To all whom it may concern:

Be it known that we, MARCUS A. MYERS and RICHARD KEENE, both citizens of the United States, and residents, respectively, of the borough of Manhattan and county of New York, and RICHMOND HILL, borough and county of Queens, both in the city and State of New York, have invented a new and Improved Process of Producing Warp-Knitted Fabrics, of which the following is a specification.

We have discovered that by a peculiar construction and method of operation of a warp knitting machine, we can produce a fabric having stripes of differing thickness or bulk of material and thus produce a warp knitted fabric presenting the appearance of fabrics heretofore produced only by the weaving process upon a loom; and we have also discovered that as a result of our process a peculiar and permanent optical effect is produced in the fabric in that the strips or parts having the greater body or bulk of material present the appearance of having greater density of color than the strips having the lesser body or bulk of material, which effect we believe is entirely new in a warp knitted fabric.

In the drawings hereon we illustrate those parts only of a warp knitting machine which are immediately involved in carrying out our process.

Figure 1 is a diagrammatical front view of the tension and separator bars of a warp knitting machine having therein threads, the spacing whereof is represented for the sake of clarity in illustration; Fig. 2 is a diagrammatical vertical sectional view of the parts shown in Fig. 1 and also showing the movable guide bars, pressure bar, needles, etc., mostly in section; Fig. 3 is a plan view of a piece of our new fabric.

In the drawings 1, 2 and 3 represent the beams or spools of a warp knitting machine, 4, 5 and 6 are respectively the spring tension bars for the beams 1, 2 and 3. 7 are the separator teeth supported upon the bar 8, as usual, 9 and 10 are the usual movable bars for the respective sets of guides 11 and 12, which have the usual eyes or openings 13 and 14 respectively in their ends through which the threads pass. 15 is the usual pressure bar, 16 the needle, 17 the usual needle guide, 18, 19 and 20 are the threads respectively from the beams 1, 2 and 3. In the usual operation of such machines threads 18 and 19 only are employed. They respectively pass from the beams 1 and 2 over tension bars 4 and 5, through the eyes of the guides 11 and 12, and are manipulated by the needles and co-acting parts in the usual way, and the fabric thus produced is uniform in weight, thickness and appearance, all of it being substantially the same as the thin strips or portions shown at 21 in Fig. 3. For the production of our new fabric, however, we supply the machine with an added or third beam 3, tension bar 6, and thread 20, which passes downwardly through the eye 14 of the same guide 12 through which the thread 19 passes, so that the guide will manipulate and present two threads to the needles and co-acting parts, whereas the guide 11 and its eye 13 will present one thread only, and the added thread 20 is supplied from the upper beam, as stated, only at the places transversely of the fabric and of the widths desired for the production of the strips or heavier or denser parts of the fabric, as clearly indicated in Fig. 1, that is to say, the threads 18 and 19 supplied from the beams 1 and 2, passing over their tension bars 4 and 5 respectively, are clearly shown as extending entirely across the machine as in usual knitting, whereas the added thread 20 supplied from the beam 3 and passing over its tension bar 6 is shown as supplied intermittently only, that is to say, from such parts of the upper beam 3 as will coincide with the location and width of the desired stripes in the material. The threads from the beam 3 may, however, be disposed thereon in any preferred manner, provided they be sectionally gathered and guided by the separator teeth to engage with the appropriate or necessary guide bars. The separator comb 7 manipulates all the threads in the usual manner, that is to say, when the two threads 18 and 19 only are employed, they pass between adjoining teeth of the separator comb, but in those portions where the added thread 20 is introduced, all three of the threads pass between the same adjoining teeth of the separator comb. In like manner in those portions of the knitting where the two threads 18 and 19 only are
employed, the respective needles and co-acting parts manipulate them only for the production of what may be called the normal or thin parts of the fabric, but in those portions where the added thread is introduced, the same needles manipulate the three threads in the same way that at other places they manipulate the two. Thus at the parts where the added thread is introduced, the resulting fabric, instead of being the normal, or what we call the thin fabric, indicated at 21 in Fig. 3, has longitudinally extending stripes or portions 22, which embody a greater weight or bulk of fabric than the intermediate portions because of the added threads.

Attention is called to the fact that in Fig. 3 the number of threads shown in the section 21 are substantially the same as those in the thicker stripes or sections, whereas obviously there should be more represented in the thicker stripes or sections, but no attempt has been made in the drawing to illustrate this minute detail because the optical effect produced by the improved fabric will be best illustrated without such detail being shown.

It will be obvious to those who are familiar with this art that if, desired, the added thread 29 may be of a different gage from that of the other threads and may also be of a different material and of a different color, and thus the strength, cost and optical effect of the finished fabric be varied.

It will also be obvious that one or more additional beams may be added to the machine so that at such times as desired, still other additional threads may be introduced. It is unnecessary to illustrate such modifications because they are all clearly within the purview of the invention as disclosed and will be at once appreciated and fully understood by those skilled in this art. We therefore do not limit ourselves to the specific details shown and described.

We claim:

1. The process of producing warp knitted fabric having longitudinally extending continuous stripes consisting in continuously supplying two threads to each of the needles and more than two threads to each of certain adjoining needles.

2. The process of producing warp knitted fabric having longitudinally extending continuous stripes consisting in supplying a certain number of threads to each of certain adjoining needles and more than that number to each of separated series of adjoining needles.

3. The process of producing warp knitted fabric having longitudinally extending continuous stripes consisting in supplying two threads to each of the needles and more than two threads to each of separated series of adjoining needles, one of said first named threads passing alone through its appropriate thread guide, and the other conjointly with the said additional thread or threads through its appropriate thread guide, and laid up parallel with said additional thread or threads in the finished product.

4. The method of making warp knitted fabric consisting in continuously supplying to the needles three or more threads and leading through predetermined adjoining thread guides and to predetermined adjoining needles differing numbers of threads.

In testimony whereof we have signed our names to this specification.

Marcus A. Myers.
Richard Keene.