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METHOD AND MEANS FOR WEAVING

Filed Sept. 2, 1927

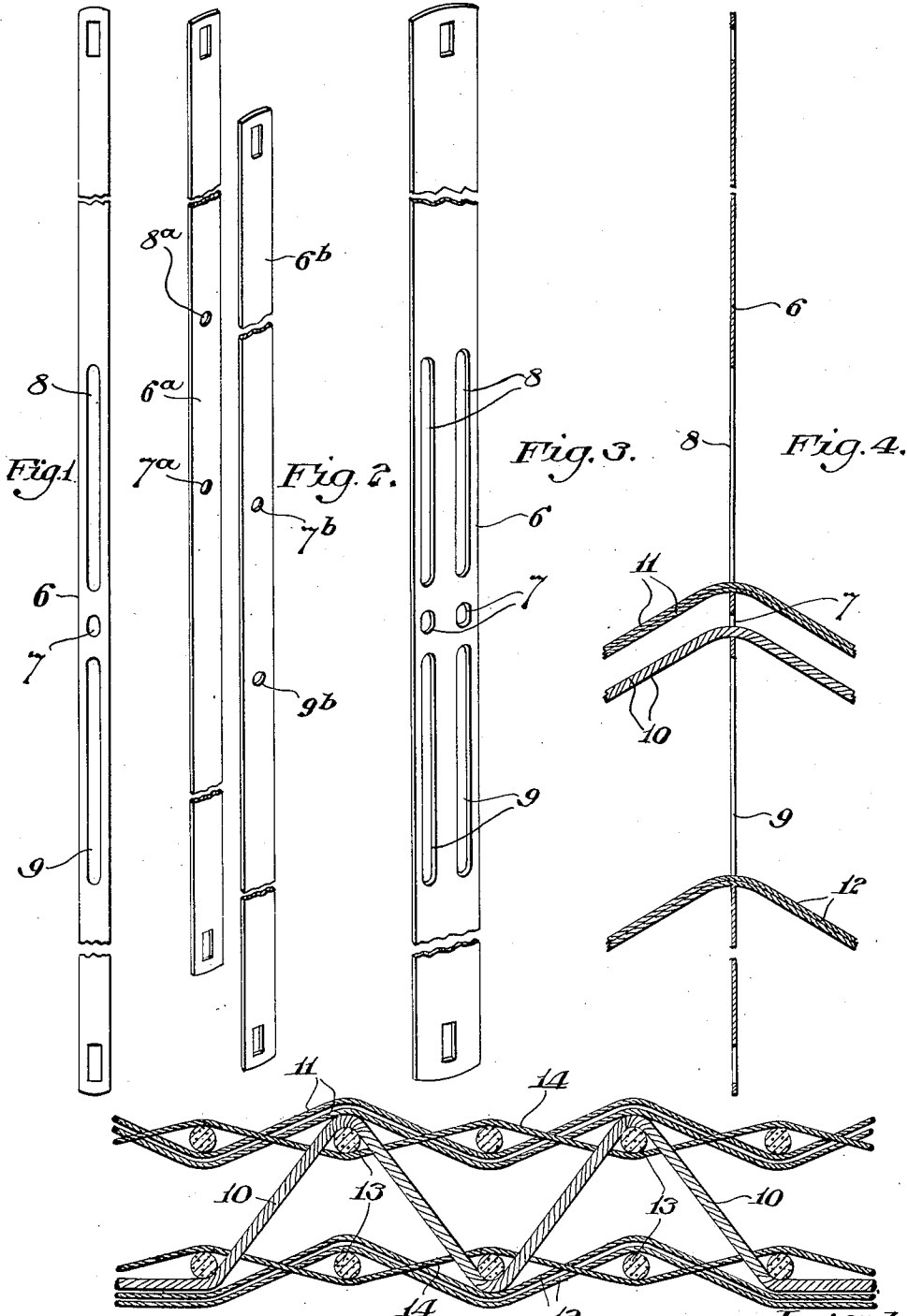


Fig. 5.

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METHOD AND MEANS FOR WEAVING

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Our invention relates to an improved method and means for weaving. The object is to provide a method and means for shedding a plurality of warp threads at points in the same vertical plane.

By such method the number of heddles required is greatly reduced, thus reducing the necessary lift of the warp threads and also obviating friction between the warp threads and reducing the strain thereon.

The invention is especially applicable to pile weaving, and is particularly suitable for double piece plush weaving, but need not necessarily be confined to such work.

In accordance with the present practice the pile warp and the slack or loose backing warp threads are shedded by means of separate heddles operating side by side. It frequently happens that, due to the friction between the slack backing warp and the pile warp threads, some of the pile thread fibers become attached to and are carried by the backing warp threads and thus show on the back of the finished fabric, which is objectionable. It is desirable that none of the pile warp material should show through the backing. By using two slack backing threads a more perfect backing is secured, especially if friction or rubbing between the pile warp threads and the slack backing warp threads is prevented. We secure this object by using a single heddle for the pile warp thread and the slack backing warp threads. That is, the heddles are provided with a loop or eye in the middle, and with a slot or elongated loop or eye of required extent and properly spaced therefrom, or in the case of double piece plush weaving the elongated eyes are placed on each side of the middle eye.

In some cases it may even be desirable to provide middle eyes and loop eyes in parallel, in a single heddle.

Or again in weaving satin back, in accordance with the present practice, it requires four backing ends to make double cloth, and four sets of heddle frames. By providing two eyes in each heddle, one for the tight backing warp for the top piece and one for the top backing end of the bottom piece, we do away with two

sets of heddle frames and have a more positive shed.

Referring to the drawings, which illustrate merely by way of example, suitable means for effecting the invention:—

Fig. 1 is a front elevation of a heddle in accordance with my invention.

Fig. 2 is a similar view of a pair of heddles each having two eyes.

Fig. 3 is a view in perspective of a modification.

Fig. 4 is a side sectional view of the heddle shown in Fig. 1, with the warp threads therein.

Fig. 5 is a view in longitudinal section showing the weft filling threads and the warp threads.

Similar numerals refer to similar parts throughout the several views.

Heddles are made of various materials, usually of wire or flat metal strips. In Fig. 1 is shown the heddle 6 with the eyes 7 in about the middle part thereof, as is usual. In addition to this however, in accordance with the present invention, elongated eyes or slots 8 and 9 are provided, one above and the other below the middle eye 7. This heddle is adapted for double piece plush weaving. The eye 7 carries the pile warp thread 10, while the elongated eyes 8 and 9 carry the upper and lower slack backing warp threads 11 and 12, respectively. Each eye 8 and 9 may carry one or a plurality of such threads. In the present example two such threads are shown for each eye.

It will be understood that the positions and extent of the slots or elongated eyes 8 and 9 are such as to give the required relative shedding movement of the loose backing warp threads 11 and 12 with respect to the pile warp thread 10, in other words the eyes 8 and 9 are long enough to provide the shed required by the shuttle, and also to permit the required lost motion in operating the heddle in opposite directions.

It will thus be seen that a single heddle will perform the shedding operation of a pile warp thread and one or more upper and lower loose backing warp threads.

In Fig. 5 is indicated more or less diagram-

matically, the relative positions of the weft or filler threads 13, the pile warp thread 10, the tight backing warp threads 14 and the loose backing warp threads 11 and 12.

5 In accordance with the present practice each warp thread requires a separate heddle for the shedding operation. This requires a large number of heddles operating in close proximity. This is especially the case where
10 two or more loose backing warp threads are provided. This results in crowding the heddles into close proximity and a certain amount of rubbing the threads together results.

15 By using a single heddle for the pile warp thread and the loose backing warp thread or threads, and especially the upper and lower loose backing warp threads, the number of heddles is greatly reduced. This allows more
20 room for the yarn. The yarn is not crowded. Less lift of the warp thread is required and thus the strain on the yarn is greatly reduced, and the speed of the loom can be greatly increased.

25 In Fig. 2, a pair of heddles are shown. Heddle 6^a is provided with the eyes 7^a and 8^a for the warp threads of the tight-backing top piece, and heddle 6^b is provided with the eyes 7^b and 9^b for the tight backing end of
30 the bottom piece, for weaving satin back.

In Fig. 3, I show a heddle in which the middle eyes 7 and loop eyes 8 and 9 are placed in parallel.

What we claim is:—

35 A heddle having a plurality of pairs of elongated warp thread slots at the ends thereof, the slots of the respective pairs being in alignment and a warp thread eye disposed adjacent to the middle of said heddle.

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CERTIFICATE OF CORRECTION.

Patent No. 1,802,907.

Granted April 28, 1931, to

JOSEPH P. COSTELLO ET AL.

It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the drawing, cancel "Fig. 1 and Fig. 2; the Figures now appearing in the drawing as "3, 4 and 5" should bear the numbers 1, 2 and 3; page 1, lines 1 and 2, strike out the words "method and" and line 3, strike out the words "method and"; same page, lines 35 to 37, strike out "with a slot or elongated loop or eye of required extent and properly spaced therefrom, or"; line 40, beginning with the word "In" strike out all to and including the word "heddle" in line 42; line 56, beginning with "Fig. 1" strike-out all to and including the word "eyes" in line 59; line 60, for "Fig. 3" read Fig. 1; and for the word "modification" read heddle illustrating our invention; line 62, for "Fig. 4" read Fig. 2, and line 63, strike out "shown in Fig. 1"; line 65, for "Fig. 5" read Fig. 3; line 76, after "provided" strike out "one" and after "and" second occurrence strike out "the other"; line 100, for "Fig. 5" read Fig. 3; page 2, line 25, beginning with "In Fig. 2" strike out all to and including the word "back" in line 30; and line 31, strike out "In Fig. 3, I show a heddle in which" and insert In the heddle shown; and that the said Letters Patent should be read with these correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of August, A. D. 1931.

(Seal)

Wm. A. Kinnan,
Acting Commissioner of Patents.