Sept. 11, 1928. 1,684,364

G. J. SECKEL

METHOD FOR WEAVING TEXTILE FRABRICS

Filed July 2, 1925

Fig: 1.

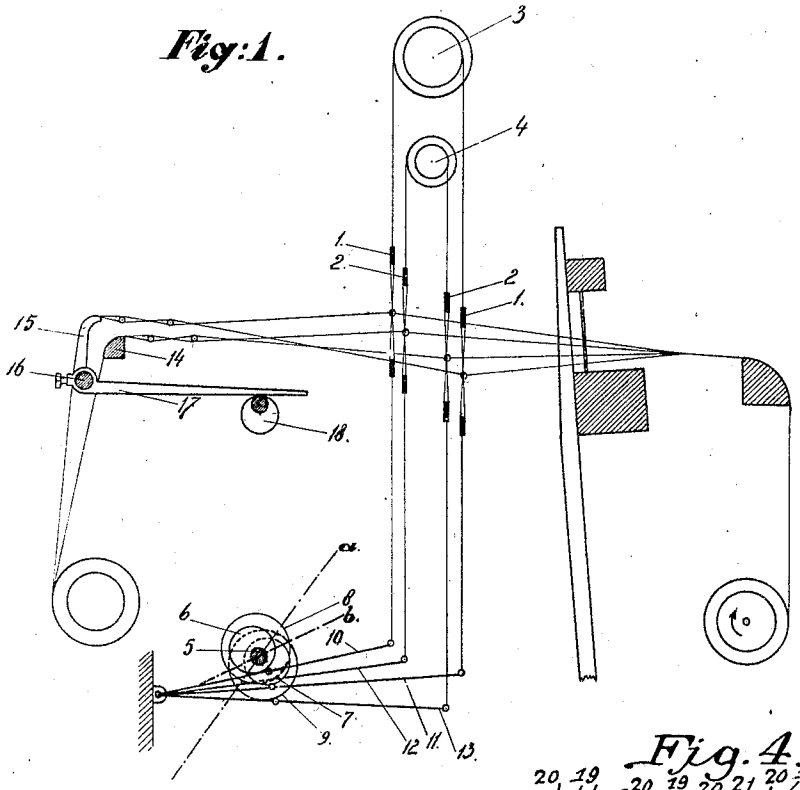


Fig: 2.

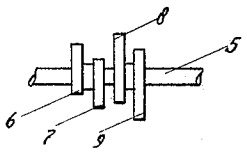


Fig. 3.

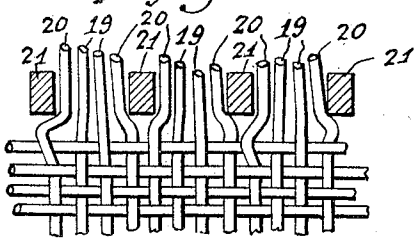
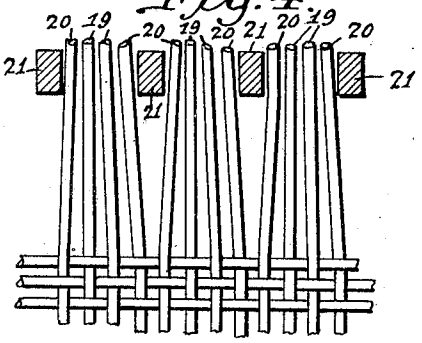


Fig. 4.



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UNITED STATES PATENT OFFICE

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METHOD FOR WEAVING TEXTILE FABRICS.

Application filed July 2, 1925, Serial No. 41,184, and in the Netherlands May 19, 1925.

The invention relates to an improved method for weaving textile fabrics.

In threading the warp threads in the reed of a loom it has hitherto been preferred to insert between each two wires of the reed a minimum number of warp threads or in other words to provide for a maximum number of wires per unit of length, in order to ensure that in the fabric the warp threads will lie at equal distances apart, i. e. that the tracks left by the wires of the reed appear in the fabric to the minimum extent.

This practice however gives rise to several important drawbacks of which one of the greatest is the danger of breaking the warp threads when knots or slubs occur therein, which in that case cannot pass through the narrow slits of the reed. The large number of wires in the reed moreover increases the total friction between the warp threads and the reed, which in turn increases the breakages of the threads.

The invention has for its object to produce an absolutely even fabric while using wide slits between the wires of the reed and therefore few wires per unit of length avoiding in this way the inconveniences mentioned above.

According to this invention such object is attained by so controlling the tension in all or some of the warp threads lying between each pair of wires at the instant on which the weft is beaten up, that the tension in the warp threads immediately adjacent the said wires is less than that in the threads lying between them.

According to one embodiment of my present invention, the above object may be realized by actuating the heddles or harnesses of the loom, carrying the warp threads, which within each slit of the reed lie immediately adjacent the wires somewhat later than the harnesses carrying the interjacent warp threads. The latter at the instant of beating up the weft will therefore have a greater tension than the first mentioned warp threads which therefore are forced outwards so that in the fabric they will come in place immediately in front of the wires of the reed and by doing so will avoid the track which otherwise would be left by the wire.

This difference in tension which is caused by the different times of operating the harnesses of the loom is not always sufficient to attain the object in view. Therefore in order completely to avoid the leaving of the tracks of the wires in the fabric, according to my present invention the warp threads which within each slit of the reed lie immediately adjacent the wires substantially at the instant at which the weft is beaten up, are slackened and thereafter are again tensioned, so that the shed at the moment at which the shuttle is passed therethrough, will always be flat and tensioned. The method of slackening the warp threads adjacent the wires of the reed, at the moment of beating up the weft in some cases may also be applied independently of the method of operating the harnesses at a different moment.

The invention will be further described with reference to the accompanying drawing in which by way of example an embodiment of a loom for weaving plain taffeta, is illustrated.

Fig. 1 shows a diagrammatic side elevation of those parts of the loom to which the invention relates.

Fig. 2 is a fragmentary plan view of the shedding cams.

Fig. 3 is a fragmentary top plan view showing the relative position of the threads at the moment when the weft is beaten up, and

Fig. 4 is a similar view showing the threads after the reed has moved back.

In these figures 1 designates the harnesses of the loom intended for carrying the warp threads which in each slit of the reed lie immediately adjacent the wires, the harnesses for the interjacent warp threads being denoted by the numeral 2. The harnesses 1 and 2 are secured to separate rollers 3, 4, which in the drawing are shown, one below the other; it will however be clear, that the rollers may also be arranged co-axially e. g. by arranging the one around the other in such a manner that the ends of the inner roller protrude beyond the outer.

For operating the separate sets of harnesses, the cam shaft carries two sets of shedding cams 6, 7 and 8, 9, which may be formed in pairs or all may be made integral. In the drawing the cams of one set are shown on a larger scale than those of the other set. This however is only done for the sake of clearness as in reality the cams preferably are of equal dimensions. With the different cams co-operate treadles 10, 11 and 12, 13 respectively. The cams are arranged in pairs in such manner that the

harnesses 1 are operated later than the harnesses 2. The lines *a* and *b* indicate the different closed-shed positions of the two sets of shedding-cams.

The loom is further provided with a stationary shedding beam 14 carrying the warp threads of the harnesses 2 and a movable shedding beam 15 for the warp threads which are carried by the harnesses 1 and therefore in each slit of the reed lie immediately adjacent the wires. The movable shedding beam 15 is mounted on a rocking shaft 16 which may be rocked by means of a lever 17 and a cam 18. Instead of the fixed shedding beam a movable shedding beam acting in the ordinary way may be used.

If lease rods are necessary such rods should be disposed separately in the two groups of threads as shown in Figure 1.

The modus operandi of the apparatus shown is as follows:

Due to the difference in the angular position of the two pairs of cams the harnesses 2 after the insertion of a weft thread are earlier operated than the harnesses 1, so that at the moment of beating up the weft, the interjacent warp threads 19 are tensioned more than the threads 20 immediately adjacent the wires, causing the latter to be forced outwards and to come in the fabric immediately in front of the wires. This effect is increased by the fact that the eccentric 18 is so adjusted and is driven in such a way that at the moment of beating up the weft the movable shedding beam 15 is moved forwards, causing the warp threads 20 adjacent the wires to be slackened. The positions occupied by the adjacent threads 20 and interjacent threads 19 when the weft is beaten up, and during the return of the shuttle, are shown in Figs. 3 and 4, respectively. Immediately after the beating up the shaft 16 is turned in the opposite direction so that the corresponding warp threads are again tensioned, so that the shed will be completely flat and tightened at the moment at which the shuttle is passed therethrough, avoiding much breakage of the threads and therefore also reducing the danger of the shuttle being thrown out. In most cases this throwing of the shuttle is caused by the breaking of the warp threads during the return movement of the lay as the loose ends of the threads prevent the adjacent warp threads from opening. As by applying the invention the slits of the reed may be twice as wide as usual, such accidents are almost completely avoided, since all knots and slubs may readily pass between the rods of the reed. The slackening of the warp threads which are in direct contact with the metal rods of the reed, at the moment of the beating up of the weft reduces also the breakage of such threads.

What I claim is:

1. In the process of weaving textile fabrics which comprises passing more than two warp threads through the same silt of the reed, the method of preventing reediness which consists in controlling the tension of the warp threads within each silt of the reed at the moment at which the weft thread is beaten up so that the threads immediately adjacent the wires of the reeds are less tensioned than the interjacent threads.

2. A method as claimed in claim 1, in which the harnesses of the loom carrying the warp threads which in each silt of the reed lie immediately adjacent the rods, are operated later than the harnesses carrying the interjacent warp threads.

3. A method as claimed in claim 1, wherein the first mentioned warp threads are slackened before and are again tensioned after the moment of beating up the weft.

4. A loom of the type including a reed providing slits through which the warp threads pass, characterized by the fact that in each slit warp threads lie adjacent the wires of the reed and other warp threads are interjacent thereto, and means is provided for exerting, at the moment at which the weft thread is beaten up, a less tension on said adjacent threads than on said interjacent threads.

5. A loom of the type including a reed providing slits through which the warp threads pass, harnesses for carrying the warp threads, and cams for operating said harnesses, characterized by the fact that in each slit warp threads lie adjacent the wires of the reed and other warp threads are interjacent thereto, and that the cams for operating said harnesses are so arranged that the harnesses carrying the adjacent threads are operated later than the harnesses carrying the interjacent threads.

6. In a loom, a reed having wires providing relatively wide slits for the reception of a plurality of warp threads, harnesses carrying the threads adjacent said wires, harnesses carrying the interjacent threads, a movable back bearer for carrying the said adjacent threads, a back bearer for carrying the interjacent threads, and means for operating said movable back bearer to slacken the threads controlled thereby at the moment of beating up the weft.

In testimony whereof I affix my signature.

GERRIT JAN SECKEL.

CERTIFICATE OF CORRECTION.

Patent No. 1,684,364. Granted September 11, 1928, to

GERRIT JAN SECKEL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, lines 68 and 71, claim 1, for the word "silt" read "slit"; and the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 9th day of October, A. D. 1928.

M. J. Moore,
(Seal) Acting Commissioner of Patents.

CERTIFICATE OF CORRECTION.

Patent No. 1,684,364. Granted September 11, 1928, to

GERRIT JAN SECKEL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 79 claim 2, for the word "silt" read "slit"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of November, A. D. 1928.

M. J. Moore,
(Seal) Acting Commissioner of Patents.