April 14, 1953 P. C. CONSOLETTI 2,634,763

HEDDLE BAR HANGER

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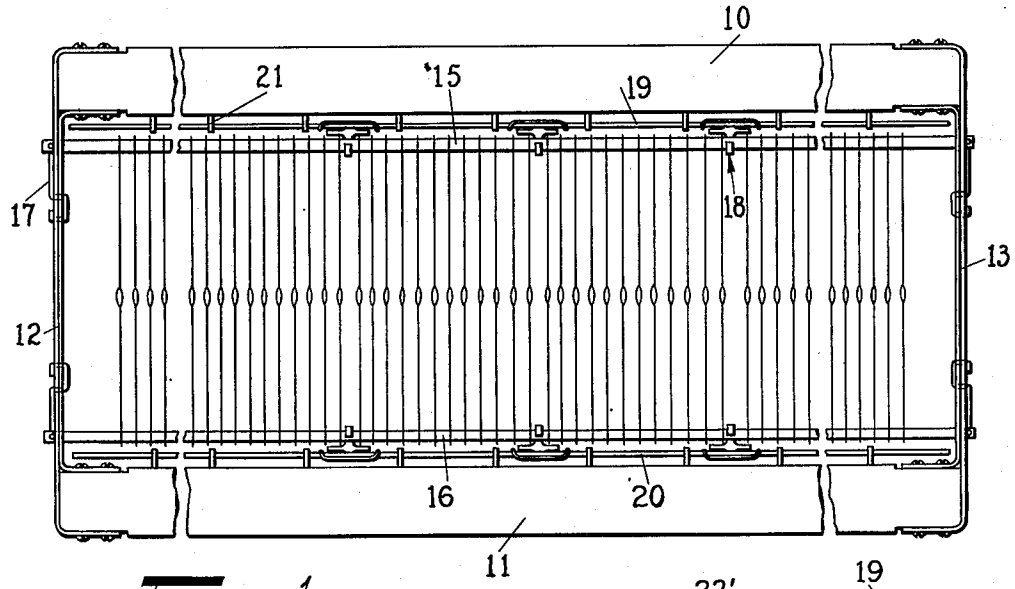


FIG. 1

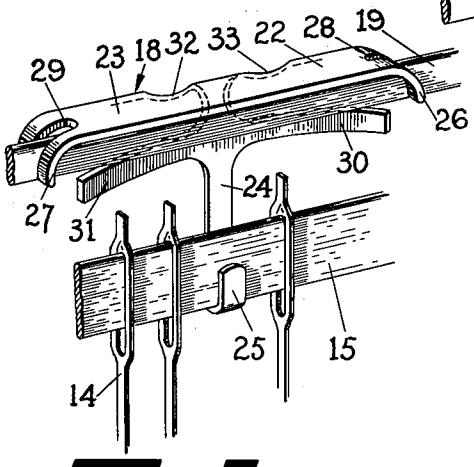


FIG. 2

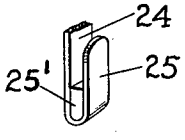


FIG. 5

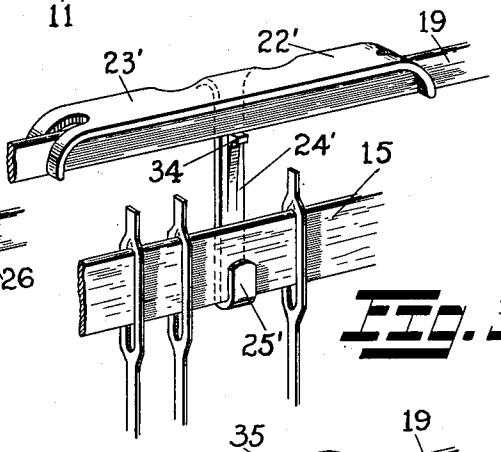


FIG. 3

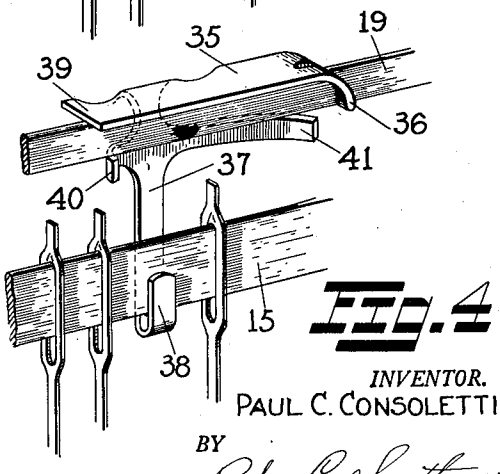


FIG. 4

INVENTOR.
PAUL C. CONSOLETTI
BY
Rodney C. Southworth
ATTORNEY

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HEDDLE BAR HANGER

Paul C. Consoletti, Milford, Mass., assignor to Draper Corporation, Hopedale, Mass., a corporation of Maine

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9 Claims. (Cl. 139—92)

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This invention pertains to improvements in harness frames for looms, and more specifically, improvements relating to that type of harness frame in which the heddle bars are suspended upon hangers which in turn are slidable upon and are mounted for support upon auxiliary supporting rods which are carried by the harness frame rails.

It is a general object of the invention to improve harness mechanisms so that the hangers upon which the heddle bars are suspended may be so devised as to be snapped into or from position without disturbing either the heddles, the bars upon which they are carried, or the auxiliary supporting rods from which the hangers depend, and along which they are slidable as is required for assembly and for slight movement of heddles along the frames incidental to the weaving function.

It is a more specific object of the invention to devise heddle bar hangers which may quickly be snapped into or from position on the auxiliary supporting rods and which shall at the same time be extremely simple in construction, economically manufactured and which shall also be rugged in construction and certain in operation so that they may serve for an extended period of time without attention or likelihood of failure in performing their intended function.

In more commonly used types of harness frames, the general frame structure which includes top and bottom rails either made from wood or from some other material such as one of the lighter alloy metals, and end struts is supplemented by a pair of heddle bars which may be removed from the frame after releasing the ends thereof, and upon which the numerous heddles are threaded and supported. These heddles are free to move along the length of the frame, at least for a limited extent. Of course, the heddles may be removed or others added by releasing one end of the bars and sliding them to a position where the heddles may be removed from or threaded onto the bars. These bars are normally suspended or have additional support along their length as well as at the ends, which intermediate support is afforded by certain hangers, sometimes called slide hooks, these having taken various conformations and in some instances being carried upon and slidable along what are generally known as auxiliary supporting rods which in turn are carried by the top and bottom rails, one for each rail. It is most frequently the practice to have these rods movable lengthwise in certain eyed threaded elements which are

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fastened into the wood or other material from which the rails have been made.

In all of the constructions which have been put into practical usage, the method of assembly of the bar hangers as well as of the heddles themselves has involved threading the same onto the supplemental supporting rods although the bars themselves are carried within open ended slots or notches. As a consequence, the removal of a hanger or repositioning thereof has necessitated drawing the auxiliary supporting rods endwise until the particular hanger or hangers the position of which is to be altered have been released. Naturally this involves considerable time and effort, and in so doing, the likelihood that the heddle bars and heddles themselves may get out of control becomes fairly great. That is more probable if the heddles themselves are of the type to be hooked over the bars rather than threaded along the length thereof.

Accordingly, the improved hanger herein described and claimed is adapted to be snapped into and from position on the auxiliary supporting rod without disturbing any of the other parts and without any likelihood of mispositioning or unintended release of the heddles or other elements which are involved. While the prior art shows some hangers which may be assembled or removed while the other parts are in place, no one of them has, so far as applicant is aware, been introduced into commercial practice. According to the instant invention, hangers are formed by bending and hardening strip steel or other appropriate material, and comprise wing members having slotted, bent ends which engage the rods on which they are mounted and a more or less centrally disposed extension at right angles to the direction of movement of the hanger along the rod, this latter part being bent at its free end for the reception of and for supporting or sustaining the bar upon which the heddles are threaded. The locking of the hangers in position is accomplished by one or more flexible, but sufficiently resilient or resistant latching members which underlie or normally extend across the pathway of movement of the rod relatively to the hanger if the parts are to be disassembled. It is sufficient for the person assembling a hanger or hangers on the rods in a frame to press these spring-like latching members which more preferably take the form of laterally or oppositely directed fingers bent into the desired shape to serve their intended purpose as will hereinafter be described in greater detail so as to press them to a position in which

they do not interfere with the assembly or disassembly of a hanger on the rod, this being accomplished in some instances with a suitable tool, or in other instances merely by bending the parts with the fingers. As will be apparent from the following more detailed description, the use of these hangers permits the snapping of the parts into place very quickly thereby making possible attachment or detachment of hangers and freeing of the heddle bars as is desired without resort to the troublesome and time-consuming removal of the auxiliary supporting rods as is now necessary with those hangers in commercial use. The hangers as herein described and claimed are relatively simple, require few bending operations, and are not more expensive than any others of the usual type employed and which are normally assembled by threading along the supporting rods.

The invention will be described by reference to the accompanying figures of drawing, wherein:

Fig. 1 is an elevational view showing a harness frame to which the invention has been applied.

Figure 2 is an isometric view illustrating the manner in which a hanger constructed in accordance with the invention is employed.

Fig. 3 is a view similar to Fig. 2, but showing a modified form of latching means.

Fig. 4 is another view similar to Fig. 2, but showing still another modification.

Fig. 5 is a detail view of a modified form of a part of the hanger.

Now referring to Fig. 1, the harness frame is comprised of a top rail 10, a bottom rail 11, and end struts 12 and 13. These are attached in such a manner as to provide the usual rigid framework within which is carried a plurality of heddles 14 which may take any of the well known forms common to these parts. As illustrated in Fig. 2, one type of heddle which may be employed has eyes or loops at either end which are adapted to be threaded onto the heddle bars 15 and 16, one at the top and the other at the lower part of the frame. These bars pass through the end struts 12 and 13 and project beyond to a short extent having in that projecting portion of the bar an opening or drilled hole within which engages the hooked or latching end of a wire latch member 17, there being one of these at each end of each of the bars. The bars thus supported at the ends are spaced so that the heddles may slide along them, but they must necessarily be supported intermediate their ends at several points and for that purpose the heddle bar hangers generally indicated by numeral 18 are provided. These hangers are in turn suspended from top and bottom auxiliary supporting rods 19 and 20 which are threaded through eyes or openings at the ends of short threaded members such as "screw eyes" 21. There are several of these for each of the rods and they are suitably spaced so as to support the rods in a relatively rigid manner. In assembly, a rod is entered at the outermost screw eye and is pushed along the length of the frame rail, being guided into each of the remaining eyes in turn until each end of the rod is confined within the rectangular inner space defined by the outer structure of the frame after which it cannot be removed except by forcefully bending one of its ends to clear the end strut and then drawing it outwardly.

The hanger is preferably formed from a resilient material such as spring steel and is bent over suitable forms to assume a desired shape. Strictly speaking, only the latching means need be resilient, but it is more convenient to punch these parts out of sheet stock of the desired physical characteristics. Each hanger comprises what may be termed oppositely directed wing members 22 and 23 intermediate the ends of which, and preferably substantially at the center, there extends at right angles a bar suspending portion 24 which is bent at its free end to form a hook 25 within which is held the heddle bar 15 or 16 as the case may be. The ends of the wing portions 22 and 23 are bent as at 26 and 27 and are slotted as at 28 and 29 thereby to form forked or bifurcated ends which embrace the particular auxiliary supporting rod 19 or 20 as the case may be, the parts as described to this point being, to all intents and purposes, of relatively rigid construction and not necessarily adapted to be flexed or distorted in any manner incidental to their assembly or disassembly to and from the rod 19 and bar 15.

In order to maintain the parts in position, it is necessary to assure that the bent ends of the wing members shall not become detached from the rod and for that purpose, a latch member or members of suitable nature to extend across or to block off the pathway which the rod 19 must necessarily take if it is to be released from the slots or notches 28 and 29 is provided. One specific form of latch which may be employed comprises the oppositely directed, flexible fingers 30 and 31 which are bent as shown in Fig. 2 thereby to extend at the opposite side of the rod from that at which the wing members 22 and 23 are disposed and to cross the pathway of the rod as described. These wing members are sufficiently flexible to be bent as illustrated in the dot-and-dash line position so as to permit disassembly of the hanger from the rod by lifting it until the bent ends 26 and 27 are freed therefrom. The flexing of the latching finger or fingers may be accomplished by pressing thereon with a suitable blunt instrument, or, in some instances, the operator may merely use his fingers to bend these parts as is necessary for effecting the desired detachment. While it is preferable that these fingers be as flexible as is consistent with reasonable strength and durability, they must have sufficient tendency to maintain the normal bent position which they occupy when the parts are fully assembled so that there would be no unintended displacement and therefore an unintended release of a hanger.

Once the parts have been assembled, the hanger may slide freely along the length of both the rod and the bar since the slots 28 and 29 embrace the rod loosely, and also the latching fingers 30 and 31 permit a reasonable amount of play.

In order to facilitate bending of the material into the desired form and to make it unnecessary to have a relatively sharp bend between the wing portions 22 and 23 and the extending part 24, the material adjacent the juncture of the wings and extension 24 is cut away as at 32 and 33, this being an expedient well known to those conversant with the art of forming such parts from sheet material.

The free slidability lengthwise makes it possible for the heddles to assume their natural position incidental to the weaving function and, as a matter of fact, after repairing a warp thread at which time heddles are moved endwise and the adjacent hanger or hangers also move to an extent, the parts will always return to their

natural position just as soon as the loom is started and the harness mechanism moves the harness frame through one or more of its cycles.

Now referring to Fig. 3, instead of laterally extending fingers 30 and 31, a single latching member 34 may be struck from the suspending, hooked member 24 and this, being suitably resilient, may be pressed inwardly to permit attaching or detaching of the hanger.

Obviously the spring steel fingers 30 and 31 or that at 34 may be separately formed and attached. The latch 34 is so bent at its end adjacent the rod that a suitable, flat retaining surface is presented to assure its locking function.

According to a modification, Fig. 5, the hooked end 25 may be supplemented by an insert 25' which may be of metallic or non-metallic material, and which serves as a wear-resistant element and which may also facilitate the slidability of the parts in normal usage. Preferably this insert is of a very hard, wear-resistant metal which functions well with steel, of some tough wear-resistant material or may be of some one of the well known plastics, for example, vulcanized fibre, nylon or one of the plastic laminates. The insert may be held in place by a pin or by indenting in some way.

It is obvious that the direction of pull upon the members at the lower side of the frame is opposite to that at the top, however, the principles of operation and mode of assembly are precisely the same, and in the specification and claims, any statement or terminology with reference to the bar being suspended from the auxiliary supporting rod is to be interpreted broadly enough to include the reversal of direction of forces at the lower as compared to those at the upper part of the frame. It is evident that the assembly of the hangers may be accomplished by hooking them toward the front or toward the back. There is no reason why, if desired, the wing members 22 and 23 may not extend in one direction and the hooked end 25 in the opposite, although that is not a preferred construction.

The latching finger or fingers may be varied, for example, the bar suspending member may be positioned nearer one end rather than centrally, and a single finger may then serve. In Fig. 4 such a hanger is shown and it comprises a wing member 35, hooked, slotted end 36 and an extension 37 having a hooked end 38 for sustaining the bar 15 as in forms above described. Instead of a second wing oppositely directed to wing 35 only a short extension or stub 39 is employed. A retaining lug 40 is bent forwardly from member 37 and serves to limit movement of the unit upwardly or from rod 19 as viewed in this figure. The hanger is removably latched in position by latching finger 41. To remove the hanger one presses the finger out of line with the rod so the hooked end may be lifted from the rod after which the entire hanger is moved back out of engagement with it. If desired, a latch similar to latch 34, Fig. 3, may be substituted. It may be formed as a part of the extending member 37 or separately and riveted thereto. In that event it is not necessary to utilize the lug 40, but the stub end 39 may be bent and slotted as is the wing end 36.

While the material from which the hangers are to be made is preferably a good quality of strip steel which may be hardened so as to resist wear, it is to be understood that any satisfactory material may be employed so long as it has sufficient strength, hardness to resist wear, and a reasonable possibility of forming the latching fingers so that they may be flexed without too great difficulty, but will still have sufficient tendency to maintain their normal position as and for the purpose above described. The material itself may be of a rust-resistant nature, or may be subjected to any of the processes adapted to render it resistant to corrosion.

While one preferred embodiment and certain modifications have been disclosed, it is to be understood that the inventive concept may be carried out in a number of ways. The invention is, therefore, not to be limited to the precise details described, but is intended to embrace all variations and modifications thereof falling within the spirit of the invention and the scope of the claims.

I claim:

1. For a loom harness frame of the type having heddle bars upon which the heddles are slidably mounted and auxiliary supporting rods from which said heddle bars are suspended, an improved heddle bar hanger which comprises wing members disposed along and adapted to engage the said rods and a centrally disposed bar suspending portion at right angles to the wing members, said bar suspending portion having a hooked end for engagement of the bar, said wing members having bent ends and slots therein for embracing the rod, and means for releasably retaining the said slotted ends in engagement with the rod and permitting ready assembly of the hanger thereon which comprises laterally directed, flexible fingers bent so as normally to extend across the rod after the hanger has been assembled thereon.

2. For a loom harness frame of the type having heddle bars upon which the heddles are slidably mounted and auxiliary supporting rods from which said heddle bars are suspended, an improved heddle bar hanger which comprises wing members disposed along and adapted to engage the said rods and a bar suspending portion positioned intermediate the ends of said wing members and extending at right angles thereto to terminate in a hooked end for receiving and sustaining said bar, the free end of each said wing member being slotted and bent in a direction such that it embraces the rod, and means for releasably retaining the said slotted ends in engagement with the rod and permitting ready assembly of the hanger thereon which comprises at least one latch member normally positioned across the path of the rod as it enters or is removed from the slots in said wing members, said latch member further being laterally displaceable to a position in which it is not disposed across the said path of the rod.

3. For a loom harness frame of the type having heddle bars upon which the heddles are slidably mounted and auxiliary supporting rods from which said heddle bars are suspended, an improved heddle bar hanger which comprises wing members disposed along and adapted to engage the said rods and a bar suspending portion positioned intermediate the ends of said wing members and extending at right angles thereto to terminate in a hooked end for receiving and sustaining said bar, the free end of each said wing member being slotted and bent in a direction such that it embraces the rod, and means for releasably retaining the said slotted ends in engagement with the rod and permitting ready assembly of the hanger thereon which comprises

at least one member adapted to be flexed laterally out of the pathway of the rod, but normally maintained by its own resilience across the pathway the said rod must take as it is removed from engagement within the slotted ends of the wing members.

4. For a loom harness frame of the type having heddle bars upon which the heddles are slidably mounted and auxiliary supporting rods from which said heddle bars are suspended, an improved heddle bar hanger which comprises wing members disposed along and adapted to engage the said rods and a bar suspending portion positioned intermediate the ends of said wing members and extending at right angles thereto to terminate in a hooked end for receiving and sustaining said bar, the free end of each said wing member being slotted and bent in a direction such that it embraces the rod, and means for releasably retaining the said slotted ends in engagement with the rod and permitting ready assembly of the hanger thereon which comprises oppositely directed members normally disposed across the pathway of the said rod as it is removed from engagement within the slotted ends of the wing members, said oppositely directed members further being resilient thereby to be flexed to a position to release said rod.

5. A heddle bar hanger as defined in claim 4 wherein said hooked, bar receiving end is provided with a wear-resistant insert.

6. A heddle bar hanger as defined in claim 4 wherein said hooked, bar receiving end is provided with a wear-resistant insert of non-metallic material.

7. A heddle bar hanger as defined in claim 4 wherein said hooked bar receiving end is provided with a wear-resistant insert of fibrous material.

8. For a loom harness frame of the type having heddle bars upon which the heddles are slidably mounted and auxiliary supporting rods from which said heddle bars are suspended, an improved heddle bar hanger which comprises oppositely directed wing members disposed along and adapted to engage the said rods and a centrally disposed bar suspending portion positioned intermediate the ends of said wing members and extending at right angles thereto to terminate in a hooked end for receiving and sustaining said bar, the free end of each said wing member being bifurcated and bent in a direction to embrace the rod when in assembled relationship thereto, and means for releasably retaining the said slotted ends in engagement with the rod and permitting ready assembly of the hanger thereon which comprises oppositely extending resilient fingers bent to assume a position across the path of removal of the rod from said slotted wing ends.

9. For a loom harness frame having heddle bars upon which the heddles are slidably mounted and auxiliary supporting rods from which said heddle bars are suspended, an improved heddle bar hanger which comprises a rod engaging portion for bearing on and embracing the sides of the rod, a bar suspending member extending at right angles from said rod engaging portion and having a hooked end within which the bar is retained, and a spring latch engageable at the opposite side of the rod from that at which the said rod engaging portion is disposed movable to and from positions in one of which it retains the hanger on the rod and in the other of which it permits its removal therefrom.

PAUL C. CONSOLETTI.

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