HEALD MOUNTING FOR SHAFT FRAMES OF LOOMS

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ABSTRACT

A loom has a shaft frame, for shedding, including heald laths and lateral frame supports, and shaft staves are mounted in the shaft frame and support healds guiding the warp threads. Each shaft stave carries a heald mounting head having a rhombus cross-section with one diagonal perpendicular to the working plane of the loom and the other diagonal parallel to the working plane. Each heald is an elongated element formed, intermediate its ends, with an eye for passage of a warp thread therethrough. The opposite ends of each heald are forked to form a pair of gripping jaws having releasable conforming snap engagement with the head of a shaft stave. Thereby, the healds may be readily removed and replaced in the shaft frame.

10 Claims, 1 Drawing Figure
HEALD MOUNTING FOR SHAFT FRAMES OF LOOMS

FIELD AND BACKGROUND OF THE INVENTION

This invention relates to a heald shaft, for shedding in a loom, and preferably including metallic healds and shaft staves which latter are directly mounted on or integral with the heald laths.

The healds of known heald shafts for looms comprise, for example, yarn, metal wire, or thick steel plates, and are retained, at both ends, by shaft staves which are passed through corresponding eyelet-shaped or hook-shaped end members of the healds. The shaft staves are mounted in the shaft frame, which latter comprises heald laths and lateral frame supports.

A disadvantage of these heald shafts is that healds cannot be replaced without awkward detachment of the shaft stave from the shaft frame, or by dismantling the shaft frame itself if the heald lath and the shaft stave are integrally constructed.

SUMMARY OF THE INVENTION

In accordance with the present invention, each heald is an elongated element, preferably metallic, which is formed, intermediate its ends, with an eye for passage of a warp thread therethrough. Each shaft stave carries a heald mounting head which has a rhombus cross-section with one diagonal perpendicular to the working plane of the loom and the other diagonal parallel to the working plane. At least one end of each heald is formed to provide a pair of angular gripping jaws arranged to have releasable conforming snap engagement with the head of a shaft stave.

Thus, at least one end of each heald is inserted into two limbs, with at least one limb having a jaw portion extending toward the other limb. The limbs engage around the stave head of the respective shaft stave, and each stave head has a cross-section with a maximum width exceeding the distance between the jaw portion of one limb and the other limb. Preferably, both limbs are formed with jaw portions extending toward each other.

An object of the invention is to provide an improved heald shaft for shedding in a loom.

Another object of the invention is to provide improved healds, for looms, which are readily removable and replaceable with respect to the shaft frame of a loom.

A further object of the invention is to provide a shaft frame arrangement in which healds can be replaced without detachment of a shaft stave from the shaft frame or without dismantling of the shaft frame if the heald lath and the shaft stave are integral with each other.

For an understanding of the principles of the invention, reference is made to the following description of a typical embodiment thereof as illustrated in the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing, the single figure is an elevation view, partly in section, illustrating a heald embodying the invention as mounted on shaft staves each secured to or integral with a respective heald lath of a shaft frame.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing, a loom has healds 1 and 2 for retaining respective warp threads 3 and 4 in either the lower or the upper shed positions relative to the weaving or working plane 5. Each heald 1, 2 is supported at its top and bottom ends by shaft staves 7 and 7', respectively, each of which is mounted on or integral with a respective heald lath 6 or 6' of a lath frame.

The opposite ends of each heald member are bifurcated to form two limbs or clevis members 8 and 9 or 8' and 9'. The clevis members initially diverge at equal but opposite angles to the longitudinal axis of the heald to a maximum distance a, and then are formed with a bend of approximately 90° or more so that the clevis members approach each other until the free ends of the clevis members have a spacing of b from each other.

The heads of the shaft staves 7 and 7' are approximately rhombus shaped in cross-section, and have respective surfaces 10 and 11 or 10' and 11' which are inclined, relative to the longitudinal axis of the heald 1 in the same way as are the clevis members 8 and 9 or 8' and 9'. These surfaces are adjoined by surfaces 12 and 13 or 12' and 13', forming jaw portions, which latter surfaces form an angle of approximately 90° or more with the respective surfaces 10 and 11 or 10' and 11', and are therefore inclined toward the longitudinal axis of heald 1. One diagonal (the major axis) of the rhombus thus formed coincides with the longitudinal axis or center line of heald 1, while the other diagonal is perpendicular thereto.

A heald 1 or 2 is engaged with shaft stages 7 and 7' by being pressed axially against the shaft frame. Each free clevis member end then will slide over the surface 10 and 11, or over the surface 10' or 11', and the clevis members will spread until the distance between the free ends of the clevis members has reached the maximum width a (diagonal) of the head of the shaft stave 7 or 7'. Further pressure causes the clevis members to spring back into their original state. This is because correct dimensioning of the unstressed distance b between the ends of the clevis members, of the maximum width a of the stave heads, and of the clevis members 8, 9 or 8', 9' themselves, assures that the elastic limit of the heald material is not exceeded when the clevis members are spread open.

Since the distance between adjacent points of the upper and lower shaft staves 7 and 7' is less than the length of the heald, as measured over the free ends of the clevis members, it follows that the heald must be shortened by bending when it is being engaged, but this does not give rise to any difficulties, due to the flexibility of the heald.

A particular advantage of the illustrated embodiment of the invention arises from the small distance between the heald ends and the heald laths, which enables the height of the shaft frame to be kept low.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. In a loom having a shaft frame, for shedding, including heald laths and lateral frame supports, and shaft staves mounted in the shaft frame and supporting
3. In a loom, the improvement claimed in claim 1, in which at least one end of each heald is forked into two limbs, at least one of which has a jaw portion extending toward the other limb; the limbs engaging around the stave head of the respective shaft stave; the stave head having a cross-section with a maximum width exceeding the distance between the jaw portion of one limb and the other limb.

4. In a loom, the improvement claimed in claim 2, wherein each shaft stave having a heald mounting head is directly mounted on a heald lath.

5. In a loom, the improvement claimed in claim 2, in which each shaft stave carrying a heald mounting head is integral with a heald lath.

6. In a loom, the improvement claimed in claim 2, in which, considered in a direction from the root of the forked portion of each heald toward the free ends of the limbs, the limbs initially diverge and then converge relative to each other, the converging portions forming the jaw portions.

7. In a loom, the improvement claimed in claim 6, in which both limbs diverge from the longitudinal center line of the associated heald and then converge toward each other.

8. In a loom, the improvement claimed in claim 6, in which the cross-section of the mounting heads carried by said shaft staves is substantially of the same shape as that of the shape enclosed by the limbs of the forked portions of said healds.

9. In a loom, the improvement claimed in claim 6, in which the cross-section of each heald mounting head is substantially a rhombus with one diagonal coinciding with the longitudinal axis of a heald.

10. In a loom, the improvement claimed in claim 8, in which the limbs of the forked portions of said healds are engaged over said heald mounting heads by elastically springing the limbs apart; the difference between the maximum width of said mounting heads in a direction perpendicular to the longitudinal center lines of the healds and the distance between the free ends of the heald limbs being not greater than the elastic deformation capacity of said limbs.

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