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54 **Improved joint for connecting uprights and cross members of heald frames for weaving looms.**

57 In improved joints for connecting uprights and cross members of heald frames for looms, in which the cross members are applied to shaped plates projecting from the uprights by means of a U-shaped frame (6), an arm (8) of said U-shaped frame is pivoted on the remaining part (7) of the frame and is allowed to oscillate only so as to move away from the other arm.

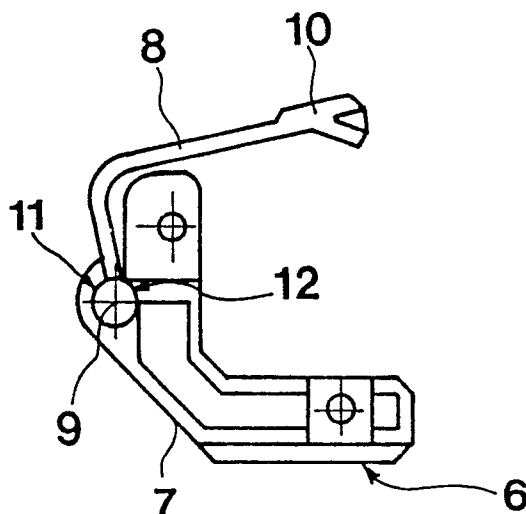


FIG. 1

EP 0 328 953 A1

IMPROVED JOINT FOR CONNECTING UPRIGHTS AND CROSS MEMBERS OF HEALD FRAMES FOR WEAVING LOOMS

The present invention concerns an improved joint for connecting the uprights and the cross members of heald frames for weaving looms, and its object is to guarantee easy removal, while using the loom, of the lateral uprights of said frames so as to insert the stitches, both manually and with automatic selvedge thread drafting machines.

It is already known, in the technique of textile machines, to join the uprights and the cross members of heald frames, by making use of shaped plates projecting from the uprights, close to the ends thereof with which cooperate the outwardly opening U-shaped ends of the cross members, which latter are then fixed to said plates, with possibility of easy removal, by different means.

It is also known - for example from the EP-189216 - to form the ends of the cross members with outwardly opening U-shaped frames, applied to said members by riveting, and to make one of the arms of said frames elastic and then apply a fastening screw thereon. More precisely, said frames are formed of a die-cast square plate, to which there is applied by riveting a square spring ending with a fold designed to mate with a depression of the upright plate and to be engaged by a fastening screw.

This arrangement has been improved by the Italian Utility Model application No. 22523 B/87, filed by the Applicant, wherein the U-shaped frame applied to the end of the cross members of heald frames is formed in one piece with the elastic arm.

In both these cases, the change of configuration of the U-shaped frame applied to the cross member - required for its engagement with the shaped plate of the upright - is obtained by elastic deformation of one of the spring-shaped arms of said frame.

It has now been found that better results - to obtain a stouter engagement and facilitate production - can be achieved by modifying the above configuration through a change of shape of said frame, suitably formed in two mutually connected parts.

The present invention provides this improved solution and concerns, more exactly, an improved joint for connecting uprights and cross members of heald frames for looms, of the type in which the cross members are applied to shaped plates projecting from the uprights by means of a U-shaped frame, characterized in that an arm of said U-shaped frame is pivoted on the remaining part of the frame and is allowed to oscillate only so as to move away from the other arm.

In practice, said first arm is a square arm

mounted by way of a cylindrical hinge onto a square plate forming said remaining part of the frame, and said cylindrical hinge is formed on the external part of said square plate, more or less at the centre of the base of the U-shaped frame.

Preferably, elastic means can be provided in said U-shaped frame to oppose the oscillation of said first arm in respect of the other arm. Said elastic means suitably comprise a rubber pad interposed between the portion of the first arm close to the hinge and an extension of the square plate external to said arm.

The invention is now described in further detail, by mere way of example, with reference to the accompanying drawing, in which:

Fig. 1 is a view of the U-shaped frame forming the joint according to the invention;

Fig. 2 is a view of the frame of figure 1, showing also the elastic means opposing the oscillation of the pivoted arm; and

Fig. 3 is a view of the joint according to the invention, formed with the frame of figure 2.

With reference to figure 3 of the drawing, the upright 1 of a heald frame (not shown in full) comprises, near its upper end, a shaped plate 2 projecting towards the inside of the heald frame. Said plate - made, like the upright, of light metallic material, as aluminium or a suitable alloy - is formed at the top with a bulge 3, on the upper part of which there is a round space for housing a barrel-shaped insert 4 of hard material, as steel or like.

The cross member 5 of the heald frame carries in turn, riveted onto its end, a U-shaped frame 6 meant to be connected to the plate 2, as shown in figure 3 of the drawing. According to the invention, the U-shaped frame 6 is formed (fig. 1) in two parts - obtained by die-casting - which comprise a stout stiff square plate 7 and a square arm 8, more slender than the plate 7 but equally stiff, an end of which is pivoted by means of a cylindrical hinge joint 9 onto the external part of the square plate 7, more or less at the centre of the base of the U-shaped frame 6.

The other end of the arm 8 has a thickening 10, shaped so as to house the bulge 3 of the plate 2 - as shown in figure 3 - when the U-shaped frame 6 engages with said plate to form the joint of the invention.

The cylindrical hinge 9 is obtained by forming a seat 11 on the square plate 7 and a transversal cylindrical body 12 into the arm 8.

In the frame illustrated in figure 1, said arm 8

can freely oscillate in 9 so as to move away from the opposite arm of the square plate 7, while it cannot move towards said arm beyond the position of parallelism shown in figures 2 and 3, as its central square portion meets with the suitably shaped end of the square plate 7.

In the frame shown in figure 2, the oscillation of the arm 8 away from the other arm is instead opposed by elastic means, consisting of a rubber pad 13 interposed between the portion of said arm 8 close to the hinge 9 and an extension 14 of the square plate 7, formed externally to the hinge 9 and to the arm 8 as a prolongation of the element delimiting the seat 11.

The construction in two stiff and stout pieces, formed by die-casting, guarantees a very practical and efficient structure of the frame; the mounting of which in correspondence of the hinge 9 is very easily obtained. Also easy and convenient is the mounting of the joint, which is obtained by positioning the frame 6 of the cross members onto the plate 2 of the uprights and causing the thickening 10 of the arm 8 to go over the bulge 3 of said plate 2.

The joint is then locked by using, in a manner known per se, a fastening screw 15 which forces the thickening 10 of the arm 8 onto the plate 2.

If using the frame of figure 1, mounting and removal of the joint are obtained by mere oscillation of the arm 8, in the most convenient way but with the need to apply at once the screw 15 during assembly; whereas, in the case of the frame of figure 2, mounting and removal require to force the oscillation of the arm 8 against the opposition of the pad 13, but with the advantage, during assembly, of a tripping connection between the two elements of the joint, the final locking of which, by means of the screw 15, can thus be more conveniently obtained later on.

Claims

1) Improved joint for connecting uprights and cross members of heald frames for looms, of the type in which the cross members are applied to shaped plates projecting from the uprights by means of a U-shaped frame, characterized in that an arm of said U-shaped frame is pivoted on the remaining part of the frame and is allowed to oscillate only so as to move away from the other arm.

2) Joint as in claim 1), wherein said first arm is a square arm mounted by way of a cylindrical hinge onto a square plate forming said remaining part of the frame.

3) Joint as in claim 2), wherein said cylindrical hinge is formed on the external part of said square plate, more or less at the centre of the base of the U-shaped frame.

4) Joint as in claim 1), wherein said U-shaped frame comprises elastic means opposing the oscillation of said first arm in respect of the other arm.

5) Joint as in claims 1) to 4), wherein said elastic means consist of a rubber pad interposed between the portion of the first arm close to the hinge and an extension of the square plate external to said arm.

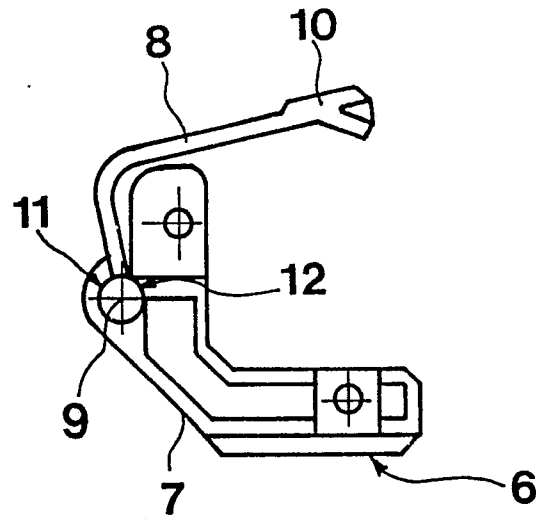


FIG. 1

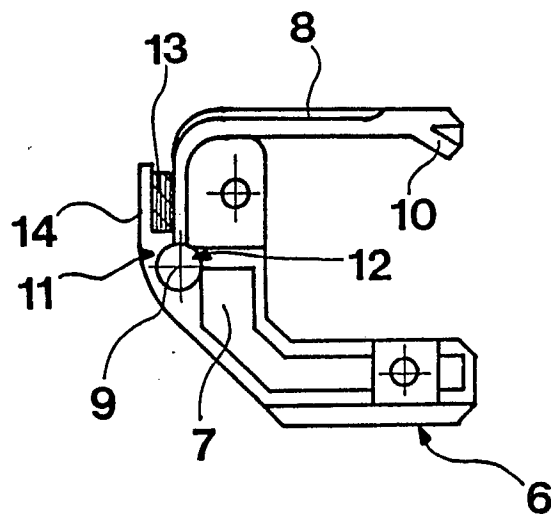


FIG. 2

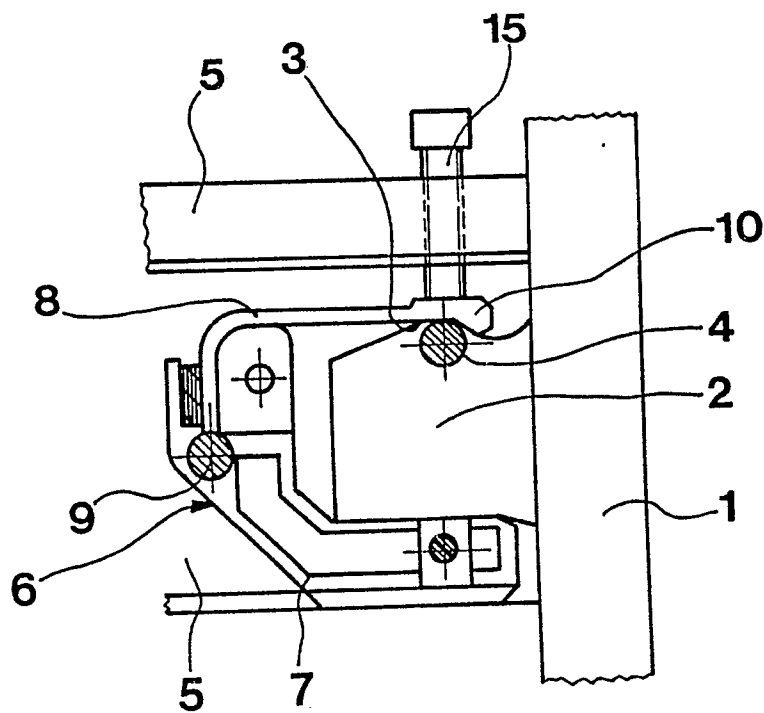


FIG. 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 89 10 1829

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A,D	EP-A-0189216 (VERBRUGGE) ---		D03C9/06
A	DE-C-3308371 (GROB) ---		
A	FR-A-2305521 (GROB) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			D03C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 02 MAY 1989	Examiner BOUTELEGIER C.H.H.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone V : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document	