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[54] **LOOM HARNESS MECHANISM**

[75] Inventors: **Stanley C. Tiernan**, Bellingham; **Ronald Berry**, Hopedale, both of Mass.

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

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[51] **Int. Cl.** **D03c 13/00**

[58] **Field of Search** 139/57, 58, 79, 80, 82, 139/91, 92

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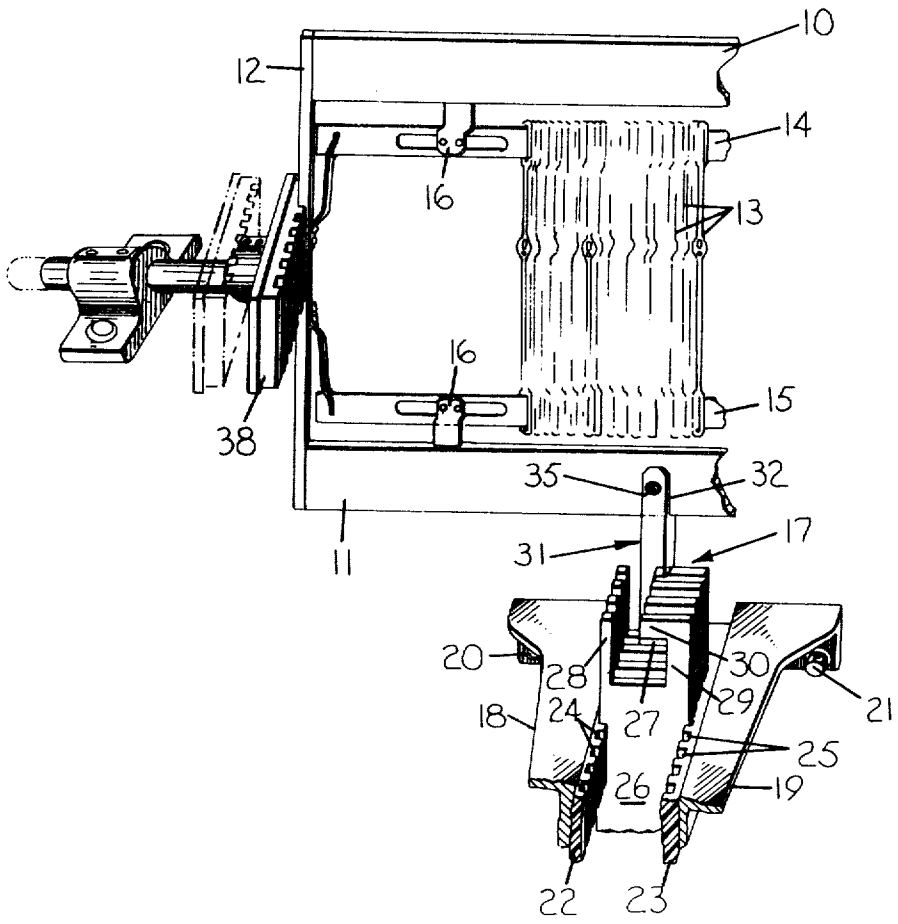
Primary Examiner—James Kee Chi

[57] **ABSTRACT**

An improved drive connection between a loom's harness frames and the shedding motion drive therefor which includes a vertically reciprocal harness shedding drive plate for each harness frame and a linkage member interconnecting each harness frame with its respective drive plate. That portion of each linkage member which communicates with its drive plate is movable between two positions, one of which disconnects a harness frame from the drive, and the other of which locks the connection and transmits the motion of the drive to the harness frames.

4 Claims, 4 Drawing Figures



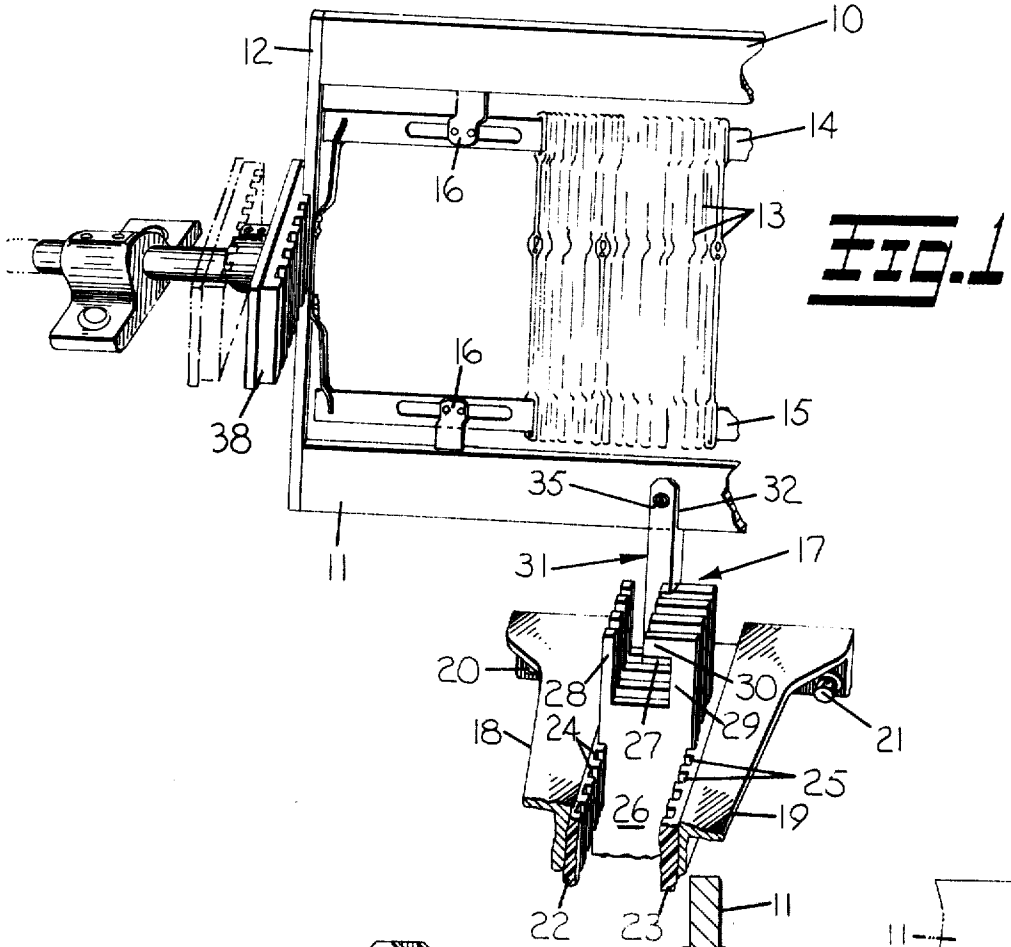


Fig. 1

Fig. 2

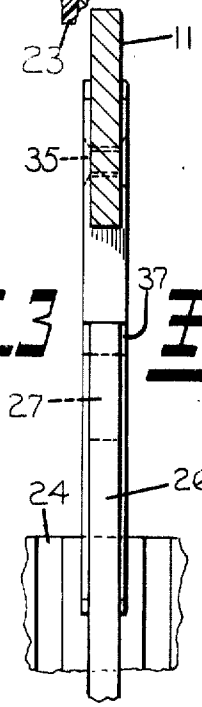


Fig. 3

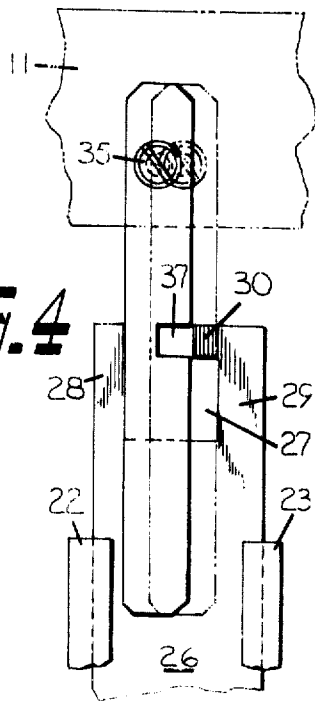


Fig. 4

LOOM HARNESS MECHANISM

BACKGROUND OF THE INVENTION

Looms in which the harness shedding motion is controlled by a drive disposed below the harness frames, a positive drive connection must be provided, such as push rods or the like, between the drive and the individual harness frames. Harness frames are normally assembled in a loom with the warp yarn that is to say, the multiplicity of warp yarn ends have been drawn through their respective heddles carried by the harness frames. This combination when placed in a loom presents problems of interferences and accessibility when attempting to connect each harness frame with the drive means therefor. On wide looms which require a plurality of driving connections between each harness frame and its source of shedding motion drive an excessive amount of time is required to align each harness frame and to make the positive drive connection.

The improved harness drive connection according to the invention simplifies this task by providing connecting linkage members which are pre-assembled to the harness frames and when the latter are placed in a loom said linkage members can be quickly and easily slid into and locked in a position which provides the required driving connection.

SUMMARY OF THE INVENTION

The improved drive connection between a loom's harness frames and the shedding motion drive therefor comprising the invention includes a harness shedding drive plate for each harness frame and a linkage member interconnecting each harness frame with its respective drive plate. The drive plates are disposed and guided for vertical reciprocation by the shedding motion and includes upper end portions which are recessed for receiving the lower end of their respective linkage members. These recesses are generally L-shaped and are formed by spaced side members one of which includes a integrally formed and laterally directed element in the form of a driving tooth which extends toward the opposed end member to a point approximately one half the width of each drive plate.

Each end of the linkage member is bifurcated with the upper end thereof being fixed to the lower portion of the harness frame and the opposite end receivable into the recess of its respective drive plate. Intermediate their ends, the linkage members are provided with a laterally extending recess that communicates with one side thereof to define a drive pocket having an internal configuration conforming to the shape of the driving tooth which extends from one of the side members of the drive plate. The width of the L-shaped recess in the drive plates is greater than the width of the linkage member and with the lower end of the latter assembled therein, it is laterally movable with its respective harness frame from a position in said recess where it is readily removable to a position where the driving tooth meshes with the drive pocket. In this position the dictates of the shedding motion are transmitted to the harness frames. To maintain the linkage members in driving relation with their respective drive plates, an adjustable harness frame guide member carried at the side of the loom is moved and then fixed in a position in close proximity with the sides of the harness frames.

It is an object of the invention to provide an improved drive connection between the loom's harness

frames and the shedding motion therefor which is of simplified construction, inexpensive to manufacture, and which can be easily and quickly connected to or disengaged from the means for effecting the shedding of said harness frames.

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 showing part of a loom's harness frame and the harness mechanism according to the invention connected thereto,

FIG. 2 is a perspective view of the linkage member for interconnecting a harness frame with its respective drive plate,

FIG. 3 is an elevational view partially in section showing the linkage member in its assembled position, and,

FIG. 4 is a view in front elevation of the assembly in FIG. 3 showing by means of full and phantom lines the manner in which the linkage member is moved with its harness frame to and from driving engagement with the drive plate.

Description of the Preferred Embodiment

In the embodiment shown in FIG. 1 only those parts of a loom have been shown which are required for a complete understanding of the invention.

The mechanism for the vertical reciprocation of harness frames to form sheds of warp threads into which weft is inserted in a known manner utilize two or more like sets of driving elements along the length of a harness frame to perform this function. For purpose of brevity only those driving elements associated with the left hand side of a single harness frame as shown in FIG. 1 will be described in detail.

Now referring to FIG. 1, a harness frame is normally comprised of top and bottom rails **10** and **11** tied together at their ends to struts **12** (one only shown) to form a rigid rectangular structure. A plurality of heddles **13** are threaded onto and carried by heddle bars **14** and **15** supported at their ends in the struts **12** and intermediate their ends by hangers **16** at appropriately spaced intervals. Other heddle supporting means are commonly used and that herein shown is merely given by way of illustration.

Referring again to FIG. 1, the elements for transmitting the movement of the loom's shedding motion drive to the harness frames is indicated generally by numeral **17** and includes a pair of spaced support brackets **18** and **19** that are assembled to a part of the loom's framework, not shown, by means of bolts **20** and **21**. Each of these support brackets **18** and **19** has a guide member fixed thereto which are disposed in opposed relation and identified by numerals **22** and **23** respectively. These guide members **22** and **23** are each provided with a plurality of vertically extending grooves **24** and **25** which also being in opposed relation serve as guideways for vertically reciprocal drive plates **26**. Drive plates **26** are operatively connected at their lower ends not shown to the looms shedding motion drive also not shown and are caused during the performance of their intended function to reciprocate within their respective guideways **24** and **25**.

As shown in FIGS. 1 and 4 the upper ends of the drive plates 26 are provided with a generally L-shaped recess 27 which is formed by spaced side members 28 and 29 the latter of which terminates at its upper end in an integrally formed and laterally extending driving tooth 30. This driving tooth extends toward side member 28 to a position approximately one half the width of the drive plate 26 leaving a space adopted for the reception of the means now to be described for interconnecting a drive plate 26 with its respective harness frame.

The means for interconnecting a drive plate 26 with a harness frame includes a linkage member indicated generally by numeral 31 having an upper bifurcated end portion 32 with each branch thereof being provided with an assembly hole which are depicted by numerals 33 and 34 (FIG. 2). Holes 33 and 34 are in alignment one with the other and as shown in FIGS. 1 and 4, the bottom rail 11 of the harness frame assembles within the space formed by the bifurcated end by means of a screw 35 (FIG. 4). To fix the linkage member to the bottom rail 11, screw 35 when assmbled in holes 33 and 34 passes through an aligned hole in said bottom rail. The opposite or lower end of the linkage member is also bifurcated as indicated at 36 in FIG. 2 and as shown in FIGS. 3 and 4 this end of said linkage member assembles in the recess 27 of the drive plate 26 in a manner whereby the branches of the bifurcation extend downwardly on each side of the drive plate and below said recess 27. The linkage member 31 is provided intermediate its ends with a laterally extending recess which communicates with one side thereof to define a drive pocket 37 (FIGS. 2 and 4).

Referring to FIG. 4, the solid line position of the linkage member 31 is its location within the recess 27 of the drive plate 26 in which the drive of the shedding motion is disconnected and said likage member can be separated from the drive plate. The phantom line position of the linkage member 31 in FIG. 4 is that position where it has been shifted to the right with its harness frame to place the drive pocket 37 thereof in mesh with the driving tooth 30 of the drive plate 26. In this position the dictates of the shedding motion drive are transmitted to the harness frame. To maintain the linkage member 31 and its harness frame in this position, an adjustable harness frame guide 38 is moved from the phantom to solid line position shown in FIG. 1 where it is then securely located.

In operation a harness frame is quickly and easily connected to its respective drive plate 26 by simply lowering said harness frame and cause its linkage member 31 to enter the recess 27 in its respective drive plate to a position where the driving tooth 30 of the latter is in alignment with the drive pocket 37 of said linkage member. When in this position, the linkage member with its harness frame is shifted so as to place the driving tooth 30 in mesh with the drive pocket 37 and this driving connection is maintained by moving and fixing the harness frame guide in close proximity with the strut 12 of said harness frame.

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.

We claim:

1. In combination with a loom having a plurality of harness frames with guideways disposed at each side thereof for guiding the harness frames during vertical reciprocation thereof, an improved means for transmitting a loom's shedding motion to the harness frames, comprising:

a. a harness sheding drive plate for each of the harness frames disposed for vertical reciprocation below and in alignment with the harness frame individual thereto;

b. a linkage member disposed in communication with each harness frame and drive plate which includes;

i. an elongated body portion having a first end attached to the lower exterior surface of a harness frame:

ii. a second end interconnecting and removably associated with its respective drive plate; and

iii. means for placing said linkage member into driving engagement with its drive plate for transmitting the motion of the latter to its respective harness frame.

2. The improved means for transmitting a loom's shedding motion to the harness frames according to claim 1 wherein said harness shedding drive plate includes spaced upper side members for reception of the second end of said linkage member therebetween.

3. The improved means for transmitting a loom's shedding motion to the harness frames according to claim 2 wherein one of said spaced upper side members includes an integrally formed and horizontally disposed driving tooth extending to a position midway between said side members and defines an unrestricted area for removal of the second end of said linkage member therefrom.

4. The improved means for transmitting a loom's shedding motion to the harness frames according to claim 3 wherein said means for placing said linkage member into drawing engagement with its drive plate includes a drive pocket intermediate the ends of said linkage member which is movable with its harness frame within the limits of said side members to move said drive pocket into meshing relation with said driving tooth.

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