June 2, 1931. C. D. BROWN 1,807,582

WARP BEAM

Filed Oct. 12, 1928

Fig. 1.

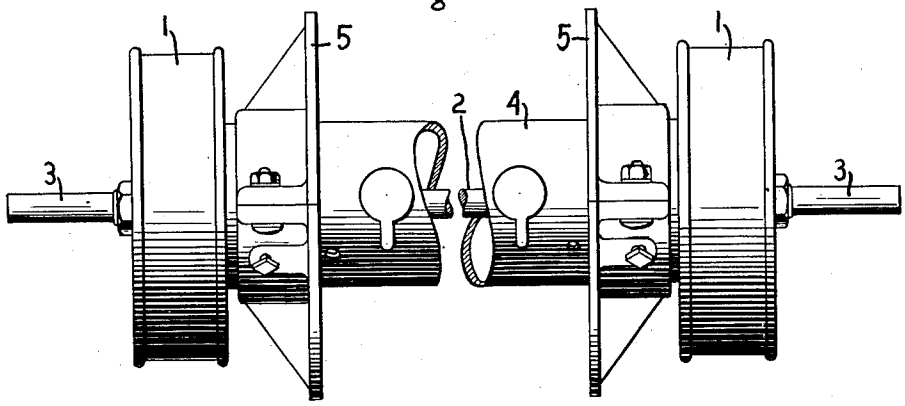


Fig. 2.

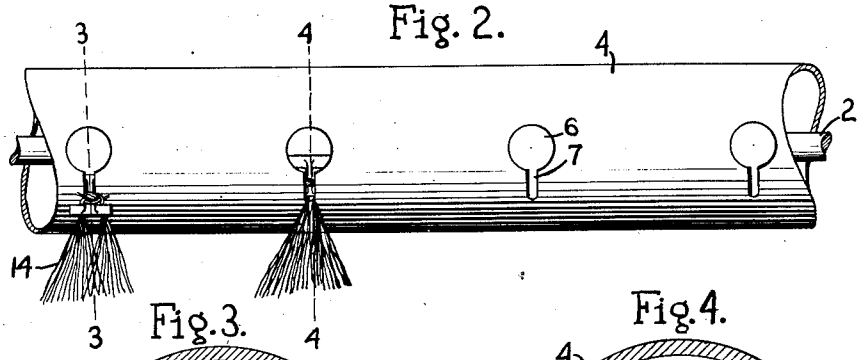


Fig. 3.

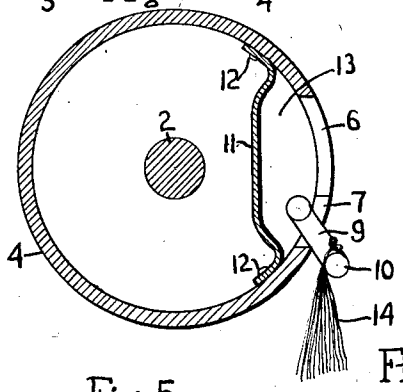


Fig. 4.

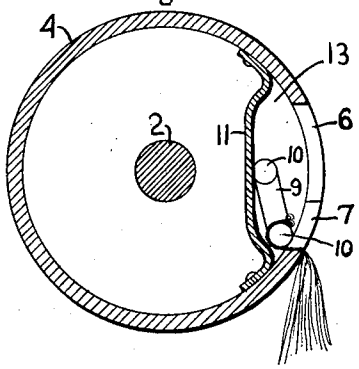


Fig. 5.

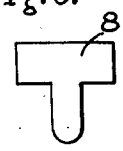
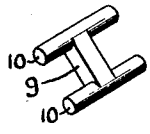


Fig. 6.



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UNITED STATES PATENT OFFICE

CARL D. BROWN, OF HOPEDALE, MASSACHUSETTS

WARP BEAM

Application filed October 12, 1928. Serial No. 312,045.

This invention relates to warp beams for looms and has for its principal object to provide a simple and efficient means for securing the warp ends thereto so that the warp ends may be readily secured under substantially equal tension and may be wound smoothly and evenly upon the warp beam under substantially equal tension.

Before a sheet of warps can be wound upon the warp beam, the warp ends must be secured thereto and as there are a very large number of warps, it is common practice to attach the warp ends in groups to the warp beam. But as the sheet of warps as the warps are wound upon the beam must lie smoothly and evenly on the beam barrel, it is important that the attaching means shall not remain on the outside of the barrel periphery for the warps to be wound thereover. It is also important that the warps as they are wound upon the beam shall be under substantially equal tension. The present invention provides for securing these necessary results in a practical, expeditious and simple manner.

The invention is particularly useful in that type of warp beam having a hollow cylindrical metal barrel but in its broader aspects is applicable to any type of warp beam.

The nature and objects of the invention will appear more fully from the accompanying description and drawings and will be particularly pointed out in the claims.

The drawings illustrate an all-metal type of warp beam having a hollow cylindrical barrel and embodying a simple and preferred form of the invention.

In the drawings:

Fig. 1 is a side elevation partially broken away of the warp beam.

Fig. 2 is a side elevation of a section of the beam barrel showing one group of warp ends secured thereto in the first position and another group of ends secured thereto in the final position.

Fig. 3 is a view on a larger scale in transverse cross section taken on the line 3—3 of Fig. 2.

Fig. 4 is a similar view taken on the line 4—4 of Fig. 2.

Fig. 5 is a detail illustrating a second form of keyhole slot.

Fig. 6 is a perspective view of one of the warp anchors shown in Figs. 2, 3 and 4.

The warp beam which may be of any suitable form is herein shown as comprising suitable heads 1, a central shaft 2 with the gudgeons 3, a hollow cylindrical metal barrel 4 and false heads 5 adjustable longitudinally of the barrel in accordance with the width of the warp sheet to be wound thereon.

In the specific construction illustrated as a preferred embodiment of the invention, the barrel 4 is provided with a longitudinal series of keyhole slots, each of which extends circumferentially of the barrel. In the form illustrated, each of these keyhole slots comprises a generally circular larger end 6 and a generally narrow and straight smaller end 7 but the particular shape of these slots may be varied as desired and there is shown in Fig. 5 another form in which the larger end of the slot 8 is rectangular.

Cooperating with these keyhole slots, in the preferred form of the invention illustrated, is a series of warp anchors, one for each slot. One of these anchors is shown separately in Fig. 6 and is of general I-shape comprising the central stem 9 and the cylindrical heads 10. These anchors are of such a size that the stem 9 is insertable into the smaller end, as 7, of the keyhole slots, while the head 10 at each end of the stem is larger than the smaller end 7 of the keyhole slot but is insertable into the larger end 6.

The space in the barrel at the rear of the row of keyhole slots or apertures presents a pocket extending longitudinally of the barrel in the rear of the section of the barrel wall in which the keyhole slots are located and preferably instead of allowing the entire central space of the barrel to form this pocket, a wall member 11 shown as a metal plate is secured by rivets 12 or otherwise to the barrel at the interior and at the rear of the wall section in which the keyhole slots are located so as to form a smaller pocket 13 which will retain the warp anchors when they are unattached to the warp ends and prevent their getting out of reach. It will

thus be seen that so far as the cooperating keyhole slot and warp anchor feature is concerned, it is only necessary that the barrel shall present a thin wall section extending longitudinally in which the keyhole slots are formed and a pocket in the rear of the wall section and extending longitudinally thereof.

In attaching the warp ends to the barrel, the operator first places the warp anchors in the keyhole slots in the position shown at the left of Fig. 2 and in Fig. 3 with one head of the warp anchor inside the barrel, with the stem in the smaller end of the keyhole slot and with the other head projecting exteriorly of the barrel periphery. With the warp anchors in this position, the operator may then tie successively to each warp anchor in the series a group of warp ends as 14. As the warp anchor in this position is unyieldingly secured to or interlocked with the barrel, the operator may pull the warps up snugly over the head of the warp anchor outside of the barrel and tie the warp ends in place and he may readily do this to each group of ends and each warp anchor. Thus the ends may be tied under substantially equal tension and the act of tying one group of warp ends to one warp anchor interferes in no way with any other group of warp ends, the tension thereon or the tying thereof to its warp anchor. The warp anchors stand in this position readily accessible to the tying operation and any group may be re-tied or rearranged at any time as desired.

After the entire sheet of warps has thus been connected to the protruding ends of the warp anchors with the warp anchors in turn interlocked with and connected to the barrel, the operator then shifts each warp anchor to place it entirely within the barrel periphery, inserting the protruding head of the warp anchor to which the warp ends are tied through the larger end of the keyhole slot and dropping it into the position illustrated toward the right of Fig. 2 and in Fig. 4, leaving the warps extending out through the smaller end of the keyhole slot and with the anchors entirely inside the barrel periphery. Since the warps have been tied under substantially equal tension, they will, when in this final position, again be under substantially equal tension and the conditions of tension in one group of warp ends will in no wise be effected by that in any other.

When now the beam is rotated and the warps wound thereon, they will lie smoothly and evenly on the beam barrel.

When the warps are to be removed after the sheet of warps has been used up on the barrel, the anchors are readily slipped out through the keyhole slots and the warp ends readily detached therefrom.

It will thus be seen that the invention provides anchoring means for connecting the warp ends unyieldingly to the warp beam barrel at points exteriorly of the barrel in groups without the tension on the warp ends in any group affecting that of the warp ends in another group and that the anchoring means is shiftable to bring the connected ends of the warps within the barrel periphery again connecting them to the barrel, each group being entirely independent of every other group.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A warp beam comprising a cylindrical barrel having a thin wall section extending longitudinally thereof, a pocket in the rear of said wall section and a longitudinal series of circumferentially extending keyhole slots in said wall section opening into said pocket and a warp anchor for each slot having a stem insertable into the smaller end of the slot and a head at each end of the stem larger than the smaller end of the slot but insertable into the larger end of the slot whereby each anchor may be interlocked with the barrel with one head projecting outside of the barrel periphery to enable a group of warp ends readily to be tied thereto and may then with the attached warp ends be placed entirely within the said pocket with the warp ends extending out through the smaller end of the keyhole slot.

2. A warp beam comprising a cylindrical barrel, a plurality of warp anchors, and means for interlocking the anchors and barrel either with the anchors entirely inside the barrel periphery or with the anchors projecting outside the barrel periphery, the projecting portions of the anchors when in the latter position providing means to which the warp ends may be secured in groups and therethrough to the barrel under substantially equal tension whereby when the anchors are thereafter transferred to the former position, the warps may be wound smoothly on the barrel under substantially equal tension.

3. A warp beam comprising a cylindrical hollow metal barrel having a longitudinal series of circumferentially extending keyhole slots, an I-shaped warp anchor for each slot, the stem of which is insertable into the smaller end of the slot and the heads of which are larger than the smaller end of the slot but are insertable into the larger end of the slot whereby when the anchors are engaged with their respective slots with one head projecting outside the barrel periphery, the warp ends may be secured thereto in groups under substantially equal tension and whereby the warp anchors may thereafter be shifted to insert both heads inside the barrel periphery thus to lock the warp ends to the barrel and enable the warps to be wound smoothly on the barrel under substantially equal tension.

4. A warp beam comprising a cylindrical barrel and anchoring means for connecting

the warp ends in groups to the barrel exteriorly thereof and shiftable to bring the points of connection between the warp ends and the anchoring means from the exterior to the inside of the barrel periphery without the tension on any group of warp ends affecting that on any other group of warp ends.

5. A warp beam comprising a cylindrical barrel having a thin wall section extending longitudinally thereof and a pocket in the rear of the wall section and a series of unitary warp anchoring means detachably connectable to the barrel in two positions and to which the warp ends may be secured in groups externally of the barrel under substantially equal tension with the said anchoring means connected to the barrel, the said warp anchoring means being thereafter transferable into the said pocket.

6. A warp beam comprising a cylindrical barrel having a thin wall section extending longitudinally thereof and a pocket in the rear of the wall section, a series of warp anchors, and means for interlocking the warp anchors and barrel against relative movement due to tension on the warps either with the anchors entirely in said pocket or with the anchors projecting from said pocket outward of the barrel periphery, the projecting portions of said anchors when in the latter position providing means to which the warp ends are secured in groups.

7. A warp means comprising a cylindrical hollow metal barrel having a longitudinal series of apertures therethrough and anchoring means shiftable to cooperate with said apertures in two different positions and acting when in one position unyieldingly to connect the warp ends in groups to the barrel exteriorly thereof and acting when in the other position to connect the said groups of warps to the barrel within the barrel periphery.

8. A warp beam comprising a cylindrical hollow metal barrel having a longitudinal series of apertures therethrough and a plurality of warp anchors bodily shiftable to cooperate with said apertures and unyieldingly engageable with the barrel in either of two positions and each adapted to have tied thereto a group of warp ends, the point of connection between each warp anchor and its group of warp ends lying outside the barrel periphery when the anchor is in one of the two positions and lying inside when the anchor is in the other position.

In testimony whereof, I have signed my name to this specification.

CARL D. BROWN.

CERTIFICATE OF CORRECTION.

Patent No. 1,807,582. Granted June 2, 1931, to

CARL D. BROWN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, line 33, claim 7, for the word "means" read beam; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 7th day of July, A. D. 1931.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)