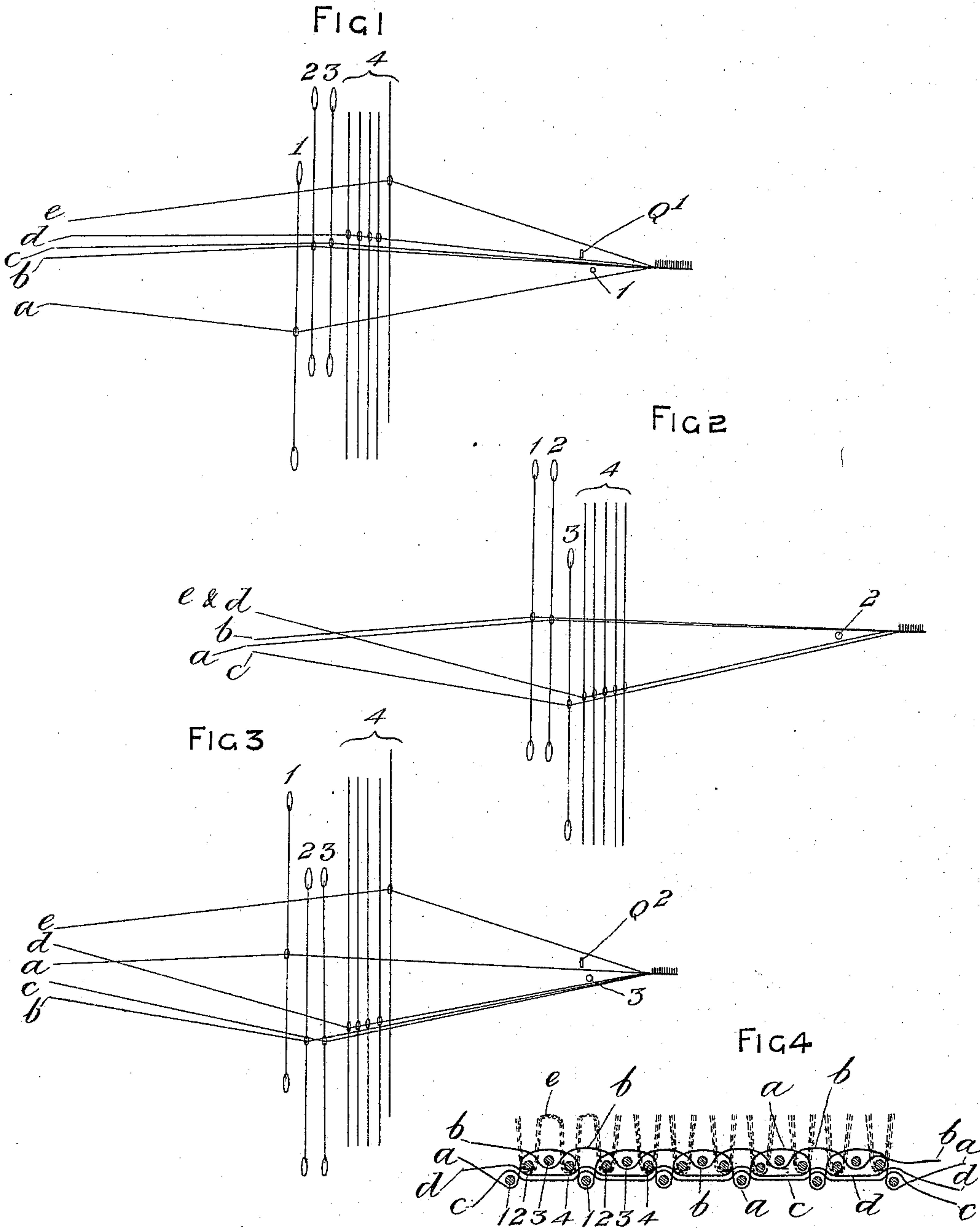


(No Model.)

A. WEBB, G. M. WHITTALL & F. B. FAWCETT.
PILE FABRIC.

No. 573,118.

Patented Dec. 15, 1896.



WITNESSES.

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UNITED STATES PATENT OFFICE.

ALBERT WEBB, OF WORCESTER, AND GEORGE MATTHIAS WHITTALL AND FRANCIS BEST FAWCETT, OF KIDDERMINSTER, ENGLAND.

PILE FABRIC.

SPECIFICATION forming part of Letters Patent No. 573,118, dated December 15, 1896.

Application filed April 24, 1895. Serial No. 546,972. (No specimens.)

To all whom it may concern:

Be it known that we, ALBERT WEBB, residing at Worcester, and GEORGE MATTHIAS WHITTALL and FRANCIS BEST FAWCETT, residing at Kidderminster, in the county of Worcester, England, subjects of Her Majesty the Queen of Great Britain and Ireland, have invented certain new and useful Improvements in Pile Fabrics, of which the following is a specification.

This invention has reference more particularly to Brussels and tapestry fabrics when manufactured as cut-pile or velvet carpets, but is also applicable to other classes of pile fabrics. Such carpets and other pile fabrics are generally woven with three shots of the weft to bind one wire or row of pile-tufts in order to make the pile fast. By this invention we are enabled to firmly bind each wire or row of tufts with two shots of the weft instead of three shots, the cycle of the process being completed in two rows of tufts, making four weft-shots in all for the two rows. By this means an increased production is obtained with a saving of one-third of the weft and a reduction in the cost of the weaving.

We will describe this invention by referring to the accompanying drawings, on which—

Figures 1, 2, and 3 illustrate our method of weaving, as hereinafter described; and Fig. 4 is a longitudinal section through a portion of our improved fabric, drawn on an enlarged scale and with spaces between the warp and weft threads, so as to show their arrangement more clearly.

The same letters and figures of reference indicate the same or corresponding parts in all the figures.

To produce our improved fabric in a Jacquard Brussels-carpet loom, it is first necessary to arrange that the dead-warp threads shall rise only once in four shots or wefts—viz., for the back weft—and to remain down for the other three shots or wefts. In a Brussels-carpet loom the dead-warps sometimes consist of two kinds, first, those portions of the figuring or pile warp which are not at the time being used to produce the figure, but lie dormant in the body or back of the fabric, and, secondly, an extra warp of cotton jute or other material for the purpose of backing

or filling and which takes no part in producing the figure. The first-named threads will hereinafter be described as the “dead-warp,” and the second or backing warp will be described as the “stuffer.” The first-named threads thus having the double capacity of figure-warp and dead-warp are entered in the eyes of the Jacquard healds or harness, and those selected for producing the figure are lifted by the jacquard, and the remainder as dead-warps are lifted by a lower board called the “comber-board;” and as regards the stuffer-threads they are entered in a heald which may be attached to the said comber-board, (and fixed immediately behind the Jacquard healds in the ordinary manner,) so as to partake of the same motion as the other dead-warp, (indicated in Figs. 1, 2, and 3,) as hereinafter described.

The process of weaving will now be as follows, and as indicated in Figs. 1, 2, and 3. First, the “through” binding-warp (marked *a*, see Fig. 1) is drawn down and the “surface-warp” *b*, with the dead-warp *d* and the stuffer *c*, is raised. The figure-warp *e* is still further raised above the binding, dead, and stuffer warps by the jacquard, thus forming a double shed or opening, as shown in Fig. 1. A wire *Q* to form the pile is then inserted into the upper shed, and at the same time a weft number 1 is shot through the lower shed and the whole is beaten up by the slay. Second, the figure-warp *e*, the dead-warp *d*, and the stuffer *c* are then drawn down, as shown in Fig. 2, and the through-warp *a* is raised to the same level as the surface-warp *b*, which remains steady. A shot number 2 is thrown across and beaten up, thus binding the first row of pile-tufts. Third, the through-warp *a* remains raised and the figure-warp *e* is raised above it by the jacquard, as in the first operation, to form a double shed. The surface-warp *b* is drawn down and the dead-warp *d* and stuffer *c* remain down at the same position as in the second movement. The position is shown in Fig. 3. A wire *Q*² is inserted in the upper shed and then a shot number 3 in the lower shed and beaten up by the slay, as before. Fourth, this movement is the same in its effect as the second, above described, the figure-warp *e* being drawn

down to the same position as *c* and *d* in the second and third movements and the surface-warp *b* being raised to the same level as *a*, which remains steady. The throwing in of the fourth shot (marked 4 in Fig. 4) and beating up by the slay complete the cycle. The effect of this method of weaving is shown in Fig. 4, in which the figure-warp *e*, forming rows of tufts, is held by the weft-threads 2 and 4, while the warp-threads *a b* pass over the weft-threads 2 4, the warp *a* passing also above the weft 3 and below the wefts 1, while the warp *b* passes below the weft 3. Thus it will be seen that the wefts 2 and 4 immediately on the top of each row of tufts are each bound by the two threads *a b* and by the side pinch obtained by the wefts 1 and 3, which in turn are tightly bound by the binding-chain.

We are aware of British Patent No. 6,158 of 1882 to Fawcett, one of the present applicants; but in the fabric of said patent the rows of tufts are bound by only one weft and the imperfect binding was found in practice to make the pile loose, each tuft being bound by but one shot and a thread of chain. Fur-

ther it was found that the weaving was very slow, as it could only be worked practically with six pick shots, while the fabric of the present invention is worked with four shots in two-shot time, thereby increasing the production by at least one-half.

We claim—

A fabric comprising the figure-warp *e* forming rows of tufts, the weft-threads 2 and 4 holding the rows of tufts, the two warp-threads, *a* and *b* passing over the weft-threads 2 and 4, the wefts 1 and 3 between the tufts and between the warps *a* and *b*, and the stuffer-warps binding the wefts 1, said tufts being thus bound by the two wefts 2 and 4 and the two warps *a* and *b* and by the side pinch obtained by the wefts 1 and 3, substantially as described.

In witness whereof we have hereunto set our hands in presence of two witnesses.

ALBERT WEBB.

GEORGE MATTHIAS WHITTALL.

FRANCIS BEST FAWCETT.

Witnesses:

CHARLES THOMAS ESTEN CLARKE.

ARTHUR COLIN DERRETT.