My invention relates to a new and useful textile fabric, more particularly, an embossed tapestry fabric of a novel highly ornamental and durable character, which at the same time is inexpensive to produce. My invention further relates to a novel method of weaving tapestry fabrics and more particularly to a novel method of embossing the figuring or design upon the face of fabrics, so as to produce not only a highly ornamental and at the same time inexpensive tapestry fabric, but whereby also to produce an embossed tapestry fabric of greater durability and one which will better withstand usage and wear.

With the above ends in view my invention consists of a multi-ply tapestry fabric including a ground or body ply, of any suitable weave, extending throughout the entire fabric, unbroken and in substantially one plane, and a figuring ply disposed alternately upon the face or back of the ground or body ply, over any desired figured areas, being tied to the ground ply on the face and being free of the ground ply on the back; said figuring ply being formed of relatively thick and bulky weft threads hereinafter termed “padding” weft threads or “stuffer” weft threads and relatively thin and suitably colored figuring warp threads; and said “padding” weft threads being floated across the ground ply in noninterlocking relation thereto and being encased within and firmly tied to the surface of the ground ply by the figure warp threads, upon the face of the fabric, whereby raising said figured warp threads a very substantial distance above the face of the ground ply, thus to produce a highly accentuated embossed design closely simulating what is known as a frizette effect.

My invention further consists of a novel method of weaving a tapestry fabric of a character stated, which consists in differently tensioning two or more separate sets of warp threads and interweaving the same with two different weft threads of greatly different thicknesses. More particularly my invention consists in providing two differently tensioned sets of ground warp threads and a third and separate set of figured warp threads, the latter tensioned to a lesser extent than either one of the two sets of ground warp threads, interlacing a ground weft thread with said sets of differently tensioned ground warp threads in any desired plain or other weave, throughout the fabric, thereby to produce a continuous and unbroken ground ply in substantially one plane, and interlacing said figure warp threads, or any desired portions of said figure warp threads upon the face of the ground ply, alternately with a “padding” weft thread laid freely, or “floatcd” across the face of the ground ply, and with a ground ply weft thread thereby to tie and to encase said “padding” weft threads on the face of the ground ply, with the desired colored figure warp threads.

Due to the relatively highly tensioned ground weave and the relatively lightly tensioned figure weave, comprising padding weft threads merely laid over the ground weave or ply and not interlaced with any of the ground warp threads, an embossed figuring is produced upon the face of the ground ply, which will project above the surface thereof with sharp and well defined boundaries.

For the purpose of illustrating my invention, I have shown in the accompanying drawings, a form thereof which is at present preferred by me since it will give in practice, satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

In the accompanying drawings, in which like reference characters indicate like parts:

Figure 1 represents a vertical section of a portion of the novel tapestry fabric taken parallel to the warp thereof.

Figure 2 represents a section on line 2—2 of Figure 1, illustrating the structure of the fabric transversely of the warp thereof.

Figure 3 represents a section on line 3—3 of Figure 1.

Figure 4 represents a section on line 4—4 of Figure 1.
Figure 5 represents a section on line 5—5 of Figure 1.

Figure 6 represents a diagrammatic view in the elevation of a loom adapted to carry out the novel method of my invention. Referring more particularly to Figures 6 of the drawings, 1, 2 and 3 designate the three separate warp beams employed to carry out my novel method; 1 supplying a set of medium tensioned ground warp strands or threads 4 (either single or double ended), 2 supplying the lightly tensioned figure warp threads 5, and 3 supplying the highly tensioned ground warp threads 6.

The warp threads 4, 5 and 6 pass over any suitable whip roll 7, then pass through suitable heddles 8 and 9, carried and actuated by the jacquard frame 10, and suitably weighted by the loom 11, and are then passed through the reed 12 and finally over the breast beam 13. The shuttle is designated by the numeral 14 in Figure 6. While in Figure 6 only one shuttle 14 is shown, it is to be understood that at least two shuttles are required to carry out my novel method, one to carry the relatively thin ground weft thread and the other to carry the relatively thick and bulky “padding” weft thread.

In carrying out my invention the beams 1, 2 and 3, are each differently tensioned as indicated by the weights 15, 16 and 17, respectively. The two sets of ground warp threads 4 and 6, suitably shed with each throw or pick of the ground wefts 18 and 28, are interwoven with said ground weft threads in a continuous and uniform manner, in any suitable plain or other weave to produce a continuous and substantially unbroken ground ply 19 of a relatively tight or close texture. This is best illustrated in Figures 1 to 5 inclusive. The alternate ground weft threads designated by the numerals 18 and 28 respectively are identical and may be, and preferably are, supplied from the same shuttle, although they have different functions within the fabric.

The lightly tensioned colored figure warp threads 5, suitably colocated upon the figure beam 2, comprise any one, two or more differently colored threads, as for instance the green threads 20 and red threads 21, represented by inclined and vertical cross-hatching respectively in the sectional views in Figures 1 to 5 inclusive. The differently colored warp threads 20 and 21 are shed in any predetermined and desired sequence by means of the jacquard frame and are either alternately raised above the face of the ground ply 19, in order alternately to give the particular color on the face of the finished fabric, or both, or all such colored figure warp threads 20 and 21 (collectively designated by the numeral 5), are sunk beneath the ground ply 19, if a ground face area is desired. These different surface conditions are illustrated particularly in Figure 1. Thus, the area designated by the arrow 22, is, in specific illustration shown by Figure 1, a green colored embossed face area, while the portions 23 and 24 are red colored embossed face areas. Thus also, the area 25 is a ground face area, where the colored or figured warps are entirely submerged beneath the ground ply.

In carrying out my invention the ground ply 19 is woven of the medium and highly tensioned, warp threads 4 and 6, respectively, and the weft threads 18 and 28. To produce a ground face area the colored warp threads 20 and 21 are sunk below the ground ply 19, and are there interwoven with the padding weft threads 26, which are similarly sunk beneath the ground ply 19, in an entirely detached and noninterlacing relation to the upper ground ply 19, thereby forming between the ground ply 19 and the submerged colored ply 27, what may be termed open pockets. When a figured and embossed area is desired on the face of the fabric, that is above the ground ply 19, such as the figured areas 22, 23 and 24, the particular colored figure warp, such as the figure warps 20 or 21, is raised above the ground ply 19, by means of the jacquard, and the padding weft thread 26 is similarly raised above the ground ply 19. To produce the embossed colored or figured area of the particular colored warp thread, as for instance the green threads 20 in the figured area 22, or the red threads 21 in the figured areas 23 and 24, the particular colored warp threads are interwoven alternately with one pick of padding weft 26 and one or more picks of the ground weft threads 28 (see Figure 1).

While the medium tensioned ground warp threads 4 are sufficiently tighter than the lightly tensioned colored or figure warp threads 20 and 21 (or collectively designated as threads 5 in Figure 6) so as to maintain an unbroken plain ground ply 19, yet in order to draw the figure warp threads 20 and 21 down through the body of the ground ply 19 throughout the figured areas (22, 23 and 24) the particular ground weft picks designated by the numeral 22, which are interwoven with the figured warps 20 and 21, are interfaced with the highly tensioned ground warp threads 6 in opposition to said lightly tensioned colored warp threads 20 and 21. Due to this great difference between the tensioning of the ground warp threads 6 and the opposed figure warp threads 20 and 21 (warps 5 in Figure 6) between the same ground weft picks 28, or threads 20 and 21 are drawn down through the ground ply 19, leaving the padding weft threads or “stuffer” wefts 26, clear above the ground ply 19, though completely encased by the particular colored ground warp thread, and...
firmly tied to the face of the ground ply 19 by means thereof.

The figure warp threads 20 and 21, not being used in any particular figured face area such as the red thread 21 in the green face area 22 or the green warp thread 20 in the red face areas 23 and 24, are sunk beneath the ground ply 19, and floated on the back, though interlaced occasionally with a ground weft so as to tie the unused figure warps to the back of the ground ply 19.

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

The method of weaving a fabric of the character stated, which consists in employing two sets of medium and highly tensioned ground warp threads and one set of figured warp threads, interweaving the same with ground weft thread, thereby to produce a ground ply in substantially one plane, interlacing said figure warp threads upon the face of said ply alternately with a padding weft thread laid freely across said ply and with a ground weft thread, thereby to tie and encase said padding weft thread on the face of the ply with the figured warp threads, the difference in tensioning of the two sets of ground warp threads providing an embossed tapestry fabric unbroken in substantially one plane, and a figuring ply disposed alternately upon the body ply.

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