Oct. 4, 1949. R. G. TURNER 2,483,857

HARNESS FRAME FOR LOOMS

Original Filed March 1, 1946

Fig. 1

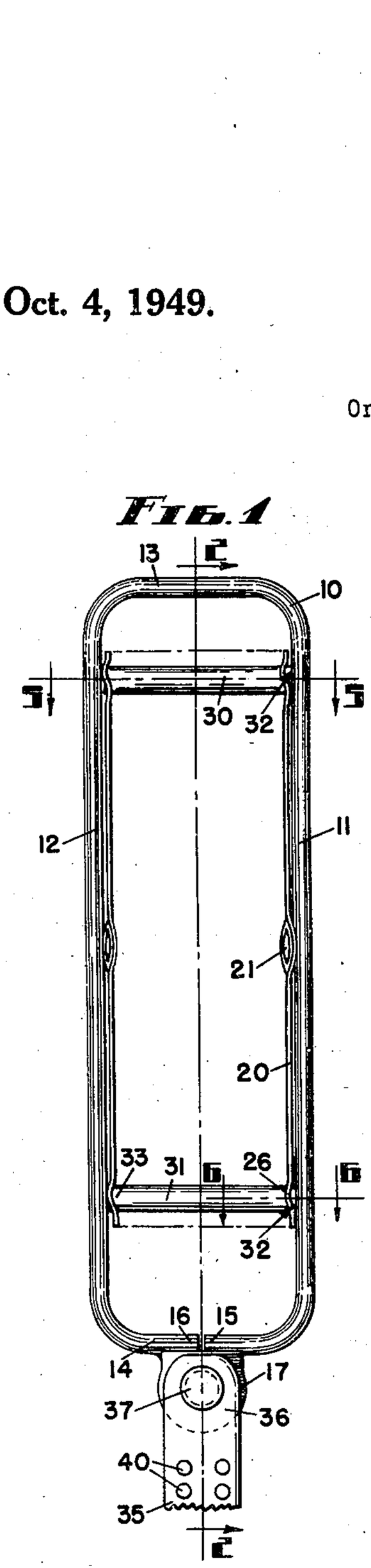


Fig. 2

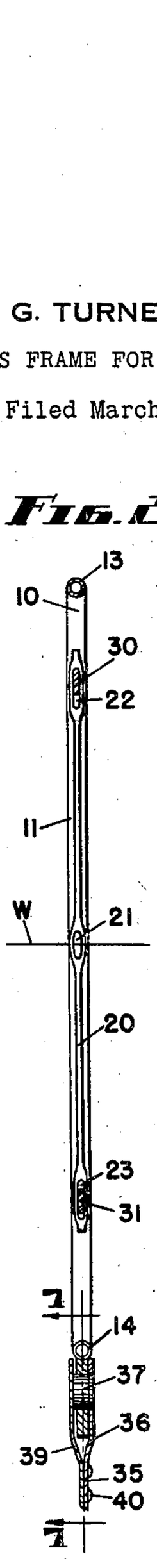


Fig. 3

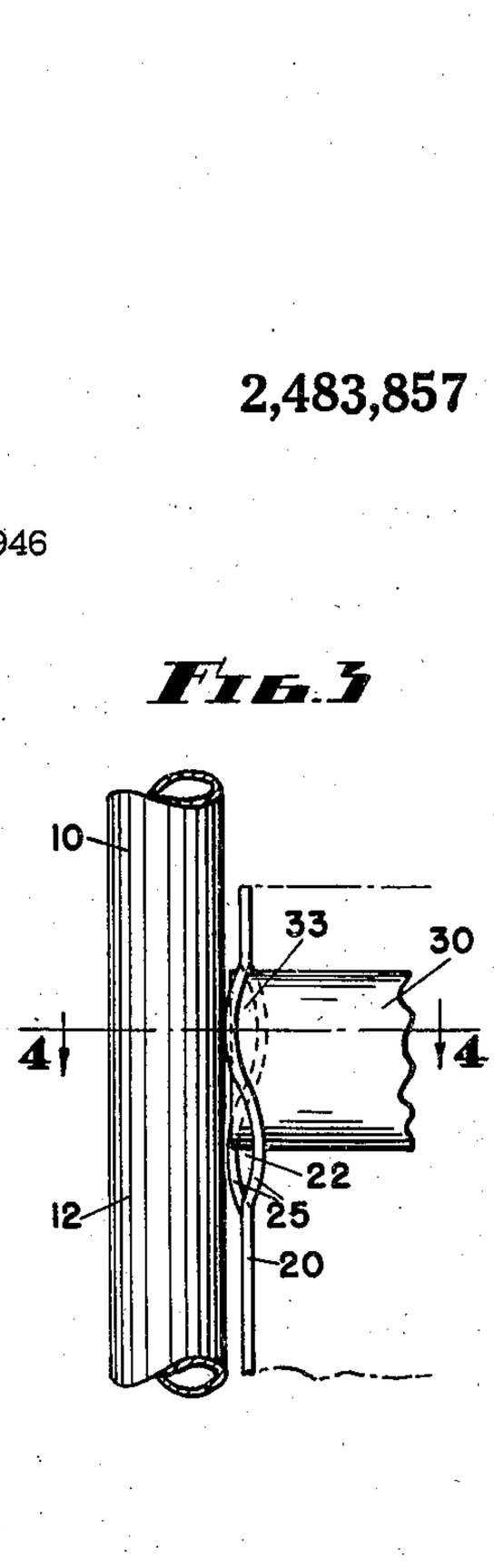


Fig. 4

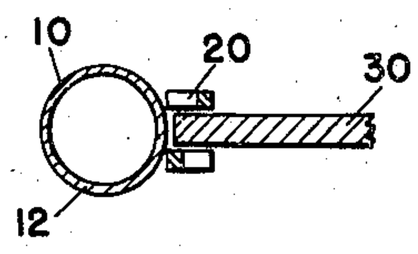


Fig. 5

Fig. 6

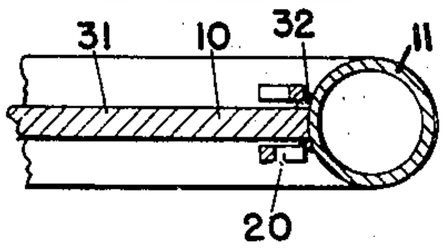


Fig. 7

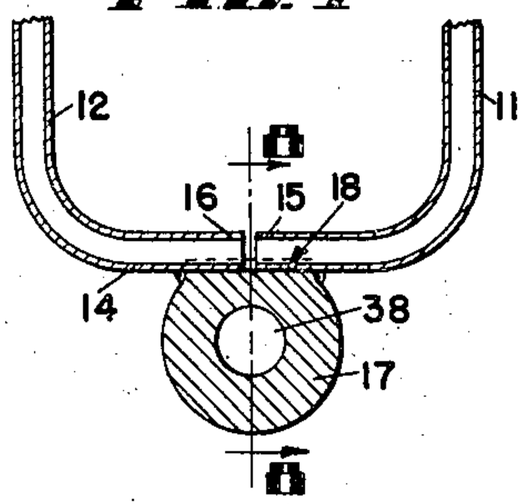
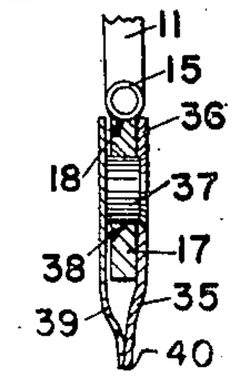


Fig. 8



INVENTOR
RICHARD G. TURNER

Chas. T. Hawley

ATTORNEY

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HARNESS FRAME FOR LOOMS

Richard G. Turner, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts

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3 Claims. (Cl. 139—92)

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This is a division of my copending application Serial No. 651,073, filed March 1, 1946, now abandoned.

This invention relates to improvements in harness frames for looms and it is the general object of the invention to provide a strong lightweight harness frame of simple construction.

Loom harness frames customarily employ top and bottom heddle bars which are connected to both side bars of the harness frames. Because of this construction it is necessary to disconnect at least one side of the heddle bars to fit them with the warp heddles. It is an important object of my present invention to provide a harness frame with resilient heddle bars which are free at one end so that they may be sprung slightly when heddles are being fitted to or strung along them.

It is another object of my present invention to provide a harness frame made with continuous side, top and bottom elements and having the bottom element welded or soldered to a bearing by which the harness frame can be reciprocated.

A further object of the invention is to provide an improved detachable connection between the aforesaid bearing and a driving link.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawings, wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a front elevation of a harness frame made according to my present invention,

Fig. 2 is a vertical section on line 2—2 of Fig. 1,

Fig. 3 is an enlarged front elevation of the upper left hand part of Fig. 1,

Fig. 4 is a horizontal section on line 4—4 of Fig. 3,

Fig. 5 is a horizontal section on line 5—5 of Fig. 1,

Fig. 6 is an enlarged horizontal section on line 6—6 of Fig. 1,

Fig. 7 is an enlarged vertical section on line 7—7, Fig. 2, the link being omitted, and

Fig. 8 is a vertical section on line 8—8, Fig. 7.

The harness frame forming the subject matter of my present invention is intended for use more particularly on narrow unit type looms which weave a single tape or the like. Such looms have narrow warps and ordinarily run at high speeds. The harness frames are only a few inches wide and generally move vertically in guides not shown fixed to some part of the loom, and power is applied either to the top or the bottom of the frames to cause vertical reciprocation thereof in the shed forming operations of the loom.

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Referring more particularly to Figs. 1 and 2, the harness frame forming the subject matter of this invention may include a continuous outer frame or member 10 having right and left side bars or elements 11 and 12 which are integral with top and bottom cross bars or elements 13 and 14, respectively. The frame 10 is preferably made of a length of tubular metal the ends of which are indicated at 15 and 16. A bearing 17, see Figs. 7 and 8, has a concave groove 18 into which the ends 15 and 16 fit and the latter are secured, as by silver solder, or otherwise, to the bearing. The latter therefore aligns the ends 15 and 16 and unites them to form the bottom bar element 14.

The harness frame is provided with a plurality of heddles 20 having warp eyes 21 and having upper and lower heddle bar slots 22 and 23, respectively. The sides of the top slots 22 may be bent in opposite directions as indicated at 25 in Fig. 3, and the sides of the bottom slots 23 may also be bent as indicated at 26. These bends at the ends of the heddles are of the customary form and are for the purpose of preventing the heddle eyes from getting too close to each other for proper relationship between the heddles and warp threads, one of which is indicated at W in Fig. 2.

The heddles are mounted on top and bottom parallel heddle bars 30 and 31 which extend respectively through the slots 22 and 23 and between side bars 11 and 12. These heddle bars as shown in Fig. 1 have their right ends 32 rigidly connected to the right side bar element 11, but their left ends 33 are free and terminate close to the left side bar element 12. The heddle bars are made of sheet metal and possess sufficient resilience to permit a limited amount of deflection without taking a permanent set, and derive their entire support from side element 11.

During manufacture of the harness frame the right ends of the heddle bars 30 and 31 are held firmly against the bar 11 and attached to the latter as by silver solder. I do not wish to be limited to this particular method of attaching the heddle bars to the side element 11 but have found in practice that it is quite satisfactory. After the heddle bars have been attached as described they lie preferably within the outline of the closed hollow harness frame. The free or left ends 33 of the heddle bars can then be sprung or deflected from the full line to the dotted line position as indicated in Fig. 5 for fitting of the required

number of heddles **20**. Because of its resilience each heddle bar springs back to its normal position when released after stringing of the heddles. The heddle bars are of sufficient width so that they have a substantial amount of attachment to the side bar or element **11** and can withstand the tension of the warp threads when the harness frame moves to form top or bottom sheds in the loom.

As shown in Figs. 1, 2 and 8 the bearing **17** is connected to a link **35** having a relatively thick side sheet metal member **36** to which is welded a stud **37** fitting into a hole **38** in bearing **17**. The other side of link **35** is made with a thin retaining sheet metal spring member **39** extending along the bearing **17** and acting to hold stud **37** in a hole **38**. The members **36** and **39** are riveted together as at **40**. By springing member **39** away from bearing **17** the stud can be removed if desired.

From the foregoing it will be seen that I have provided a simple form of harness frame in which the heddle bars are securely attached to one of the side elements of the harness frame member **10** but are free at their opposite ends to be sprung slightly for the stringing thereon of heddles. It will also be noted with respect to Fig. 3 that the bends at the opposite sides of the slot **22** prevent entry of the upper part of the heddle into the narrow space between the left side bar **12** and the adjacent free end **33** of the heddle bar **30**. It will be understood that similar conditions exist with respect to the lower heddle bar **31** and those parts of the heddle at opposite sides of slot **23**. Also, the bearing **17** aligns the end parts **15** and **16** and forms them into the bottom bar or element **14**. Furthermore, the spring member **39** permits ready fitting of stud **37** into the hole **38** and removal therefrom. The harness frame proper, comprising the side and top and bottom member and bearing is not claimed herein but is claimed in the parent application of which this is a division.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a loom harness, a closed hollow metallic frame having spaced vertical side elements, and a resilient metallic heddle bar permanently and rigidly connected at one end thereof to one of said elements on a part thereof facing the other side element and extending toward a part of the other side element facing said one element and having a free end adjacent to said other element, said heddle bar being located entirely within the hollow metallic frame and supported entirely from said one side element, said free end being normally positioned to prevent the stringing of heddles on the heddle bar, and said free end due to the resilience of the heddle bar being deflectable from a normal position thereof to permit the stringing of heddles thereon.

2. In a loom harness, a flat metallic frame having spaced side elements, a resilient metallic heddle bar having one end thereof permanently connected to one of said elements and having the other end thereof terminating at a point adjacent to the other element and defining a narrow space between said other element and the other end of said heddle bar, and a heddle on said heddle bar adjacent to said other element and having a part thereof bent laterally for engagement with said other element for the purpose of spacing the heddle from said narrow space, said heddle bar normally lying in the plane of the frame, and said other end of the heddle bar being deflectable out of the plane of the frame to permit the stringing of heddles on said heddle bar.

3. In a loom harness a frame made of metallic tubing circular in transverse section and having spaced side elements a metallic resilient heddle bar one end of which is securely fastened to one of said elements and the other end of which is free and extends toward but terminates adjacent to the other element, and a heddle on said heddle bar adjacent to said other side element having parts thereof bent laterally to engage said other side element to space the heddle therefrom, said other end of the heddle bar being normally positioned to prevent application of a heddle to the heddle bar or removal of a heddle from the heddle bar, and said other end due to the resilience of the heddle bar being deflectable from the normal position thereof to permit the stringing of a heddle on said heddle bar and removal of a heddle from said heddle bar by movement of part of the heddle between the rounded part of said other element and said other end of the heddle bar.

RICHARD G. TURNER.

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