

J. A. CLARK.
TUFTED FABRIC LOOM.
APPLICATION FILED JAN. 5, 1910.

960,824.

Patented June 7, 1910.

2 SHEETS—SHEET 1.

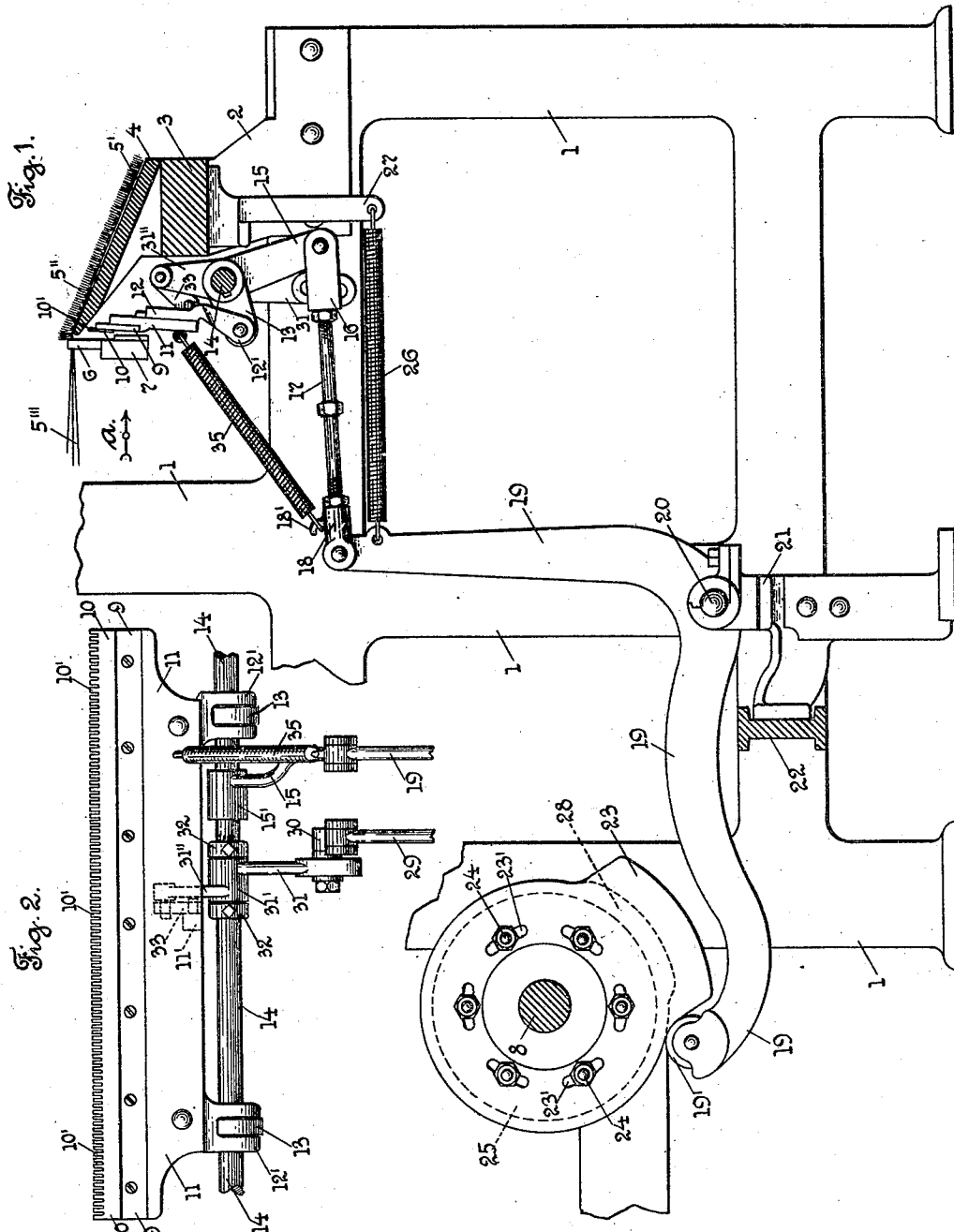


Fig. 1.

Fig. 2.

Witnesses

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Fig. 3.

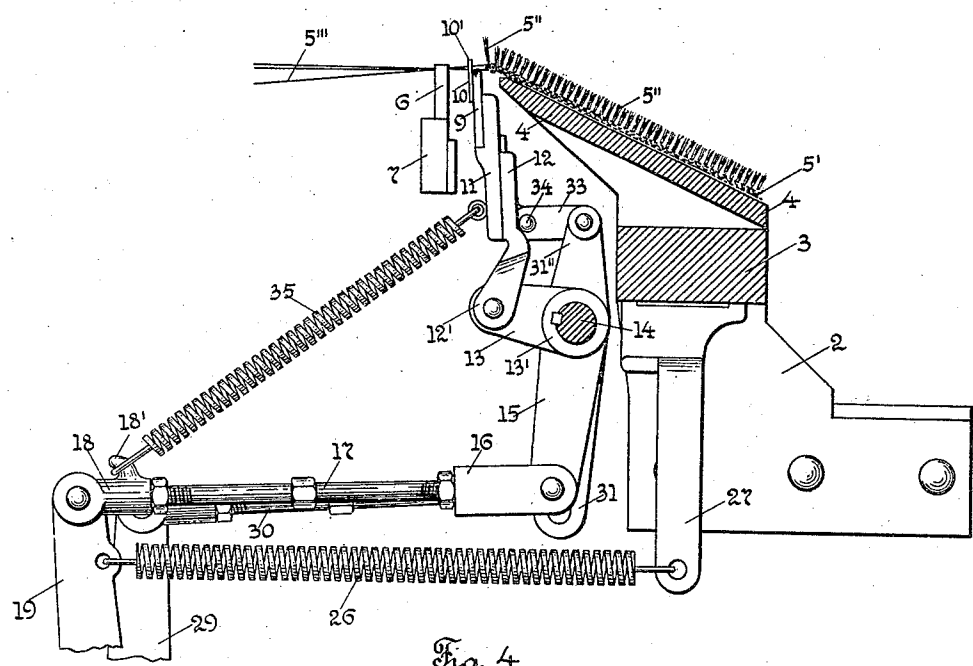
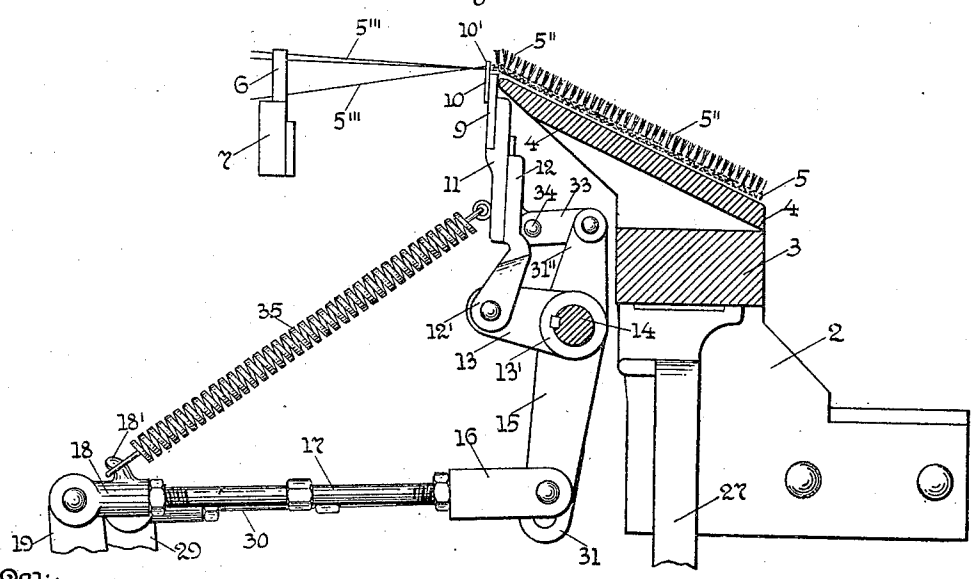


Fig. 4.



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UNITED STATES PATENT OFFICE.

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TUFTED-FABRIC LOOM.

960,824.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN A. CLARK, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Tufted-Fabric Looms, of which the following is a specification.

My invention relates to a tufted fabric loom, and more particularly to an improvement in a pile or tufted fabric loom of the class shown and described in U. S. Letters Patent, No. 446,402. In said class of looms, the tuft yarns for forming the pile are inserted into the warps by a series of tubes, each of which carries tuft yarn, and the tuft yarn is interwoven into the fabric with its ends projecting above the surface, and as the tubes are withdrawn from above the fabric the yarns from the tubes are cut by blades or shears.

In the tufted fabric loom shown and described in the Letters Patent above referred to, there is a movable cloth lifter bar, which at the time the tuft yarn is being cut, supports the underside of the fabric, and is actuated so as to lift the back of the fabric always into exactly the same horizontal plane, when the tuft yarns are to be cut; it is thus possible to obtain similar lengths in each row of tufts, to obviate the waste of tuft yarn when the tufts are cut off.

It has been found in practice that after the tuft yarns are beaten into the fabric, at the fell of the cloth, and the lay or reed moves back from its forward position near the edge of the breast plate or cloth board, that the fell of the cloth or fabric will also fall back with the reed, from one-eighth to three-eighths of an inch, which depends upon the firmness of the goods to be woven, the thickness of the filling threads, and also the amount of tuft yarn to be inserted, so that the position of the fell of the fabric, during the process of weaving, varies to a considerable degree back and forth, from its most favorable position for the tuft yarn to be cut off, and consequently the ends of the tufts are left in a more or less imperfect condition, causing a considerable waste of tuft yarn in the process of finishing the face of the goods.

The object of my invention is to obviate this condition, and in my improvements in the class of looms referred to, I have pro-

vided the inner edge of the movable cloth lifter bar shown and described in said Patent, No. 446,402, with a series of short dents or teeth, which correspond with the dents of the reed, and I have also imparted additional movements to the cloth lifter bar, to make it a fell positioning device, whereby, after the tuft yarns have been inserted into the shed and are secured by a pick of weft beaten up to the fell, and the lay is moving backward, this fell positioning device will move a short distance toward the lay, and will then be raised with its teeth or dents entering into the warp, and immediately thereafter be brought forward toward the edge of the breast plate or cloth board, moving with it the inserted tuft yarns and the pick of weft to an exact position relative to the cutting edges of the shears. The cloth will also be raised into the same level to have the tuft yarn cut to the correct length, without unnecessary waste of tuft yarn. After this, and before the reed has been moved again to its forward position, the cloth lifter bar is lowered under the breast plate and away from the reed, to its inoperative position.

The required movement of the cloth lifter bar with the warp teeth or dents thereon, is preferably obtained by the combination of two levers which are operated by two cams, consecutively.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have shown in the drawings a detached portion of a tuft pile fabric loom of the class referred to, with my improvements combined therewith, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a cross section through a detached portion of a tuft fabric loom of the class referred to, with my improvements combined therewith. Fig. 2 shows the cloth lifter bar, and the operating mechanism connected therewith, detached, looking in the direction of arrow *a*, Fig. 1. Fig. 3 shows, on an enlarged scale, the cloth lifter bar and operating levers shown in Fig. 1, in a different position. Fig. 4 corresponds to Fig. 3, but shows the parts shown in said figure in a different position.

In the accompanying drawings, 1 is the

loom side or end frame, 2 is a stand secured thereon, which carries the cross bar 3 with the breast plate or cloth board 4 thereon, adapted to guide the fabric, which consists of the back 5', and the pile or tufts 5'', and the warps 5''', which extend through the dents of the reed 6 carried on the lay 7. The reed 6 moves back and forth with the lay, which is operated by mechanism, not shown, 8 is the cam or bottom shaft of the loom.

I will now describe my improvements in the cloth lifter device, which consists of the cloth lifter bar 9, which is provided in this instance at its upper edge with a bar 10 extending upwardly therefrom, and having a series of short teeth or dents 10' thereon, see Fig. 2, which correspond in location with the dents of the reed 6, and are adapted to enter into the warps 5''' when the bar 10 is raised, as shown in Fig. 3.

The cloth lifter bar 9 is suitably secured to the bar carrier 11, which is mounted on arms 12 at each end thereof. The arms 12 have the yoke shaped ends 12', which are pivotally mounted on the ends of arms 13, which have their hubs 13' secured upon the rock shaft 14, which is suitably mounted in bearings on the loom side, not shown.

Fast on the rock shaft 14 is the hub 15' of a lever 15, which has its ends pivotally connected to the rod head 16 on an adjustable connecting rod 17. The other end of the rod 17 is provided with a rod head 18, which is pivotally connected to one end of an angle lever 19. The hub of the lever 19 is loosely mounted on a stud 20 on a stand 21, which is secured on the girt 22. The other arm of the lever 19 has a roll 19' thereon which travels in this instance upon the periphery of a cam 23, which in this instance is adjustably secured by bolts 24 extending through elongated slots 23' in the cam 23, on a disk 25, shown by broken lines in Fig. 1. The disk 25 is secured upon the cam shaft 8. A helically coiled contraction spring 26, attached at one end to the lever 19 and at its other end to an arm 27, secured to the underside of the cross bar 3, acts to hold the roll 19' on the lever 19 in contact with the periphery of the cam 23.

A second cam 28, shown by dotted lines in Fig. 1, is also adjustably secured, in this instance to the opposite side of the disk 25. The cam 28 is adapted to operate a second angle lever, which extends alongside of the elbow lever 19, and is of the same shape, and also has its hub mounted on the stud 20. The upper part of the second angle lever is shown at 29 in Figs. 2, 3 and 4.

The upwardly extending end of the lever 29 is pivotally connected to one end of an adjustable connecting rod 30; the other end of said connecting rod 30 has adjustably connected thereto the arm 31. The hub 31' of

the arm 31, see Fig. 2, is in this instance loosely mounted on the rock shaft 14, and is held in position thereon by two collars 32.

Extending upwardly from the hub 31' of the arm 31, is an arm 31'', which has its end pivotally connected to a link 33. The other end of said link 33 has connected thereto, by a pin 34, a lug 11' on the bar carrier 11. A helically coiled contraction spring 35 is connected at one end to the bar carrier 11, and at its other end to a projection 18' on the rod head 18, and acts to hold the cloth lifter bar 9 in its proper position.

In the operation of the loom, through the rotation of the cams 23, and 28, the angle levers 19 and 29 are moved, and through connections to the bar carrier 11, said bar carrier, and the lifter bar 9, having the bar 10 fast thereon, with the teeth or dents 10', cause the raising of the teeth or dents 10' from the position shown in Fig. 1 to the position shown in Fig. 3, causing said teeth or dents 10' to enter the warp threads 5'', and to position the cloth lifter bar 9, to support the fabric as the lay beats up, preparatory to the cutting of the tuft yarn, and also causes the forward movement of the bar 10, having thereon the teeth or dents 10', toward the edge of the breast plate or cloth board 4, moving with said bar the inserted tuft yarns, and the pick of weft, to the exact required position relative to the cutting edges of the shears, and making it a fell positioning device, as the lay moves back, see Fig. 4.

By placing a pick of weft behind the tufts, and beating it up with the tufts to the fell of the fabric, and holding it in this position by the short dents, I am enabled to hold the tufts in an upright position, to be cut accurately by the shear blades.

It will be understood that the details of construction of my improvements may be varied if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a pile fabric loom, a fell positioning device, comprising a bar having a series of teeth or dents thereon, means to move said bar to and fro, and up and down, below the fabric, whereby the teeth or dents may enter the warps, and move the fell to a definite position, and also raise the fabric into a horizontal plane after each insertion of the tuft yarns.

2. In a pile fabric loom, a fell positioning device, comprising a bar having a horizontal plane surface to contact with the under surface of the woven fabric, and having a series of teeth or dents at one side of said horizontal surface, adapted to enter between the warp threads, and means to move said teeth or dents.

3. In a pile fabric loom, a fell positioning

device, comprising a bar having a series of teeth or dents thereon to enter the warp threads, and pivotally mounted on arms extending from a rock shaft supported under the breast plate, a downward extension on said arms below said shaft, a connection from said downward extension to a lever and cam, and said lever and cam, to move said bar back and forth, and a second pivoted arm, and a lever having a connection from one of its arms to said bar, and a connection from its other arm to a second lever and cam, and said lever and cam, to move said bar back and forth.

4. In a pile fabric loom, a fell positioning bar, comprising a horizontal bar upon a movable arm, a series of teeth or dents on said bar, a cam, and connections to a movable arm, to move said bar up to place the

back of the fabric in a definite horizontal plane, and a second cam, and connections to rock said bar on its pivotal axis, and move the dents in the warp to a definite position at the fell, after each insertion of the tuft yarn.

5. In a pile fabric loom, a fell positioning device, comprising a horizontal bar having a series of dents or teeth thereon, and means to move said bar to carry the dents or teeth in the warps to a fell position or cloth making point, with the tuft yarns around one pick of filling, and another pick of filling behind the tuft yarns.

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