United States Patent [19]

Sujdak

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[54] **LOOM WARP BEAM DEVICE**

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[73] Assignee: **Rockwell International Corporation,** Pittsburgh, Pa.

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[52] **U.S. Cl.** ..... **139/97;** 139/101; 66/86 A; 242/54 R; 308/24

[51] **Int. Cl.** **D03d 49/06**

[58] **Field of Search** ..... 139/101, 102, 97, 1 R; 66/86 A, 86 R; 28/32, 39; 242/54 R, 118.41; 308/24

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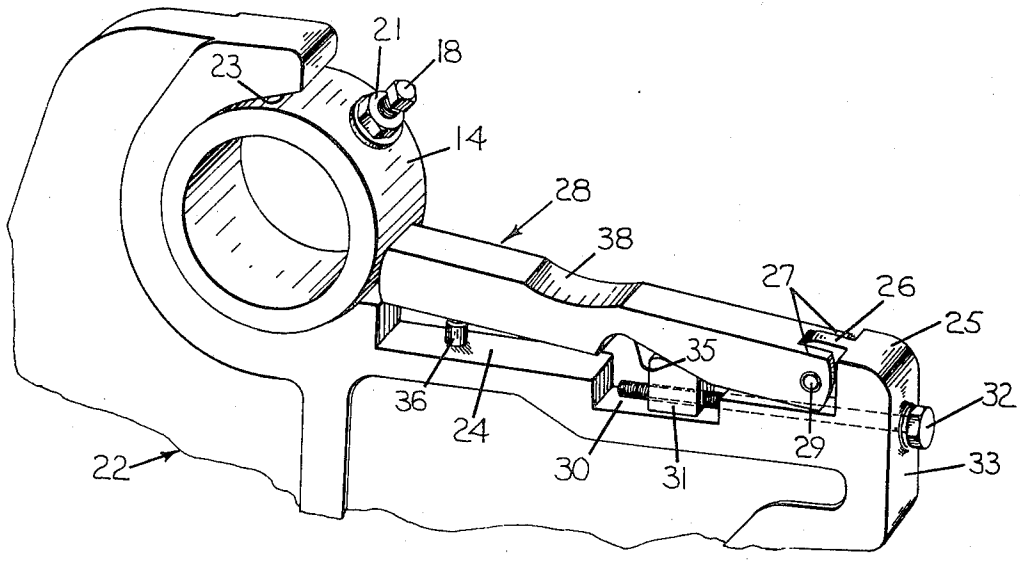
Primary Examiner—James Kee Chi

[57] **ABSTRACT**

A center wrap beam support for a loom having an integrally formed pocket for reception of a coupling element which interconnects the ends of two warp beam shafts. The support includes a cam controlled locking lever selectively movable between an inactive position and one which engages the coupling element for maintaining the connected shafts in axial alignment.

2 Claims, 4 Drawing Figures



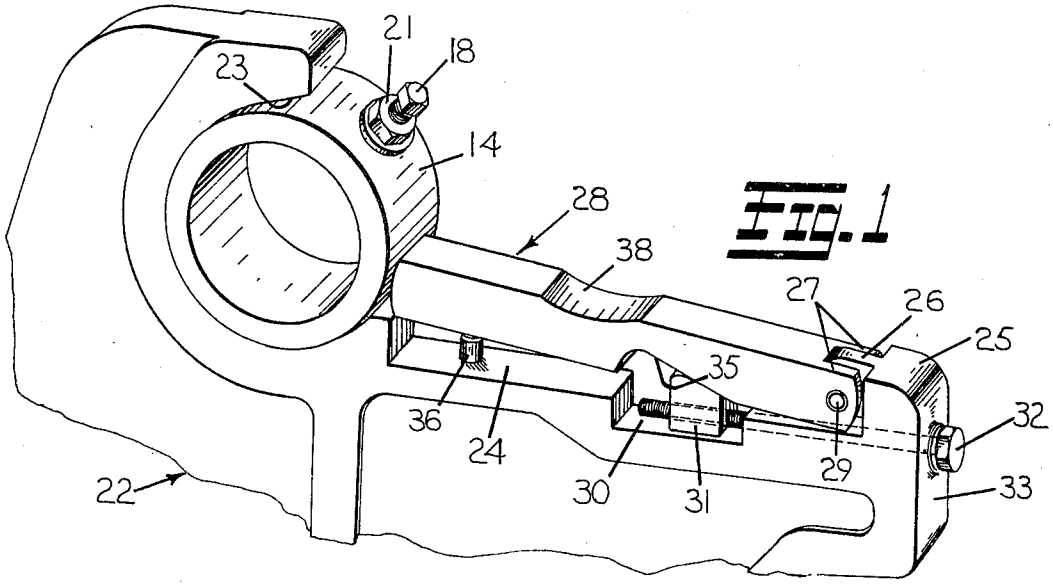


Fig. 1

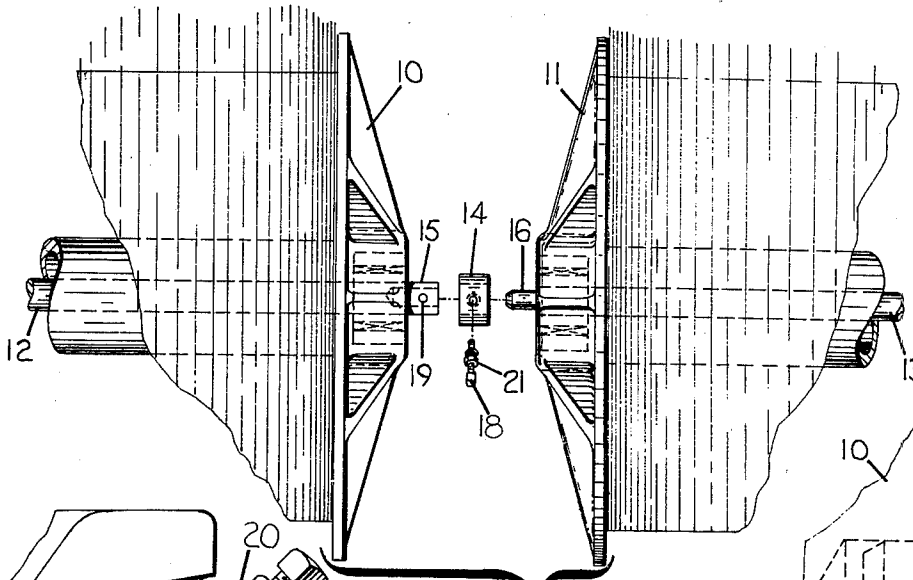


Fig. 2

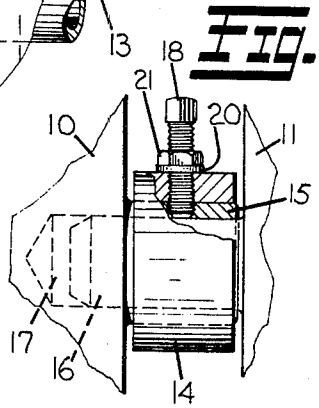


Fig. 3

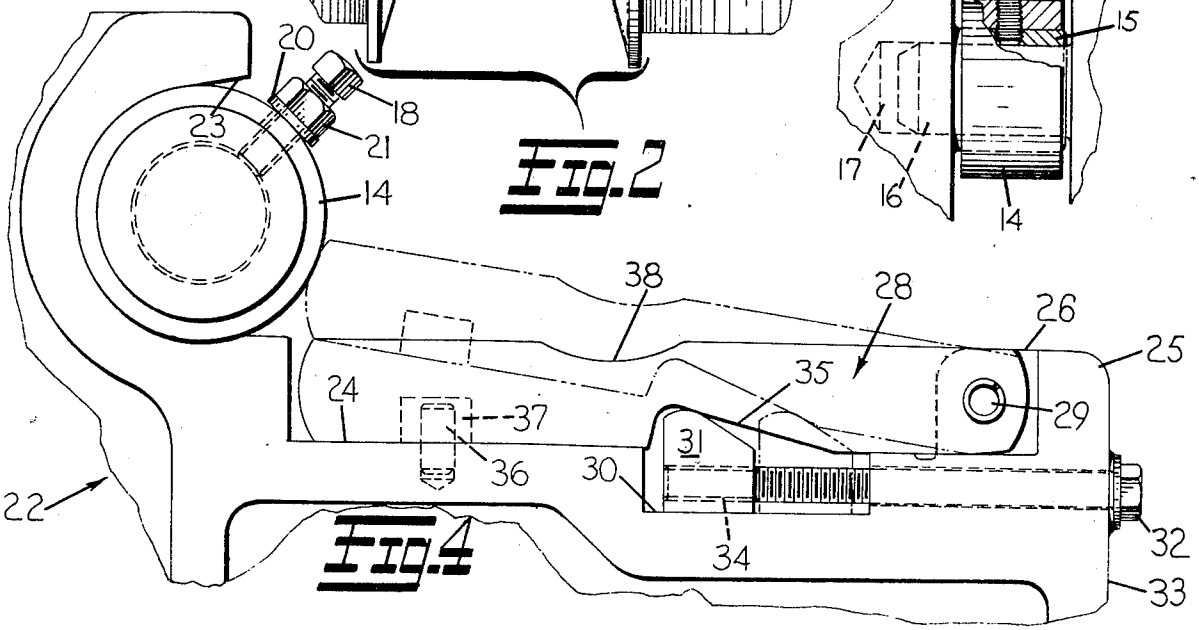


Fig. 4

LOOM WARP BEAM DEVICE

BACKGROUND OF THE INVENTION

In looms adapted to weave fabric of exceptionally wide width, it is common practice to draw warp yarn from more than one yarn beam. These yarn beams are disposed in axial alignment at the back of the loom in the usual yarn beam location. The ends of adjacent yarn beams are normally located in close proximity with one another with some form of so-called center support for axially aligning the yarn beams.

U.S. Pat. No. 2,798,513 discloses an apparatus for supporting and axially aligning more than one yarn beam in a loom which locates adjacent bearing surfaces of yarn beams by means of annular grooves and a pivotal cap member that is adapted to be pivoted to a position where it is bolted to secure the location of the ends of adjacent warp beams.

It is desirable that adjacent yarn beams in a loom be located as close to one another as possible and with large diameter beam heads the limited space therebetween often makes it difficult to quickly and without effort position and fix said adjacent yarn beams in axial alignment.

The loom warp beam device according to the present invention provides an improved yarn beam center support having a cam controlled locking lever which is easily and simply actuated for locking or unlocking the yarn beam shafts in an axially aligned position.

SUMMARY OF THE INVENTION

The loom warp beam device comprising the invention includes a yarn beam center support having an integrally formed pocket for supporting the coupled ends of adjacent yarn beam shafts. The support includes a rearwardly directed extension to which one end of an elongated locking lever is pivotally attached. A cam element is carried by the extension directly below and in contact with the underside of the elongated locking member. This cam member is movable longitudinally along a portion of the length of the locking member by a screw element on which it is assembled and which is carried by the rearwardly directed extension.

The turning of this screw element in one direction will cause the cam to move rearwardly and its contact with the underside of the locking lever will cause the free end of the latter to pivot upwardly to a position of locking engagement with a coupling which interconnects adjacent yarn beam shafts. By turning the screw in the opposite direction the cam is caused to move forwardly and the locking lever is released from its position of locking engagement with the coupling referred to above. Although this locking lever is shown and described as fixing the position of adjacent yarn beam shafts, it should be understood that it would perform its intended function equally as well on a single shaft upon which two yarn beams were assembled.

It is a general object of the invention to provide an improved yarn beam center support for looms which draws its warp yarn from more than one yarn beam.

Another object of the invention is to provide a yarn beam center support having a cam controlled locking device which is readily assessable and which can be quickly and easily moved to and from positions for maintaining adjacent warp beams in axial alignment.

These and other objects of the invention will become more fully apparent by reference to the appended claims and as the following detailed description proceeds in reference to the figures of drawing wherein:

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a perspective view of a yarn beam center support showing the cam controlled locking device according to the invention applied thereto;

FIG. **2** is an elevational view of a portion of two adjacent yarn beams showing the means by which they are interconnected;

FIG. **3** is a detailed view and partially in section showing two adjacent yarn beam shafts interconnected by the coupling member shown in FIG. **2**, and

FIG. **4** is a view in side elevation of the yarn beam center support showing by means of full and phantom lines the inactive and locking position respectively of the cam controlled locking device.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As the general construction and operation of the mechanism for feeding warp yarns from yarn beams to a loom to which the present invention is applicable, is well known and familiar to those conversant in the art, and as the invention is entirely concerned with a center support for adjacently disposed yarn beams in a loom, it is only considered necessary here to illustrate and describe those parts which are directly concerned with a preferred form of the present invention.

In FIG. **2** a portion of two warp yarn beams are shown with the one on the left being identified by numeral **10** and that on the right by numeral **11.** These yarn beams are mounted for controlled rotation upon supporting shafts or so-called yarn beam shafts with that for yarn beam **10** being depicted by numeral **12** and the one for yarn beam **11** by numeral **13.** FIG. **2** shows yarn beams **10** and **11** disconnected and FIG. **3** the same beams assembled by means of a coupling **14.** Referring again to FIG. **2,** the opposed ends of the yarn beam shafts **12** and **13** are identified by numerals **15** and **16** respectively. End **16** of shaft **13** is of reduced diameter and is adapted to assemble in a counterbore **17** provided in the end **15** of yarn beam shaft **12.** In assembled position, as shown in FIG. **3,** coupling **14** is positioned on the end **15** of shaft **12** and a set screw **18** in said coupling **14** is adapted to be tightened so as to pass through a hole **19** adjacent the end of shaft **12** where it is then tightened into locking engagement with end **16** of shaft **13.** A washer **20** and lock nut **21** on set screw **18** is tightened against the outer surface of coupling **14** (FIG. **3**) and serves to maintain yarn beam shafts **12** and **13** in coupled relation.

The yarn beam center support is depicted generally in FIGS. **1** and **4** by numeral **22** and is fixed to a part of the loom's framework (not shown) by any suitable means.

The upper and forward portion of the support **22,** which is that portion on the left as seen in FIGS. **1** and **4,** is provided with an integrally formed arcuated pocket **23** which is adapted to receive coupling **14** to position shafts **12** and **13** and the yarn beams **10** and **11** carried thereby in axial alignment. Below and extending rearwardly from the pocket **23,** the center support **22** is provided with a horizontal shelf **24** which terminates in an upwardly directed lug **25.**

Lug **25** includes a centrally disposed and forwardly directed rib **26** which provides a means for the pivotal

attachment thereto of the bifurcated end **27** of a locking lever indicated generally by numeral **28.** This locking lever **28** attaches to rib **26** by means of a pin **29** which passes through aligned holes not shown in the bifurcated end **27** and rib **26.**

Intermediate the ends of shelf **24** a recess is provided which defines a raceway **30** within which a cam member **31** is selectively movable between the solid and phantom line positions shown in FIG. **4.** Cam member **31** is selectively movable by means of a screw **32** which extends through a hole in the center support **22** below the rearward portion of shelf **24** and lug **25.** The head of the screw **32** remains in contact with the end portion **33** of the center support and the threaded portion extends into the raceway **30** where it assembles in a threaded hole **34** provided in the cam member **31.**

The underside of the locking lever **28** includes a cam engaging recess **35** (FIGS. **1** and **4**) and has a configuration which causes the locking lever **28** to rest on the shelf **24** when the cam member **31** is in the solid line position shown in FIG. **4.** When the cam member **31** is moved to the phantom line position in FIG. **4** by the turning of screw **32** the upper surface of said cam moves along the angularly directed surface of recess **35** and pivots the locking lever **28** to the phantom line position in FIG. **4.**

A locking pin **36** assembles in and protrudes from the forward portion of shelf **24** and when the locking lever is in its lowermost position said pin is within an opening **37** provided on the underside of said locking lever and serves to prevent any possible lateral movement of the latter which could possibly interfere with either of the adjacent yarn beams **10** and **11.**

Intermediate the ends of the locking lever, its upper surface includes an arcuated recess **38** and provides a means, when in its lowermost positions, of positioning the yarn beams prior to moving them into operating position or removing them from the loom.

To summarize the operation, the yarn beams are interconnected by the coupling **14** and with the locking lever in its lower position are rolled or guided into operating position which places said coupling within the pocket **23** of the yarn beam center support **22.** At this same time the outboard ends of each yarn beam are guided into known forms of bearing members (not shown) assembled on each side frame of a loom. In this position the adjacent yarn beams are in axial alignment and are locked in this position by the locking lever **28.** This is accomplished by turning screw **32** so as to move cam member **31** to the phantom line position in FIG. **4** which pivots the forward end of the locking lever **28** into locking engagement with the outer surface of the coupling **14.** Although the present invention has been described in connection with a preferred embodiment, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the invention and the appended claims.

I claim:

1. For a loom having juxtaposed and axially aligned warp yarn beams from which warp yarn is drawn during weaving, an apparatus for positioning and maintaining adjacent yarn beams in axial alignment comprising:

a. a supporting shaft for each yarn beam with a coupling member for interconnecting the ends of said supporting shafts;

b. a bracket member having an integrally formed pocket for reception of said coupling member and for positioning the yarn beams in axial alignment;

c. means defining a locking lever pivotally connected to said bracket member; and

d. Cam means carried by said bracket member and operatively associated with said locking lever having manual means for selectively moving said cam means between positions for supporting and guiding said coupling member into and out of said pocket and for locking said coupling within said pocket.

2. The apparatus according to claim **1** wherein said bracket member includes a locating pin fixed thereon and engageable with said locking lever in its position for supporting and guiding said coupling member to prevent lateral movement thereof.

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