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R. G. TURNER

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CLOTH CLAMP FOR LOOMS

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FIG. 1

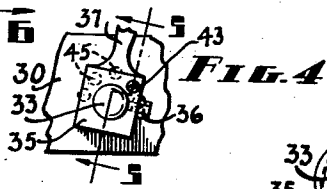
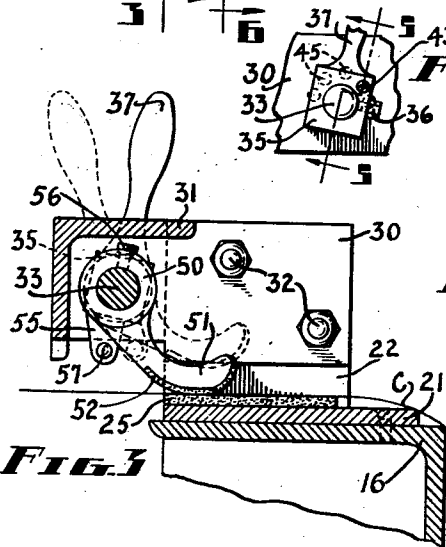
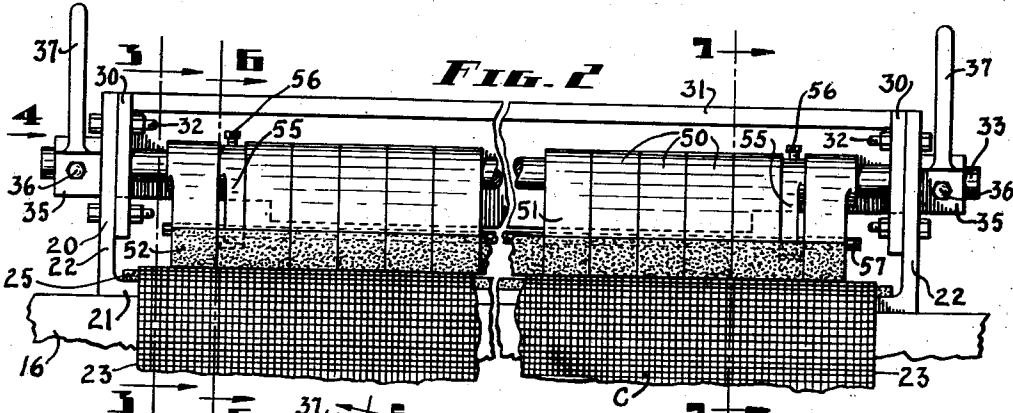
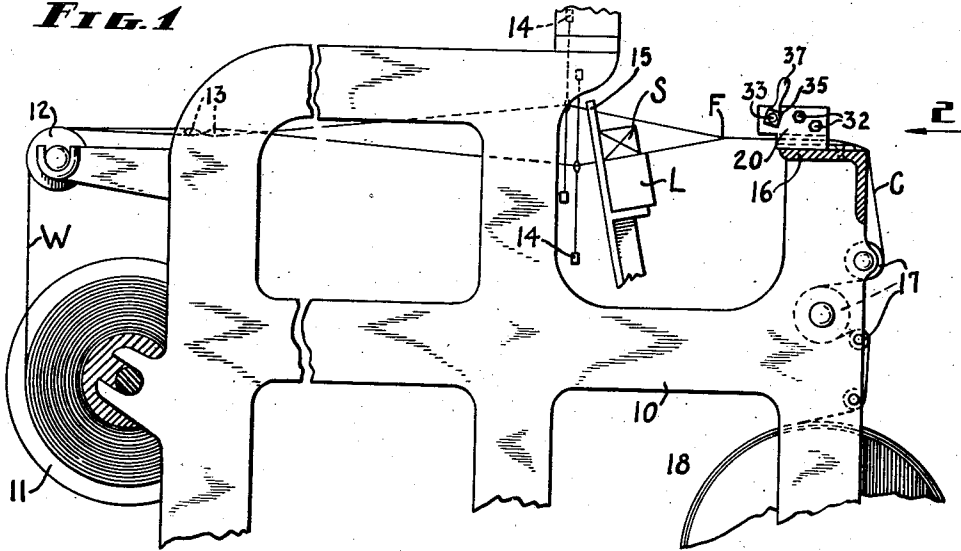
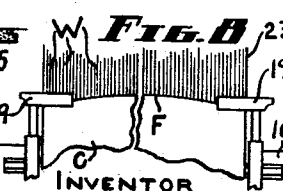
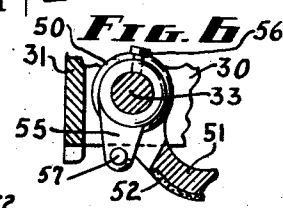
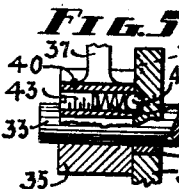


FIG. 5



INVENTOR
RICHARD G. TURNER
Blm. P. Hawley
ATTORNEY

UNITED STATES PATENT OFFICE

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CLOTH CLAMP FOR LOOMS

Richard G. Turner, Worcester, Mass., assignor to
Crompton & Knowles Loom Works, Worcester,
Mass., a corporation of Massachusetts

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8 Claims. (Cl. 139—291)

This invention relates to improvements in cloth clamps and it is the general object of the invention to provide means for preventing objectionable backward motion of the fell of the cloth during periods of idleness of the loom.

In the usual loom the warp is fed forwardly from the warp beam and is separated into sheds for the passage of the shuttle which lays a pick of weft. The lay then beats forwardly to incorporate this pick into the fell of the cloth and the latter is led to a take-up mechanism which advances the cloth progressively during loom operation. In the weaving of certain fabrics the tension of the warp threads has a tendency to move the fell of the cloth rearwardly while the loom is idle. It is observed that this tendency is a minimum at the selvages where the cloth is held by the temples, but at an intermediate point between the selvages the fell may move rearwardly to form a curved fell and cause a thick place in the center of the cloth when weaving is resumed. The customary method used to correct this condition is to advance the take-up before weaving is resumed, but due to the curved form of the cloth fell this advance motion by the take-up does not restore the fell to a straight line.

It is an important object of my present invention to provide a cloth clamp normally in cloth holding position during loom operation, and remaining in that position when the loom is stopped to resist rearward motion of the cloth fell under the tension of the warp threads.

It is a further object of my present invention to provide a series of clamping elements mounted for free rotation on a supporting bar and controlled by a means the position of which can be changed from holding to non-holding position whenever rearward motion of the cloth is desired, as for a pickout.

It is a further object of my present invention to provide a resilient friction material, such as a plate of soft rubber, under the fabric and arrange clamping means over the fabric to have engagement with the latter and force the same against the rubber plate.

It is a still further object of my present invention to mount the individual clamps in such a way that any tendency of the cloth to move rearwardly will increase the pressure exerted by the clamp on the cloth.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrange-

ment of parts hereinafter described and set forth.

In the accompanying drawing, wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a side elevation of a loom having my invention applied thereto, certain parts being shown in section,

Fig. 2 is a front elevation taken in the direction of arrow 2, Fig. 1, on an enlarged scale,

Fig. 3 is a vertical section on line 3—3 of Fig. 2,

Fig. 4 is a detailed end elevation looking in the direction of arrow 4, Fig. 2,

Fig. 5 is a detailed section on line 5—5 of Fig. 4,

Fig. 6 is a vertical section on line 6—6 of Fig. 2 showing the control rod and arm, the cloth and parts under it being omitted,

Fig. 7 is a vertical section on line 7—7 of Fig. 2, with the clamp in holding position, and

Fig. 8 is a diagrammatic plan view showing the cloth with a rearwardly curved fell such as develops after the loom has stood idle for some time.

Referring to the drawings, the loom frame 10 has mounted at the rear thereof a warp beam 11 from which is led the warp threads W. The latter extend upwardly and forwardly over a whip roll 12 and there may be provided lease rods 13 from which the warp is led to harness frames, two of which are shown herein at 14. Mechanism not shown is provided for raising and lowering these harness frames to separate the threads into upper and lower planes or sheds through which the shuttle S is picked. The shuttle travels along a reciprocating lay L on which is mounted a reed 15 to beat the picks led by the shuttle into the fell F of the cloth C. The cloth extends over a breast beam 16 which in the present instance is shown in the form of an angle iron, after which the fabric extends around rollers designated generally at 17 to a take-up roll 18 which, by means of mechanism not shown, is turned to advance the cloth. During loom operation the take-up roll exerts a forward pull on the cloth the effect of which is to unwind the warp from the beam 11.

As previously stated, I have observed in the weaving of certain fabrics that the fell of the cloth has a tendency to move rearwardly during periods of idleness so that the fell of the cloth is curved backwardly between the temples 19, as shown in Fig. 3. It is to correct this tendency that I have provided the cloth clamp to be described hereinafter.

Secured to the breast beam is a frame 20 having a base 21 the ends of which are bent up to form vertical plates 22. The base 21 extends under the fabric as suggested in Fig. 2 and the plates 22 lie beyond the selvages 23 of the cloth. Mounted on the base 21 is a sheet or plate of soft rubber 25 which lies immediately under the cloth and over and preferably along which the cloth passes as it moves toward the take-up roll.

Secured to each plate 22 is a foot 30 formed as part of a brace 31 which extends across the loom above the cloth. The feet 30 may be held to the plates 22 by means of bolts 32 as shown particularly in Fig. 3 and afford support for a shaft 33 the ends of which project beyond the feet 30. The shaft 33 is mounted for rotation in bearings 34 in the feet 30.

Shaft 33 has secured to each end thereof a hub 35 held to the shaft by a set screw 36 and having an upstanding handle 37 by which the shaft is rocked in its bearings. The angular setting of the bar is maintained by a yieldable lock shown in Figs. 4 and 5. As shown particularly in Fig. 5, the hub 35 is provided with a bore 40 at one end of which is a ball 41 engaging a compression spring 42 held in place by a screw 43 tapped into the bore 40. The adjacent foot 30 is provided with a series of pockets 45 arranged concentrically with shaft 33 and proportioned to receive the ball 41. The extent of the pressure exerted on the ball 41 tending to hold it in any selected pocket may be varied by the screw 43. As the handle is moved to rock the shaft 33 the ball will move from one to another of the pockets 45 and hold the shaft in any one of several angular positions. If desired, both of the hubs 35 may be constructed as shown in Fig. 5, although I do not wish to be held to the use of a yielding lock at each end of the bar 33. The hubs 35 are close to their corresponding feet 30 and serve to prevent substantial endwise motion of the shaft 33.

The shaft 33 extends through and has loosely mounted thereon a series of clamps 50 which are free to rotate with respect to the shaft 33. Each clamp is provided with a forwardly and downwardly extending foot 51 the under side of which is provided with a pad of soft rubber 52. In order to determine the position of the clamps I secure a pair of spaced control arms 55 to the shaft 33 by means of set screws 56 which permit angular adjustment of the control arms relatively to the shaft 33. These arms 55 extend downwardly and support a control rod 57 which lies behind the feet 51. In order to make room for the arms 55 certain of the clamps 50 are formed as shown in Fig. 2 with extended feet which lie under the arms 55. In this way continuity of the clamping surface is preserved across the fabric.

During loom operation the handles 37 will be in the forward or full line position shown in Fig. 3 the effect of which is to allow the feet 51 to rest by gravity on the cloth. The spring 42 is sufficiently strong to hold the rod 57 in the full line position shown in Fig. 3 behind the feet 51. Under these conditions the cloth will move forwardly, or in a right hand direction as viewed in Fig. 3, the forward motion induced by the take-up being retained by the clamps. When the loom stops the feet remain in holding position with respect to the cloth and prevent rearward slipping thereof.

Should it be necessary to move the cloth rearwardly, as for a pick-out, the handles are moved

back, or to the dotted line position of Fig. 3, thereby moving the rod 57 forwardly against feet 51 to raise them. The spring 42 is strong enough to hold the feet 51 raised. After the pick-out the handle is pulled forwardly and the clamps again fall onto the cloth. When the feet are down they have frictional contact with the cloth at points in front of and below the shaft 33, hence any rearward motion of the cloth to the left as viewed in Fig. 3, will draw the pads 52 downwardly against the cloth and force the latter against the rubber plate 25.

I have found that a clamp constructed as described herein effectively prevents objectionable rearward motion of the fell of the cloth during prolonged periods of idleness on the part of the loom. The fell of the cloth is kept substantially straight and upon resumption of weaving the first pick to be beaten into the cloth will be properly spaced from the last pick laid before loom operation was interrupted.

From the foregoing it will be seen that I have provided a clamp to hold the cloth against substantial rearward motion during periods of idleness on the part of the loom. It will also be seen that the location of the bar 33 is such that rearward motion of the fabric has the effect of increasing the holding effect of the clamping feet 51. It will also be seen that means are provided for yieldingly holding the clamping feet 51 elevated. The rod 57 and the bottoms of the feet 30 are sufficiently high to allow the temples to move forwardly under them if struck by a misplaced shuttle.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a loom having a breast beam and a lay movable toward and from the breast beam to beat picks of filling into the cloth which moves forwardly over the breast beam, a support mounted on the breast beam and extending over the cloth and breast beam, and means supported by and movable relatively to said support and extending downwardly and forwardly to engage the cloth and clamp the same in fixed position with respect to the breast beam to prevent rearward motion of the cloth toward the lay.

2. In a loom having a breast beam and a lay movable toward and from the breast beam to beat picks of filling into the cloth which moves forwardly over the breast beam, a support mounted on and extending over the breast beam, and a series of clamps movable relatively to each other and with respect to the support and mounted on the latter in positions over the breast beam and cloth to engage the latter to prevent movement of the cloth toward the lay.

3. In a loom having a breast beam and a lay movable toward and from the breast beam to beat picks of filling into the cloth which moves forwardly over the breast beam, a support extending over the cloth and breast beam, and a series of clamping feet pivotally mounted with respect to the support and extending downwardly and forwardly into engagement with the cloth to prevent the latter from moving relatively with the breast beam in a direction toward the lay.

4. In a loom having a breast beam and a lay movable toward and from the breast beam to beat picks of filling into the cloth which moves

forwardly over the breast beam, a body of compressible friction material supported by the breast beam and located under the cloth, and clamping means located above the cloth and said compressible friction material to exert a downward force on the cloth tending to hold the latter between said compressible material and the clamp means to prevent motion of the cloth toward the lay.

5. In a loom having a breast beam and a lay 10 movable toward and from the breast beam to beat picks of filling into the cloth which moves forwardly over the breast beam, a body of rubber mounted on the breast beam and having sliding engagement with the underside of the cloth as 15 the latter moves forwardly, and clamp means above the cloth having the under surfaces thereof provided with rubber in sliding contact with the top of the cloth, said clamp means exerting a downward force on the cloth tending to hold 20 the same between the body of rubber and the rubber on the clamp means to prevent movement of the cloth rearwardly with respect to the breast beam toward the lay.

6. In a loom having a breast beam and a lay 25 movable toward and from the breast beam to beat picks of filling into the cloth which moves forwardly over the breast beam, a support extending over the cloth and breast beam, clamp means mounted on and movable with respect to 30 the support means and extending downwardly and forwardly to have frictional engagement with the cloth, said clamp means tending nor-

mally to move into engagement with the cloth to prevent movement of the cloth rearwardly toward the lay, and means mounted on the support to move the clamp means out of engagement with the cloth.

7. In a loom having a breast beam and a lay movable toward and from the breast beam to beat picks of filling into the cloth which moves forwardly over the breast beam, a rod mounted on the breast beam and extending above the latter and the cloth, a plurality of clamping feet pivotally mounted on the rod and extending forwardly and downwardly from the rod into engagement with the cloth and exerting downward forces on the cloth tending to prevent rearward movement thereof with respect to the breast beam toward the lay.

8. In a loom having a breast beam and a lay movable toward and from the breast beam to beat picks of filling into the cloth which moves forwardly over the breast beam, a rod mounted on the breast beam and extending above the latter and also the cloth, a plurality of clamping feet pivotally mounted on the rod and extending forwardly and downwardly from the rod into engagement with the cloth and exerting downward forces on the cloth tending to prevent rearward movement thereof with respect to the breast beam toward the lay, and means supported by the breast beam movable with respect 30 to the rod to lift the clamping feet out of engagement with the cloth.

RICHARD G. TURNER.