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2,406,435

WARP BEAM WITH WARP HOLDING MEANS

Filed June 30, 1945

FIG-1-

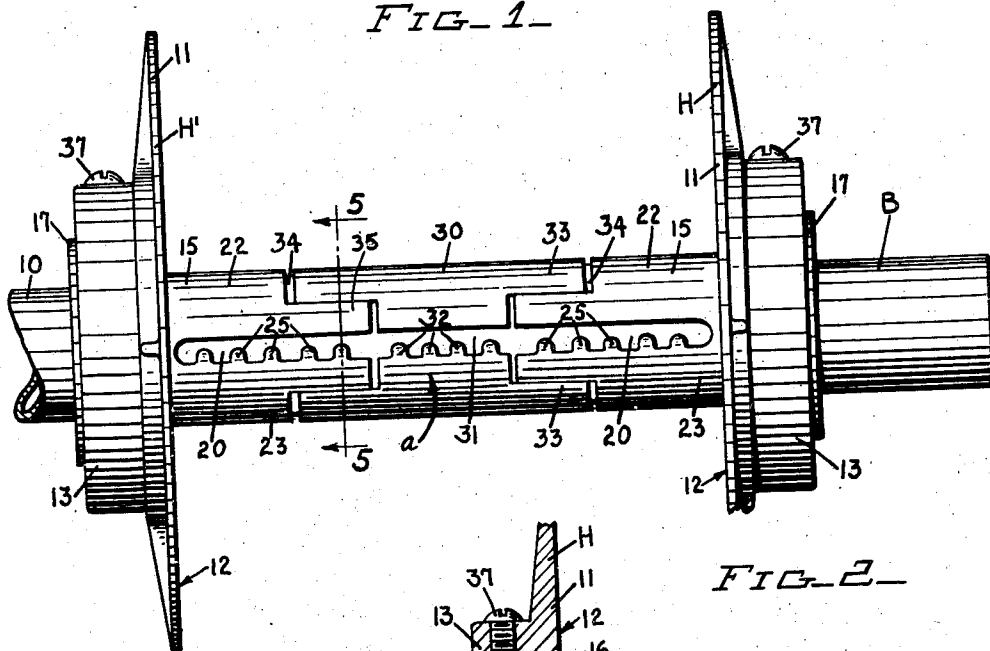


FIG-2-

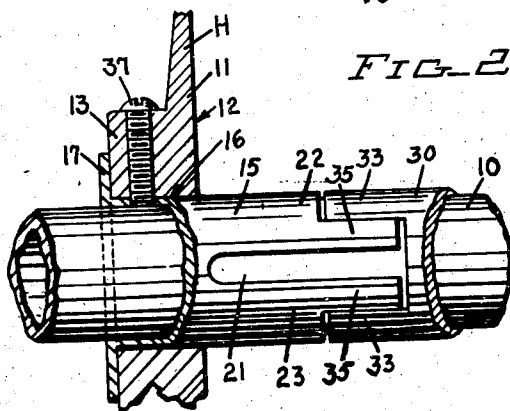


FIG-3-

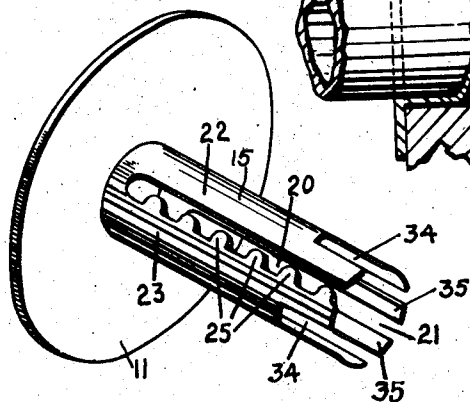


FIG-4-

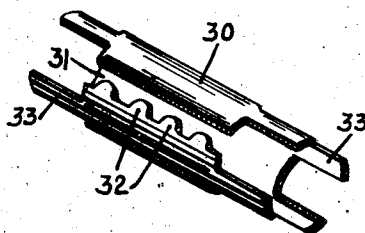
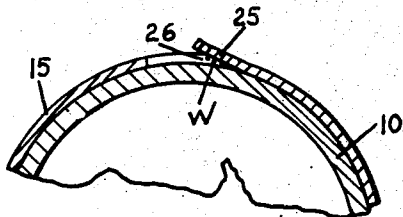


FIG-5-



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WARP BEAM WITH WARP HOLDING MEANS

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7 Claims. (Cl. 242-124)

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This invention relates to improvements in warp beams and it is the general object of the invention to provide means associated with improved warp head clamp means to hold the warp ends on the beam.

In my co-pending application Serial No. 582,551, filed March 13, 1945, I have set forth a beam so constructed that the pressure of the warp threads forces a sleeve or the like against the beam barrel to prevent longitudinal slippage. The warp head is connected to the sleeve and is thus held in position on the beam barrel by the very forces which tend to move the head along the barrel. Preparatory to the warp winding operation it is customary to attach the warp threads to the beam so that rotation of the beam will draw the warp threads from a creel. It is an important object of my present invention to construct the aforesaid sleeve with warp holding lips or projections which hold the warp threads at the start of the winding operation.

In order that the sleeve may be compressible or deformable for the purpose of being forced against the beam barrel it is made with at least one longitudinal slot and it is another object of my invention to have the warp holding lips or projections extend from the sleeve into the slot, thereby permitting the warp threads to be held between the lips and the beam barrel. The inward force exerted by the warp threads tends to bend the lips toward the barrel to insure tight holding of the warp ends.

Where the sleeve is made of a metal having an appreciable thickness it may be desirable to use a shell surrounding the barrel and extending between the warp heads. It is a further object of my invention to construct this shell with a longitudinal slot into which warp holding lips or projections extend. In order that the lips on the sleeves and the shell may be aligned it is a further object of the invention to provide the shell and sleeves with overlapping parts which prevent substantial relative angular movement around the beam barrel. Even in those instances where the sleeves are made of thin sheet metal it would still be desirable to have holding lips or the like for the intermediate part of the beam and the aforesaid shell is therefore not limited to use with sleeves having thick walls.

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 drawing, wherein a convenient embodiment of my invention is set forth,

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Fig. 1 is a front elevation of a warp beam made according to my present invention,

Fig. 2 is a detail rear elevation of the right hand part of the structure shown in Fig. 1, certain parts being in section to illustrate the manner in which the sleeve and warp head are connected to each other,

Fig. 3 is a perspective view of a beam head and its sleeve,

Fig. 4 is a perspective view showing the intermediate shell, and

Fig. 5 is a fragmentary enlarged transverse section on line 5-5 Fig. 1 showing the manner in which the holding lips or projections catch the warp threads.

Referring to Fig. 1, the beam designated generally at B has a cylindrical barrel 10 extending throughout the length thereof. Right and left beam heads H and H' are mounted on the barrel in such manner that they can be adjusted therealong to vary the width of the warp space between them. The warp heads and parts attached thereto are similar and a description for one of them will suffice for both.

The head H is formed with a flange 11 having a warp engaging surface 12 and a hub 13. A sleeve 15 made of thin sheet metal surrounds and closely fits the barrel 10 and passes through the bore 16 of the hub 13. The outer end of the sleeve is turned up to form a flange 17 which can be secured in any approved manner to the hub 13. The sleeve may be driven into the bore in the hub so that the latter and the sleeve are in effect united.

The sleeve has front and back longitudinal slots 20 and 21, respectively, which define upper and lower sections 22 and 23, respectively, extending along the barrel and compressible by reason of the slots against the barrel by the pressure of the warp wound on the beam. As shown more clearly in Figs. 1 and 3 a series of lips or projections 25 are integral with the section 23 and extend into and part way across the slot 20. As shown in Fig. 5 these lips are spaced slightly from the barrel to define a notch 26 into which the warp threads W may be held. The sleeve sections and lips are somewhat resilient and can be pressed toward the barrel 10 by the warp threads.

Extending along the barrel between the sleeves 15 is an intermediate shell 30 which in the present instance may be formed with a single slot 31 into which extend lips 32 similar to lips 25. The shell 30 has end teeth 33 which enter notches 34 in the sleeves to prevent substantial relative angular movement of the sleeves and shell around the

barrel. In this way the slot 31 is kept in alignment with the slots 20. As shown in Fig. 2 the inner free ends of the back of the sleeve sections 22 and 23 are formed as teeth 35 and lie between the teeth 33 on the adjacent end of the shell. The shell therefore does not interfere with the contraction of the sections 22 and 23.

Preparatory to the winding operation the heads H and H' will be moved approximately to their required positions to define the width of the warp space and can be held in these positions by small set screws 37. These set screws are not intended to withstand very much if any of the lateral pressure of the warp but are merely for the purpose of holding the heads in adjusted position. After the warp threads have been caught under the lips 25 and 32 the beam is set in rotation in the direction indicated by arrow a, Fig. 1 and the warp threads are drawn from the creel and wrapped around the sleeves and the shell. The warp threads exert a considerable inward force which not only compresses the sections 22 and 23 against the warp barrel 10 but also tend to bend the lips inwardly toward the barrel center for the purpose of holding the warp ends tightly. The shell itself will be subjected to some compression incidental to the winding operation. As the depth of the warp threads increases they exert increasingly high end forces on the warp heads H and H' tending to move them toward the ends of the barrel. The inward pressure of the warp threads is sufficient to overcome this end force, however, and the heads are held tightly in position in the manner set forth in the aforesaid co-pending application.

From the foregoing it will be seen that I have provided simple means by which warp threads may be attached to holding lips or projections formed on compressible sleeves which are associated with or connected to the warp heads. The lips 25 and 32 extend into their respective slots 20 and 31 and are forced into warp end holding position by the pressure of the warp. The teeth 33 and notches 34 prevent relative angular movement of the sleeves and shell, thereby aligning the lips on both the sleeves and shell.

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 warp beam having a barrel and a warp head, a sleeve connected to the barrel and extending along the barrel and having a longitudinal slot permitting the sleeve to be forced into holding relation with the barrel by the warp threads to prevent slipping of the head along the barrel, and warp holding means extending from the sleeve into said slot.

2. In a warp beam having a barrel and a warp head, a sleeve connected to the barrel and ex-

tending along the barrel and having a longitudinal slot permitting the sleeve to be forced into holding relation with the barrel by the warp threads to prevent slipping of the head along the barrel, and warp holding lips integral with the sleeve and extending into said slot.

3. In a warp beam having a barrel and a warp head, a sleeve connected to the barrel and extending along the barrel and having a longitudinal slot permitting the sleeve to be forced into holding relation with the barrel by the warp threads to prevent slipping of the head along the barrel, and warp holding projections carried by the sleeve and extending from one side of said slot into the latter.

4. In a warp beam having a barrel and a warp head, a sleeve formed of resilient material connected to the barrel and extending along the barrel and having a longitudinal slot permitting the sleeve to be forced into holding relation with the barrel by the warp threads to prevent slipping of the head along the barrel, and warp holding lips integral with said sleeve extending into said slot and being bendable toward said barrel by the pressure of the warp.

5. In a warp beam having a barrel and a warp head, a sleeve connected to the barrel and extending along the barrel and having a longitudinal slot permitting the sleeve to be forced into holding relation with the barrel by the warp threads to prevent slipping of the head along the barrel, and warp holding lips integral with the sleeve extending into said slot and normally spaced from said barrel to provide notches for the reception of warp threads between the barrel and lips.

6. In a warp beam having a barrel and two spaced warp heads thereon, a sleeve on each warp head extending along the barrel toward the other warp head, a shell surrounding the barrel and located between and interlocked with said sleeves, said sleeves and shell having substantially aligned longitudinal slots, and warp holding lips on said sleeves and shell extending into the slots in said shells and sleeve, respectively.

7. In a warp beam having a barrel and two spaced warp heads thereon, a sleeve on each warp head extending along the barrel toward the other warp head, a shell surrounding said barrel and extending between said sleeves, interengaging teeth and slots on said sleeves and shell to prevent substantial relative angular movement of the sleeves and shell around said barrel, said sleeves and shell having substantially aligned longitudinal slots to permit the pressure of the warp wound on the sleeves to force the latter into holding relation with respect to the barrel, and warp holding lips on said sleeves and shell extending into the slots of said sleeves and shell, respectively.

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