No. 725,627. PATENTED APR. 14, 1903.

H. PANITSCHEK & J. AHORN.

PATTERN FABRIC AND METHOD OF MAKING SAME.

APPLICATION FILED APR. 20, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

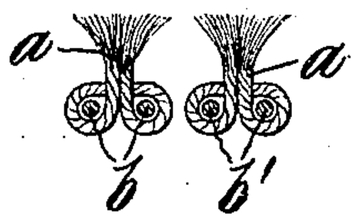


Fig. 2.

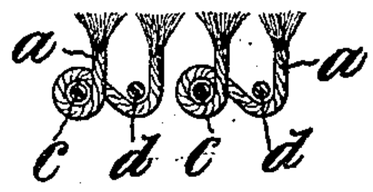


Fig. 3.

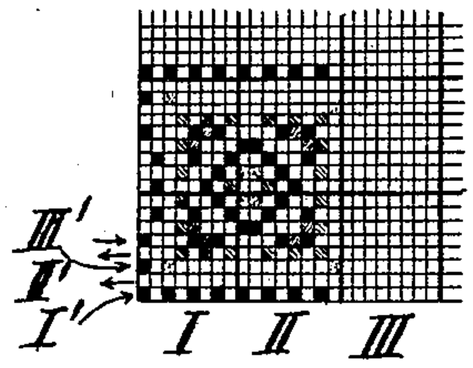
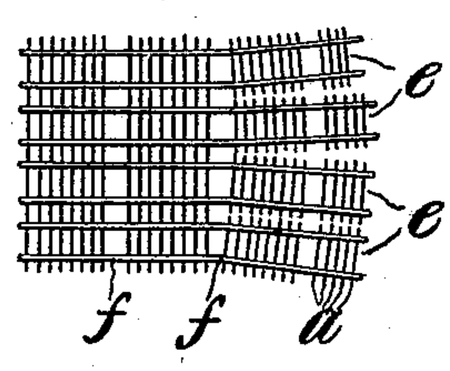


Fig. 4.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

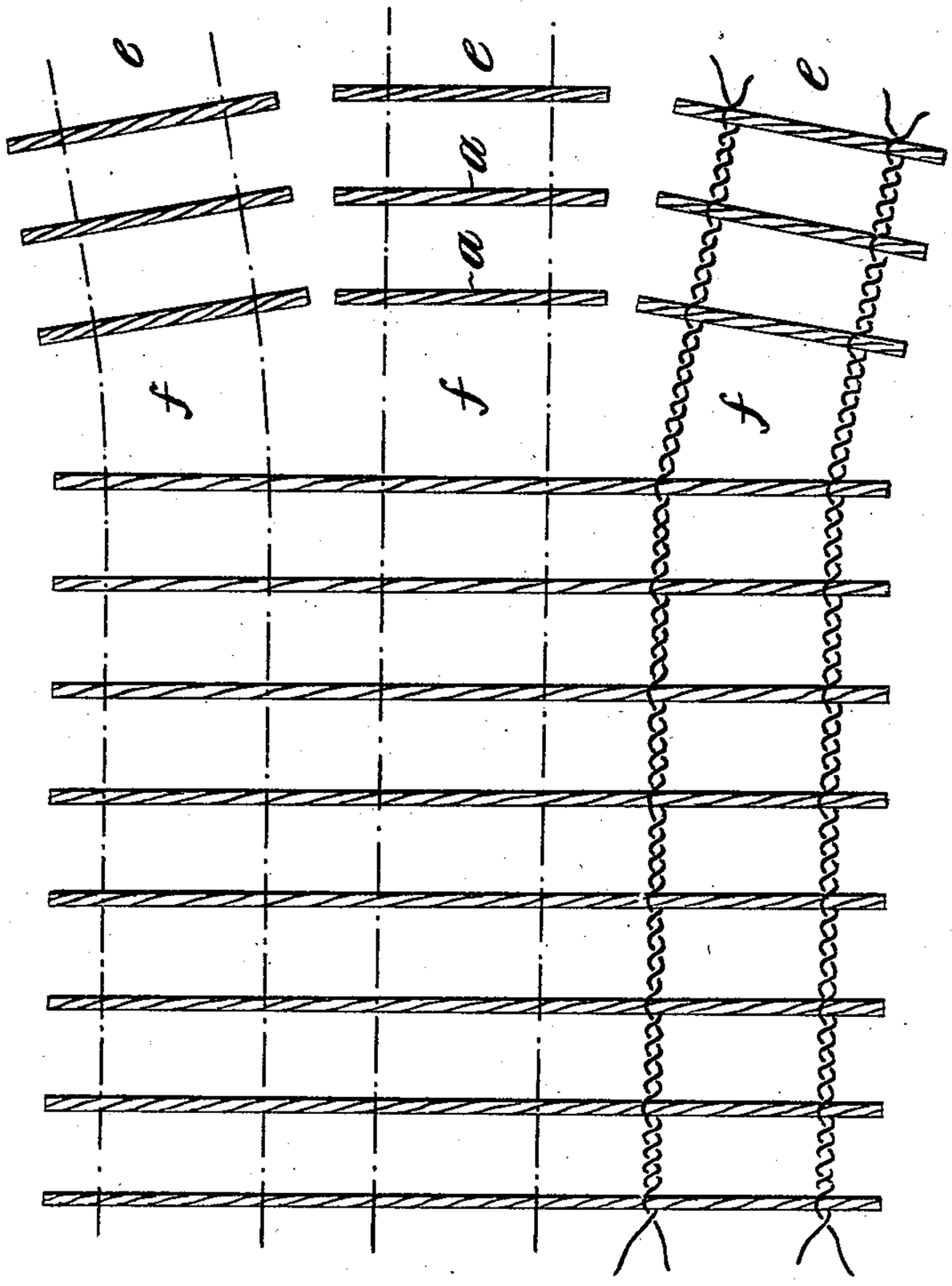
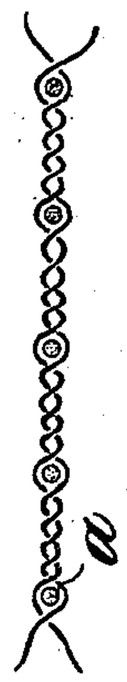


Fig. 6.



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UNITED STATES PATENT OFFICE.

HEINRICH PANITSCHEK AND JOHANN AHORN, OF SARAJEVO, AUSTRIA-HUNGARY.

PATTERN FABRIC AND METHOD OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 725,627, dated April 14, 1903.

Original application filed August 19, 1899, Serial No. 727,819. Divided and this application filed April 20, 1901. Serial No. 56,733. (No specimens.)

To all whom it may concern:

Be it known that we, HEINRICH PANITSCHEK and JOHANN AHORN, subjects of the Emperor of Austria-Hungary, residing at Sarajevo, Province of Bosnia, Empire of Austria-Hungary, have invented certain new and useful Improvements in Pattern Fabrics and Methods of Making Same, (being a division of application Serial No. 727,819, filed August 19, 1899;) and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The essential difference between the coarse long-pile Smyrna carpets and the fine short-pile Persian carpets lies in the different manner of inserting the pile-threads in the warp—*i. e.*, the kind of knot used to form the pile, which is twisted or knotted around the warp-threads one after another in the direction of the weft. Then a weft-thread or ground pick is inserted to bind the knots and the pile cut to proper length.

In the drawings, in which like parts are similarly designated, Figure 1 illustrates the Smyrna knot; Fig. 2, the Persian knot; Fig. 3, a design on paper or otherwise for a Persian carpet; Fig. 4, the finished pattern fabric, part of it being cut in the direction of the warp and ready for use for making the finished carpet. Fig. 5 is an enlarged plan, and Fig. 6 is an edge view of the same.

It will be observed that in Fig. 1 the Smyrna knot is formed by twisting the pile-thread *a* around a pair of warp-threads *b b* and bringing both ends of the pile together and up between the two warp-threads *b*. The pile is therefore not distributed uniformly, because the tufts or pile passes up between the two warp-threads of a pair *b b;* but no pile passes between adjacent pairs of warp-threads *b b'*. Now if a carpet made with this knot were cut very short it would exhibit rows of tufts separated by interspaces, because the pile would be too short to spread across and fill up the comparatively wide interspace between the pairs of warp-threads. This is quite different with the knot of the fine Persian carpets illustrated in Fig. 2, where the pile *a* makes a complete turn around one thread *c* of a pair of warp-threads *c d*, one end coming up between them, while the other end is carried under the second warp-thread *d* of a pair of such threads and brought up between the adjacent pairs of warp-threads *d c*, so that there will be a pile between any two adjacent warp-threads, giving a perfectly uniform distribution of the pile.

Now the object of our invention is to form a fabric such that when cut into strips in the direction of the warp each strip will contain short weft-threads of sufficient length to form a knot after removal from the pattern-strip. These weft-threads of different colors are inserted in the order required to form a pattern when successively removed from these strips and knotted to the warp-threads of a carpet in the process of manufacture in the weft direction. In order to do this, the design Fig. 3, made in colors, is cut in what represents the warp direction of the finished fabric into strips I II III, each strip containing a certain number of knots in its width and here shown, for example, eight—that is, there are eight points in the width of each strip and each row of eight points is inserted into the warp-threads of the pattern fabric in zigzag order, the row I' worked from left to right, II' from right to left, III' from left to right, and so on with the remaining rows. The warp-threads are arranged in pairs, two pairs to each strip. The weaver now inserts weft-threads into the warp-threads of the pattern fabric to be made, after the latter have been twisted together and before beaming in the order and of the color indicated in the several rows of the pattern-strip I', II', III', &c., before him; but these weft-threads must be so inserted that when the pattern fabric is cut into strips in its own warp direction these short weft-threads can be easily pulled out one after the other, thus forming several strips, each of which contains short threads *a*, that are to serve as pile-threads in a carpet, and all these threads will

occur in the same order in each strip *e* of the pattern fabric. Now the weft-threads of this pattern fabric should not be close together, in order to prevent as far as possible the simultaneous removal of several threads. The weft should also not be held too tightly, but, nevertheless, should be held tight enough to prevent the weft-threads from coming out during the cutting of the pattern fabric. In order to hold them, the warp-threads, beamed in pairs twisted together, are given extra twist on the cloth-beam side of the loom and untwisted to the same extent on the warp-beam side of the loom, so that the two warp-threads near the cloth-beam are twisted together, and thus hold the weft-threads securely between them and twist them up in the warp. We have found three twists or turns to the centimeter sufficient to accomplish this result; but the amount of twist may be varied and is left to the judgment of the weaver. After every pick the warp-threads are given the required twist.

In order to readily count and insure the proper number of weft-threads in the pattern fabric, it is advisable to separate the rows of the pattern I′ II′, &c., that have been picked in the pattern fabric by suitable intervals *f*, Fig. 4. In order to do this, a double space is left between the rows, which can be done by omitting a pick or allowing the shuttle to run idle at the end of a row of points in the design, (here shown as an example at the end of every eight picks, Fig. 4, of the eight-point pattern-strips of Fig. 3,) while the winding of the cloth-beam and twisting of warp-threads is not discontinued.

The fabric is cut into strips, from which the short weft-threads are removed and woven in as a pile in carpet in the weft direction in zigzag manner, and after every group of threads has been knotted a ground-pick is inserted.

It will thus be seen that each strip will serve for feeding in proper order the tufts or pile-threads to the weaver or loom for as many carpets of the same design as there are strips *e* cut from the pattern fabric.

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. The method of making pattern fabrics, which consists in weaving colored weft-threads into warp-threads in the order in which they will occur in the weft direction of a finished fabric and in groups, twisting the warp-threads as they are fed, and interspacing the groups of weft-threads at the end of the row of knots represented by the pattern, substantially as described.

2. The method of making pattern fabrics, which consists in weaving colored weft-threads into warp-threads in the order in which they occur in the weft direction of a finished fabric and in groups, twisting the warp-thread on the cloth-beam side of the shed and similarly untwisting them on the warp-beam side thereof, interspacing the groups of weft-threads to correspond to the rows of the pattern, and cutting the pattern fabric into strips in the warp direction, substantially as described.

3. The method of making pattern fabrics, which consists in twisting together pairs of warp-threads, inserting weft-threads in the order in which they are to occur in the finished fabric and in groups, each thread of a group separated from the others thereof by a plurality of twists of said warp-threads and producing between the groups of weft-threads a greater number of twists, substantially as described.

4. The method of making pattern fabrics, which consists in untwisting pairs of twisted warp-threads and again twisting them together in pairs, inserting colored weft-threads after a determined number of twists to said pairs of warp-threads in the order in which they are to occur in the finished fabric, twisting the pairs of warp-threads on the cloth-beam side of the shed and similarly untwisting them on the warp-beam side of the shed, and cutting the pattern fabric into strips containing two pairs of twisted warp-threads, substantially as described.

5. The method of making temporary pattern fabrics, which consists in twisting colored weft-threads between warp-threads that are spaced in pairs, twisting together the warp-threads in pairs, inserting weft-threads spaced and in groups of eight, and cutting the pattern fabric into strips, each containing two pairs of twisted warp-threads and the spaced and grouped weft-threads, substantially as described.

6. The method of making pattern fabrics, which consists in untwisting warp-threads that have been twisted together, to form a shed and inserting weft-threads in the order in which they are to occur in the weft direction of a pile fabric, then twisting the pairs of warp-threads together again, inserting the weft-threads spaced and arranged in groups, and the groups spaced from one another, substantially as described.

7. A pattern-fabric strip, comprising interspaced short weft-threads, arranged in groups, spacing between the groups different from that between the individual threads forming a group, and said weft-threads twisted between pairs of warp-threads, substantially as described.

8. A pattern-fabric strip, consisting of two pairs of warp-threads, each pair of warp-threads twisted together and weft-threads held in the warp-threads, said weft-threads spaced and arranged in groups, substantially as described.

9. A pattern fabric, comprising warp-threads twisted together, interspaced weft-threads held in the warp-threads and arranged in groups and the spacing of the groups being different from that of the weft-threads, substantially as described.

10. A pattern-fabric strip, consisting of two pairs of warp-threads, the threads of a pair twisted together, interspaced short weft-threads held therein and of sufficient length to form pile-threads in a pile fabric, said weft-threads also arranged in groups and the spacing of the groups being different from that of the weft-threads, substantially as described.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

HEINRICH PANITSCHEK.
JOHANN AHORN.

Witnesses:
GUSTAV PHILIPPUTSCH,
ALVESTO P. HOGUE.