June 23, 1942. J. J. KAUFMANN 2,287,687

LOOM HARNESS

Filed Dec. 29, 1939

Fig. 1.

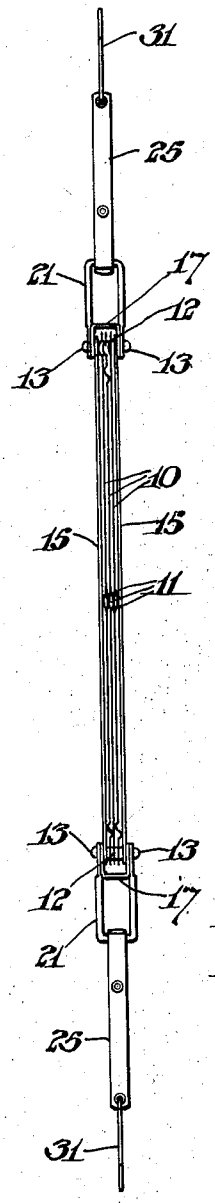



Fig. 2.

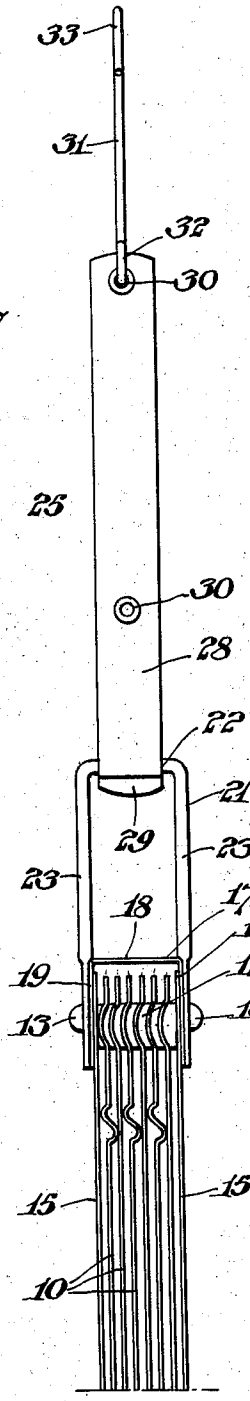



Fig. 3.

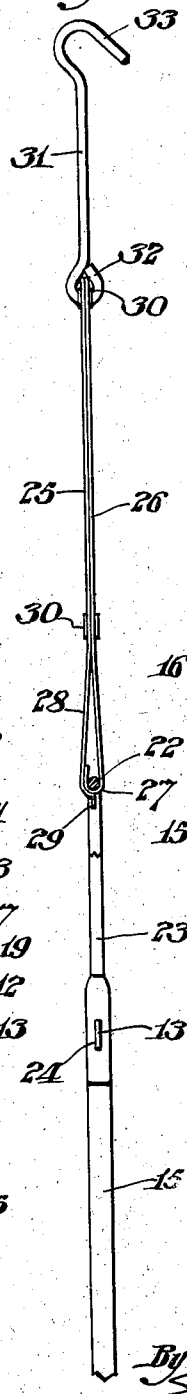
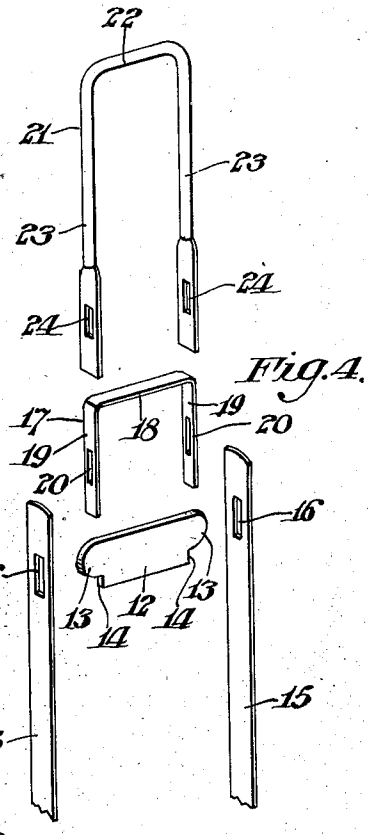



Fig. 4.




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# UNITED STATES PATENT OFFICE

2,287,687

## LOOM HARNESS

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Application December 29, 1939, Serial No. 311,455

6 Claims. (Cl. 139—92)

This invention relates to loom harness and it relates more particularly to improved means for mounting, in a loom, groups of heddles for controlling the warp ends of the selvage, although it should of course be understood that the harness may be used for other purposes such, for example, as weaving stripes in a fabric in which the warp ends thereof are manipulated independently of the ends controlled by the main harness frames.

Heretofore various types of devices have been suggested for controlling the warp ends of a selvage, but in such devices it was usual to use heddles of much greater length than the heddles in the main harness frames to prevent fouling of the selvage heddles and their supporting parts with the parts of the main harness frames. The heddles customarily used were of a length sufficient to extend from the top of an elevated harness frame to the bottom of an adjacent harness frame when the shed is formed in the loom.

However, in the use of selvage harness of the type in which the heddles are of greater length, as aforesaid, difficulty arises when a set of harness is removed from the loom, either for reentering the warp therein or for storage purposes, by reason of the selvage harness projecting a considerable distance above and below the main harness frames. It, therefore, was customary, when a set of harness was removed from the loom, to withdraw from their heddles the warp ends controlled by the selvage harness, and to separate the selvage harness from the main frames. This involves complications when the harness is replaced in the loom, by reason of the necessity to rearrange the selvage harness with respect to the main frames, and also by reason of the necessity to draw in the selvage warp separately after the harness is replaced in the loom.

The principal object of the present invention is to provide a selvage harness in which heddles of standard length are employed, which heddles are so mounted that there will be no interference with the free shedding of the main harness frames, and which selvage harness is so constructed and arranged that the entire set of harness may be readily removed from the loom with the selvage harness left in the proper relationship to the other frames.

A further object of the invention is to provide selvage harness in which the short rods, upon which the heddles are mounted, will always be maintained in their proper horizontal positions, thereby to insure proper freedom of action, and to eliminate crowding of the heddles toward one end of the rod as usually occurs when the rod is tilted.

A further object of the invention is to provide a selvage harness which may be inexpensively constructed, but which will be durable and efficient in its operation.

A further object of the invention is to provide improved means for connecting the selvage harness to the actuating straps which will permit the selvage harness to be readily and expeditiously removed from the loom when desired.

Other objects and advantages of the invention will be readily apparent to those familiar with this type of apparatus.

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

Figure 1 is a front elevational view of a selvage harness embodying the main features of the present invention;

Fig. 2 is an enlarged fragmentary elevational view of the upper portion of the structure shown in Fig. 1;

Fig. 3 is a side elevation, partly broken away, of the portion of the structure shown in Fig. 2; and

Fig. 4 is a perspective view illustrating in detached relationship certain of the parts of the structure.

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

Referring to the drawing, in the particular embodiment of the invention therein shown, the heddles 10 may be of any preferred type, but preferably are of the kind shown, being made of thin, flat strips of metal or wire in which central warp eyes 11 of the ordinary type are provided. The heddles 10 are mounted on the heddle supporting bars 12 in the ordinary manner. The heddles 10 are preferably of the standard length such as are used in the main harness frames, as it is not necessary, in the present selvage harness, to use extra long heddles, as has heretofore been customary.

The heddle supporting bars 12 consist of relatively short members punched and formed from a metallic strip. The end portions of each heddle supporting bar 12 are reduced in width, as at

13, thereby providing shoulders 14 for a purpose to be presently explained.

One heddle supporting bar 12 is provided at the top of the heddles 10, and another at the bottom of the heddles 10, and connecting said bars 12 are side members 15 also made of thin, flat strips of metal or wire, preferably somewhat stiffer and heavier, however, than the strips from which the heddles 10 are formed. In each end of each of the side members 15 there is provided a slot 16 complemental to a reduced end portion 13 of the bar 12 upon which it is mounted.

The arrangement is such that when the side members 15 are mounted with the slots 16 thereof engaging the reduced end portions 13 of the bars 12, the inner faces of said side members 15, adjacent the slots 16, will abut against the shoulders 14 of said bars.

The side members 15 are initially maintained on the bars 12 by means of U-shaped members 17, each comprising a horizontal portion 18 and vertical portions 19. The vertical portions 19 of each of said U-shaped members 17 are slotted, as at 20, complemental to the reduced end portions 13 of the bar 12, for mounting the same thereon. After the heddles 10 and the side members 15 are assembled on the bars 12, the side legs 19 of said U-shaped members 17 are sprung open to enable the same to be placed upon the bars 12.

It should be understood, however, that the U-shaped members 17 are not absolutely essential, and in some instances the same may be omitted; but said U-shaped members assist materially in the initial assembling of the selvage harness, serving to retain the heddles 10 and side strips 15 on the bars 12 until the other parts, to be hereinafter described, are assembled with respect to said bars.

Each of the bars 12 is provided with a bail member 21, having a horizontal portion 22 and two vertical legs 23. This bail member 21 is preferably made from round wire having its ends flattened and spread to a width corresponding to the width of the side members 15, and in the flattened parts of the vertical extensions 23 of the bail members 21, there are provided slots 24 complemental to the end portions 13 of the bars 12, upon which the heddles 10 are mounted.

The bail members 21 are preferably made of relatively stiff or hardened material having sufficient resiliency and under such tension as to cause the vertically extending legs 23 thereof to spring inwardly toward each other, thereby to hold the various parts assembled upon the bars 12.

The horizontally extending portion 22 of each of the bail members 21 is mounted in a connector 25, the main body portion 26 of which is made from a thin, flat and relatively wide strip of metal, preferably spring steel, bent around at one end to form a hook 27 for the reception of the horizontally extending portion 22 of the bail member 21. The connector 25 is provided with a closure plate 28, also made from a thin, flat strip of metal, preferably spring steel, which preferably extends the full length of the connector 25 and across the opening of the hook portion 27, serving to prevent the selvage harness from fouling on the adjacent frames in the loom when the shedding occurs. Said closure plate 28 also extends around the hook of the main portion to a medial point where it is provided with a projecting tab 29 normally lying in an intermediate plane of the structure, the purpose of which is to facilitate the insertion of the bail member 21 in the hook portion 27 of the connector 25.

The spring closure plate 28 is preferably secured to the main plate 26 of the connector 25 by means of tubular rivets 30, one of said rivets being located at the end of the connector 25 remote from the hook portion thereof, the arrangement being such that the opening of said tubular rivet 30 may be utilized for the attachment of a hook member 31 which engages the actuating strap (not shown) of the harness. This hook member 31 may comprise a single piece of wire having a loop end portion 32 which engages the opening provided by the tubular rivet 30. The other end of the hook member 31 is shaped in the usual hook formation, as at 33, for engagement in one of the apertures usually provided in an actuating strap (not shown) of the harness.

It will be seen that by the foregoing arrangement, there is provided a novel form of harness for mounting small groups of heddles in the loom such, for example, as are employed for weaving the selvage in certain types of fabrics, or in some instances for weaving stripes therein.

It will be noted that in the present form of harness, heddles of standard lengths may be employed, nevertheless the arrangement is such that there will be no interference with the free shedding of the harness frames. Furthermore, when it is necessary to remove a set of harness from the loom, the selvage harness may be left in its proper relationship therein, by reason of the fact that the bail members 21 may be readily disconnected from the connectors 25, and when so disconnected, the overall height of the selvage heddle assembly will not exceed that of the main frames.

Hence, the entire set of harness may be readily removed from the loom without requiring the withdrawal of the warp ends from the selvage harness, and considerable time and labor are avoided when the harness is replaced in the loom.

I claim:

1. In a loom harness for supporting small groups of heddles, heddle supporting bars upon which said heddles are mounted, side members having their end portions engaging the end portions of said supporting bars, U-shaped members each having vertical leg portions resiliently impelled towards each other and engaging the end portions of the supporting bars, and bail members each having leg portions engaging the end portions of the supporting bars to retain the various parts assembled on said supporting bars.

2. In a loom harness for supporting small groups of heddles, heddle supporting bars upon which said heddles are mounted, side members comprising thin flat metallic strips having their ends portions in slotted engagement with the end portions of said supporting bars, said supporting bars having shoulders against which the end portions of the side members abut, U-shaped members each having leg portions in slotted engagement with the end portions of the supporting bars, and bail members each having leg portions in slotted engagement with the end portions of the supporting bars and tensioned to retain the various parts assembled on said supporting bars.

3. In a loom harness for supporting small groups of heddles, heddle supporting bars upon which said heddles are mounted, said supporting bars having shoulders near each end, and one

piece bail members each having a horizontal portion and elongated vertical leg portions the ends of which are in slotted engagement with the end portions of the supporting bars, said bail members being made of relatively stiff material having sufficient resiliency and under such tension as to cause the leg portions to spring inwardly toward each other to the limit provided by the shoulders of the supporting bars thereby to retain the various parts assembled upon the supporting bars.

4. In a loom harness for supporting small groups of heddles, heddle supporting bars upon which said heddles are mounted, side members comprising thin flat metallic strips having their end portions in slotted engagement with the end portions of said supporting bars, said supporting bars having shoulders against which the end portions of the side members abut, and one piece bail members each having a horizontal portion and elongated vertical leg portions the ends of which are in slotted engagement with the end portions of the supporting bars, and the ends of the leg portions of the bail members serving to retain the various parts assembled upon the supporting bars.

5. In a loom harness for supporting small groups of heddles, heddle supporting bars upon which said heddles are mounted, side members comprising thin flat metallic strips having their end portions in slotted engagement with the end portions of said supporting bars, said supporting bars having shoulders against which the end portions of the side members abut, and one piece bail members each having a horizontal portion and elongated vertical leg portions the ends of which are in slotted engagement with the end portions of the supporting bars, said bail members being made of relatively stiff material having sufficient resiliency and under such tension as to cause the leg portions to spring inwardly toward each other thereby to retain the various parts assembled upon the supporting bars.

6. In a loom harness for supporting small groups of heddles, heddle supporting bars upon which said heddles are mounted, side members comprising thin flat metallic strips having their end portions in slotted engagement with the end portions of said supporting bars, said supporting bars having shoulders against which the end portions of the side members abut, one piece bail members each having a horizontal portion and elongated vertical leg portions the ends of which are in slotted engagement with the end portions of the supporting bars, said bail members being made of relatively stiff material having sufficient resiliency and under such tension as to cause the leg portions to spring inwardly toward each other thereby to retain the various parts assembled upon the supporting bars, and thin flat and wide steel connectors each having a hook portion engaging the horizontal portion of a bail member over the greater portion of its width.

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