

Jan. 24, 1928.

C. D. BROWN

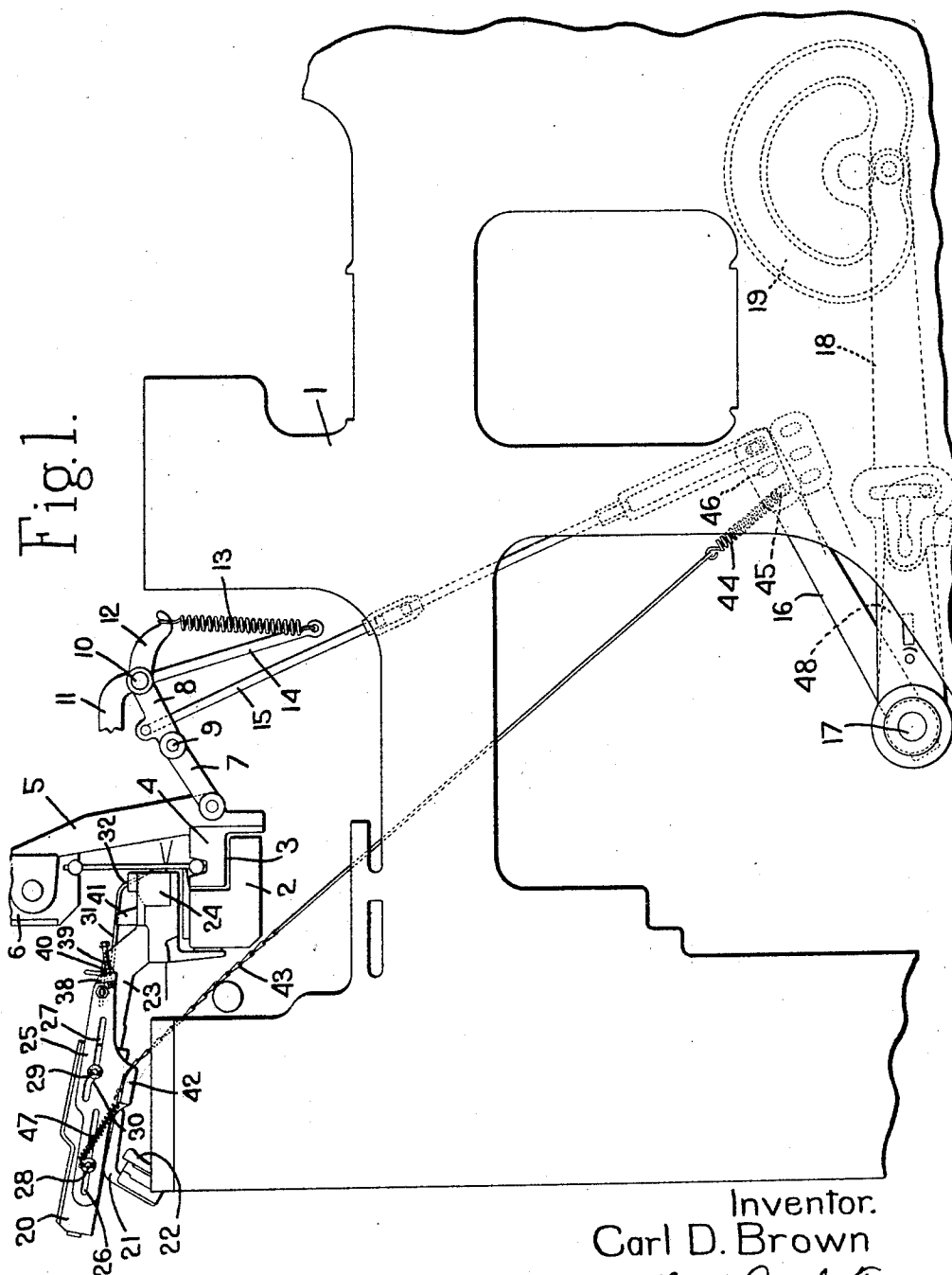
1,657,429

TERRY LOOM

Filed May 18, 1927

2 Sheets-Sheet 1

Fig. 1.



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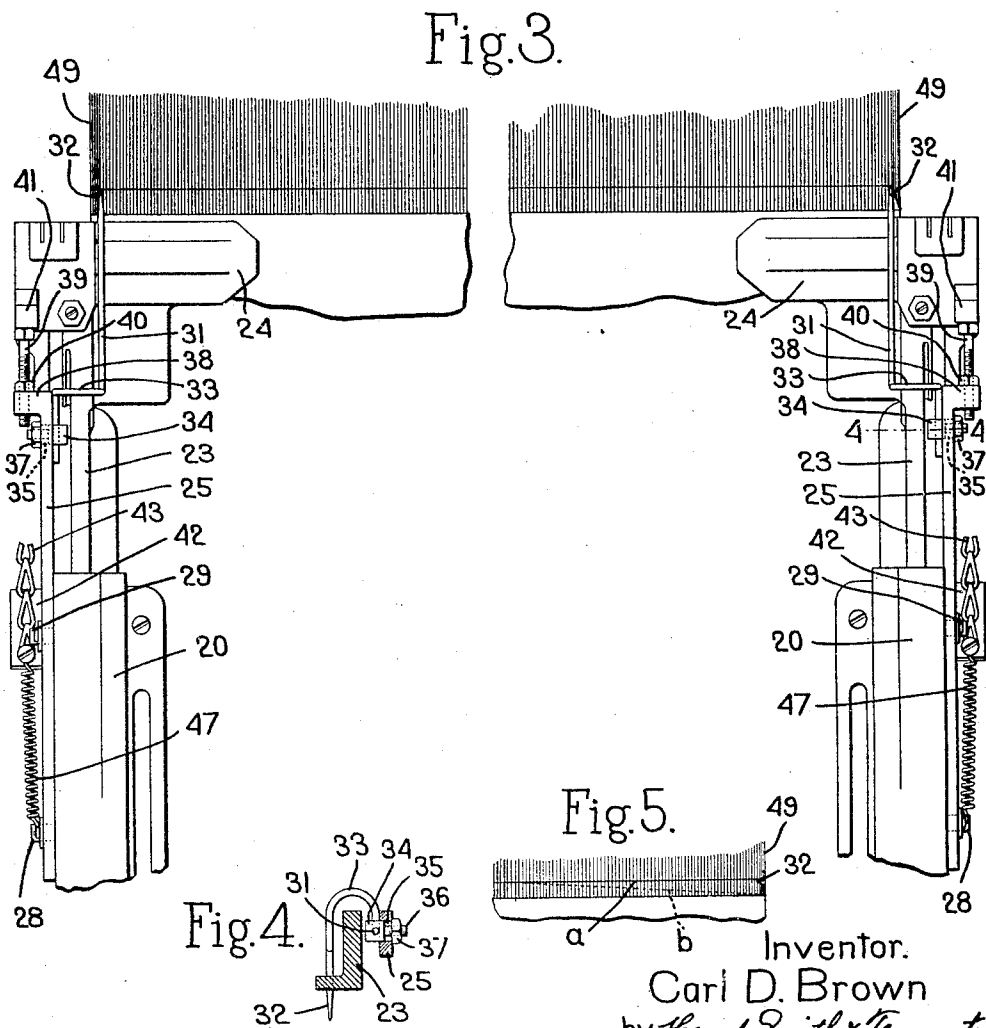
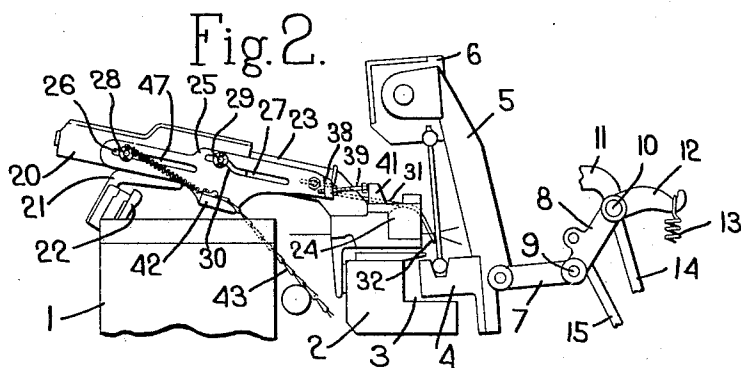
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE.

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## TERRY LOOM.

Application filed May 18, 1927. Serial No. 192,279.

This invention relates to improvements in terry looms and the object of the invention is to provide a mechanism for producing an even pile throughout the width of the fabric or the portion thereof provided with a terry pile. In looms of this type usually two sets of warp threads are employed, one for making the body of the fabric known as "body warps", and one for making the loops called "terry warps". During the weaving operation forming a terry fabric, it is the usual practice partially to beat up the filling for a series of picks and upon a succeeding pick fully to beat up the filling, which forces the partially beat-up filling against the fell of the fabric and causes the terry warps to form upwardly and downwardly extending loops and thereby produce the pile of the fabric. The heights of the loops thus formed are determined by the position of the first weft laid upon the partial beat-up.

In the usual operation of the terry loom the first weft laid upon partial beat-up extends across the warps at an angle from the edge or selvage of the fell of the fabric to the partial beat-up position. Subsequent wefts made during partial beat-up extend in parallelism with the fell of the fabric. Upon full beat-up the wefts laid during partial beat-up are forced against the fell of the previously woven fabric and the loops of terry warps intermediate of the first weft laid on partial beat-up and the fell are bent into loops which form the pile. As the portions of the terry warps which lie between the fell and the first pick and first weft laid upon partial beat-up are progressively shorter from the central portion of the width of the web to the selvage at the end of the loom from which the shuttle is picked, the loops formed upon full beat-up are progressively shorter from the central portion of the web toward this edge.

The object of the present invention is to provide means for preventing the production of such shorter loops and to insure the production of loops of equal length throughout substantially the entire width of the web of the fabric.

This is accomplished in the present invention by providing means which will direct the first length of weft laid upon partial beat-up in parallelism with the fell of the fabric throughout the whole or substantial-

ly the whole width of the web. As terry cloth is usually woven with selvage strips along the edge which do not contain terry loops, the means for causing such parallelism of the threads may be positioned at or within the selvage. If, however, a fabric is woven in which the terry loops extend entirely to the edge of the web, the means for directing the first weft upon partial beat-up should be located at the edge of the web of fabric.

It will therefore be understood that the present invention contemplates the provision of means for producing terry fabric either with or without a selvage.

A preferred embodiment of the invention is illustrated in the accompanying drawing as applied to a usual type of terry loom such as that disclosed in Patent No. 1,322,715, granted November 25, 1919, to the Draper Corporation, assignee of Charles F. Merrill, in which the partial and full beat-ups are produced by a swinging reed secured to the lay and movable from full beat-up position to partial beat-up position. The invention, however, is applicable to such other types of looms in which partial and full beat-ups are imparted to the lay.

As the general mechanism of the terry loom is well known, only such illustration of the terry loom is shown in the drawing as will show the application of the present invention thereto.

In the drawings:

Fig. 1 is a side elevation of a portion of a loom side showing the lay, the mechanism for causing the partial and full beat-ups thereof and the present invention applied thereto. In this figure of the drawing the reed is shown in full beat-up position.

Fig. 2 is a detail view of the mechanism embodying the present invention illustrating the reed in partial beat-up position with means for directing the first warp laid upon partial beat-up in parallelism with the fell of the fabric.

Fig. 3 is a detail plan view of a portion of a loom showing the manner in which the devices for directing the first weft laid upon partial beat-up are carried by the temple stands.

Fig. 4 is a detail vertical sectional view on lines 4-4, Fig. 3, showing the manner in which the spacing finger is arched to avoid engagement with the shank of the temple.

Fig. 5 is a diagrammatic view showing the fell of the web of fabric, the warps extending therefrom and illustrating in dotted lines the position assumed with the first weft laid upon partial beat-up in usual structures and in full lines the position in which the weft is laid in the present invention.

The loom illustrated in the accompanying drawings comprises the usual loom sides 1, the lay 2 having a recess 3 to receive the lower bar 4 of the swinging reed support 5 which is pivotally mounted upon the hand rail 6. The swinging reed support is moved toward and from full beat-up position by toggles at each end of the loom comprising links 7 and 8, the adjacent ends of which are pivotally connected by a stud 9 which forms the knee of the toggle. The opposite end of the link 8 is pivotally mounted on the stud 10 extending from a bracket 11 carried by the lay. The link 8 is also provided with an extension 12 which is connected by a helical spring 13 to the end of an extension 14 of said bracket. The spring 13 tends normally to keep the toggle in extended position and the swinging reed support in full beat-up position. The swinging reed support is moved to partial position by breaking the toggle and this is accomplished in the present construction by a link 15 which is connected at one end to the link 8 of the toggle near the knee 9 and at its opposite end to the end of an arm 16 which is rigidly secured to and extends from the beat-up shaft 17 and which is rocked intermittently by a lever 18 which is actuated by the usual terry cam 19, as is fully set forth in the patent to Merrill above-mentioned.

The present invention comprises the provision of means for causing the weft laid by the shuttle upon the first pick of partial beat-up to lie in parallelism to the fell of the web of fabric throughout substantially the entire width thereof. In the preferred embodiment of the invention illustrated herein, this means comprises a spacing finger movable to partial beat-up position and in proximity to the edge of the web at the time the first pick is laid, so that the first pick upon the partial beat-up will be directed thereby in parallelism to the fell of the fabric. Preferably, but not necessarily, the spacing finger or other means is thus positioned by the mechanism which shifts the reed from full beat-up position to partial beat-up position.

In the preferred embodiment of the invention illustrated herein, the spacing finger is slidably supported by the temple stand and the spacing finger normally engages the head of the temple and partakes of the movement of the temple head.

The usual temple stand 20 which is mounted upon the bracket 21 carried by the breast beam 22 inclines slightly downwardly and

rearwardly. The usual temple comprising a temple shank 23 and temple head 24 is yieldably mounted in the temple stand.

In the particular embodiment of the invention illustrated, the spacing finger is carried by a sliding plate 25 which is provided with longitudinally extending slots 26 and 27 which slidably engage respectively studs 28 and 29 projecting from the side of the temple stand. The slot 27 has an intermediate cam portion 30 which upon longitudinal movement of the sliding plate depresses the rearward end thereof.

The spacing finger 31, which desirably is formed of a rod, is secured to the rear end portion of the sliding plate 25. The spacing finger 31 comprises a straight portion which extends in substantially the axial direction of the plate 25 and is provided with a downwardly turned rear end 32, which, when the finger is moved to partial beat-up position, projects through the warps and thereby lies in the path of the first pick of the weft laid upon the partial beat-up. The rear end portion of the finger 31 is bent to form an arch 33 which extends over the shank 23 of the temple and the forward end of the finger is offset at right angles to the plane of this arch and extends through a block 34 which is slidably mounted in a recess 35 in the plate 25 and is provided with a screw-threaded extension 36 having a nut 37 which engages the outer face of the slide 25. By setting up the nut 37, the block 34 is drawn into the recess 35 and clamps the end of the finger 31 which extends through it firmly against the inner face of the plate 25, thereby securing the finger firmly to the sliding plate 25.

Desirably adjustable means are provided for limiting the forward movement of the finger. In the construction shown, the sliding plate 25 is provided at its rear end with a laterally extending flange 38 in which an adjusting screw 39 is seated and held in adjusted position by a set nut 40. The temple head has an upwardly extending boss or lug 41 which lies in the path of and engages the head of the adjusting screw 39 when the slide is moved rearwardly, thereby limiting the movement of the finger so that it may be positioned accurately at the limit of partial beat-up of the reed.

Any suitable mechanism operable in synchronism with the reed shifting mechanism may be employed to move the spacing finger to partial beat-up position. This purpose can conveniently be accomplished by actuating the slide from the arm 16 of the beat-up shaft 17 which is actuated by the terry cam and which arm acts through the link 15 to break the toggle which controls the position of the swinging reed support. In the construction illustrated, the sliding plate 25 has a flange 42 extending from its lower portion, to which one end of a chain 43 is connected,

the opposite end of the chain being connected preferably by a spiral spring 44 to one of the usual slots 45, 46 in the end portion of the arm 16. A spiral spring 47 connected at one

end to the stud 28 extending from the temple stand and at its other end to the flange 42 acts to retain the slide and finger normally in retracted position during plain weaving.

The slots 26 and 27 permit the slide to be withdrawn by the spring 47 until the downwardly turned rear end portion 32 of the spacing finger will engage the temple head. The spring 47 also permits a movement of the slide which enables the finger to partake of the movement of the temple head. Desirably the slots 26 and 27 are of sufficient length to permit the sliding plate and the finger carried thereby to yield with the temple sufficiently to avoid breakage if the shuttle, failing to box properly, should get between the reed and the temple, under which circumstances the temple must yield a considerable distance to avoid a smash.

In the operation of the loom, the plain portion of the fabric is woven when the reed is moved to full beat-up position, as illustrated in Fig. 1. During such plain weaving operation, the spacing finger is held in inoperative position and preferably against the temple head. When the usual pattern mechanism of the loom calls for partial beat-up, the lever 18 is connected by the usual locking mechanism to the arm 48 which is on the beat-up shaft 17, thereby causing the beat-up shaft to depress the arm 16, thus breaking the toggle and shifting the reed to partial beat-up position. At the same time the downward movement of the arm 18 acting through the chain 43 draws the slide 25 forwardly. The cam section 30 of the slide thereupon depresses the rear end of the slide 25 and consequently depresses the downwardly extending end portion 32 of the spacing finger 31 through the plane of the warps. The rearward movement of the slide advances the downwardly extending end portion 32 of the spacing finger until it reaches partial beat-up position, such movement being limited by the engagement of the head of the adjustable screw 39 with the lug 41 upon the loom temple. When, therefore, the first pick is laid, the weft engages the downwardly extending end portion 32 of the spacing finger and extends therefrom in parallelism with the fell of the fabric as illustrated by the full line *a* in Fig. 5, instead of lying at an angle to the fell of the fabric as illustrated in the line *b* in Fig. 5, which would be the case in the absence of a spacing finger or other spacing means. In the present construction, the spacing finger 31 is carried by the temple and the downwardly extending end 32 thereof extends through the warp within the series of selvage warps 49. It will, how-

ever, be understood that if no selvage is provided, the finger can be offset in such a manner as to lie at the edge of the web of fabric.

Desirably similar spacing fingers are employed at both sides of the loom for it will be readily understood that if an odd number of wefts are laid during beat-up, the reed shifting mechanism will operate when the shuttle is alternately at opposite sides of the loom, and a guiding device, therefore, will be required at each side of the loom to insure the laying of the first weft upon partial beat-up in parallelism with the fell of the fabric. By reason of the present invention, therefore, the length of terry warps between the fell of the web of fabric and the first weft laid upon partial beat-up will always be equal throughout the width of the loom and upon full beat-up these portions of the warps will form loops of uniform height throughout the entire width of the terry weave.

It will be understood that the particular embodiment of the invention disclosed herein is of an illustrative character and that various changes in form, arrangement and construction of parts may be made within the spirit and scope of the claims. It will also be understood that the invention is equally applicable to terry looms in which the lay as a whole is selectively given full and partial beat-up movements.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. In a loom for weaving terry fabrics comprising a lay, means for selectively shifting the reed of the lay to full and partial beat-up positions, means for causing the weft, laid by the shuttle upon the first pick of partial beat-up, to lie in parallelism with the fell of the web of fabric throughout the entire width of the terry weave.

2. In a loom for weaving terry fabrics comprising a lay, means for selectively shifting the reed of the lay to full and partial beat-up positions, guiding means operable upon the first pick of partial beat-up to engage the weft at or adjacent the edge of the web at partial beat-up position and cause the same to lie in parallelism to the fell of the web of fabric throughout the entire width of the terry weave.

3. In a loom for weaving terry fabrics comprising a lay, means for selectively shifting the reed of the lay to full and partial beat-up positions, a finger movable to partial beat-up position of the reed and in proximity to the edge of the web of fabric to cause the weft to lie in parallelism with the fell of the web of fabric and means operable by the reed-shifting means for positioning said finger.

4. In a loom for weaving terry fabrics

comprising a lay, means for selectively shifting the reed of the lay to full and partial beat-up positions, a finger movable to partial beat-up position of the reed at the edge of the terry weave to cause the weft to lie in parallelism with the fell of the web of fabric, means operable by the reed-shifting means for positioning said finger and adjustable means for limiting the positioning movement of said finger.

5. In a loom for weaving terry fabrics comprising a lay, means for shifting the reed of the lay to full and partial beat-up positions, a temple stand, a temple, a finger mounted upon said temple stand and movable longitudinally relatively thereto and means operable by the reed-shifting means, when actuated to position the reed in partial beat-up position, to advance said finger into the path of the weft at the partial beat-up position.

6. In a loom for weaving terry fabrics comprising a lay, means for shifting the reed of the lay to full and partial beat-up positions, a temple stand, a temple yieldably mounted therein, a slide reciprocally mounted upon said temple stand having a downwardly extending finger normally engaging the temple head and movable therewith, means operable by the reed-shifting mechanism, when actuated to shift the reed to partial beat-up position, to advance said slide and position said finger in the path of the weft at partial beat-up position and means operable to withdraw said slide to, and to retain the same in, normal position when the reed is shifted to full beat-up position.

7. In a loom for weaving terry fabrics comprising a lay, means for shifting the reed of the lay to full and partial beat-up positions, a temple stand, a temple yieldably mounted therein, a slide reciprocally mounted upon said temple stand having a downwardly extending finger normally engaging the temple head and movable therewith, means operable by the reed-shifting mechanism, when actuated to shift the reed to partial beat-up position, to advance said slide and position said finger in the path of the weft at partial beat-up position, cooperating adjustable means on said slide and temple head to limit the forward movement of said slide and means for withdrawing said slide to normal position when the reed is shifted to full beat-up position.

8. In a loom for weaving terry fabrics

comprising a lay, means for shifting the reed of the lay to full and partial beat-up positions, a temple stand, a temple yieldably mounted therein, a slide reciprocally mounted upon said temple stand having a downwardly extending finger normally engaging the temple head and movable therewith, means operable by the reed-shifting mechanism, when actuated to shift the reed to partial beat-up position, to advance said slide and position said finger in the path of the weft at partial beat-up position, means for limiting the advancing movement of said slide including a screw adjustably seated in said slide, an abutment on said temple head adapted to be engaged thereby upon advancing movement of said slide and means for withdrawing said slide to normal position when the reed is shifted to full beat-up position.

9. In a loom for weaving terry fabrics comprising a lay, means for shifting the reed of the lay to full and partial beat-up positions, a temple stand, a temple yieldably mounted therein, a slide mounted on said temple stand having a cam slot operable upon advancing movement of said slide to depress the forward end thereof, a finger extending forwardly and downwardly from said slide normally engaging the temple head and partaking the movement thereof, means operable by the reed-shifting mechanism, when actuated to shift the reed to partial beat-up position, to advance said slide and position said finger in the path of the weft at partial beat-up position and means operable to withdraw said slide to, and retain the same in, normal position when the reed is shifted to full beat-up position.

10. In a loom for weaving terry fabrics comprising a temple stand, a temple reciprocally mounted therein, a lay, means for shifting the reed of the lay from full to partial beat-up positions including a toggle, a cam-actuated beat-up shaft having an arm and means connected to said arm for actuating said toggle, a finger-carrying slide reciprocally mounted upon said temple stand, means connecting said arm and said slide operable to advance said slide and position the finger thereof in the path of the weft at partial beat-up position upon actuation of said arm to cause the toggle to move the reed to partial beat-up position.

In testimony whereof, I have signed my name to this specification.

CARL D. BROWN.