G. HEDRICH.

CHENILLE.

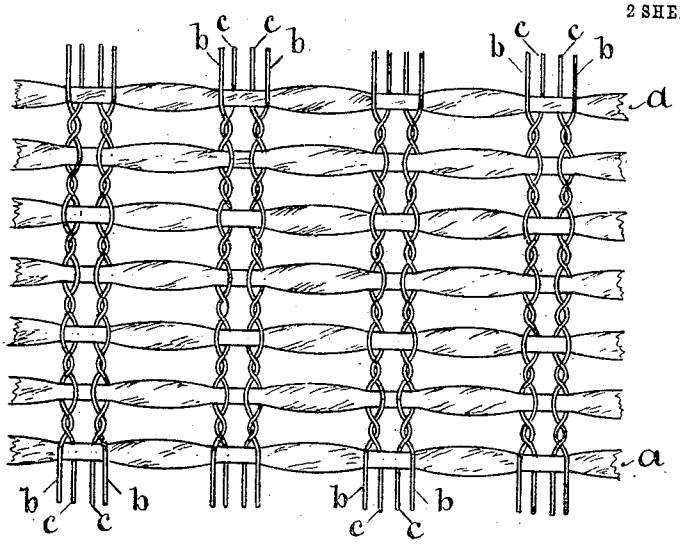
APPLICATION FILED APR. 18, 1908.

954,570.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



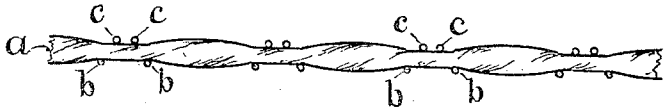


Fig. 2.

Fig. 3.

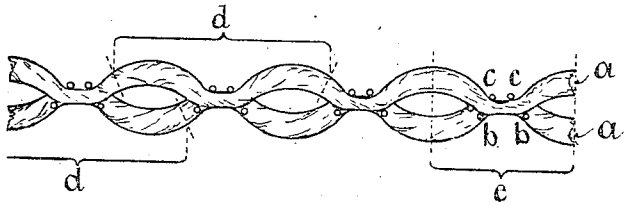
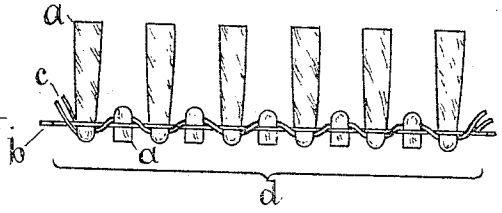


Fig. 4.



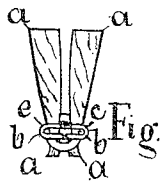
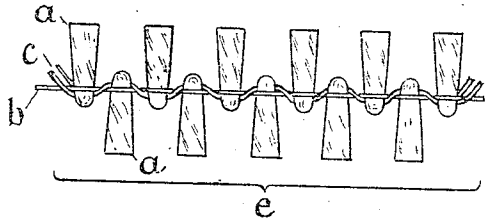


Fig. 5.

Fig. 6.



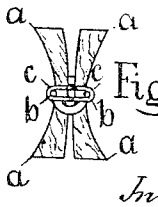


Fig. 7.

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2 SHEETS—SHEET 2.

Fig. 8.

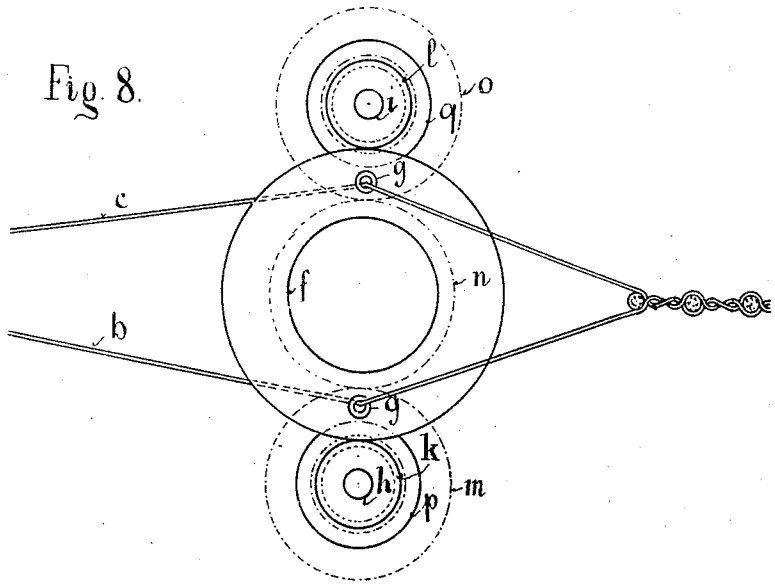
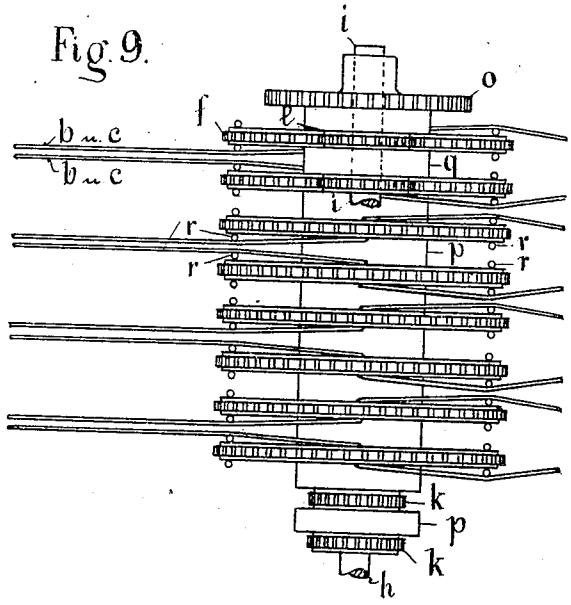


Fig. 9.



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UNITED STATES PATENT OFFICE.

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CHENILLE.

954,570. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed April 18, 1908. Serial No. 427,849.

To all whom it may concern:

Be it known that I, GUSTAV HEDRICH, a subject of the German Emperor, residing at Barmen, in Germany, have invented certain new and useful Chenille, of which the following is a specification.

This invention consists in an improvement in the manufacture of chenille for pile fabrics on which the pile appears on one or both sides, for carpets, curtains, hangings, table-covers, and the like, similar to oriental and chenille goods.

An object of the improvement is to provide a chenille in which the knots are effectively locked in the thread and at the proper distance apart.

A further object is to provide a chenille in which the knots have their two ends tending to lie close together, so that they may tend to assume and maintain position perpendicular to the base of the fabric woven with this chenille.

A further object is to provide a chenille capable of being cut to form the pile filling for a single pile or double pile fabric.

A further object is to provide a chenille capable of being conveniently carried between the warp threads of the base of the fabric in the weaving thereof.

A further object is to provide chenille for the manufacture of a pile fabric of this nature which requires no locking weft or warp for the retaining of the knots, but can be made by the use of the improved chenille and a single woven base.

Figures 1–7 of the annexed drawings are diagrams explaining the method of formation of the chenille, Fig. 1 being a plan of the chenille in course of manufacture as stretched on the machine, Fig. 2 a front or edge view thereof, Fig. 3 an edge view of the chenille when removed from the machine, Fig. 4 a side view and Fig. 5 an end view of the chenille cut as for single pile fabric. Fig. 6 a side view and Fig. 7 an end view of the chenille cut for a double pile fabric. Figs. 8 and 9 show a side view and plan respectively of a construction for the execution of the method.

Contrary to the already known methods of manufacturing chenille where the tufts of the chenille are laid about a central thread, it may be pointed out, that in the present method no central thread is used, but pile wefts *a*, *a* (Fig. 1) are bound up together at intervals by separated groups of threads, each group consisting of two pairs of threads *b*, *c*, each pair as shown in Fig. 1 being twisted, the one to the right the other to the left, either once or more in the spaces between the adjacent chenille wefts, the twisting being reversed after each pile weft. On the machine where this chenille fabric is produced, the chenille is tightly stretched so that it appears in front view as shown in Fig. 2. After it is taken off the machine and stretched in the direction of the threads *b*, *c*, a corrugated or tubular form as shown in Fig. 3 will result, which arises from the alternately opposed twists of the pairs of threads *b*, *c*, as the latter tend to press the individual wefts individually upward and downward. This tubular formation which is important for the cutting of the chenille, is increased if the threads *b* and *c* during the manufacture are stretched with unequal tension. If the tubular fabric so obtained is cut at the places marked by dotted lines in Fig. 3 at *d*, the ends of the tufts are pulled upward by the tendency of the threads *b c* to untwist without any further manipulation so that a one-sided chenille is obtained, which is shown in Fig. 4 in longitudinal view and Fig. 5 in cross-section.

It will be seen that the chenille strips are produced from the upwardly directed and the downwardly directed pile wefts alternately. The wefts are therefore alternately used for the formation of the one and the other of two neighboring chenille strips (see Fig. 3, *d* above and *d* below), and there are left small pieces of the weft (see Figs. 4 and 5) between the tufts which are as firmly knotted in as the tufts themselves, so that assisting to give body to the fabric they constitute no special loss of material. They also provide the spacing necessary or desirable for the passage of the weft of the fabric into which the chenille is afterward incorporated.

The chenille for double-sided pile fabrics is obtained from the material shown in Fig. 1, by cutting the tubular portions, not in the same manner described above, but by a single direct cut through the middle of them (as shown at *e* in Fig. 3) so that a chenille is formed as in Figs. 6 and 7 with alternately upwardly and downwardly directed tufts. Since the tufts are straightened up after the cutting of the pile wefts by the partial untwist of each pair of threads *b*, *c*, the threads

require more than a half turn. This is not possible in an ordinary twisting machine and is therefore suitably done by means of the construction which is shown in two views diagrammatically in Figs. 8 and 9. The spacing of the threads *b*, *c*, is done by annular disks *f* which are put into rotary motion and through the oppositely placed eyes *g*, *g*, of which the threads *b*, *c*, are respectively passed in opposite directions to that in the two disks *f*, which belong together and are necessary for each chenille strip, the threads pass either as shown from the inside toward the outside or contrarily from the outside toward the inside. At the same time as the disks are turned, the twisting of the threads takes place and by turning the disks alternately toward the right and the left an alternately right and left twist is given to the threads after each weft is thrown and beaten up. The turning of the disks *f*, which of course cannot be arranged on an axle, since the threads have to pass unhindered across the axis, is effected in the following manner. Below and above the disks *f* two shafts *h*, *i*, are respectively arranged carrying toothed disks *k*, *l*, engaging teeth on the peripheries of the disks *f* and geared to one another by the toothed wheels *m*, *n*, *o*, (shown by dotted lines in Fig. 8). As they act in opposite directions upon the disks *f*, this row of disks is sufficiently held without any axle, especially as the disks *f* and toothed wheels *l*, *k* are provided with smooth flanges *r*, *p*, *q*, alongside the teeth, which cause a quiet running of the whole arrangement as they prevent the grinding of the teeth at the base. The flanges *p* on the shaft *h* and *q* on the shaft *i*, also secure the proper distance apart and serve also as guides for the disks *f* by means of their lapping-over rim. For the latter purpose vertical guide-pins r^1 may also be provided, as suggested in Fig. 9, which serve also as guides for the threads *b*, *c*. The reciprocatory turning of the wheels and disks may be effected in different ways, for instance, by means of a reciprocatory toothed rack engaging in one of the wheels *m* or *o*.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. The method of forming chenille for pile fabrics consisting in passing pile wefts successively between threads which are twisted together in pairs, the threads being disposed in groups spaced from one another, each group comprising two pairs of threads, one pair being twisted to the left and the other pair to the right between any two successive pile wefts, the twisting being reversed after each weft and subsequently separating the fabric so formed into separate chenilles by severing the pile wefts between the thread groups.

2. The method of forming chenille for pile fabrics consisting in passing pile wefts successively between threads which are twisted together in pairs, the threads being disposed in groups spaced from one another, each group comprising two pairs of threads, one pair being twisted to the left and the other pair to the right, between any two successive pile wefts, the twisting being reversed after each weft and subsequently separating the fabric so formed into separate chenilles by severing the pile wefts between the thread groups, the pile wefts being severed near the group of threads on the right and left alternately nearest the point of severance.

3. The method of forming chenille for pile fabrics consisting in passing pile wefts successively between threads which are twisted together in pairs, the threads being disposed in groups spaced from one another, each group comprising two pairs of threads, one pair being twisted to the left and the other pair to the right and each pair being twisted so that the threads engage one another and pass each alternately under and over the successive pile wefts, between any two successive pile wefts, the twisting being reversed after each weft and subsequently separating the fabric so formed into separate chenilles by severing the pile wefts between the thread groups.

In witness whereof I have signed this specification in the presence of two witnesses.

GUSTAV HEDRICH. [L. S.]

Witnesses:

OTTO KÖNIG,

C. BÄRTHLEIN, Jr.