March 25, 1952 F. P. GROAT ET AL 2,590,609

PILE WIRE

Filed Dec. 28, 1949



Fig. 1.

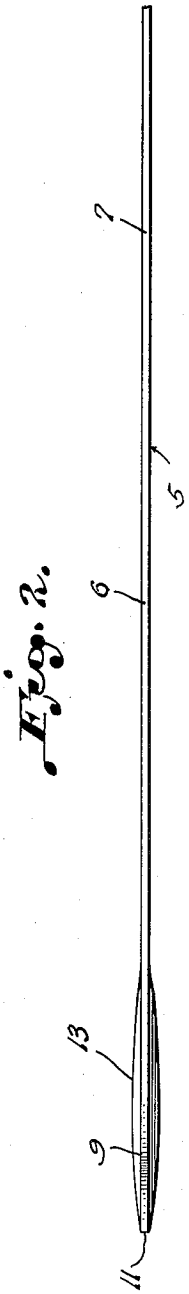


Fig. 2.



Fig. 4.

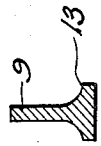


Fig. 3.

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PILE WIRE

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8 Claims. (Cl. 139—44)

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This invention relates to improvements in pile wires for weaving pile fabrics.

The use of plain wires, cutting wires, shaped wires and knob wires in wire looms for weaving pile fabrics is old and well known in the art. The present invention relates particularly to knob wires having a shank of uniform height and a raised portion or knob on the end opposite the head of the wire. In weaving the fabric the pile warps are raised over the shank of the wires to form loops and upon withdrawal of the wires the loops are raised by the knob to a height corresponding to the height of the knob. In practice, the variation in the height of the shank of knob wires is limited which necessarily limits the variation in the height of the knob, so that the height of the loops formed by withdrawal of the wires is relatively high. If the height of the shank is below a certain limit the wire will turn causing the knob to tip over to the side so as to interfere with the withdrawal of the wire. Wires of the knob type will not operate satisfactorily unless the knob remains erect when the wire is withdrawn and consequently the present wires must have a relatively high shank and knob.

It is an object of the present invention to provide a wire having a relatively low shank and knob with means for maintaining the wire in an erect position while being withdrawn from the woven fabric to produce pile loops of relatively low height.

A further object of the invention resides in providing a pile wire having a knob provided with a widened base or shoe which serves to hold the knob in an erect position when the wire is withdrawn from the woven fabric.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a side elevational view of the improved wire,

Fig. 2 is a top plan view of the same,

Fig. 3 is a sectional taken on the line 3—3 of Fig. 1, and,

Fig. 4 is a section taken on line 4—4 of Fig. 1.

Referring to the drawing wherein for the purpose of illustration a preferred embodiment of the invention is shown the numeral 5 denotes generally the improved wire. It includes a shank 6 of substantially rectangular shape in cross section having upper and lower rounded edges 7 and

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8. The shank is that portion of the wire which is inserted in the fabric being woven and the length of the shank will depend on the width of the fabric to be woven. The front end of the shank which is that end opposite the end attached to the head is provided with a raised portion or knob 9 and when the shank is fully inserted the raised portion extends beyond the inner selvage of the fabric. The forward edge 10 of the knob rises gradually from the shank to the crest of the knob. The rear end of the knob terminates in a point 11 from which extends a downwardly curved edge 12 which merges with the lower edge 8 of the shank. The sides of the knob or raised portion throughout their length are flared outwardly at the bottom to provide lateral flanges or extended portion 13 extending from opposite sides of the shank which serve as a foot or shoe to hold the knob in a vertical or erect position at all times. The foot formed by the extended portions has a width greater than the width or height of the shank.

A knob wire of the type described is particularly useful when used in combination with plain wires with or without cutting wires. A loop pile fabric having loops of different heights in some of the transverse rows may be woven by using the improved knob wire in alternation with plain wires and if a loop and tuft pile fabric is desired cutting wires may be inserted in the fabric between the knob and plain wires. Assuming a fabric of two or more frames of pile warp is being woven and the warps are selectively raised over the wires inserted in the fabric in the usual manner. Upon withdrawal of the plain wires the loops formed thereon will be of a height corresponding to the height of the wire. When the succeeding knob wire is withdrawn the loops formed thereon will be raised by the knob to a height corresponding to the height of the knob which pulls the warps to reduce the height of those loops in the preceding row formed from the same warps. Those loops in the preceding row not formed of the same pile warps will not be reduced in height and as the row of loops formed by withdrawal of the knob wire are not affected by withdrawal of the next succeeding plain wire they will remain a uniform height corresponding to the height of the knob. By providing the knob wire with a relatively low shank and knob it is possible to produce a row of loops having a height no greater than the height of the lowest loops in the rows of loops of different heights. In practice a plain wire having a height of .370" has been used in combination

with a knob wire having a shank of .082" and a knob of .144" giving an all over height of .226". The loops woven over the plain wire of the same pile warps as the loops woven over the shank of the knob wire were reduced by withdrawal of the knob wire a distance of .144", so that the row of loops formed by the knob wire were the same height as the lowest loops in the rows of loops of different height. Heretofore, knob wires of the dimensions mentioned were not feasible as the wires will turn causing the knob to tip over to the side and interfere with withdrawal of the wire. By providing the knob on the end of the shank with a shoe or foot we have overcome this difficulty which permits knob wires of such dimensions to be used and thus produce loop pile fabrics of new and novel textured effects.

It is to be understood that the form of our invention herein shown and described is a preferred example of the same and that changes in the shape, size and arrangement of the parts may be made without departing from the spirit of the invention or scope of the subjoined claims.

Having thus described our invention, we claim:

1. A pile wire for wire looms comprising a shank having a raised portion at one end and lateral flanges on said shank for maintaining the raised portion in an erect position when inserting or withdrawing the wire.

2. A pile wire for wire looms comprising a shank having a high portion at one end, the lower edge of the high portion having lateral flanges for maintaining the high portion in an upright position.

3. A pile wire for wire looms comprising a relatively low shank having a raised portion at one end, the sides of the raised portion being curved outwardly at the base to provide a foot wider than said shank.

4. A pile wire for wire looms comprising a relatively low shank, a high portion at one end of said shank having its top edge inclined downwardly into merging relation with the top edge of said shank, the sides of said high portion being flared outwardly at the bottom to provide a foot wider than said shank.

5. A pile wire for wire looms comprising a relatively low shank, a high portion at one end of said shank having its top edge inclined downwardly into merging relation with the top edge of said shank, the sides of said high portion being flared outwardly at the bottom to provide a foot wider than said shank, said foot being curved upwardly at its outer end.

6. A pile wire for wire looms comprising a shank of relatively low height having a raised portion at its front end, said shank having extended portions from opposite sides thereof to provide a foot having a width greater than the height or width of the shank.

7. A pile wire for wire looms comprising a shank of relatively low height having a raised portion at its front end, said raised portion being extended from opposite sides to provide a foot for supporting the raised portion in an upright position when inserting and withdrawing the wire.

8. A pile wire for wire looms comprising a shank of relatively low height having a raised portion at its front end, a portion of the lower edge of said shank adjacent the front end of the shank being wider than the height or width of the shank.

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