

[54] CUTTING, CLAMPING AND WEFT PRESENTATION MECHANISM FOR LOOMS

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[22] Filed: July 3, 1974

[21] Appl. No.: 485,627

[30] Foreign Application Priority Data July 7, 1973 Spain 193243

[52] U.S. Cl. 139/303; 139/291 C

[51] Int. Cl.² D03D 49/10

[58] Field of Search 139/170.3, 170.4, 293, 139/291 C, 302, 303

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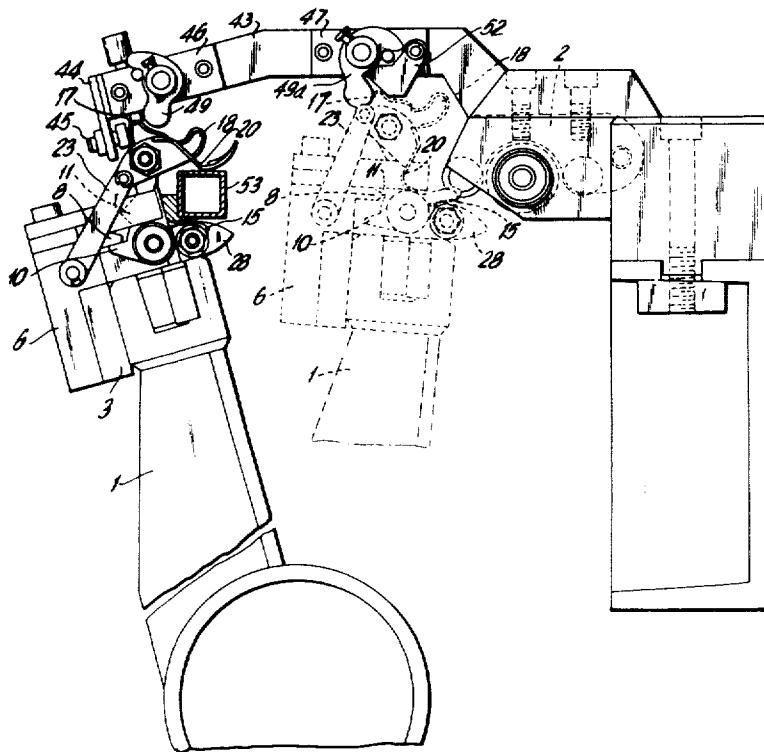
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[57] ABSTRACT

A cutting, clamping and weft presentation mechanism for a loom comprises a first assembly affixed to the batten of the loom, and a second assembly affixed to the temple of the loom. The first assembly comprises a rotatable plate having a projection that has the dual function of acting as both a clamp and a cutting unit. The plate, which rotates in response to a camming surface and a lug in its face coming into contact with fixed stops on the second assembly, is connected to a presenting arm on one side and a fixed bar having a cutting knife on the other side. When the batten is moved in either of two directions, the stops cause rotation of the plate, thus affecting either separation or closing of the shearing mechanism which consists of the knife and one side of the projection. It also affects the clamping of the weft which is accomplished by a clamping rod slidably mounted on one side of the plate and the other side of the projection.

10 Claims, 2 Drawing Figures



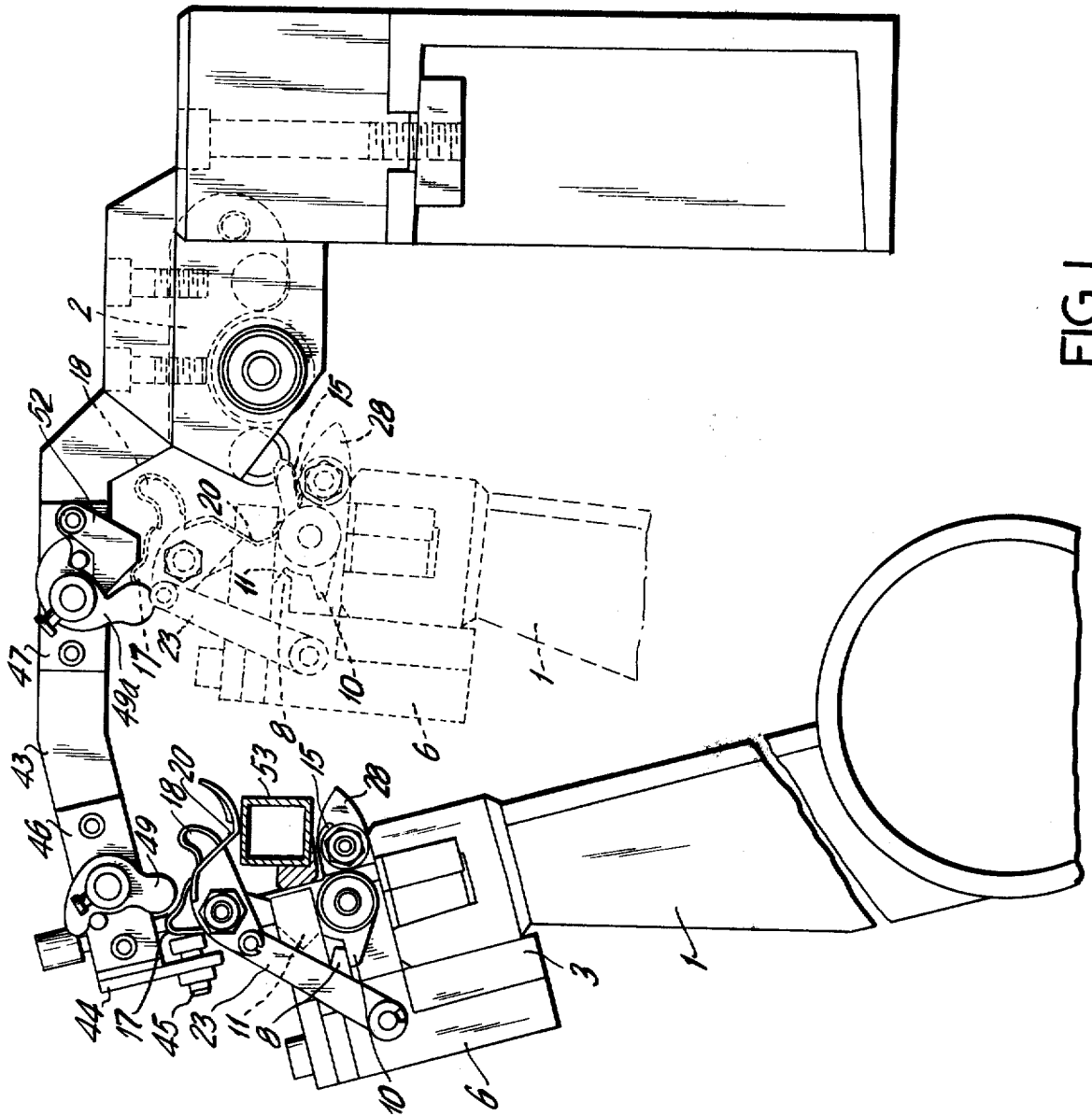


FIG. 1

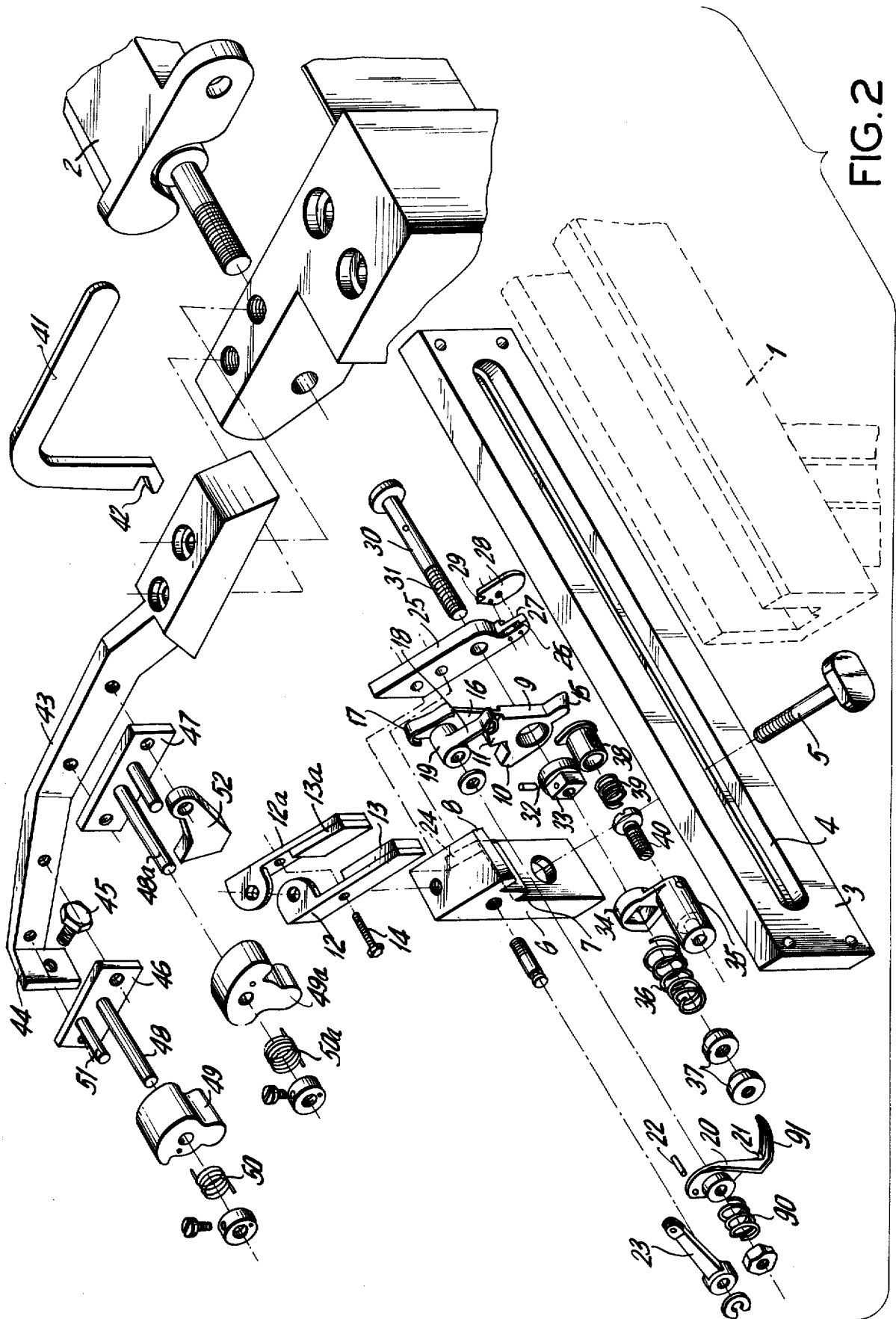


FIG. 2

CUTTING, CLAMPING AND WEFT PRESENTATION MECHANISM FOR LOOMS

SUMMARY OF THE INVENTION

The present invention refers to an improved cutting, clamping and weft presentation mechanism for a loom, which brings substantial improvements over the prior art devices in its simplicity of design and efficiency of operation.

The fundamental advantage of the present invention is that it is mounted on one side of the loom on the temple-batten assembly. Since the movements of the batten of the present invention is all that is required to operate the present mechanism, no auxiliary mechanisms involving concomitant inefficiency are needed. This results in a mechanism of complete independence, unknown in prior art devices.

The mode of installation facilitates adoption to any width of fabric, for as the temple is being shifted inward or outward on the loom, according to whether the width of the fabric is to be reduced or increased, the opening and closing device mounted therein shifts with it. This serves as a reference for positioning the cutting, clamping and weft presentation assembly mounted on the batten itself. This results in a sure and simple control of the fabric width to be obtained.

The necessity of keeping one end of the fabric fixed so that it can be centered with the loom is eliminated.

All of the above advantages are accomplished by a simple and inexpensive mechanism. This mechanism comprises a first and a second assembly. The first assembly is mounted on the batten, and the second assembly is mounted on the temple.

The first assembly comprises a base block having a plate with a presenting arm connected to it rotatably mounted on the block. The plate has a camming surface and a lug on one face. Extending outwardly from the plate is a projection that serves the dual function of cutting and clamping. Its cutting function is achieved by rotating the plate relative to a fixed knife, and its clamping function is achieved by urging a clamping member toward a face of the projection thereby securing the weft between the clamping member and face.

The second assembly comprises an angular arm having a V-shaped notch for guiding the weft. A second arm, parallel with the first, mounts a pair of fixed stops, one stop contacting the camming surface and the other stop contacting the lug when the batten is moved. Depending on which stop is contacted, the plate is rotated in either of two directions whereby the clamping and cutting functions can be achieved.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a side view of a mechanism embodying the present invention, showing a first assembly on the batten, and a second assembly on the temple; and

FIG. 2 is an exploded detail of the parts shown in FIG. 1.

DETAILED DESCRIPTION OF THE INVENTION

In FIG. 1, there is shown the parts of a loom embodying the present invention. A batten 1 mounts a first assembly via a flat bar or plate 3 (FIG. 2) mounted on the batten 1. The flat bar 3 has a slot 4 in which a screw 5 mounts a base block 6. The slot 4 permits adequate adjustment of the first assembly relative to the batten 1. The base block 6 has a step 7 formed on its face for receiving the flat bar 3. An upper flange 8 provided on the top face of the block 6 serves as a limit stop for a plate 9.

The plate 9 has a projection 15 which serves the dual function of clamping and cutting. The upper part of the plate 9, opposite to the projection 15, has a camming surface 17 and a curved portion 18 which terminates in a bushing 19. A pair of teeth 10, 11 are formed on the plate 9 and engage with stop 8 of the block 6 to limit the rotation of the plate 9. The bushing 19 rotatably secures the plate 9 to the block 6 via an arm 23 secured to the base block and a connection pin 22 which connects the bushing 19 to the arm 23. A presenting arm 20, which is also mounted on the pin 22 intermediate the bushing 19 and arm 23, is urged toward plate 9 by a spring 90 so that the arm 20 rotates with the plate 9. The arm 20 has a spoon-shaped portion 91 with notch 21 formed in it for holding and guiding a weft.

The plate 9 is braked upon rotation by pressure shims 12, 12a which are mounted on the base block 6. Shim 12 lies on one side of the plate 9 and shim 12a on the other. The pressure shims have friction linings 13, 13a which, when pressed against the plate 9, serve to absorb the inertia of plate 9. A screw 14 extending through a hole in each of the pressure shims can adjust the pressure exerted on the plate 9.

Fixed to a step 24 or the base block 6 is a bar 25 having a knife 26 at its end. An offset 27 on the bar secures a plate 28 with a hook-shaped pawl 29 which guides the weft to the shearing mechanism formed by projection 15 and knife 26. The plate 9 is urged toward the bar 25 by a spring 36 which is mounted in a tail end 34 of a bushing 35. The spring 36 is compressed by nuts 37. A second bushing 32 within the tail end 34 receives a shaft 30 having a threaded end 31 which is inserted through holes in the bar 25 and plate 9. A cotter secures the shaft 30 to the bushing 32 via a nut 33.

The first bushing 35 receives a screw 40 and a clamping rod 38 which is urged toward the projection 15 by a spring 39 mounted between screw 40 and clamping rod 38. The clamp which is formed by the face of clamping rod 38 and the face of projection 15 facing the clamping rod, serves to clamp the weft when it is being cut by the shearing mechanism.

The plate 9 is rotated by a second assembly mounted on a temple 2. The second assembly has a swingable angular arm 41 terminating in a V notch 42 which directs the weft to the shearing mechanism. A wide arm 43, parallel to the line of action of the batten (FIG. 1), has a fin 44 at its end. Mounted on arm 43 are a pair of mounting plates 46, 47 which mount arcuate abutments 49, 49a via shafts 48, 48a. Springs 50, 50a urge the abutments toward the mounting plates.

Screw 45 serves as a safety lock for the shear mechanism cooperating with the camming surface 17 of the plate 9. Stop 52 mounted on plate 47 serves to release the shear mechanism by acting on the camming surface 17. These locking and releasing means are available if

opening and closing by cams or abutments 49a, 49 is not operative.

OPERATION OF THE DEVICE

The mechanism operates in the following way. In the retracted position batten 1 (solid line in FIG. 1) the assembly is in the position shown, with the presenting arm 20 in a raised position and the shear mechanism closed. The weft is, therefore, clamped between the elements 15 and 38. After the weft is inserted into the clamp supported by arm 53, the batten 1 is advanced so that the camming surface 17 encounters the abutment stop 49 which faces the rotation of plate 9 and this opens the shearing mechanism. The batten remains in this position until the weft is retained by the warp. Then, batten is moved to the position indicated in dotted line in FIG. 1 where the lug 18 strikes abutment stop 49a which causes plate 9 to rotate in the opposite direction. By this rotation, projection 15 effects both clamping and cutting of the weft. This weft is clamped until it is time to actuate the insertion device, whereupon the operative cycle is repeated.

The arm 41 must be in a different form when it is applied to selection and separation of wefts, for example, when working with wefts of various colors.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the inventive principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A cutting, clamping and weft presentation mechanism for a loom having a batten and a temple comprising a first assembly affixed to said batten and movable therewith, and a second assembly affixed to said temple for activating said first assembly, said first assembly comprising a base block, a means for securing said base block to said batten, plate means having a camming surface and a lug on one face thereof and a projection extending outwardly from the face opposite to said one face, a presenting arm connected in parallel to said plate means for movement therewith, means for rotatably connecting said plate means and presenting arm to said base block, a bar fixedly secured at one end to said base block and in parallel, side-by-side relationship with said plate means and having a knife projecting from the other end, means connecting said bar with said plate means toward said bar, means flanking said plate means and mounted on said base block for braking the rotation of said plate means, and clamping means extending near said first projection of said plate means for clamping a weft prior to cutting.

2. The device according to claim 1, wherein said

means for securing said base block to said batten comprises a flat bar mounted on said batten and having a slot formed therein, a screw inserted through said slot and connected to said base block so that said block may be adjustably mounted.

3. The device according to claim 1, wherein said base block comprises a plurality of steps for mounting purposes, and said plate means comprises a pair of teeth divided by a first step of said block for limiting the rotation of said plate means in either direction.

4. The device according to claim 1, wherein said means for rotatably connecting said plate means and said presenting arm comprises a link secured to said base block, a bushing formed integral with said plate means and in close proximity to said one face, pin means interconnecting said presenting arm and link, and spring means urging said presenting arm toward said plate means.

5. The device according to claim 1, wherein said presenting arm comprises a spoon-shaped portion having a notch therein for holding and guiding the weft to said clamping means.

6. The device according to claim 1, wherein said means for connecting said plate means with said bar comprises a shaft having a threaded end which is inserted through said bar and plate means, a first bushing having a nut therein receiving said threaded end, a second bushing having a tail end housing said first bushing, and spring means in said tail end urging said first bushing and therefore the plate means toward said bar.

7. The device according to claim 6, wherein said clamping means comprises a screw mounted in the main body portion of said second bushing, a clamping rod extending from said screw and out of said bushing in the direction of said first projection, and a spring between said screw and said clamping rod urging said clamping rod into contact with a first face of said projection.

8. The device according to claim 7, wherein said bar with said knife and a second face of said projection cut the weft upon rotation of said plate.

9. The device according to claim 1, wherein said second assembly comprises a first angular arm having a notch therein for orienting the weft, and a second arm parallel to the line of action of the batten, said second arm having a first stop and a second stop mounted thereon for contact with said camming surface and lug, respectively, so as to cause rotation of said plate means.

10. The device according to claim 9, wherein said second arm further comprises two additional rotary arched stops.

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