No. 782,178. PATENTED FEB. 7, 1905.

H. SARAFIAN.

WOVEN PILE FABRIC.

APPLICATION FILED APR. 7, 1904.

Fig 1

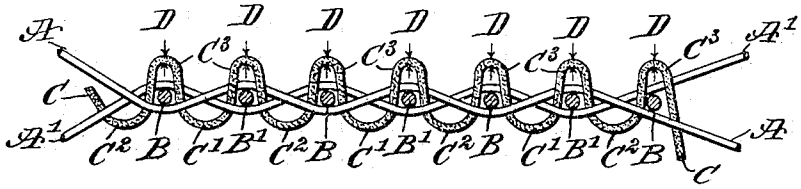


Fig 3

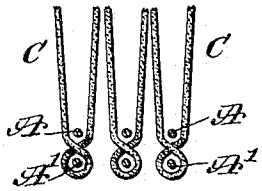


Fig 4

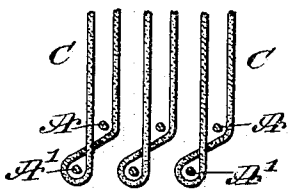


Fig 2

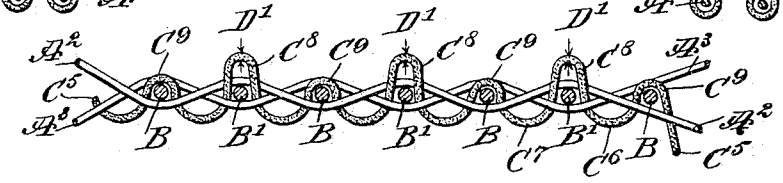


Fig 5

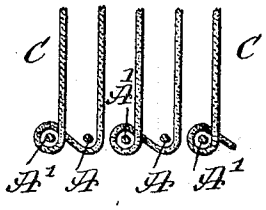


Fig 6

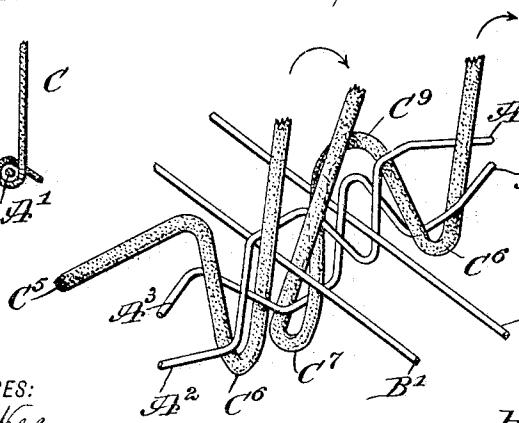
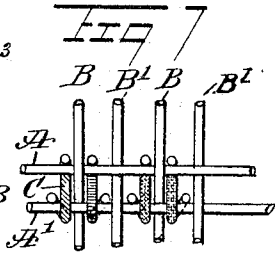


Fig 7



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No. 782,178. Patented February 7, 1905.

UNITED STATES PATENT OFFICE.

HOVCEP SARAFIAN, OF YONKERS, NEW YORK.

WOVEN PILE FABRIC.

SPECIFICATION forming part of Letters Patent No. 782,178, dated February 7, 1905.

Application filed April 7, 1904. Serial No. 202,059.

To all whom it may concern:

Be it known that I, HOVCEP SARAFIAN, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Woven Pile Fabric, of which the following is a full, clear, and exact description.

The invention relates to woven pile fabrics such as shown and described in the Letters Patent of the United States No. 752,712, granted to me February 23, 1904.

The object of the present invention is to provide a new and improved woven pile fabric in which the piles extend in one direction and a long pile can be used and at the same time an exceedingly-strong fabric can be readily produced on a loom of simple construction.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an enlarged longitudinal section of the improvement. Fig. 2 is a like view of the same, showing alternate face-loops drawn down onto the face of the body of the fabric. Figs. 3, 4, and 5 are cross-sectional views of the weave. Fig. 6 is a perspective view of the finished fabric illustrated in Fig. 2; and Fig. 7 is a plan view of the improvement, showing the use of a drum-printed pile warp-thread.

The body of the woven pile fabric illustrated in Fig. 1 is formed of sets of ground warp-threads, each set containing at least two continuous ground warp-threads A A′, of which for convenient distinction I prefer to call the ground warp-thread A the "upper" ground warp-thread and the other ground warp-thread A′ the "lower" ground warp-thread, and the sets of ground warp-threads are suitably interwoven with binding weft-threads B and B′, and each set of ground warp-threads is also interwoven with a continuous pile warp-thread C, having lower or bottom loops C' C^2 looped around the lower ground warp-thread A′ and passing between the ground warp-threads to form upper or face loops C^3, extending a distance above the upper ground warp-thread A and adapted to be cut at D to produce a pile-surface. In weaving the fabric each pile warp-thread C preferably starts from the left to the right of a pair of ground warp-threads A A′. In starting from the left to the right and after the first weft-thread B is inserted the pile warp-thread C passes down on one side of the upper ground warp-thread A, then between the ground warp-threads A A′ of a pair of warp-threads, to then loop around the lower ground warp-thread A′ to form the bottom loop C′, and to again pass between the ground warp-threads A′ A and then rise on the opposite side of the upper ground warp-thread A. The pile warp-thread C now makes the face-loop C^3 a distance above the upper ground warp-thread A and over a wire or knife, which cuts the loop C^3 at D, and then the pile warp-thread C passes down on the same side of the upper ground warp-thread A and between the ground warp-threads A A′ to form the other bottom loop C^2. The pile warp-thread C then passes between the ground warp-threads A′ A to rise on the other side of the upper ground warp-thread A and form another face-loop C^3. The pile warp-thread C extends from the face-loop C^3 downward between the ground warp-threads A A′ to be looped around the bottom ground warp-thread A′ to form the next bottom loop C′, and the above-described operation is then repeated—that is, the pile warp-thread is extended up between the ground warp-threads A A′ over a wire or knife to form the next face-loop C^3, and so on. The warp-thread A passes in front of the ground warp-thread A′ at the crossing and binding-in portion of the ground warp-threads A and A′ and also passes in front of the pile warp-thread C at the loop C^3, located at the crossing and binding-in portion of the ground warp-threads A and A′, and by this arrangement I am better enabled to produce the weave by simple mechanical operations. In very

closely weaving the fabric the ground warp-threads A A′ of a set of ground warp-threads stand approximately one above the other, as plainly illustrated in Fig. 3; but in case the weaving is less close then the ground warp-thread A of a set of ground warp-threads appears staggered relative to the ground warp-thread A′, as shown in Fig. 4, and when the fabric is loosely woven the ground warp-thread A of a set of ground warp-threads appears approximately alongside its mate A′, as indicated in Fig. 5. It is understood that the relative tension given to the ground warp-threads A A′ of a set of ground warp-threads produces the result as to the relative location of the ground warp-threads to each other, as above mentioned.

In the modified form illustrated in Fig. 2 the pile warp-thread C^5 forms lower or bottom loops C^6 C^7 and alternate face-loops C^8 C^9, of which the face-loops C^8 extend a distance above the face of the body of the fabric and are adapted to be cut at D′ to produce a pile-surface. The other face-loop C^9 remains uncut and is drawn down onto the upper face of the body of the fabric at the crossing of the ground warp-threads A^2 A^3. The ground warp-thread A^2 passes in front of the uncut loop C^9 and in front of the other ground warp-thread A^3 at the crossing and binding-in portion of the ground warp-threads A^2 A^3, the same as above described in reference to Fig. 1 and for the same reason.

Fig. 6 shows an enlarged perspective view of the finished fabric just described, and by reference to this figure it will be seen that each individual pile has two bottom loops and one face-loop, the bottom loops being looped around the bottom ground warp-thread A^3, and the side members of the pile all stand inclined in the same direction with the face-loop C^9 between the said side members. By this arrangement each pile is very firmly interlocked with the ground warp-threads to prevent the piles from becoming detached when the fabric is used. By drawing the loops C^9 down a large amount of pile warp-thread is saved; but, if desired, a very long pile-loop C^8 can be made to produce long piles. It will also be seen that by drawing the face-loop C^9 firmly down onto the face of the body of the fabric an exceedingly strong and durable body is produced in which the piles are not liable to become loose or pull out when using the fabric as a rug, for instance.

As shown in the drawings, alternating binding weft-threads B and B′ are employed, passing between the ground warp-threads A A′ directly below the face-loops C^3, as shown in Fig. 1, or below the face-loops C^8 C^9, as illustrated in Fig. 2. The ground warp-thread A, Fig. 1, (or A^2, Fig. 2,) passes under the weft-threads B and over the weft-threads B′, while the ground warp-thread A′, Fig. 1, (or A^3, Fig. 2,) passes over the weft-threads B and under the weft-threads B′.

Although I prefer the arrangement of the weft-threads B and B′ as described, it is evident that more or less weft-threads may be employed, according to the density desired to be given to the body of the fabric.

By reference to Figs. 1 and 2 it will be seen that each warp-thread in its upper position is on the same side of the pile warp-thread, and hence in the finished weave the said upper warp-thread portions tend to incline all the pile ends in one direction to give the pile-face a very desirable sheen similar to the one appearing in oriental rugs. It will also be noticed that the adjacent pile-arms of successive piles stand on the same side of the corresponding warp-thread A A′. (See Fig. 7.) It will also be seen that each pair of ground warp-threads A A′ is interwoven with its own pile warp-thread C, and in case a figured pile-face is called for then the pile warp-thread C (or C^5) used is one that is colored in sections or what is technically known as "drum-printed." (See Fig. 7.) By reference to this figure, which is a plan view of the fabric shown in Fig. 5, the ground warp-threads A A′ appear spaced apart and the pile warp-thread C (or C^5) appears as in the finished fabric—that is, beaten up by the lay of the loom—and the pile-loops appear cut to produce a pile-face in color, according to a predetermined design.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A pile fabric which consists of sets of warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread, extended between the ground warp-threads, and having face-loops, the ground warp-threads passing alternately in the front and rear of the face-loops and the ground warp-thread which passes in front of a face-loop also passes in front of the other ground warp-thread at this face-loop.

2. A pile fabric having sets of warp-threads, weft-threads, and pile-threads, each of the latter having two bottom loops looped around one of the ground warp-threads and a single top loop on the upper face of the body of the fabric, and passing over a weft-thread, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

3. A pile fabric having sets of warp-threads, weft-threads, and pile-threads, each of the latter having two bottom loops looped around one of the ground warp-threads and a single top loop on the upper face of the body of the fabric, located approximately midway between the said bottom loops, and passing over a weft-thread, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

4. A pile fabric having sets of warp-threads, weft-threads, and pile-threads, each of the latter having two bottom loops looped around one of the ground warp-threads and a single top loop on the upper face of the body of the fabric between adjacent crossings of the said ground warp-threads, the loop passing over a weft-thread, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

5. A pile fabric which consists of sets of warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread and forming alternate cut and uncut loops at the face of the body of the fabric, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

6. A pile fabric which consists of sets of warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread and forming alternate cut and uncut loops at the face of the body of the fabric, the uncut face-loops being drawn down onto the body of the fabric, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

7. A pile fabric which consists of sets of warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread and forming alternate cut and uncut loops at the face of the body of the fabric, the uncut face-loops being drawn down onto the body of the fabric and the cut face-loops extending above the face of the body of the fabric, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

8. A pile fabric which consists of sets of warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread, extended between the ground warp-threads and having alternately cut and uncut face-loops, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

9. A pile fabric which consists of sets of warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread, extended between the ground warp-threads and having alternately cut and uncut face-loops, the uncut face-loop being drawn down onto the top face of the body of the fabric, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

10. A pile fabric which consists of sets of

warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread, extended between the ground warp-threads and having alternately cut and uncut face-loops, the uncut face-loop being drawn down onto the top face of the body of the fabric at the crossing of the ground warp-threads, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

11. A pile fabric which consists of sets of warp-threads and of weft-threads for binding said sets together, each set of warp-threads comprising at least two continuous ground warp-threads and one continuous pile warp-thread, the pile warp-thread being looped around one ground warp-thread and extended between the ground warp-threads and having alternately cut and uncut face-loops, the uncut face-loop being drawn down onto the top face of the body of the fabric, one of the ground warp-threads passing in front of the drawn-down face-loop and in front of the other ground warp-thread at the crossing of the ground warp-threads.

12. A pile fabric which consists of sets of warp-threads and weft-threads for binding said sets of warp-threads together, each set of warp-threads comprising at least two continuous ground warp-threads, and a pile warp-thread looped around one ground warp-thread, passing up between the two ground warp-threads, each ground warp-thread in its upper position being on the same side of the pile warp-thread.

13. A pile fabric which consists of sets of warp-threads and weft-threads for binding the said sets of warp-threads together, each set of warp-threads comprising at least two continuous ground warp-threads and a continuous pile warp-thread looped around one ground warp-thread and passing between the ground warp-threads, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

14. A pile fabric which consists of sets of warp-threads and weft-threads for binding the said sets of warp-threads together, each set of warp-threads comprising at least two continuous ground warp-threads and a continuous pile warp-thread looped around one ground warp-thread and extending between the ground warp-threads, to form upper loops which produce piles, the adjacent side arms of successive piles being on the same side of the corresponding ground warp-thread, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

15. A pile fabric which consists of sets of warp-threads, and weft-threads for binding the said sets of warp-threads together, each set of warp-threads comprising at least two continuous ground warp-threads and a continuous pile warp-thread looped around one ground warp-thread and extending between the ground warp-threads to form face-loops which produce piles, the weft-threads passing between the ground warp-threads below the said face-loops, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

16. A pile fabric which consists of sets of warp-threads, and weft-threads for binding the said sets of warp-threads together, each set of warp-threads comprising at least two continuous ground warp-threads and a continuous pile warp-thread looped around one ground warp-thread and extending between the ground warp-threads to form face-loops which produce piles, each bottom loop of the pile warp-thread extending between adjacent weft-threads, the ground warp-threads appearing alternately in the front and rear of the face-loops and the ground warp-thread which appears at one time in front of a face-loop also appearing in front of the other ground warp-thread at this face-loop, one of the ground warp-threads appearing at the rear of the other ground warp-thread at the crossing of the ground warp-threads.

17. A pile fabric which consists of sets of warp-threads, and weft-threads for binding the said sets of warp-threads together, each set of warp-threads comprising at least two continuous ground warp-threads and a continuous pile warp-thread looped around one ground warp-thread and extending between the ground warp-threads to form face-loops which produce piles, the weft-threads passing between the ground warp-threads below the

said face-loops and the ground warp-threads passing alternately over and under the said weft-threads, the ground warp-thread passing under a weft-thread also passing in front of the other ground warp-thread and in front of the face-loop.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOVCEP SARAFIAN.

Witnesses:
THEO. G. HOSTER,
EVERARD BOLTON MARSHALL.