April 11, 1939. W. H. BAHAN 2,154,119

HARNESS CONNECTOR FOR LOOMS

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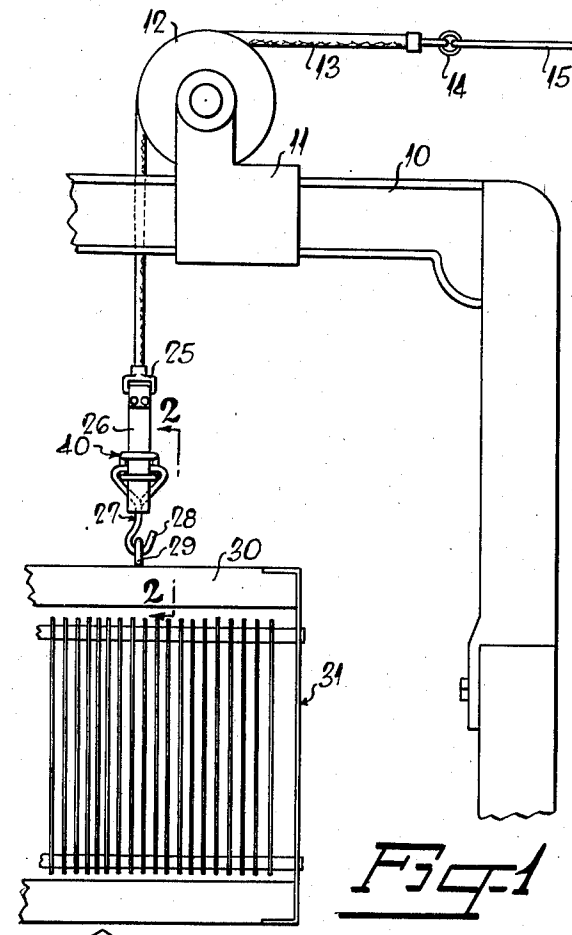


Fig. 1

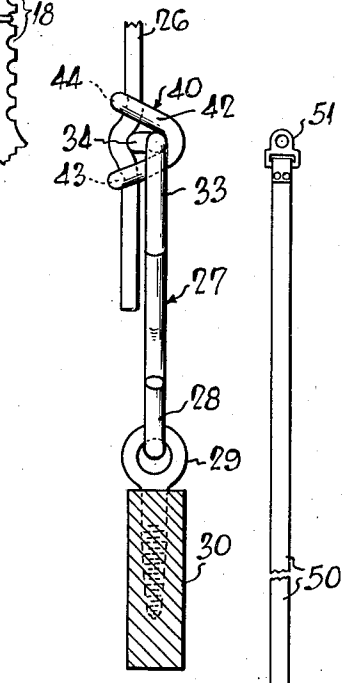


Fig. 2

Fig. 5

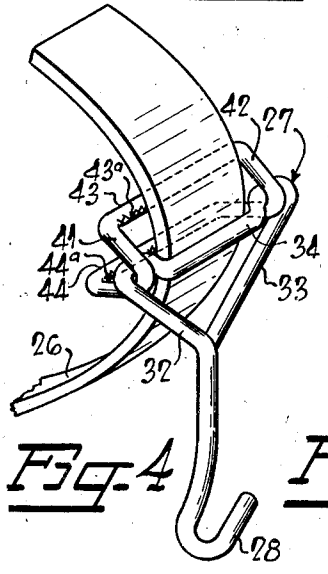


Fig. 4

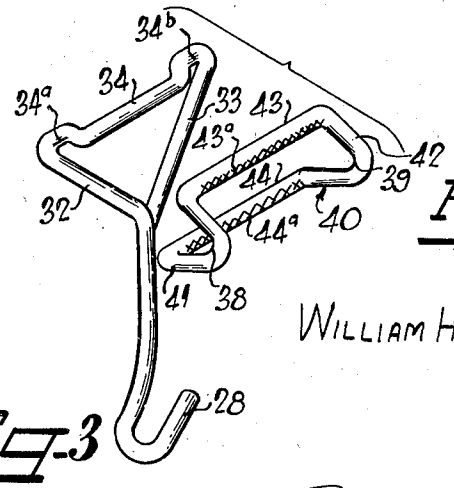


Fig. 3

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HARNESS CONNECTOR FOR LOOMS

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2 Claims. (Cl. 24—163)

This invention relates to a connecting means for adjustably securing the heddle frames of a loom to the raising and lowering mechanism. It is a well known fact in the textile trade that the heddle frames of looms are raised and lowered during the weaving operation at a very rapid rate. This raising and lowering is necessary in order that the warp thread, which is carried by the frames will be divided to properly form a shed through which a shuttle is thrown back and forth. If the frames are not adjusted to the proper elevation the shed will not be properly formed, and consequently, the shuttle will often engage and break some of the warp threads as it passes through the shed. Also the changes of climatic conditions in the mill affect the length of the connecting members between the frames and the raising and lowering means thereby necessitating frequent adjustments so as to keep the frames at the proper elevation.

It is, therefore, an object of this invention to provide a harness connector for looms which affords an easy and quick adjustment of the height to which the heddle frames are raised. The present invention comprises a buckle which is adapted to clamp a flexible strap member said buckle having its lower end connected to the top of the heddle frame and said strap having its upper end secured to the raising and lowering means for the heddle frame. This buckle provides the means whereby the strap may be quickly and easily adjusted therein without detaching the heddle frame from the buckle or the strap from the raising and lowering means.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken into consideration with the accompanying drawing, in which.

Figure 1 is an elevation of the portion of a loom showing my invention applied thereto;

Figure 2 is an enlarged vertical sectional view taken along the line 2—2 in Figure 1;

Figure 3 is an exploded isometric view of the buckle;

Figure 4 is a view of the parts shown in Figure 3, but also showing the position of the parts of the buckle as they appear when a strap is first inserted therein;

Figure 5 is a view of my improved buckle showing the same when being used with a slightly different type of strap for raising and lowering a heddle frame.

Referring more specifically to the drawing, the numeral 10 denotes an arch of a loom upon which is mounted a bracket 11. This bracket has pulleys 12 rotatably mounted therein, only one of which is shown, upon which cord 13 is adapted to rest. The upper end of cord 13 is linked to a suitable ring 14 and this ring, in turn, is linked to a bar 15. The bar 15 has the right hand end thereof linked to another ring 16, which ring is connected to a link 17 and said link 17 being adapted to fit in one of several notches 18 in dobby arm 19.

The lower end of cord 13 has a suitable eyelet 25 thereon to which the upper end of strap 26 is secured. The intermediate portion of the strap 26 is adapted to be clamped by a connector assembly comprising members 27 and 40 in the desired position. The member 27 has a hook 28 on the lower end thereof for normally engaging eyelet 29 said eyelet being threadably secured in the upper rail 30 of the heddle frame 31. During the operation of the loom, the dobby arm 19 reciprocates back and forth thereby raising and lowering the heddle frame 31 together with the warp threads associated therewith. The connector can also be used on a plain loom as well as a dobby arm. The other side of the loom has other pulleys 12 and other straps 13 for supporting the other ends of the heddle frames.

In order to provide means whereby the height of the heddle frame 31 may be adjusted quickly with or without detaching the heddle frame from the hook portion 28, it is necessary to provide a specially constructed buckle. The upper portion of the member 27 is bent so as to form a triangular head having sides 32, 33 and 34. The top side 34 is offset from the sides 32 and 33, that is, it occupies a different plane from the plane in which the sides 32 and 33 occupy. This offset side 34 is used as a bearing surface against which one side of the strap member 26 is pressed when the parts are in a buckled or clamped position, as shown in Figures 1 and 2. It will be noted, however, that each end of the top side 34 bends back into the plane occupied by the sides 32 and 33, thereby forming bearing portions 34*a* and 34*b* which accommodate the crotches 38 and 39 of the V-shaped end portions 41 and 42 of clamp 40. The clamp 40 is formed from one continuous bar and the ends of these parallel V-shaped end portions 41 and 42 are joined together by two parallel bars 43 and 44 which in turn are disposed approximately at right angles to the V-shaped portions. These bars 43 and 44 have roughened surfaces 43*a* and 44*a* which engage the opposite side of the strap 26 from that engaged by the side 34 of the member 27 when the strap is in clamped position.

When it is desired to adjust the strap **26**, the parts are placed in the position as shown in Figure 4, at which time the strap can be easily adjusted, relative to the clamp **40** of the member **27**. After the strap has been properly positioned, the clamp **40** is turned through an angle of substantially 180 degrees to the position shown in Figure 2 at which time the strap is tightly clamped between the side **34** and the roughened surfaces **43***a* and **44***a* of the parallel bars **43** and **44** respectively. This is accomplished by moving the hook **28** in a counterclockwise manner in Figure 4.

Figure 5 shows a slightly modified form of the invention in which my improved buckle is shown associated with an elongated strap **50**. This strap has an eyelet **51** secured to the upper end thereof which is adapted to be linked to ring **16** when in an installed position on the loom. Also at this time, the lower end of the buckle will fit into the eyelet **29** of heddle frame **31** substantially in the same manner as shown in the preceding form. By using this elongated strap, the cord **13** as well as the parts **14** and **15** may be dispensed with. Of course, the upper portion of this strap, when used, must be turned through a quarter turn in order that the flat side thereof will rest on the top of the pulley **12**, but at the same time allow the lower side thereof along with its associated buckle **27** to have its flat side lying in the same plane as the heddle frame **31**.

It is, therefore, seen that I have provided a harness connecting means whereby the height of a heddle frame may be easily and quickly adjusted without detaching the flexible strap from the raising and lowering means or the buckle from the heddle frame.

In the drawing and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for the purposes of limitation, the scope of the invention being set forth in the appended claims.

I claim:

1. A harness connector and strap for supporting the heddle frames of looms comprising a web-like strap, a buckle member having V-shaped ends on each end thereof, spaced members connecting the legs of one V-shaped end with the legs of the other V-shaped end, and a member having a loop on one end provided with a cam portion and a hook portion on the other, the apices of the V-shaped ends being adapted to rest in said loop on each side of the cam portion, and said web member being passed between the cam portion and the members joining the legs of the V-shaped ends together, so that when the member having the cam portion is rotated relative to the buckle member having V-shaped ends, the cam portion will push the web member past a straight line passing from one spaced member to the other spaced member.

2. A harness connector comprising a substantially rectangular member having opposed sides bent to substantially V-shape, a second member having an eye on its upper end substantially wider than the first member and through which the first member is adapted to be passed so that the loop member will rest in the apices of the V-shaped sides of the first member, the looped portion of the second member having an off-set portion so that when the two members are rotated relative to each other the off-set portion will move closer to the straight side portions of the first member to clamp a strap passed between the off-set portion and the straight side portions of the first member, said second member having a hook on its other end adapted to engage a heddle frame.

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