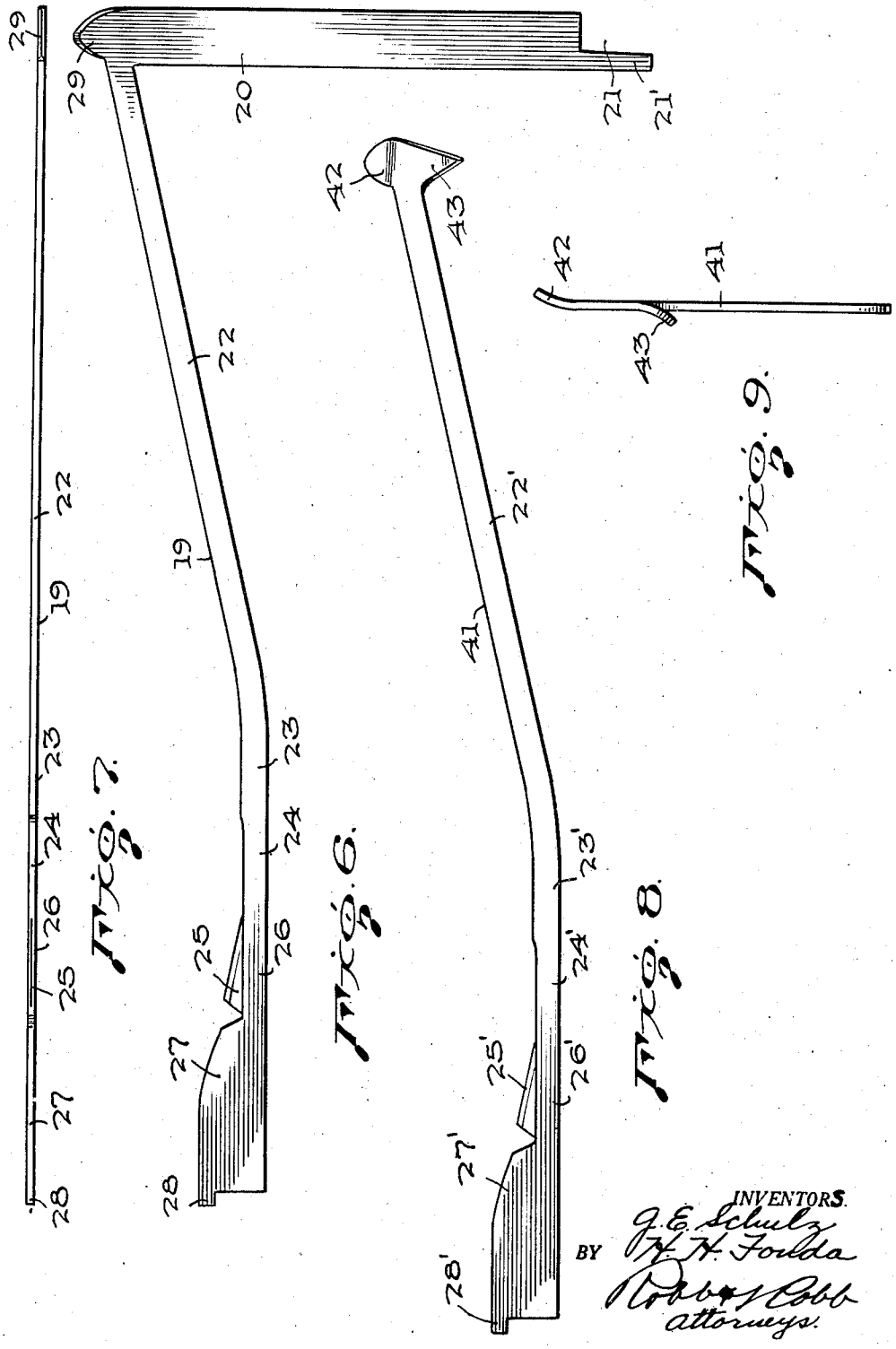


Fig. 9.

Fig. 7.

Fig. 6.

Fig. 8.

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2,414,064

UNITED STATES PATENT OFFICE

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PILE FABRIC LOOM AND PILE WIRE THEREFOR

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Application July 26, 1945, Serial No. 607,154

17 Claims. (Cl. 139—47)

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This invention relates to pile fabric looms, and more particularly to such looms of the stationary wire type, as distinguished from the conventional cross-wire looms.

In a cross-wire loom the pile loops are formed over a series of wires which are positioned parallel to the filling shot and at right angles to the binder and stuffer warps and surface yarn. Usually, as many as twenty or more such cross-wires are used at a time to hold an area of the pile fabric in form, each wire being drawn out through the work from the side of the loom and subsequently placed back in at the weaving point by means of a special wire motion. Obviously, such cross-wire looms are rather intricate, cumbersome, and required considerable floor space to accommodate the cross motion of the wires, besides which, the fabric woven thereon is of inferior quality.

Stationary wire loops, on the other hand, are more compact, simpler, and easier to operate and maintain. The stationary wires are positioned in the loom in parallel relation to the binder and stuffer warps and surface yarn, and at right angles to the filling, there being one wire for each reed space or pitch count of the fabric.

The present invention primarily concerns the form of the stationary wires and the means for mounting the same in the loom.

One of the objects of the invention is to provide an improved and simple form of pile wire, preferably of one-piece construction, and an improved holder for the same, having for their combined aims to attain accurate spacing, exact vertical and longitudinal positioning, and uniformity of horizontal alinement of the wires, with the resultant attainment of uniformity of location of the pile tufts both crosswise and lengthwise of the fabric, correct pile height and evenness of pile surface, among other advantages which materially contribute to a high standard of technical weave accuracy.

Another object of the invention is to provide a new and improved pile wire and holder which are so constructed and arranged as to compensate for shrinkage or narrowing of the fabric that takes place between the backward position of the reed and the pile forming part of the wire as the fabric is being woven, while affording sufficient flexibility of the wires to conform to the reed spacing which is preferably slightly greater than the spacing of the wires in the wire holder.

A further object of the invention is to provide an improved form of wire holder which, in addition to accurately fixing the vertical and

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longitudinal positions of the wires, also permits the wires to move upwardly with a swinging motion in the case of shuttle interference or "smash" due to out-of-timing in loom operation.

Still another object is to provide a pile wire and holder therefor which are so constructed and arranged as to permit any wire to be removed from the loom and replaced at will, without injury to the fabric and without disturbing any other part of the loom.

The invention further contemplates the provision of an improved pile wire which is so constructed as to facilitate shifting of the pile yarns alternately from one side of the pile wires to the other side in the formation of the pile loops. In carrying out this object, the invention contemplates the provision of separators between each pair of adjacent pile wires, which separators are wholly separate from the pile wires, and have no physical connection therewith, but are suspended freely between the wires and serve as guides to keep each strand of warp and surface yarn in its proper space in relation to each wire and row of pile being formed in the fabric, yet permitting absolute freedom of shedding action of the warps and surface yarn. The separators further serve to prevent the surface yarn from passing over the top of more than one pile wire in the course of forming the pile loops through raising and lowering the pile yarns and carrying them first to one side of the wire and then to the other side.

Other and further objects and advantages of the invention will be hereinafter described, and the novel features thereof defined by the appended claims.

In the drawings:

Figure 1 is a more or less diagrammatic view, partly in vertical section and partly in elevation, showing the general elements of a pile fabric loom having incorporated therein the improved pile wires and holder which form the principal features of this invention;

Figure 2 is a fragmentary perspective view showing a group of pile wires and separators as assembled in the positions occupied in the loom;

Figure 3 is a perspective view of one of the separators;

Figure 4 is a fragmentary top plan view of the pile wire holder;

Figure 5 is a sectional view taken through the holder on the line 5—5 of Figure 4, and also showing in broken lines the butt end of a pile wire in the position it normally occupies when mounted in one of the slots in the holder;

Figure 6 is a view in side elevation of one of the pile wires;

Figure 7 is a view in top plan of the pile wire shown in Figure 6;

Figure 8 is a view in side elevation of a modified form of wire which may be used at the opposite ends of the loom for forming the selvage edges of the fabric;

Figure 9 is a view in end elevation of the selvage wire shown in Figure 8, as seen towards the end opposite to the butt end, this view being shown on a somewhat enlarged scale as compared with Figure 8, and being substantially full size; and

Figure 10 is a diagrammatic plan view showing the relation between the pitch of the slots in the wire holder and the pitch of the reed spaces, on a somewhat exaggerated scale, which serves to compensate for lateral shrinkage of the fabric as the fabric is woven.

Like reference characters designate corresponding parts in the several figures of the drawings which show only the essential parts of that much of the loom as are sufficient to enable those skilled in the art to understand the construction and operation of the same. While the loom to which the invention is applied is intended to be representative of a type made by a prominent loom manufacturer, as more fully disclosed in Patent No. 790,017, granted May 16, 1905, and the prior patents related thereto, it is to be understood that the invention is not limited to looms of this precise construction.

According to the drawings forming a part hereof, 1 denotes a portion of the loom frame at the breast or front end of the loom and upon which the woven pile fabric 2 is supported and over which it passes to the take-up roll 3 provided with pins 4 in the usual manner. From the take-up roll 3, the fabric is guided to the winding roll or shaft 5 on which the fabric is wound as it is woven. At the rearward side of the member 1 is attached a table or shelf 6 which extends transversely across the loom and upon which the fabric is supported at the weaving point.

Disposed rearwardly of the table or shelf 6 is the lay 7 which is carried by the lay-sword 8 having the usual reed 9 at the upper end thereof. The lay 7 and reed 9 may be of conventional form and are movable forwardly and rearwardly towards and away from the rearward edge 10 of the shelf or table 6 in a well known manner, this motion being imparted to the lay-sword 8 and the lay and reed carried thereby, by suitable mechanism (not shown).

Disposed to the rear of the lay 7 and the reed 9 is a plurality of heddle frames. The number of these heddle frames may be varied as desired, according to the weave of the fabric and other factors which control the number and arrangement of the heddle frames. The heddle frames, as shown in the drawings, are respectively designated 11, 12, 13 and 14, and each heddle frame is provided with a series of heddles arranged in spaced relation to each other transversely across the loom, the heddles being designated 11', 12', 13' and 14'. Extending through the eyes in the respective heddles 11', 12', 13' and 14' are the warps and surface yarns which run lengthwise of the loom from the back towards the weaving point near the front end of the loom. As seen in Figure 1, the pile or surface yarn is designated 15 and passes through the heddles of the heddle frame 11. The binder

warps are respectively designated 16 and 17, these warps passing through the respective heddle frames designated 14 and 13. 18 designates the stuffer warps which pass through the heddles of heddle frame 12. The heddle frames are movable upwardly and downwardly in the conventional manner, or in lieu of the heddle frames, each heddle may be controlled individually by a harness leading to a Jacquard motion.

Extending longitudinally of the loom from the front thereof towards the heddles, and parallel to the warps and surface yarn, as well as parallel to each other, are the pile wires generally designated 19, there being one wire for every split in the reed 9 or pitch count of the fabric. The form of the pile wires will be best understood from reference to Figures 2, 6 and 7, in which it will be seen that each wire includes a vertical leg 20 at its rear end and provided with a notch 21 at the lower end of the leg. From the upper end of the leg 20 there extends a forwardly and downwardly sloping portion 22 which acts as a guide to guide the pile loops down to the pile height-forming section 23 which extends forwardly and horizontally therefrom. Beyond the pile height-forming section 23 is a pile release section 24 of somewhat less height than the section 23, and on which release section the pile loops are relieved of tension as they are beat up by the reed 9 and before the loops are cut by the knife 25 carried by the knife-holding section 26. At the extreme forward end of each pile wire is a deepened foot section or butt designated 27 on which is formed an overhanging extension 28 at its upper forward corner. It should also be noted that the vertical leg 20 at the rear of the pile wire is extended upwardly at 29 somewhat above the sloping section 22, this extension being rounded and preferably beveled about its marginal edge. Each pile wire is preferably formed in one-piece and is flat and relatively thin in cross section, and hence may be stamped from sheet metal of suitable thickness to give sufficient rigidity to the wire to produce a uniform pile height, yet flexible enough to conform to the fabric while weaving and also to absorb the shock of shuttel interference or "smash" when the loom "knocks off." The shape and thickness of the foot or butt 27 of the pile wire is preferably held within close limits, as obtained by machining, grinding, or otherwise shaping the same, in order that the butt may be received in the wire holder hereinafter more fully described, and when so received, the wires will be accurately spaced from each other. When the pile loops formed on the wire are to be cut, the knife 25 may be mounted in a slot formed in the knife-holding section 26.

Referring now more particularly to Figures 2, 4 and 5, the wire holder for the pile wires is generally designated 30, and comprises a relatively heavy metal bar which is suitably attached to the frame of the loom at its front end and extends transversely across the loom. The holder is spaced above the frame member 1, as shown in Figure 1 of the drawings, in order to allow the fabric to pass therebeneath to the take-up roll 3. The upper side of the holder 30 is provided with a longitudinally extended channel or groove 31, the front wall 32 of which is inclined forwardly. The rearward portion of the holder 30 is slotted, as indicated at 33, for the purpose of receiving the butt ends of the pile wires 19. These slots 33 are preferably so milled in the wire holder as to closely fit the butts of the pile wires, and the slots

are uniformly and accurately spaced from each other in the direction cross-wise of the loom. Each slot extends forwardly from the rear edge of the holder to the groove 31 so that when the butts 27 of the pile wires 19 are inserted in the slots, the overhanging extensions 28 on the butts will rest upon the bottom of the groove 31, as best seen in Figure 5, with the upper edge of the extensions 28 and the butts 27 disposed on the same level as the upper side of the wire holder. To prevent upward displacement of the pile wires when assembled in the wire holder 30, there is provided a clamping bar 30' which is removably attached to the upper side of the holder at the forward end thereof, as by means of screws 34 or other removable fastenings. This clamping bar 30' is extended rearwardly to overlie the extensions 28 on the forward ends of the butts 27 of the pile wires, and is sufficiently rigid to prevent the pile wires from being inadvertently displaced in a vertically upward direction from the slots 33 in the holder 30, yet sufficiently flexible to allow the pile wires to rock or swing upwardly about the extensions 28 as a fulcrum, in case of shuttle interference. This rocking or swinging movement of the pile wires prevents damage of the wires when the loom knocks off due to improper timing of the loom.

The spacing of the slots 33 in the wire holder 30 is preferably such as to compensate for shrinkage of the fabric that takes place between the backward position of the reed and the pile-forming portion of the wire, as the fabric is woven. Hence, the spacing of the slots 33 is slightly less than the distance between each split or from space to space of the reed 9 through which the warps and surface yarn extend, as diagrammatically illustrated on an exaggerated scale in Figure 10. By reason of the accurate spacing of the slots 33 and the care with which the same may be formed by machining or otherwise so that the slots are exactly vertical, the pile wires will be evenly spaced with precision in the loom and held in spaced relation to each other with equal regularity and in precisely perpendicular position. Likewise, the wires are positioned uniformly in line lengthwise of the loom as well as transversely of the loom, all of which materially contributes to the production of pile fabrics of high quality, resulting from the even and regular formation of the pile tufts when the lay moves forwardly to press the pile loops against the fabric at the weaving point, and creating a uniform and even pile surface on the fabric.

When the pile wires 19 are positioned in the holder 30, as previously described, and clamped down by the clamp 30', the wires ride or float in the fabric without the necessity of providing additional support for the wires, although it will be noted from reference to Figure 1 of the drawings that a transverse bar is arranged across the loom at 35 below the vertical legs 20 at the back of each wire, with the bar positioned in the notches 21 formed in the lower extremities of the legs. The purpose of this bar 35 is primarily for longitudinal positioning of the pile wires, and hence the legs 20 need not rest upon this bar. However, inadvertent rearward movement of the pile wires, or any of them, will be precluded by the depending extensions 21' which lie in front of the bar and limit rearward movement of the wires. The rear edge of each of these depending extensions 21' is preferably inclined forwardly so as not to interfere with the upward rocking or swinging movement of the pile wires in the case of a smash or knock-off.

In the operation of the loom, each strand 15 of pile yarn is pulled evenly over the sloping part 22 of a pile wire 19 through the uniform release of a lot of surface yarn in conjunction with the heddle action. To carry the pile strands over the pile wires first on one side and then on the other in the formation of the loops, there is provided a transversely reciprocating comb 36 through which the pile strands extend, this comb being positioned at the rear of the pile wires 19 and in front of the heddles. The transverse motion may be imparted to this comb in any suitable manner and properly timed in relation to the vertical motion of the heddle frames and the forward and rearward motion of the lay 7. To change the position of the pile yarns from one side of the pile wires to the other side, the heddle frame 11 and heddles 11' are raised to a paint sufficient for the pile yarns to clear the top of the pile wires and their upper extensions 29, whereupon the comb 36 is shifted transversely to carry the pile yarns cross-wise to the opposite side of the respective pile wires, following which, the heddle frame 11 and heddles 11' are lowered to bring the pile yarns back into their proper positions in the shed. The other heddles are never elevated to a point as high as the wires, so the stuffer and binder warps always remain in the same transversely spaced relation to each other and to the pile wires, extending forwardly between the latter from their heddles. The stuffer warps are preferably positioned on one side of the respective pile wires (for example the righthand side) and the binder warps on the opposite side of the pile wires (for example the lefthand side).

In order to prevent the pile yarns from passing over the top of more than one wire in the formation of the pile loops, there is provided a separator 37 between each adjacent pair of pile wires. These separators are preferably formed of flat, thin strips of flexible steel which may be substantially thinner than the pile wires themselves, and in the present invention, the separators are entirely separate from the pile wires and have no physical connection therewith Each separator is apertured at its upper end, as indicated at 38, so that it may be received on a transversely extended bar or wire 39 fixed to the frame of the loom and extending from side to side thereof and on which the separators are freely slidable. The lower ends of the separators are notched or bifurcated, as at 40, to engage over the bar 35 at the lower ends of the vertical legs 20 of the pile wires 19. Thus, the separators 37 are suspended from their top ends, and when mounted on the bar 39, lie between the respective pile wires in parallel relation to and in transverse alinement with the vertical legs 20 of the pile wires, as clearly shown in Figures 1 and 2 of the drawings. Since there is no physical connection between the separators 37 and the pile wires, and the separators are extremely flexible and free to move relative to each other cross-wise of the loom, there is no danger of pinching the warps and pile yarns between the separators and the pile wires, and perfect freedom of the shedding action of the warps and pile yarns is afforded.

In the event it becomes necessary or desirable to remove any pile wire from the loom, it can be quickly and easily done by simply raising the wire so that the extension 21' on the lower end of the vertical leg 20 is clear of the bar 35, where-

upon the wire may be shifted rearwardly to disengage the butt end from the wire holder, all without disturbing any other wire or any other part of the loom, and without damage to the fabric. By reversing the procedure, the wire may be replaced in the loom. or a new wire substituted therefor should the circumstances so require. When a wire is removed as just described, the adjacent separator keeps the stuffer and binder warps and the pile yarns in their proper positions and facilitates the replacement of the wire.

In Figures 2, 8 and 9 of the drawings, there is shown a modified form of wire which is intended to be used at the opposite ends of the loom for producing an improved and more secure selvage edge along opposite edges of the fabric. These wires are generally designed **41** and thus may be termed the "selvage wires," and the number of the same at each end of the loom may be varied as desired. The form of the selvage wires is generally similar to the pile wires **19** previously described, except that the selvage wires are not provided with the vertical leg at the rear ends thereof. The corresponding parts of the selvage wires are given the same reference characters as the pile wires, and the reference characters are primed. At the extreme rear end of each selvage wire, there is provided an extension projecting upwardly, as at **42**, which extension is progressively offset laterally, as best shown in Figure 9. Likewise, on the lower side of the selvage wire at its rear end, there is provided a second extension **43** projecting downwardly therefrom and progressively offset laterally in the opposite direction from the extension **42**, as also shown in Figure 9. The purpose of these extensions **42** and **43** is to aid in directing the selvage strands around the selvage wires in a more or less circular motion as the selvage strands are woven into the fabric and transversely shifted from one side of the selvage wires to the other by the upward and downward motion of the selvage strands.

Through the use of the invention as hereinbefore described, there is produced an evenness of tension on each strand of yarn and the row it forms, thereby giving the correct height of pile and evenness of pile surface which is far superior to anything heretofore attainable in known loom constructions. In addition, the one-piece construction of the wires and the employment of the new and improved wire holder more perfectly fulfills the theory of stationary wire loom design and uniformity of loom operation, and technical phases of pile fabric construction.

While the specific details have been herein shown and described, the invention is not confined thereto, as changes and alterations may be made without departing from the spirit thereof as defined by the appended claims.

We claim:

1. In a pile fabric loom, including a plurality of heddles for receiving the respective warps and surface yarns, a lay, a reed carried by said lay and having a plurality of spaces therein arranged in spaced relation transversely across the loom for receiving the warps and surface yarns, and said reed and lay being movable forwardly and rearwardly between the weaving point of the loom and the heddles; a plurality of stationary pile wires arranged longitudinally in the loom in parallel transversely spaced relation to each other and extending through the reed spaces, there being one pile wire for each reed space, and a holder having means for removably receiving the forward ends of the pile wires, with the wires disposed in accurate and uniformly spaced relation to each other and in transverse and longitudinal alinement, said holder including yieldable wire clamping means permitting upward swinging movement of the pile wires about their forward ends.

2. A pile fabric loom as defined in claim 1, wherein the forward ends of the pile wires are spaced in the holder closer together than the reed spaces in the reed to compensate for shrinkage of the fabric between the rearward position of the reed and the position of the pile loops on the wires as the fabric is woven, with the wires free to spring to conform to the reed spaces.

3. A pile fabric loom as defined in claim 1, wherein the holder is provided with a series of vertical slots uniformly spaced from each other transversely of the loom for receiving the forward ends of the respective pile wires, the pitch of the slots in the holder being less than the pitch of the reed spaces in the reed.

4. A pile fabric loom as defined in claim 1, wherein the holder comprises a rigid bar mounted transversely across the loom near the forward end thereof, said bar having a series of vertical uniformly spaced slots formed in its rear edge and extending forwardly therefrom to snugly receive the forward ends of the pile wires, the said bar also having a groove in its upper face extended longitudinally of the bar in front of the slots, each pile wire having a forwardly extended projection on the forward end thereof and coextensive therewith, said projection extending into and resting upon the base of the groove in the bar when the pile wire is inserted in one of the vertical slots aforesaid to support the wire, and means for restraining said projections, and consequently the pile wires, against displacement from the holder in a vertically upward direction.

5. A pile fabric loom as defined in claim 1, wherein the holder comprises a rigid bar mounted transversely across the loom near the forward end thereof, said bar having a series of vertical uniformly spaced slots formed in its rear edge and extending forwardly therefrom to snugly receive the forward ends of the pile wires, the said bar also having a groove in its upper face extended longitudinally of the bar in front of the slots, each pile wire having a forwardly extended projection on the forward end thereof and coextensive therewith, said projection extending into and resting upon the base of the groove in the bar when the pile wire is inserted in one of the vertical slots aforesaid to support the wire, and means for restraining said projections, and consequently the pile wires, against displacement from the holder in a vertically upward direction, while allowing upward swinging motion of each wire about the projection at its forward end as a fulcrum.

6. A pile fabric loom as defined in claim 1 wherein the holder comprises a rigid bar mounted transversely across the loom near the forward end thereof, said bar having a series of vertical uniformly spaced slots formed in its rear edge and extending forwardly therefrom to snugly receive the forward ends of the pile wires, the said bar also having a groove in its upper face extended longitudinally of the bar in front of the slots, each pile wire having a forwardly extended projection on the forward end thereof and coextensive therewith, said projection extending into

and resting upon the base of the groove in the bar when the pile wire is inserted in one of the vertical slots aforesaid to support the wire, and means for restraining said projections, and consequently the pile wires, against displacement from the holder in a vertically upward direction, while allowing upward swinging motion of each wire about the projection at its forward end as a fulcrum, in combination with means for restraining said pile wires against longitudinal displacement in a rearward direction relative to said holder when the wires are assembled in the loom.

7. A pile fabric loom as defined in claim 1, wherein the holder comprises a rigid bar mounted transversely across the loom near the forward end thereof, said bar having a series of vertical uniformly spaced slots formed in its rear edge and extending forwardly therefrom to snugly receive the forward ends of the pile wires, the said bar also having a groove in its upper face extended longitudinally of the bar in front of the slots, each pile wire having a forwardly extended projection on the forward end thereof and coextensive therewith, said projection extending into and resting upon the base of the groove in the bar when the pile wire is inserted in one of the vertical slots aforesaid to support the wire, and means removably mounted on the upper side of said bar and overlying the projections on the forward ends of the wires, for restraining said projections, and consequently said wires, against displacement from said holder in a vertically upward direction.

8. A pile fabric loom as defined in claim 1, wherein the holder comprises a rigid bar mounted transversely across the loom near the forward end thereof, said bar having a series of vertical uniformly spaced slots formed in its rear edge and extending forwardly therefrom to snugly receive the forward ends of the pile wires, the said bar also having a groove in its upper face extended longitudinally of the bar in front of the slots, each pile wire having a forwardly extended projection on the forward end thereof and coextensive therewith, said projection extending into and resting upon the base of the groove in the bar when the pile wire is inserted in one of the vertical slots aforesaid to support the wire, and means removably mounted on the upper side of said bar and overlying the projections on the forward ends of the wires, for restraining said projections, and consequently said wires, against displacement from said holder in a vertically upward direction, while permitting removal of any wire at will by longitudinal displacement in a rearward direction.

9. A pile fabric loom as defined in claim 1, wherein the holder comprises a rigid bar mounted transversely across the loom near the forward end thereof, said bar having a series of vertical uniformly spaced slots formed in its rear edge and extending forwardly therefrom to snugly receive the forward ends of the pile wires, the said bar also having a groove in its upper face extended longitudinally of the bar in front of the slots, each pile wire having a forwardly extended projection on the forward end thereof and coextensive therewith, said projection extending into and resting upon the base of the groove in the bar when the pile wire is inserted in one of the vertical slots aforesaid to support the wire, and means for restraining said projections, and consequently the pile wires, against displacement from the holder in a vertically upward direction, said means comprising a clamping bar mounted on the upper side of the slotted holder bar at the forward edge thereof and overlying the groove and pile wire projections on the forward ends of the wires when the pile wires are inserted in the slots in the holder bar.

10. A pile fabric loop as defined in claim 1, wherein the holder comprises a rigid bar mounted transversely across the loom near the forward end thereof, said bar having a series of vertical uniformly spaced slots formed in its rear edge and extending forwardly therefrom to snugly receive the forward ends of the pile wires, the said bar also having a groove in its upper face extended longitudinally of the bar in front of the slots, each pile wire having a forwardly extended projection on the forward end thereof and coextensive therewith, said projection extending into and resting upon the base of the groove in the bar when the pile wire is inserted in one of the vertical slots aforesaid to support the wire, and means for restraining said projections, and consequently the pile wires, against displacement from the holder in a vertically upward direction, while allowing upward swinging motion of each wire about the projection at its forward end as a fulcrum, in combination with means for restraining said pile wires against longitudinal displacement in a rearward direction relative to said holder when the wires are assembled in the loom, said last-named means including a stop bar mounted transversely of the loom below the pile wires, and each pile wire having a downwardly extended projection provided on its lower end and disposed in front of the stop bar for abutting engagement therewith.

11. In a pile fabric loom, including a plurality of heddles for receiving the respective warps and surface yarns, a lay, a reed carried by said lay and having a plurality of spaces therein arranged in spaced relation transversely across the loom for receiving the warps and surface yarns, and said reed and lay being movable forwardly and rearwardly between the weaving point of the loom and the heddles; a plurality of stationary pile wires arranged longitudinally in the loom in parallel transversely spaced relation to each other and extending through the reed spaces, there being one pile wire for each reed space, and a holder having means for removably receiving the forward ends of the pile wires, with the wires disposed in accurate and uniformly spaced relation to each other, and in transverse and longitudinal alinement, while permitting upward swinging movement of the pile wires about their forward ends, and a separator disposed between each pair of adjacent pile wires, with each separator freely movable laterally and supported independently of the pile wires.

12. A pile fabric loom as defined in claim 1, wherein each pile wire is of one-piece and includes a butt section at the forward end thereof adapted to be received in the holder, a knife-supporting section extending rearwardly from the butt section, a pile loop releasing section extending horizontally and rearwardly from the knife-supporting section, a pile height-forming section extending horizontally and rearwardly from the pile-releasing section and being of greater height than the latter section, a rearwardly and upwardly sloping loop guiding section extending from the pile height-forming section, and a vertical leg section at the rear end of the sloping loop guiding section.

13. A pile fabric loom as defined in claim 1, wherein each pile wire is of one-piece and in-

cludes a butt section at the forward end thereof adapted to be received in the holder, a knife-supporting section extending rearwardly from the butt section, a pile loop releasing section extending horizontally and rearwardly from the knife-supporting section, a pile height-forming section extending horizontally and rearwardly from the pile-releasing section and being of greater height than the latter section, a rearwardly and upwardly sloping loop guiding section extending from the pile height-forming section, and a vertical leg section at the rear end of the sloping loop guiding section, said vertical leg section being extended upwardly above the rear end of the sloping section.

14. In a pile fabric loom, including a plurality of heddles for receiving the respective warps and surface yarns, a lay, a reed carried by said lay and having a plurality of spaces therein arranged in spaced relation transversely across the loom for receiving the warps and surface yarns, and said reed and lay being movable forwardly and rearwardly between the weaving point of the loom and the heddles; a plurality of stationary pile wires arranged longitudinally in the loom in parallel transversely spaced relation to each other and extending through the reed spaces, there being one pile wire for each reed space, and a holder having means for removably receiving the forward ends of the pile wires, with the wires disposed in accurate and uniformly spaced relation to each other and in transverse and longitudinal alinement, while permitting upward swinging movement of the pile wires about their forward ends, and a separator disposed between each pair of adjacent pile wires, with each separator

suspended vertically in the loom from its upper end so as to be freely movable laterally and supported independently of the pile wires.

15. A one-piece pile wire for pile fabric looms, comprising a flexible, relatively thin and flat wire member including coextensive butt, knife-supporting, pile-releasing, pile height-forming and sloping guide sections, arranged in the order as stated from the front end to the rear end of the wire, and terminating at its rear end in a leg section disposed substantially perpendicular to the longitudinally extended dimension of the wire, with the upper end of the leg section extended upwardly above the sloping guide section, and the lower end of the leg section being extended downwardly at the forward edge thereof to form a rearwardly and downwardly open notch at its lower rear edge.

16. A pile wire as defined in claim 15, wherein the butt section is provided with a forwardly extended overhanging projection on its forward upper end, with the projection forming a horizontally disposed supporting shoulder.

17. A pile wire holder for pile fabric looms, comprising a rigid bar having a plurality of equally spaced vertical slots in one edge thereof, a longitudinally extended groove formed in the upper face of the bar at the forward ends of the slots aforesaid, and a clamping bar removably mounted on the upper face of the holder bar and overhanging the groove, with the rearward edge of the clamping bar terminating approximately in line with the forward ends of the slots.

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