Nov. 20, 1951 E. A. KIESSLING ET AL 2,575,451

WARP BEAM LIFTING MECHANISM

Original Filed Sept. 23, 1948

Fig. 1

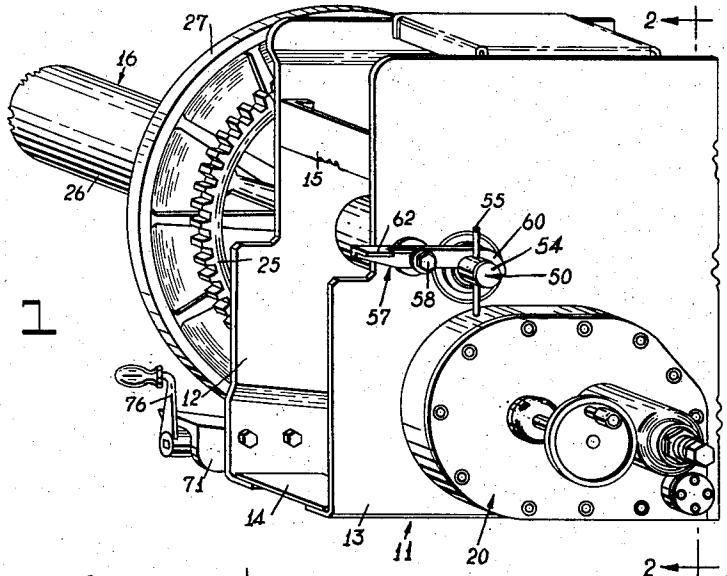


Fig. 2

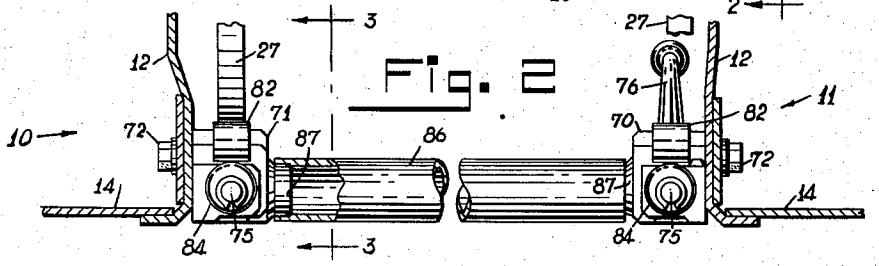


Fig. 3

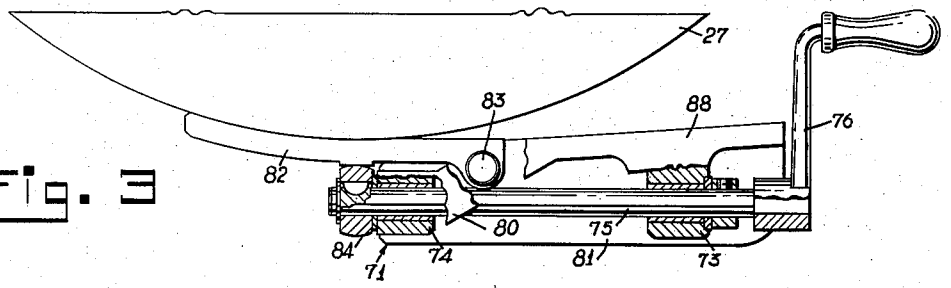
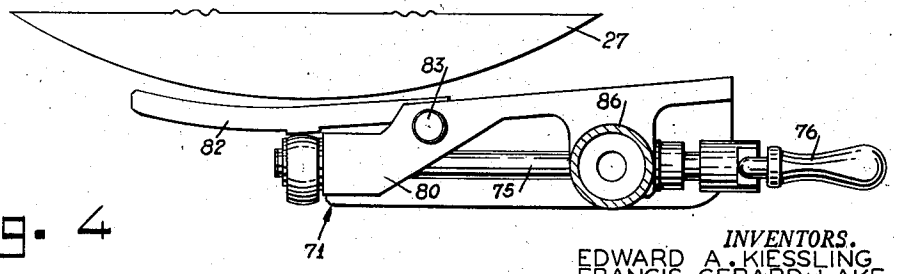


Fig. 4



INVENTORS.
EDWARD A. KIESSLING
FRANCIS GERARD LAKE
FREDERIK STEPHENSEN

BY Virgil F. Davies
ATTORNEY

Patented Nov. 20, 1951

2,575,451

UNITED STATES PATENT OFFICE

2,575,451

WARP BEAM LIFTING MECHANISM

Edward A. Kiessling, River Edge, N. J., Francis Gerard Lake, New York, N. Y., and Frederik Stephensen, Lyndhurst, N. J., assignors, by mesne assignments, to Steel and Alloy Tank Company, Newark, N. J., a corporation of New Jersey

Original application September 23, 1948, Serial No. 50,834. Divided and this application February 18, 1950, Serial No. 145,048

3 Claims. (Cl. 139—1)

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The present invention relates to improvements in warp beam mounts and to the means for moving the warp beam towards and away from axial alignment with its bearings. This application is a division of application Serial No. 50,834, filed September 23, 1948.

The conventional loom has near its rear end a warp beam on which the warp threads are wound. The warp sheet from this beam is trained over a whip roll and is then extended forwardly through various weaving instrumentalities. A let-off mechanism is provided to regulate the amount of feed of the warp from the beam. In one type of conventional loom, the let-off mechanism comprises a large beam head gear meshing with a let-off pinion and mounted rigid with one of the gudgeons of the warp beam, so as to form a unit with the warp beam, during the process of removing an empty warp beam from the loom and replacing it by a full warp beam.

The warp beam, whether it is empty or full, is bulky and heavy and is, therefore, hard to manipulate in and out of operative supported position on the loom. The unitary attachment of the large heavy beam head gear to the warp beam renders the unit more difficult to manipulate in and out of operative position and also introduces the complication of requiring said beam head gear to be moved in and out of mesh with the let-off pinion in the process of moving the warp beam in or out of mounted position.

The principal object of the present invention is to provide new and improved means by which the warp beam may be moved into or out of operative mounted position.

Various other objects of the invention will be apparent from the following particular description and from inspection of the accompanying drawings in which:

Fig. 1 is a fragmentary perspective of the warp beam mount and lifting mechanism embodying the present invention;

Fig. 2 is a transverse rear section of the loom taken approximately along the lines 2—2 of Fig. 1 and shows the warp beam empty but in mounted operative position before it has been removed from the loom and the lifting mechanism prepared to remove the empty warp beam;

Fig. 3 is a detail section of the warp beam lifting mechanism taken approximately along the

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lines 3—3 of Fig. 2 and shows said lifting mechanism in raised position to lower the empty warp beam from the loom; and

Fig. 4 is a view similar to Fig. 3 but shows the warp beam in running mounted position and the lifting mechanism in lowered inoperative position.

Referring to the drawings, the loom is provided with a right loomside 10 and a left loomside 11 serving as the main frame structure of the loom. Each of these loomsides is shown comprising an inner web 12 and an outer web 13 interconnected by a floor plate 14 and cross-braces 15, so that the webs on each loomside form a strong rigid unit and may be of the general type shown and described in copending application Serial No. 691,237, filed August 17, 1946, now Patent No. 2,533,128. Extending between the loomsides 10 and 11 is a warp beam 16 supported by bearing mounts each secured between the webs of a corresponding loomside. The warp sheet unwinds from the warp beam 16, passes over a whip roll (not shown) and then extends forwardly to various weaving instrumentalities (not shown). The rate of advance of this warp sheet is controlled by a let-off motion such as that indicated generally at 20 and shown mounted on the left loomside 11. The let-off motion is employed to control warp feed, so as to allow the necessary amount of yarn to be unwound from the warp beam and to maintain said yarn under proper tension during the weaving cycle. As far as certain aspects of the invention are concerned, the let-off motion may be of any suitable type known in the art. The let-off motion shown has an input shaft (not shown) driven from the warp beam 16 through a beam head gear 25 which is secured to the beam shaft as will be described and which meshes with a let-off pinion (not shown) keyed to said input shaft.

The warp beam 16 comprises a cylindrical beam barrel 26 and a pair of beam heads or flanges 27 integral or otherwise rigidly secured to said beam barrel. The warp beam 16 is supported in position for let-off rotation by bearing mounts which are similar in construction except that the one mount is adapted to support the beam head gear 25. The manner in which the gear 25 is connected to said one bearing mount, and the construction of the bearings and other details of the bearing mounts is fully disclosed in said parent

application Serial No. 50,834 and not being the basis of the claims of this application will not be gone into here.

For supporting the warp beam 16 in operative position on the loom and for effecting a drive connection between said warp beam and the beam head gear 25, there is provided a gudgeon 50. The gudgeon 50 is axially movable, so that it can be withdrawn from engagement with the warp beam 16 when it is desired to remove the warp beam 16 from its bearing mounts. For that purpose, the gudgeon 50 has an axial extension accessibly projecting outwardly from the outer loomside web 13 for manipulation. For facilitating the handling of the gudgeon 50 in its axial movement in or out of beam supporting position, the outer projecting end 54 has secured thereto a handle 55 shown in the form of a pin extending diametrically through said projecting end.

For locking the gudgeon 50 in operative beam supporting position shown in Fig. 1, said gudgeon is provided with a circumferential slot and there is provided a locking device comprising a detent lever 57 pivotally mounted intermediate its ends at 58 and having at one end a catch 60 in the form of a hook straddling the projecting end of the gudgeon 50 and latching into the peripheral slot therein to prevent axial movement of said gudgeon in limiting position of said gudgeon. The detent lever 57 has an arm on one side of the pivot support 58 formed with a flange extension 62 serving as a handle. A coil spring around the pivot pin of the pivot support 58 serves to bias the detent 57 clockwise into position to lock the gudgeon against axial movement.

For lowering an empty warp beam 16 after the gudgeons 50 have been withdrawn from supporting position with respect to said warp beam and for lifting a full warp beam into axially aligned position with respect to its bearing mounts, there is provided a mechanism comprising a pair of brackets 70 and 71 secured to the inner faces of the inner webs 12 of the two loomsides 10 and 11 respectively, as for example, by means of the bolts 72. Each of the brackets 70 and 71 has a pair of aligned bearings 73 and 74 for a shaft 75 carrying at its rear square end a handle 76 for rotating said shaft. Each of said brackets 70 and 71 is formed at its forward end with a pair of flanges 80 and 81 flanking a track 82 for a corresponding beam head 27 and pivotally support said track at 83. The forward end of the shaft 75 has keyed or otherwise secured thereto an eccentric cam 84 engaging the lower side of the track 82 and adapted to raise said track or permit said track to be lowered about its pivot support at 83 according to the manipulation of the turning handle 76.

A girt 86, shown in the form of a cylindrical tube, has its ends fitted over bosses 87 secured to or projecting from a flange 88 of the brackets 70 or 71 to reinforce the loom frame structure.

While the loom is operating, the handle 76 will be in the inoperative horizontal position shown in Fig. 6 and a low part of the eccentric cam 84 will be disposed on top. In this position, the track 82 will be lowered below the beam heads 27, so that they will have no supporting engagement therewith and the warp beam 16 will be free to operate without restrictions from the lifting mechanism. After the warp beam 16 has become empty and is ready to be replaced by a full one, the handles 76 are turned into position to rotate the eccentric cams 84 and to raise thereby the corresponding tracks 82 angularly upwardly into engagement with the peripheries of the beam heads 27. In this track supporting position of the eccentric cams 84, the parts will be self-locked when the full weight of the empty warp beam 16 falls upon said cams. While the tracks 82 are in the warp beam supporting position shown in Fig. 3, the gudgeons 50 in the bearing mounts 17 and 18 are pulled out, so that the warp beam 16 is released for removal from these bearing mounts and the full weight of the warp beam rests on said tracks. In this raised position of the tracks 82, said tracks will form a continuous surface with the top surfaces of the respective brackets 70 and 71, so that the warp beam can be rolled easily along said tracks and said brackets onto a truck. The top supporting surfaces of the tracks 82 are desirably curved upwardly in one direction in raised position thereof and the top surfaces of the brackets 70 and 71 slope slightly in the opposite direction, so that when the gudgeons 50 are pulled out, the released warp beam 16 will not roll by itself off the tracks 82 or brackets 70 and 71, but will be retained thereon until manually rolled off.

After the empty warp beam has been removed from the loom, the full warp beam can be rolled onto the brackets 70 and 71 and the tracks 82, and said tracks can be raised or lowered by manipulation of the handles 76, until the warp beam is in axial alignment with its bearing mounts 17 and 18. When the warp beam has been so aligned, the gudgeons 50 in the bearing mounts 17 and 18 are moved inwardly to effect the connection of said warp beam with said gudgeons, as already described.

While the invention has been described with particular reference to a specific embodiment, it is to be understood that it is not to be limited thereto but is to be construed broadly and restricted solely by the scope of the appended claims.

What is claimed is:

1. In a loom having a warp beam with a beam head at each end, and a bearing for each end of said warp beam, the combination comprising a pair of fixed brackets, a pair of tracks pivotally secured to said brackets respectively and located below said beam heads respectively, each of said tracks and the corresponding bracket conjointly defining a substantially continuous supporting surface for the corresponding beam head, and means for moving said tracks about their pivotal supports towards and away from supporting position with respect to said beam heads and for moving thereby said warp beam in and out of axially aligned position with respect to said bearings.

2. In a loom having a warp beam with a beam head at each end and a bearing for each end of said warp beam, the combination as described in claim 1, said track moving means comprising bearings in each of said brackets, a shaft supported in the bearings of each bracket, a handle for each shaft, and a lifting cam on each of said shafts engaging a corresponding track.

3. In a loom having loomsides, a warp beam located between said loomsides with a beam head at each end and a bearing for each end of said warp beam, the combination comprising a pair of brackets affixed to the inner sides of said loomsides respectively, a pair of tracks pivotally supported to said brackets respectively and located below said beam heads respectively, each of said tracks and the corresponding bracket conjointly defining a substantially continuous supporting

surface for a corresponding beam head, and means supported on said brackets for moving said tracks about their pivotal supports towards and away from supporting position with respect to said beam heads and for moving thereby said warp beam in and out of axially aligned position with respect to said bearings.

EDWARD A. KIESSLING.
FRANCIS GERARD LAKE.
FREDERIK STEPHENSEN.

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