No. 701,934. Patented June 10, 1902.

J. F. RIDDELL.

TUFT YARN SPOOL FOR TUFTED PILE FABRIC LOOMS.

(Application filed Mar. 11, 1901.)

(No Model.)

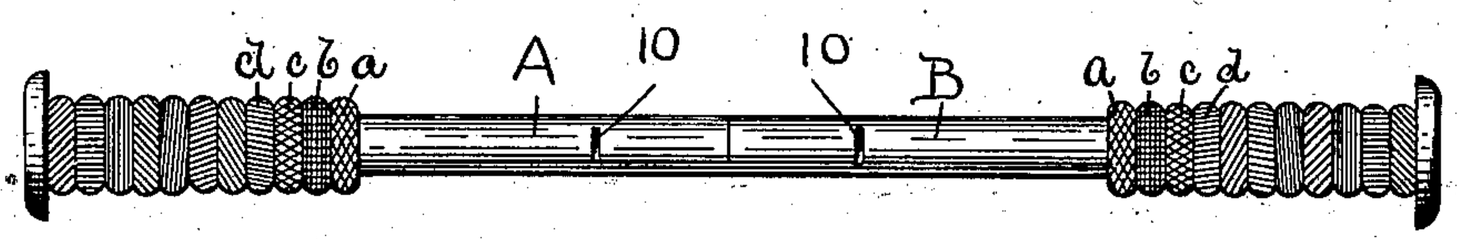

Fig. 1.

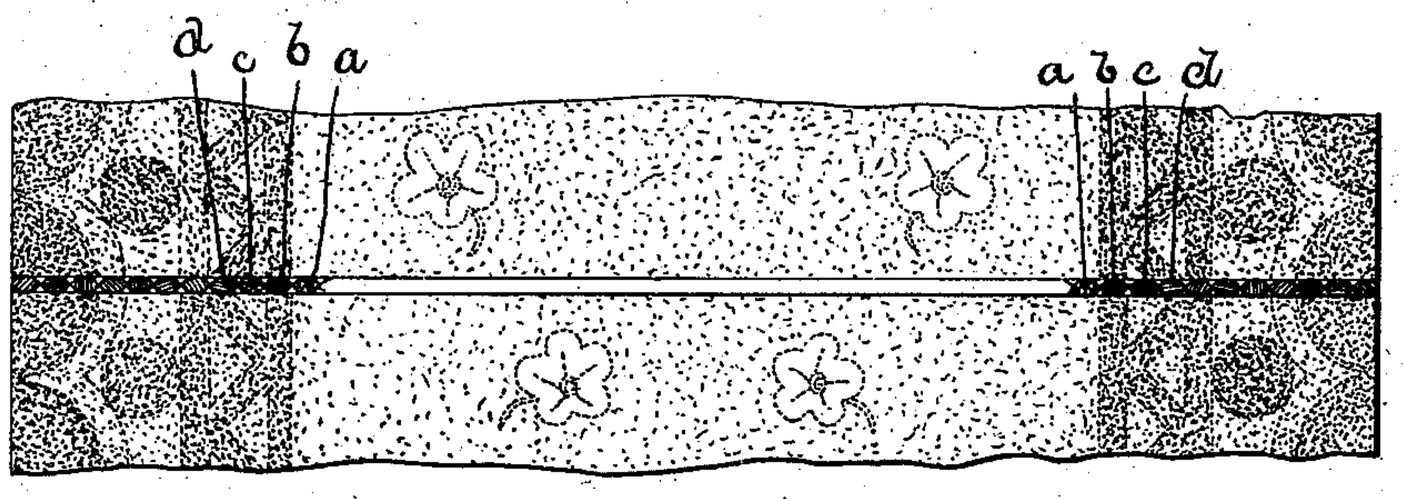

Fig. 2.

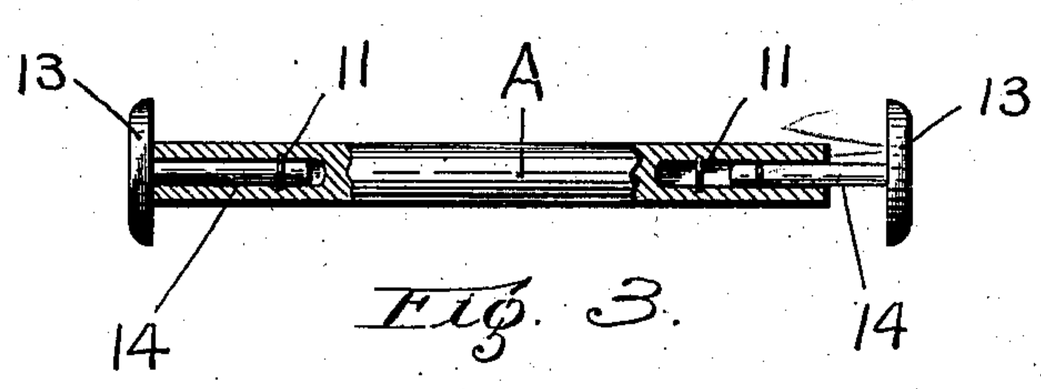

Fig. 3.

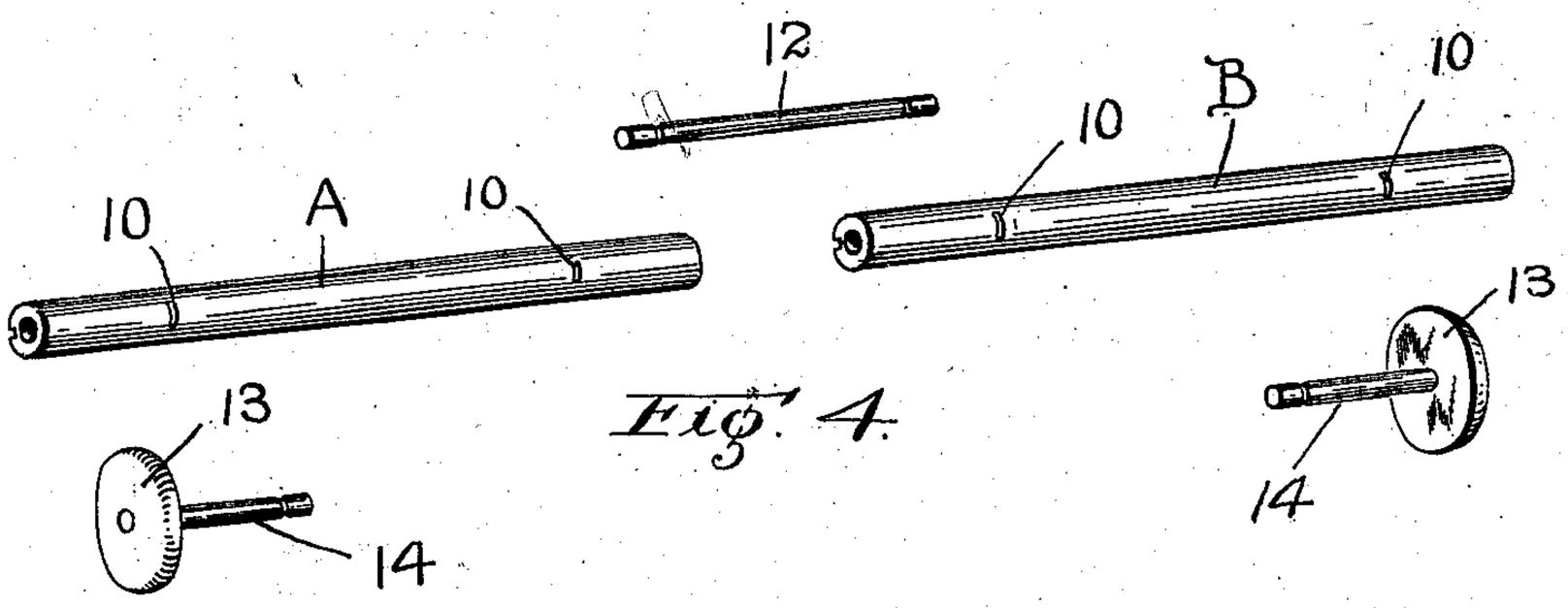

Fig. 4.

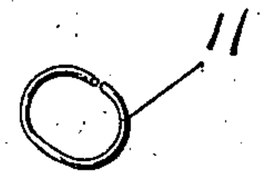

Fig. 5.

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UNITED STATES PATENT OFFICE.

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TUFT-YARN SPOOL FOR TUFTED-PILE-FABRIC LOOMS.

SPECIFICATION forming part of Letters Patent No. 701,934, dated June 10, 1902.

Application filed March 11, 1901. Serial No. 50,539. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. RIDDELL, a subject of the King of England, residing at Clinton, in the county of Worcester and State of Massachusetts, have invented a new and useful Tuft-Yarn Spool for Use in Looms for Weaving Tufted Fabrics, of which the following is a specification.

This invention relates to an improved construction for supplying different-colored yarns to a loom for weaving tufted fabrics; and the especial object of this invention is to decrease the amount of labor and lessen the expense required in winding different-colored yarns upon the spools employed in these looms.

To these ends this invention consists of the construction for supplying different-colored yarns to a loom and the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying drawings, Figure 1 is a side view of a tuft-yarn spool constructed according to this invention for use in looms for weaving tufted fabrics, the sections of differently-colored yarns being indicated thereon upon an exaggerated scale. Fig. 2 is a plan view illustrating a portion of a design for a fabric, that pick or portion of the fabric corresponding with the spool illustrated in Fig. 1 being shown upon an exaggerated scale. Fig. 3 is a side view, partially broken away, of one of the spool-sections, illustrating the manner in which the removable heads may be secured thereto while said spool-section is being wound or supplied with differently-colored yarns. Fig. 4 is a perspective view of the parts which may be employed in a complete spool constructed according to this invention, and Fig. 5 is an enlarged perspective view of one of the split spring-rings which may be employed for removably securing the spool-heads and the connecting-dowel to the spool-sections.

In that class of looms which are employed for weaving Axminster carpets or similar tufted fabrics the tuft-yarns are supplied by spools which are mounted in spool-frames normally connected to and carried by endless chains or carriers, which endless chains or carriers are moved or advanced intermittently to present the desired spool to a transferring mechanism which first releases the desired spool-frame from the carrier and introduces the ends of the tuft-yarns into the warp, said yarns being interwoven therewith and thereafter severed between the warp and the spool-frame to form the tufts, the spool-frame being then returned to the chain by the reverse movement of the transferring mechanism. Heretofore in preparing the tuft-yarn spools for use in this class of looms skilled and comparatively high-priced labor has been required to select the properly-colored yarns according to the designer's chart or pattern of the fabric to be woven, the successive yarn ends being attached to the core of the spool and the spool then being turned to wind the required lengths of yarn thereon. In thus loading or winding the spools for use in looms for weaving tufted fabrics it has heretofore been requisite to exercise an individual selection or picking out of the proper colors of yarns across the entire width of the fabric to be woven.

The especial object of my present invention is to decrease the labor required in loading or winding the spools for certain classes of fabric designs, and I accomplish this result by reason of the fact that in a very large percentage of designs the figures or colors are repeated at different points across the width of the fabric, requiring the same sequence of colors in the tuft-yarns for weaving the same. For example, in nearly all stair-carpet designs the fabric is symmetrical with respect to its central line, and when such a fabric is to be woven I propose to take advantage of this fact by dispensing with the necessity of requiring a selection of properly-colored yarns for the entire width of the fabric, and instead of requiring such selections of yarns I propose to employ for weaving each line of tufts of a fabric of this class two independent spool-sections having yarns in the same sequence of colors wound thereon, the spool-sections being journaled end to end, but inverted with respect to each other, so that the sequence of colors on the spool-sections will be symmetrical with respect to the adjacent ends of the spool-sections and the spool-sections will be turned in opposite directions when a supply of yarn is being drawn

therefrom. The application of my invention is not limited, however, to designs which are symmetrical with respect to their center line, but is equally applicable to all designs in which there is a repetition of the figures across the width thereof requiring either the same sequences of colors or inverted sequences of colors.

In practicing my invention I propose to employ spool-sections having sockets at their ends for receiving detachable heads or for detachably receiving a connecting-dowel for holding two adjacent spool-sections together while permitting them to rotate independently. The detachable heads and the connecting-dowel are preferably held in place by means of split spring wire rings inserted into sockets in the spool-sections, although it is to be understood that the mechanical details of the construction which I have herein illustrated for the purpose of practicing my invention are in no way essential to its successful application, and that I do not desire, therefore, to be limited to the particular features of such devices which I have herein illustrated.

Referring to the accompanying drawings and in detail, the spool illustrated in Fig. 1 comprises two spool-sections A and B. The spool-sections A and B are provided with recesses 10 near their ends for receiving split spring-rings 11, and the ends of the spool-sections A and B are bored out or provided with sockets for receiving either the connecting-dowel 12 (illustrated in Fig. 4) or a shank 14 of one of the detachable heads 13.

Referring now to the design illustrated in Fig. 2 for an understanding of the application of my invention, it will be seen that this design is symmetrical with respect to its center line, as is also the case with a great majority of stair-carpet designs and certain other fabrics, designs of this class being especially common for rugs.

To load or wind a spool according to my invention for such a design, each of the spool-sections A and B first have detachable heads secured thereto, as illustrated in Fig. 3, and then have the same sequence of colored yarns wound thereon. The spool-section A is then inverted with respect to the spool-section B. The inner removable heads are taken off, and the two spool-sections are connected by a connecting-dowel 12. This will bring the sequence of colors on the two sections A and B in inverted order with respect to each other. For example, the colors *a*, *b*, *c*, and *d* appearing on the spool-section B also appear on the spool-section A in the reverse order in the same manner that the colors of the tufts *a*, *b*, *c*, and *d* (illustrated on an exaggerated scale at one side of Fig. 2) appear in the reverse order at the opposite side of the design. When two spool-sections are thus loaded or wound and associated together to form a line of tufts for a symmetrical design, one spool-section A will be turned or rotated in one direction when the yarn is being drawn therefrom, and the other spool-section B will be rotated or turned in the opposite direction when the yarn is being drawn therefrom, and it is on this account that it is desirable to provide a connection between the two spool-sections which will permit them to revolve independently of each other.

From this explanation of the application of my invention to produce a design symmetrical with respect to its center line it is believed that the use of my invention for all designs in which a repetition of color-sequences occur will be obvious to those skilled in the art. For example, where the pattern is repeated at two or more places across the breadth of a fabric being woven two or more similar spool-sections would be associated together; but in such cases the spool-sections would turn in the same direction when yarn is drawn therefrom instead of turning in opposite directions, as when weaving a symmetrical design.

I am aware that numerous changes may be made in practicing my invention by those who are skilled in the art, and in many cases it is not essential that the spool-sections should be of the same length, and for many uses spool-sections of different lengths may be employed for different portions of a design across the breadth of the fabric. I do not wish, therefore, to be limited to the construction I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a construction for supplying differently-colored yarns to a loom for weaving tufted fabrics, the combination of spool-sections having yarns supplied from the same yarn ends wound upon each of said spool-sections, so that said sections will have the same sequence of colors thereon, said sections being connected together so as to be independently rotatable.

2. In a construction for supplying differently-colored yarns to a loom for weaving tufted fabrics, the combination of two independently-rotatable spool-sections having yarns of the same sequence of colors wound thereon, said spool-sections being journaled in line with each other, so that the color sequences on said spool-sections will be symmetrical with respect to the adjacent ends of the spool-sections, and said spool-sections being arranged to turn in opposite directions when supplying yarn for a design symmetrical with respect to its center line, substantially as described.

3. In a construction for supplying differently-colored yarns to a loom for weaving tufted fabrics, the combination of spool-sections, a dowel for connecting said spool-sections so that they may rotate or turn independently of each other, and spool-heads adapted to be detachably connected to the ends of the spool-sections, substantially as described.

4. In a construction for supplying differently-colored yarns to a loom for weaving tufted fabrics, the combination of spool-sections, a dowel-pin for connecting the spool-sections, detachable heads having spindles fitting into the sockets in the ends of the spool-sections, and split spring-rings fitted into the spool-sections for engaging grooves in the connecting-dowel and spool-head spindles to detachably secure the parts together, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN F. RIDDELL.

Witnesses:
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PHILIP W. SOUTHGATE.