Jan. 10, 1956 V. C. HASSOLD 2,730,137

HEDDLE FRAME

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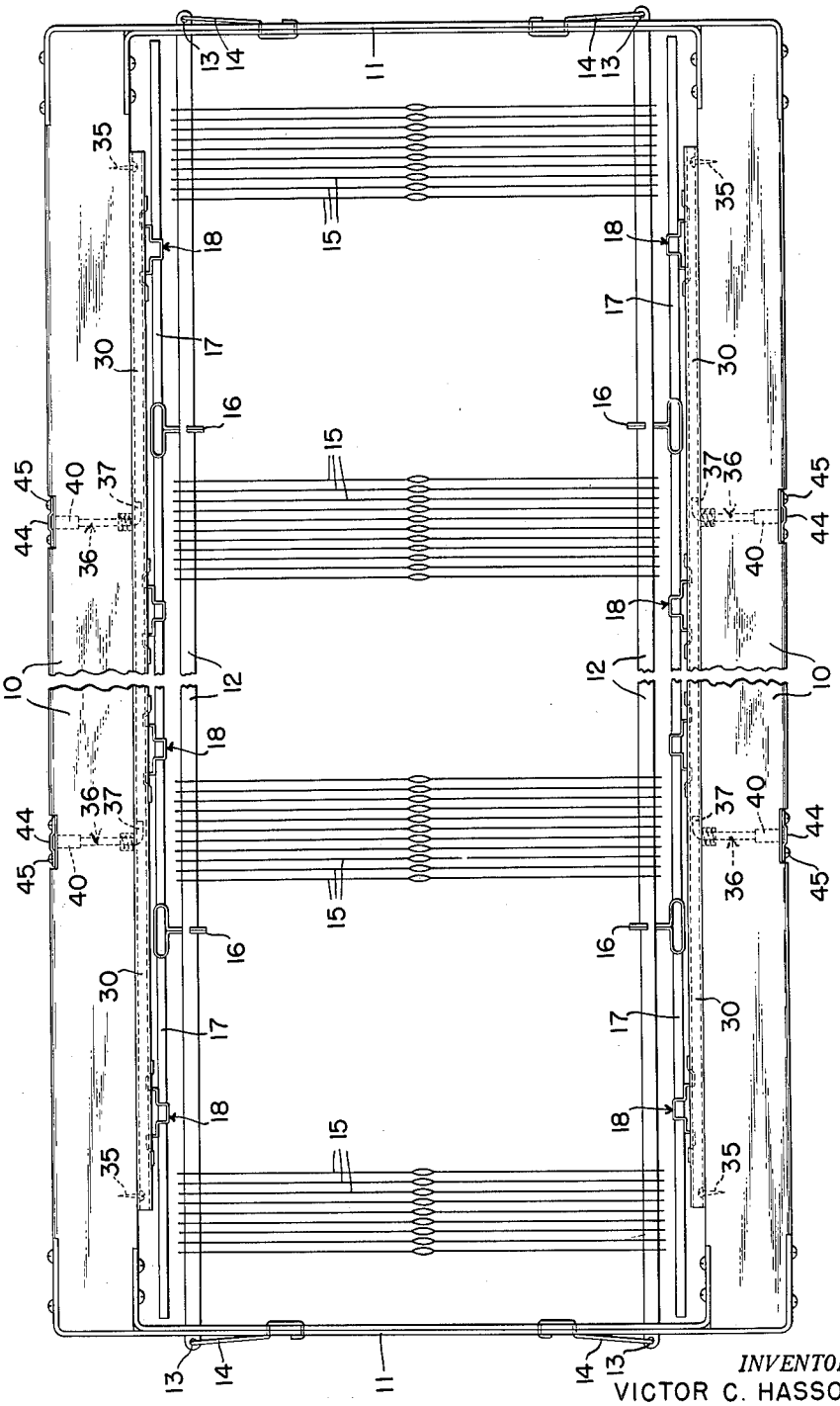


FIG. 1

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FIG. 2

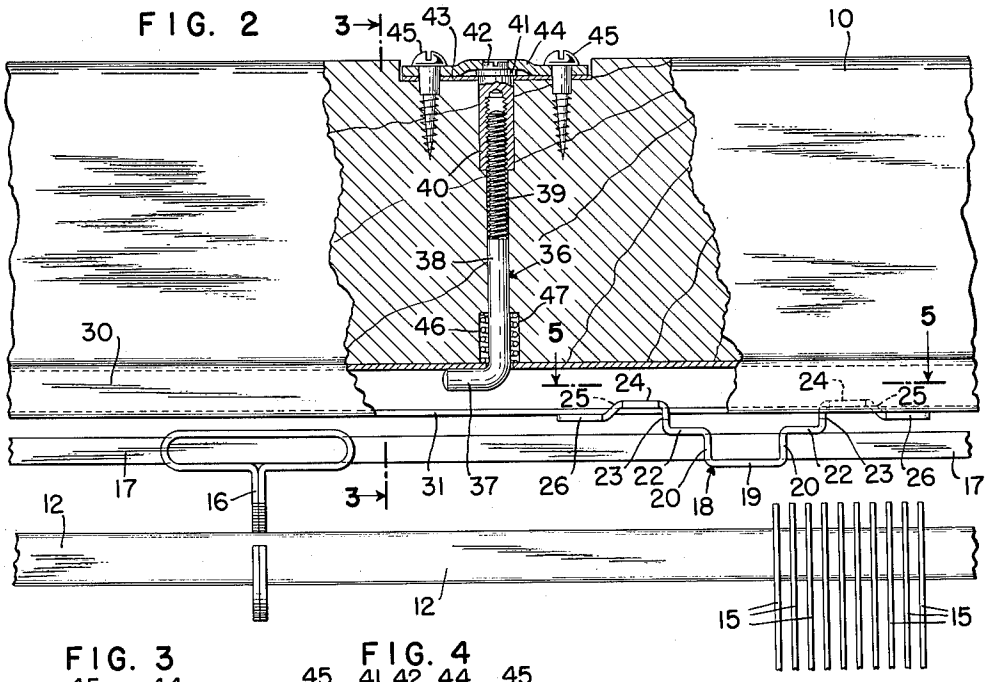


FIG. 3

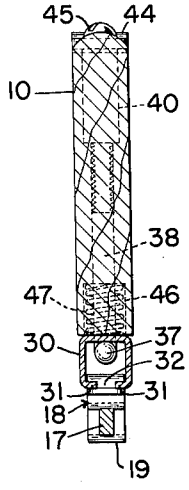


FIG. 4

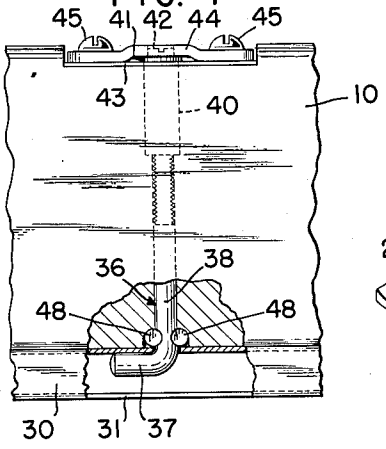


FIG. 6

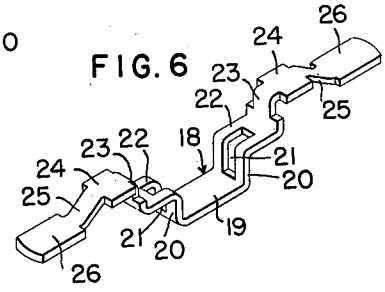
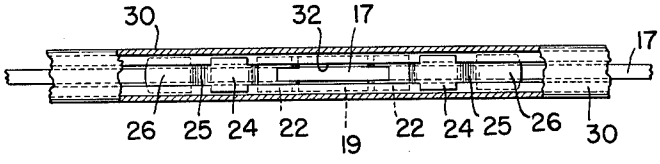


FIG. 5



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2,730,137

HEDDLE FRAME

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Application May 4, 1953, Serial No. 352,664

8 Claims. (Cl. 139—92)

This invention relates to heddle frames, and it relates more particularly to a heddle frame in which conventional heddles may be employed, and in which the warp may be entered by means of automatic drawing-in machines in the use of which it is necessary that the heddles be permitted to freely travel on the heddle supporting bars for substantially the full width of the frame without interference from the devices used for supporting the heddle bars intermediate the ends thereof.

Heretofore when the warp was to be entered in a set of heddle frames by means of automatic drawing-in machines it was customary to use a special type of heddles in the frame, the eye portions of which, at the upper and lower ends of the heddle, for mounting the same on the heddle supporting bars, each had an opening in one of the sides whereby the heddles were permitted to pass the hooks or brackets used for supporting the heddle bars intermediate the ends thereof. Heddles of this type are more expensive to manufacture, and unless made with the greatest of care and accuracy the same do not always function satisfactorily. Heddles of this type are shown and described in the Kaufman Patent No. 2,047,511, dated July 14, 1936.

Heddles of the conventional flat steel type may be used in the present frame. Heddles of this type were initially shown and described in the Fehr Patent No. 748,713, dated January 5, 1904, but of course any of the later improved forms thereof may also be used in the frame of the present invention.

The heddle frame of the present invention is also intended to overcome, more effectively than has heretofore been done, a difficulty encountered in connection with the frames of the well known and commonly used type in which the upper and lower rails are made of wood, connected at their ends by end struts, and having bars upon which the heddles are mounted. In the use of such heddle frames the top and bottom rails frequently become bowed or distorted by reason of the strains imposed in use, and sometimes by reason of climatic conditions under which the same are used, and the parallelism of the bars upon which the heddles are mounted is not properly maintained, with the result that the heddles will bind upon the supporting bars and cause warp streaks, as well as other defects of this character, to occur in the cloth being woven.

The principal object therefore of the present invention is to provide a heddle frame in which ordinary or conventional heddles may be employed, and in which said heddles may be so manipulated as to permit the warp to be entered by means of automatic drawing-in machines.

A further object of the invention is to provide, in a heddle frame, improved means for maintaining the parallelism of the heddle bars whereby there will be no interference with the freedom of movement of the heddles on the heddle bars during the weaving operation which would result in the formation of warp streaks or other defects in the weave.

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 hereof, in which:

Figure 1 is a front elevation of a heddle frame embodying the main features of the present invention;

Fig. 2 is an enlarged fragmentary view, partly in elevation and partly in section, illustrating certain of the essential parts of the heddle frame of the present invention;

Fig. 3 is a section taken approximately on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary view, partly in elevation and partly in section, illustrating a modified form of a portion of the device;

Fig. 5 is a view, partly in section and partly in plan, as indicated by the line 5—5 of Fig. 2, illustrating one of the features of the present invention; and

Fig. 6 is a perspective view of a slidable bracket member forming a part of the structure shown in Figs. 1, 2, 3 and 5, the same being shown detached.

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

Referring to the drawings, there is therein shown a heddle frame embodying the main features of the present invention which is, to a certain extent, of a conventional character, the same comprising top and bottom rails 10, made of wood, connected at their ends by struts 11.

The usual heddle supporting bars 12 are employed, which extend from end to end in the frame. The bars 12 may be secured to the end struts 11 in any preferred manner as, for example, by extending the ends of the bars 12 through slots in the end struts 11 and having their ends apertured as at 13, the apertures being engaged by spring hooks 14 which are well known and commonly used in the industry for this purpose. The heddles 15, which may be and preferably are of the conventional flat steel type, are mounted on the heddle bars 12 in the usual manner.

The heddle bars 12 are supported by means of slide hooks 16 which may be of the type shown in the Kaufmann Patent No. 2,252,183, although any other type of slide hook which will function substantially in the same manner may be employed. The slide hooks 16 are mounted on auxiliary supporting rods 17 in such manner as to be freely slidable on said auxiliary rods, and they are also freely slidable with respect to the heddle bars 12.

The auxiliary rods 17 are supported by means of bracket members 18 one of which is shown in detached perspective in Fig. 6 of the drawing. Each of said bracket members 18 has a flat plate like portion 19 which extends along and engages the inner edge of the auxiliary rod 17.

From each end of the plate like portion 19 an arm 20 extends vertically. Each arm 20 is slotted as at 21 for the passage therethrough of the auxiliary rod 17. From the end of each of the vertical arms 20 there extends a horizontal portion 22 which extends along and engages the outer edge of the auxiliary rod 17. From the other end of each horizontal portion 22 an arm 23 extends vertically. Each of said arms 23 is notched on each side for a purpose to be presently explained.

Each of said arms 23 has a horizontal extension 24 connected at one end to said arm 23, and provided at the other end with an inclined arm 25, also suitably notched on each side, similar to the vertical arm 23, and from the other end of said inclined arm 25 there is provided a flat horizontally extending portion 26.

The bracket member 18 is formed as aforesaid for the purpose of mounting the same in a track member 30 which is secured to the inner edge of the rail 10 in a manner to be presently described.

The track member 30 is preferably of C-shaped cross-section with the lips 31 thereof disposed on the inner side, said lips 31 being separated by a slot 32. The notching of the sides of the arms 23 and 25 is for the purpose of permitting said arms to extend through the slot 32 of the track member 30.

The bracket member 18 is mounted with respect to the track 30 by having the horizontal portions 24 thereof disposed within the track 30 and bearing against the inner faces of the lips 31 thereof, while the horizontal portion 26 at each end of the bracket member 18 is disposed on the exterior faces of the lips 31 of the track 30 and bears against the same.

It should here be noted that the bracket member 18 is so shaped and dimensioned that a slight frictional drag is provided either with respect to the auxiliary rod 17 or the track member 30 so that the bracket members 18, although movable, will not be freely slidable, but will normally remain in any preferred position in which they may be placed.

The track member 30 is secured to the inner edge of the rail in a peculiar manner, that is, the ends thereof are fixedly secured to the end portions of the rail by wood screws 35 while intermediate the ends thereof it is secured to the inner edge of the rail 10 by adjusting bolts 36, a preferred arrangement being shown in detail in Fig. 2 of the drawings.

As there shown, the fastening bolt 36 has a bent over head portion 37 which extends into the interior of the track member 30 and engages the inner faces of the wall of the track member 30 which is adjacent the inner edge of the rail 10.

The body portion 38 of the bolt 36 extends through the wall of the track member into the rail 10 and has its end portion threaded as at 39 for engagement by a complementally threaded sleeve 40. The sleeve 40 is provided, near its outer end, with an annular shoulder portion 41, and at the end there is a slotted head 42, the arrangement being such that the sleeve 40 may be turned by means of a screw driver applied to the slot.

The shoulder portion 41 of the sleeve 40 is disposed between metal plates 43 and 44 suitably apertured for positioning the shoulder portion of the sleeve 40 between said plates. The plates 43 and 44 are secured in the rail by means of wood screws 45.

A coil spring 46 surrounds the innermost end of the body portion 38 of the bolt 36. The coil spring 46 is located in a counterbored portion 47 of the rail 10 whereby one end of the coil spring 46 will bear against the track member 30 and tend to push the same outwardly when the sleeve member 40 is rotated to adjust the bolt 36.

In Fig. 4 of the drawing there is shown a modified form of the adjusting device in which the use of the coil spring 46 is dispensed with, and in lieu thereof the bolt 36 is provided with a pair of struck up ears 48 which directly engage the inner wall of the track member 30 for positive adjustment of said track member 30 away from the rail 10.

By the arrangement herein described there is provided a heddle frame which is so constructed and arranged that conventional heddles may be used therein, which however are capable of complete freedom of movement on their supporting bars from end to end thereof, whereby the warp may be entered by means of the automatic drawing-in machines which are now available for such purpose.

It will also be noted that the arrangement is such that adjustment may be readily made in the event of either of the rail becoming distorted or sprung either through the stresses imposed thereon during the operation of the same, or by reason of changes in the moisture content in the air where the frames are used, it being noted that if any change in the parallelism in the heddle bars occurs from any cause, the same may be readily and easily corrected by the mere adjustment of the track with respect to the rail on which it is mounted, and which is easily accomplished by the mere rotation of the threaded sleeve 40.

I claim:

1. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, slide hooks for supporting said heddle bars intermediate their ends, auxiliary rods upon which said hooks are slidably mounted, brackets slidably engaging said auxiliary rods for supporting the same intermediate the ends thereof, tracks on which said brackets are slidably mounted, said tracks being mounted on the inner edges of the respective rails.

2. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, slide hooks for supporting said heddle bars intermediate their ends, auxiliary rods upon which said hooks are slidably mounted, brackets slidably engaging said auxiliary rods for supporting the same intermediate the ends thereof, tracks on which said brackets are slidably mounted, said tracks being mounted on the inner edges of the rails and fixedly secured at their ends to the respective rails, and means mounted in the rails for securing said tracks at points intermediate the fastened ends thereof.

3. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, slide hooks for supporting said heddle bars intermediate their ends, auxiliary rods upon which said hooks are slidably mounted, brackets slidably engaging said auxiliary rods for supporting the same intermediate the ends thereof, tracks on which said brackets are slidably mounted, said tracks being mounted on the inner edges of the rails and fixedly secured at their ends to the respective rails, and means mounted in the rails for securing said tracks at points intermediate the fastened ends thereof, said securing means being adjustable for maintaining the parallelism of the heddle supporting bars.

4. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, slide hooks for supporting said heddle bars intermediate their ends, auxiliary rods upon which said hooks are slidably mounted, brackets slidably engaging said auxiliary rods for supporting the same intermediate the ends thereof, tracks on which said brackets are slidably mounted, said tracks being mounted on the inner edges of the rails and fixedly secured at their ends to the respective rails, and means mounted in the rails for securing said tracks at points intermediate the fastened ends thereof, said securing means comprising tensioning bolts for pulling said tracks toward the rails, and springs to impel said tracks away from the rails when the bolts are slackened.

5. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, slide hooks for supporting said heddle bars intermediate their ends, auxiliary rods upon which said hooks are slidably mounted, brackets slidably engaging said auxiliary rods for supporting the same intermediate the ends thereof, tracks in which said brackets are slidably mounted, said tracks being mounted on the inner edges of the rails and fixedly secured at their ends to the respective rails, and means mounted in the rails for securing said tracks at points intermediate the fastened ends thereof, said securing means including bolts for

adjusting the tracks with relation to the rails on which they are mounted.

6. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, and means for supporting said heddle bars intermediate their ends including tracks mounted on the inner edges of the rails, said tracks being C-shaped in cross-section, adjusting bolts mounted in the rails each having a head portion engaging a portion of said track, and a spring adapted to impel said track away from the edge of the rail upon which it is mounted against the tension of the adjusting bolt.

7. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, and means for supporting said heddle bars intermediate their ends including tracks mounted on the inner edges of the rails and fixedly secured thereto at their ends, said tracks being C-shaped in cross-section, adjusting bolts mounted in the rails each having a head portion engaging a portion of said track member, and a spring adapted to impel said track member away from the edge of the rail upon which it is mounted against the tension of the adjusting bolt.

8. A heddle frame comprising top and bottom rails, end struts connecting the ends of said rails, heddle bars extending from end to end in the frame, heddles mounted on said heddle bars, and means for supporting said heddle bars intermediate their ends including tracks secured to the inner edges of the rails, said tracks being C-shaped in cross-section, and brackets movably mounted in said tracks, said brackets each having portions engaging the inner faces of the lips of the track in which it is mounted, other portions engaging the outer faces of the lips of said track, said lip engaging portions being connected by portions extending through the slot between the lips of the track.

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