July 31, 1962 J. J. KAUFMANN 3,047,029

LOOM HARNESS

Filed Nov. 29, 1960

FIG. 1

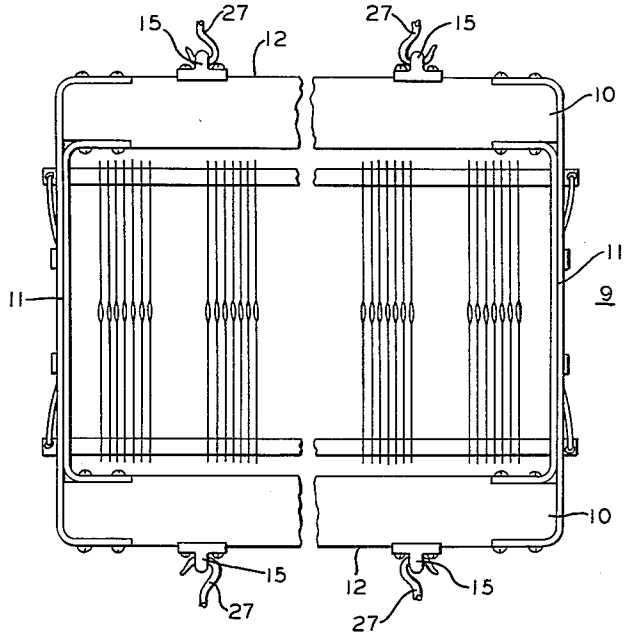


FIG. 2

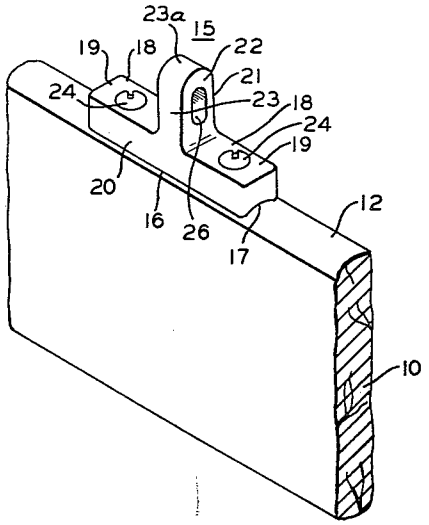
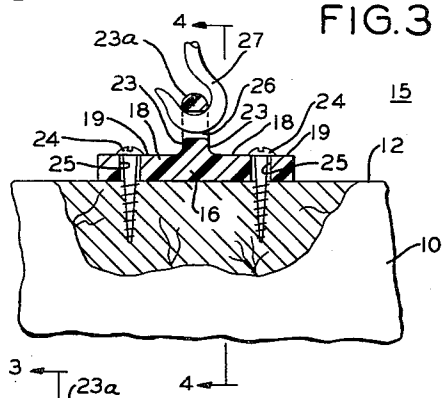


FIG. 3



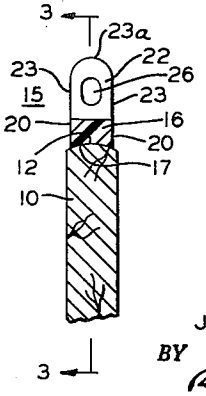


FIG. 4

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LOOM HARNESS

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1 Claim. (Cl. 139—88)

This invention relates to loom harness and more particularly to harness frame connectors for connecting the harness actuating devices to the heddle frames of weaving looms.

Various forms of attaching devices have heretofore been employed for connecting the loom harness actuators to the heddle frames.

It has been common practice to provide on the upper edges of the upper rails and on the lower rails either hooks or eyes for engagement by eyes or hooks forming part of the strap connectors. In use, the metal to metal contact results in wear or breakage, this wear often being more pronounced on the parts carried on the heddle frame.

Difficulties have also arisen from time to time by reason of the threads of the shanks of the hooks or eyes pulling loose and stripping out of the wood.

Various types of hooks have been proposed to overcome this difficulty, including hooks having shanks extending entirely through the rail and between the top and bottom edges. This shank construction may result in weakening of the rail, particularly if the gauge of metal of the hook is sufficiently heavy to carry loads imposed thereon.

Difficulties have also arisen by reason of the turning of the hooks or the eyes with respect to the frame rails which results in damage to adjoining frames by way of gouging, grooving or the like of the rail. The hooks or eyes can be prevented from turning by provisions such as those shown in my prior Patent No. 2,601,872, and as also shown in Patent No. 2,773,516. The metal hooks and eyes there shown are still subject to wear and failure as pointed out above.

It is the principal object of the present invention to provide an improved harness frame connector which is inexpensive to construct but which has a much longer life than structures heretofore available.

It is a further object of the present invention to provide a heddle frame connector which will not interfere in any way with adjacent heddle frames but which is quickly and easily assembled to the heddle frame.

It is a further object of the present invention to provide a heddle frame connector capable of use with metallic hooks and the like which has greatly reduced wear due to friction, which does not tend to bend or shatter, which cannot be disposed sidewise so as to project into the path of movement of the adjoining heddle frame, is light in weight and which fills a long felt need as a harness connector.

Other objects and advantageous features will be apparent from the description and claim.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawings forming part thereof, in which:

FIGURE 1 is a front elevational view of a loom harness frame with connectors embodying the main features of the present invention shown applied thereto;

FIG. 2 is an enlarged view in perspective showing the harness frame connector in accordance with the present invention with the hook of the harness strap removed therefrom;

FIG. 3 is a vertical central sectional view of one of the

connector devices in accordance with the invention taken approximately on the line 3—3 of FIG. 4; and

FIG. 4 is a vertical central sectional view taken approximately on the line 4—4 of FIG. 3 and with the hook removed therefrom.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes can be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

Referring now more particularly to the drawings, a heddle frame **9** of conventional type is there shown having top and bottom rails **10**, preferably made of wood, the ends of which are connected by side struts **11** of any preferred type.

Each of the top and bottom rails **10**, as shown in FIG. 1, is provided at its curved outer marginal edge **12** with two or more connector devices **15** which are shown in detail in FIGS. 2, 3 and 4.

Each of the connector devices **15** comprises an elongated body portion **16** having a transversely curved inner face **17** complemental to the outer marginal edges **12** of the rails, which facilitates the positioning thereof at the desired locations on one of the marginal edges **12**. The body portion **16** has two aligned side sections **18** with substantially flat faces **19** opposite the inner face **17**, and with opposite side faces **20**. The side faces **20** as will be seen in FIGS. 2 and 4 are inwardly of the planes of the opposite side faces of the rails **10**.

The body portion **16** has an integral body extension or arm **21** extending perpendicularly outwardly therefrom to provide a generally T-shaped construction of the connector device **15**.

The arm **21** has opposite side faces **22** normal to the side faces **19** and opposite boundary faces **23** which are aligned with the side faces **20** and have a curved meeting face portion **23***a*.

A pair of spaced screws **24**, which serve as fastening devices, are provided for each connector device **15** extending through openings **25** in the side sections **18** and into gripping relation in the rails **10**.

The body extension or arm **21** has a horizontal opening **26** therethrough connecting the faces **22**, and with its horizontal axis parallel to the rails **10**, and preferably of longer vertical dimension than its horizontal dimension so that the opening **26** is vertically elongated. The bounding surfaces of the opening **26** are preferably rounded to facilitate the insertion of a hook **27** into the opening **26**.

The connector devices **15** are made of a material having in contact with metal reduced friction and reduced tendency to wear and for this purpose are preferably molded from nylon.

In use, hooks **27** of the harness straps (not shown) can be inserted into engagement in the opening **26**. No modification of the harness or other parts of the loom is necessary.

The hooks **27** in engagement in the openings **26**, will not have any tendency to turn so that interference with adjoining heddle frames **9** is avoided. Contact by the connector devices **15** with adjoining heddle frames **9** is also avoided.

It will be noted that there is thus provided an exceedingly simple but inexpensive effective device for the connection of the harness to the harness frames with wear at the location of engagement minimized and with avoidance of likelihood of damage to adjacent harness frames.

I claim:

In loom harness, the means for securing connector de-

vices to a rail of a heddle frame at a selected location intermediate the ends of the rail and limiting the movement thereof with respect to the main plane of the heddle frame and in which the rail has opposite side faces in spaced planes and an outer connecting edge face, which comprises a T-shaped body of a single piece of synthetic plastic material having aligned side sections extending along the outer edge face of the rail with an inner face in engagement with the outer edge face of the rail and an arm extending outwardly from the rail outer edge, said side sections and said arm having opposite bounding faces spaced a lesser distance than the opposite side faces of the rail, said arm having a pair of faces transverse to and intersecting the planes of the side faces and having a vertically elongated horizontal opening therebetween spaced from the rail, said opening being parallel to the main plane of the heddle frame.

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