

June 8, 1937.

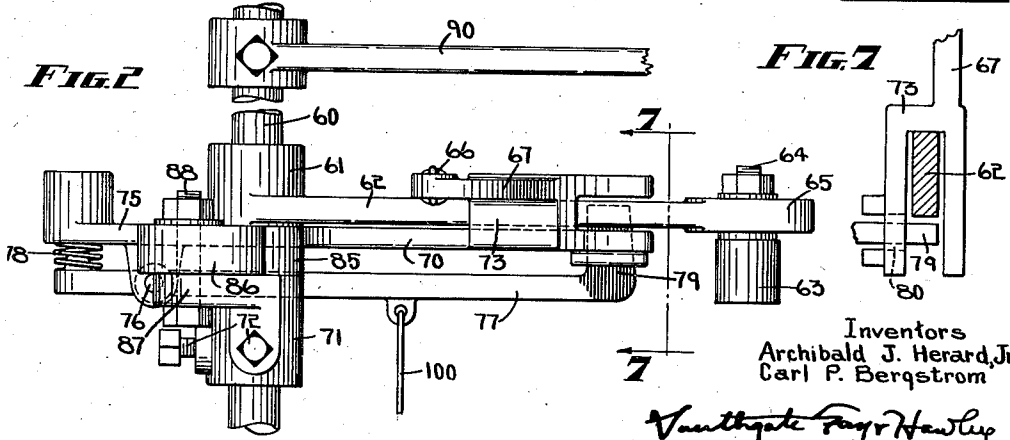
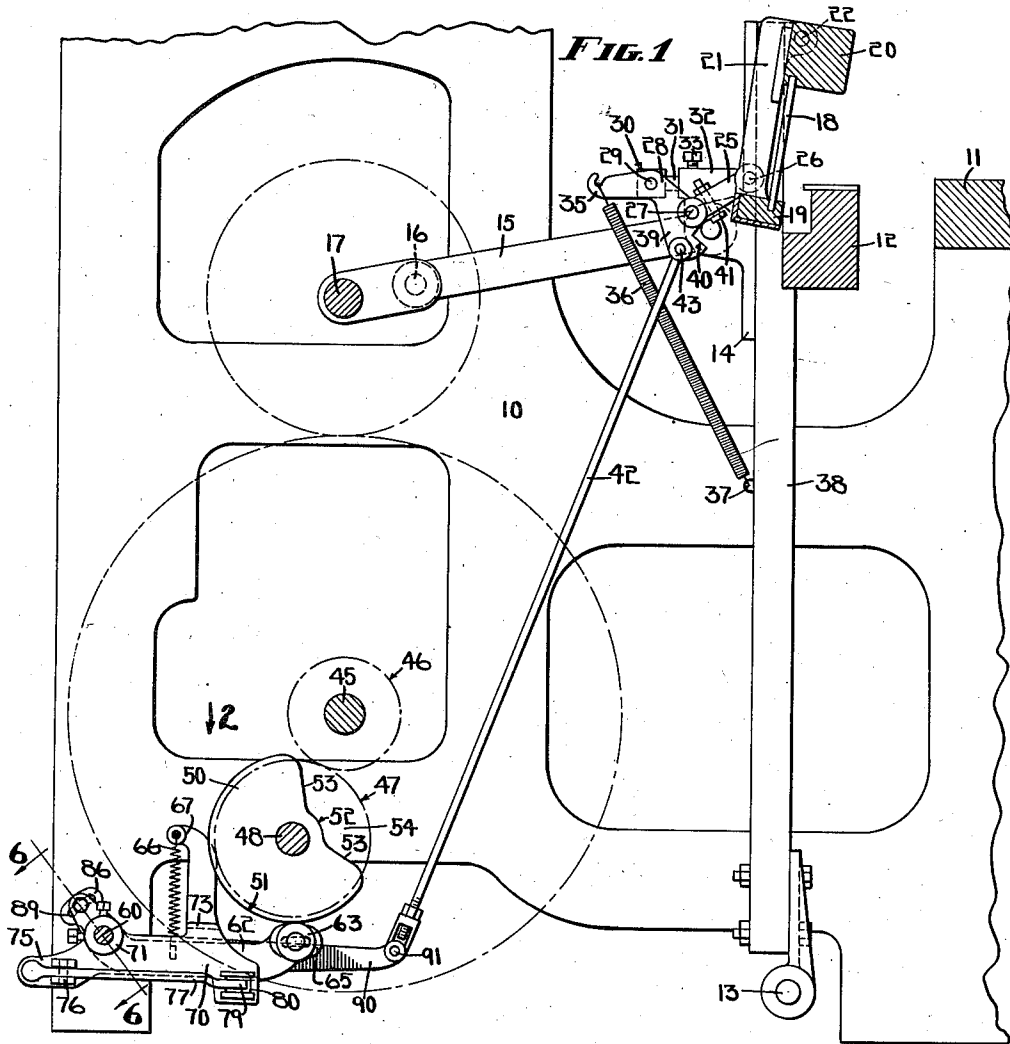
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2,082,888

LOOM FOR WEAVING TERRY

Filed Dec. 9, 1935

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

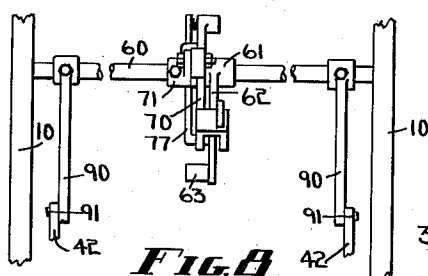


FIG. 8

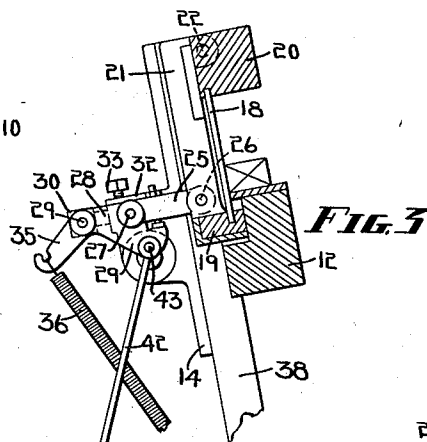


FIG. 3

FIG. 5

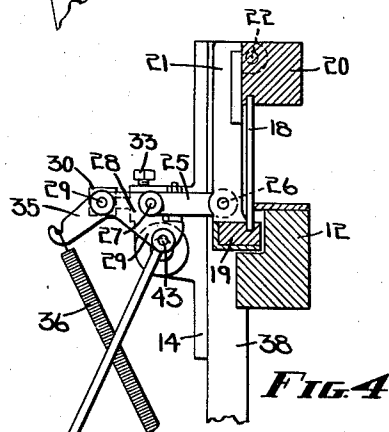
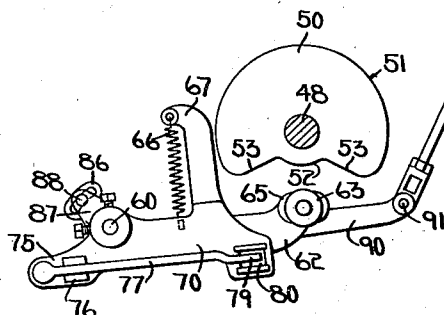
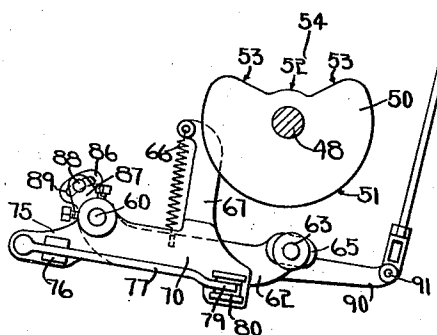
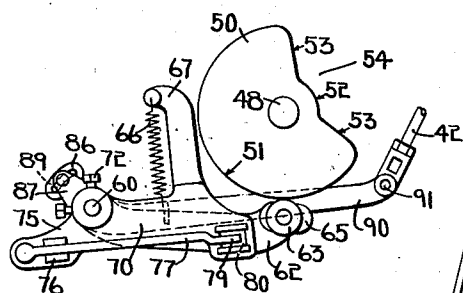


FIG. 4

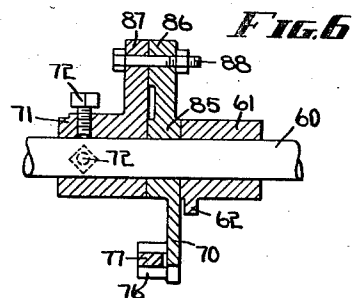


FIG. 6

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LOOM FOR WEAVING TERRY

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Application December 9, 1935, Serial No. 53,456

1 Claim. (Cl. 139—25)

This invention relates to improvements in terry fabric looms and it is the general object of the invention to provide means for weaving fabrics having different heights of pile.

5 Terry looms usually operate with two warp systems one of which is tight to form a ground web and the other of which is loose to supply the loops. The reed is controlled so that for a plurality of picks it is in a position rearward with respect to the fell when the lay is on front center, but at other times the reed moves up to the fell, the terry warp being momentarily slackened so that the portion of said warp extending between the fell and the previously laid picks of filling with the reed relatively rearwardly can be moved to form the pile characteristic of terry fabric. As heretofore made looms of this type have generally been constructed for a single height of pile and such variation as was obtained depended upon rather unsatisfactory adjustments of the connector between the reed and the reed controller. It is an important object of our present invention to provide means for determining the reed position relatively to the lay in conjunction with adjusting means to vary the extent of movement of the reed relatively to the lay on terry forming beats of the loom.

In the form of the invention illustrated herein the reed is controlled by a toggle joint interposed between the lower part of the reed and a pivot fixed with respect to the lay. The joint is controlled by a depending rod connected at its lower end to a control or positioning lever fastened to a rocking shaft. A cam operated by reduction gearing is provided to effect periodic breaking of the toggle joint by means of a lever cooperating with the cam and transmitting its motion to the control lever through the rocker shaft. It is an important object of our present invention to provide means whereby the cam lever is moved to the same extreme position for each complete revolution of the cam but wherein the total throw of the lever will be variable, generally somewhat less than the motion of the cam. Adjusting means are provided to permit the lever to use only that part of the throw of the cam which will correspond to the desired height of pile.

It is a further object of our present invention to provide means for permitting the weaving either of terry or plain fabric, this means including a coupling to be interposed between the toggle and the cam lever when terry fabric is to be woven and to be moved to non-operating or uncoupled position to prevent the cam and its

lever from altering the position of the reed when it is desired to weave plain or non-pile fabric, as headings. This coupling is so related to the several cooperating parts that the adjustments of the latter do not interfere with the coupling and uncoupling action described.

A further object of the invention is to provide a single adjustment which will give equal motions to both ends of the reed. Where individual adjustments at each end are used, as formerly, there is likelihood that one end will move more than the other, causing unevenness of the fabric.

With these and other objects in view which will appear as the description proceeds, our invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawings, wherein a convenient embodiment of our invention is set forth,

Fig. 1 is a transverse vertical section through a loom having our invention applied thereto with the lay in forward position but with the reed in relative backward position,

Fig. 2 is a top plan view taken in the direction of arrow 2, Fig. 1 on an enlarged scale,

Fig. 3 is an operating view showing parts of Fig. 1 with the lay back and the reed in shuttle guiding position with the toggle straight,

Fig. 4 is a view similar to a part of Fig. 1, but with the toggle straightened to place the reed for a terry beat-up stroke,

Fig. 5 is a view of the lower part of Fig. 4 showing the relation of the cam operated parts when a heading is to be woven of plain non-pile fabric,

Fig. 6 is a vertical section on line 6—6 of Fig. 1, on an enlarged scale,

Fig. 7 is a vertical section on line 7—7, Fig. 2, and

Fig. 8 is a diagrammatic plan on a reduced scale of Fig. 1.

Referring to Fig. 1, the loom frame 10 has a breast beam 11 and a lay 12 pivoted about a rocker shaft 13 at the lower part of the loom. At each end of the loom a lay end 14 is pivotally connected to the forward end of a connector rod 15 reciprocated by wrist pin 16 of a top shaft 17. A reed 18 is mounted between a lower backstay 19 and an upper hand rail 20, the backstay, rail and reed being held together at each end by a framework 21 which moves pivotally about axes 22 supported by a lay end 14.

At each side of the loom there is a toggle joint for determining the position of the reed and since both toggles and their connections are alike, only

one will be described. A toggle link 25 is pivoted as at 26 to the frame 21 and pivotally connected as at 27 to an operating link or lever 28. The latter pivots about an axis 29 carried by a block 30 having a forwardly extending shank 31 which fits into a bearing 32 of the lay end and held in an adjusted position by a set screw 33. The link 28 has a rearwardly extending arm 35 to which is attached the upper end of a tension spring 36 the lower end of which is fastened as at 37 to a lay sword 38. The forwardly extending arm 39 of the link 28 is formed with a shoulder 40 to abut an adjusting screw 41 in link 25 when the toggle is in straight, or terry pile forming position. A control connector 42 is pivoted as at 43 to the link 39 and extends downwardly.

If the fabric being woven is the so-called three pick terry the reed will be in the position shown in Fig. 1 for two successive beats when the lay is in forward position, but when the third forward beat occurs the connector 42 will rise to straighten the toggle so that the parts will assume the position shown in the upper portion of Fig. 4 to beat the loops of terry to the fell of the cloth.

A control mechanism for both toggle joints is shown in the lower part of Fig. 1. The regular loom bottom shaft 45 carries a gear 46 which meshes with a second larger gear 47 on a stub shaft 48. The latter is supported in suitable bearings and in the present instance will have a complete rotation every third beat of the lay, the gearing between the bottom and stub shafts and also between the bottom and top shafts being in proper proportion to accomplish this result. Secured to the stub shaft 48 is a cam 50 having a high dwell area 51 and a low dwell area 52 from which extend inclined surfaces 53 between which is a pocket or recess 54.

A rocker shaft 60 mounted for rotation in suitable bearings fixed with respect to the loom frame has loosely pivoted thereon hub 61 of a cam lever 62 carrying a roll 63. The latter is supported on a stud 64 adjustable toward and from the rocker shaft in a slotted end 65 of the cam lever. A light tension spring 66 is interposed between a horn 67 and the cam lever to urge the roll toward the cam.

Collar 71 is secured on the rocker shaft 60 by set screws 72. A transmitting lever 70, supporting the previously described horn 67, has an offset 73 to extend over the cam lever and limit upward movement thereof relatively to the transmitting lever.

A rearwardly extending arm 75 on the transmitting lever has pivoted thereto at 76 a coupling key 77 and as indicated in Fig. 2 there is interposed between the key and the arm 75 a compression spring 78 the effect of which is to urge the forward end of the key 77 toward the cam lever. The coupling key is provided with a lifting head 79 which extends through a slot 80 in the transmitting lever to project below and into the path of the cam lever.

The transmitting lever has a hub 85 on the rocker shaft from which extends upwardly and rearwardly a horn 86, and a similar horn 87 on the collar 71 is connected to the horn 86 by means of bolt 88 extending through the horns 86 and 87. An arcuate slot 89 is formed in the horn 86 so that the angular position of the transmitting lever with respect to the rocker shaft and collar 71 can be altered.

As seen in Fig. 3 there are two control levers 90 secured to the rocker shaft and extending forwardly,

each having a connection 91 with a connector 42. A cord 100 controlled by the pattern mechanism not shown is attached to the coupler key 77 to pull the latter from under the cam lever when a plain heading is to be woven.

In operation, the crank shaft 17 rotates once for each pick of the loom to move the lay back and forth and the cam 50 will complete a rotation once for every three revolutions of the crank shaft. When the lay is in rear position as shown in Fig. 3 the spring 36 will straighten the toggle joint so that the reed will be forward to support the shuttle when it is in flight, this condition occurring every beat of the loom. Spring 36, acting through link 35 will also hold the levers on shaft 60 raised. On non-terrying forward strokes of the lay the cam 50 will be in such a position that high dwell 51 will arrest up motion of the roll 63 as the lay advances, and the cam lever, acting through head 79, will hold the transmitting lever depressed, which in turn acts through the bolted horns 86 and 87 and the set screws 72 and collar 71 to prevent further rocking of the rocker shaft. The effect of this is to hold levers 90 down as the lay moves forwardly, thereby preventing the connectors 42 from rising to high position, and effecting a braking of the toggles to position the reed as shown in Fig. 1.

This relation exists for two successive beats of the loom, but on the third beat, the pocket or recess 54 of the cam is over the roll 63 and as the lay moves forwardly the roll rises into the pocket and the cam is ineffective to overpower the springs 36 to brake the toggles. The latter therefore remain straight and the reed has a terry pile forming movement, assuming the position shown in Fig. 4 relatively to the lay.

These operations will continue so long as it is desired to weave terry fabric, but when a heading is called for by the pattern mechanism the cord 100 will pull the coupling key 77 to move the head 79 out of vertical alignment with the cam lever to permit the latter to move downwardly without causing any movement of the transmitting lever, as suggested in Fig. 5. The levers 90 and connectors 42 therefore remain up each beat of the lay so long as a heading is being woven.

When it is desired to alter the height of pile it will be necessary to change the extent to which the toggle joints are broken, but this should preferably be done without disturbing the two levers 90, since any unevenness in their setting will cause imperfect cloth. The adjustment may be accomplished by loosening the bolt 88 and effecting a relative angular motion between the horns 86 and 87. If it is desired for instance to have a greater height of loop, it will be necessary to depress the connector 42 below its former position, and this can be accomplished by turning the transmitting lever about the rocker shaft in a left hand direction as viewed in Fig. 1, the cam being in the position of Fig. 4, after which the bolt 88 is tightened. This will cause the dwell 51 to give the rocker shaft a greater angular motion, causing a longer sweep of levers 90. Similarly, a reverse adjustment can be used when it is desired to weave a fabric having a lower pile.

Whatever the relative position of the horns 86 and 87 to effect varying heights of pile, the relation between the coupling head 79, the transmitting lever, and the cam lever will remain the same, since offset 73 and head 79, both on the transmitting lever limit vertical motion of the cam lever relatively to lever 70. The only difference will be that when a higher pile is to be woven the

roll 63 will rise to a somewhat higher position in the pocket 54 when the parts are in the position shown in Fig. 4. It will be understood from this that the extent of the throw which can be given by the inclined surfaces 53 of the cam 50 to the cam lever through the roll 63 is varied by altering the relative position of the horns 86 and 87, and that a single adjustment at the transmitting lever affects both levers 90.

Having thus described our 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 we do not wish to be limited to the details herein disclosed, but what we claim is:

In a terry fabric loom having a lay, a reed capable of assuming two different positions relatively to the lay when the latter is forward, a regularly rotating cam having a high dwell and a recess interrupting said dwell, a rocker shaft, a cam lever mounted on and movable about the rocker shaft as a pivot under action of the cam, a transmitting lever also mounted on the rocker shaft, and having a part with an arcuate slot concentric with the shaft, a collar on the rocker

shaft, an arm on the collar adjacent that part of the transmitting lever having the slot, bolting means passing through the arm and extending through the slot; to hold the transmitting lever and collar in any one of a plurality of relative angular positions with respect to each other about the rocker shaft, the transmitting lever capable of turning on the shaft relatively thereto when the bolting means is loosened, means to secure the collar permanently to the shaft in a given position for all angular positions of the transmitting lever relatively to the shaft, the cam lever to assume a plurality of different positions with respect to the recess of the cam depending upon the relative angular relation of the transmitting lever and collar, means to transmit an actuating force from the cam lever to the transmitting lever, and spaced means carried by the rocker shaft and operatively connected to the reed at spaced points to cause the latter to assume one or the other of its positions relatively to the lay when the latter is forward.

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