

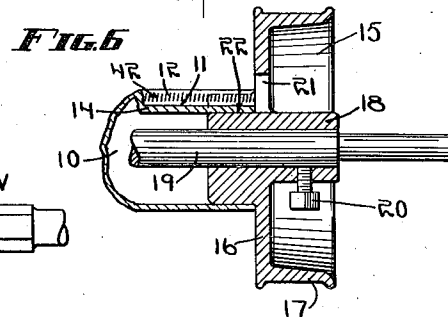
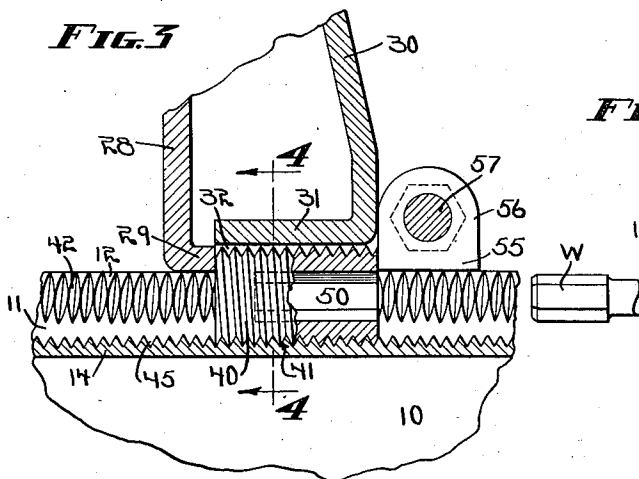
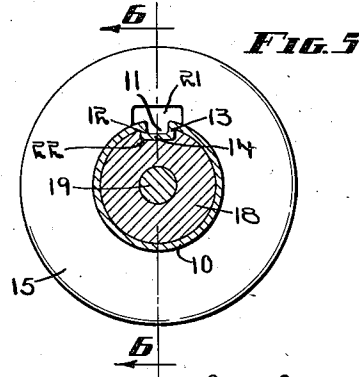
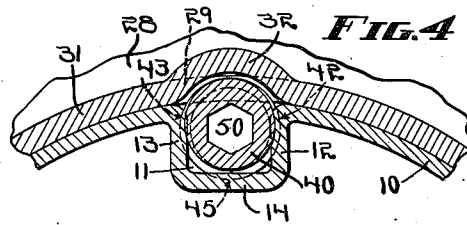
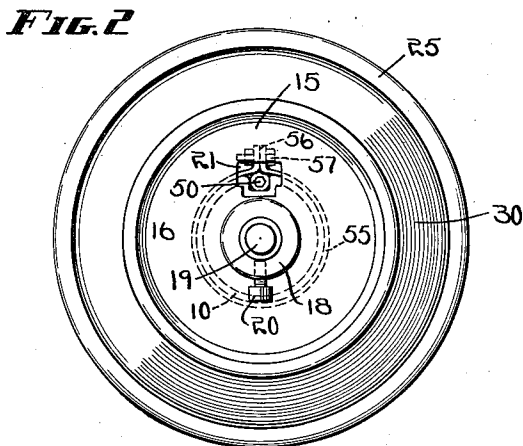
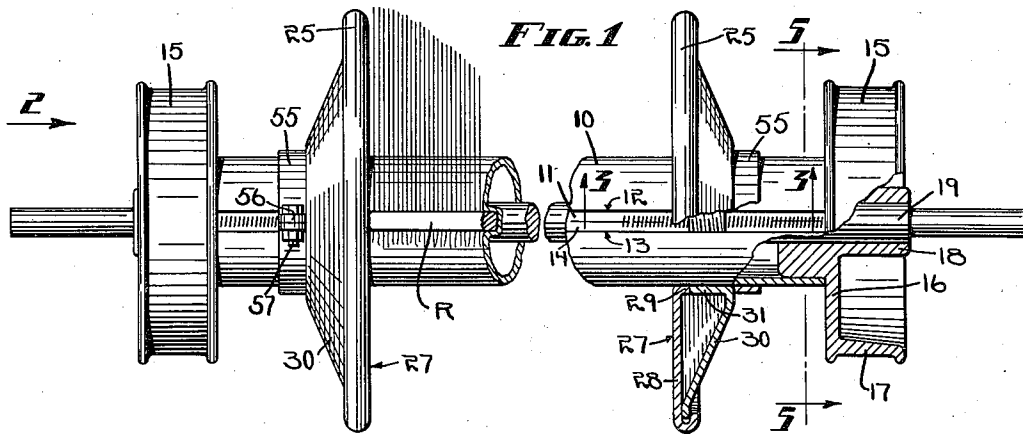
Dec. 31, 1935.

E. R. HOLMES

2,025,865

WARP BEAM

Filed Dec. 24, 1934



Inventor
Elbridge R. Holmes

Vanthorne & Fay & Hawley
Attorneys

UNITED STATES PATENT OFFICE

2,025,865

WARP BEAM

Elbridge R. Holmes, Worcester, Mass., assignor to
Crompton & Knowles Loom Works, Worcester,
Mass., a corporation of Massachusetts

Application December 24, 1934, Serial No. 758,883

11 Claims. (Cl. 242—124)

This invention relates to improvements in warp beams and it is the general object of the invention to provide means for adjusting the warp confining heads in such a way as to leave smooth and unroughened that part of the beam barrel on which the warp is wound.

The warp threads in a loom are wound on a warp beam and as the loom runs the beam turns either positively or against friction to feed the warp forwardly to the fabric. The loom will ordinarily be required to weave fabrics of varying widths and there is a corresponding necessity for changing the width of the yarn wound on the warp beam. In order to accomplish this result, especially with finer yarns, it has been customary to employ inside heads which slide along the barrel beam to be adjusted accurately to define a warp space of correct width. It has been common practice to effect this adjustment by means of screw threads cut on the beam barrel to receive corresponding threads cut in the bore or bearing of the inside head. Under this practice, when the space between the warp heads is a minimum the first layers of warp are wound on a smooth surface uninterrupted by the screw threads, but when a greater width is required the warp threads near the inside heads are necessarily wound upon the screw threads and are mutilated or discolored.

In order to start the winding operation it is usual to lay the warp threads over the barrel and then drive a retaining rod or bar into a groove formed in the barrel, carrying the threads down into the groove and clamping them in position. It is an important object of my present invention to provide a screw thread adjustment for the adjustable inside heads which shall be located in the aforesaid groove, all of the screw threads being located on the side walls and bottom of the groove to be out of reach of the warp threads, but positioned for cooperation with a screw capable of moving the head to adjusted position. The barrel may be formed of sheet metal with the groove pressed or rolled into the periphery thereof and located to receive the warp threads and their clamping rod.

The screw which lies in the barrel slot is preferably turned by an appropriate wrench which may extend along the slot, being inserted through a hole in the friction head for the purpose. In order that the hole in the friction head may always be aligned with the slot to permit entry of the wrench it is a further object of my invention to provide inter-engaging parts formed on the friction head and the barrel which will per-

manently hold the slot and hole in correct alignment.

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 claims.

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

Fig. 1 is a plan view of a beam made according to my present invention,

Fig. 2 is an enlarged end elevation taken in the direction of arrow 2, Fig. 1,

Fig. 3 is an enlarged longitudinal section on line 3—3 of Fig. 1,

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

Fig. 5 is an enlarged transverse section on line 5—5, Fig. 1, and

Fig. 6 is a detail longitudinal section on line 6—6, Fig. 5.

Referring to the drawing, I have shown a beam barrel 10 which is preferably tubular, although this is not a necessary feature of the invention, and I have bent portions of the tube to define a slot 11 which lies between parallel spaced walls 12 and 13, respectively. The walls are connected at their bottoms by a floor 14 and the slot preferably extends throughout the length of the barrel.

Each end of the beam is provided with a friction head 15 having a web 16 abutting the adjacent end of the barrel and having a friction flange 17. A central hub 18 may be formed integral with the web 16 and is held to a supporting shaft 19 by means of a screw 20. Each web is provided with an opening 21 in alignment with the slot 11 and this alignment is preserved by having the inner portions of the bearing 18 fitted around the walls 12 and 13, as suggested in Fig. 5. This result may be accomplished by providing the hub 18 with a longitudinal slot 22 sufficiently wide to receive the slot defining parts of the barrel. By this arrangement the friction head is held against substantial angular movement relatively to the barrel and the opening 21 is always in line with the slot 11.

Except for the feature of aligning the slot and opening 21 the matter thus far described may be of common construction and of itself forms no part of my present invention, and I do not wish to be limited to the particular form of barrel and friction head shown, nor to the use of a shaft. The friction head is shown as one means for con-

trolling the rotation of the beam during winding and weaving.

The beam is provided with two similar adjustable inner heads 25, and since both are alike, only one will be described. The head 25 has a flange 27 which defines one end of the warp space, and as shown in Fig. 3 the flange may be formed by a plate 28 having an intumed edge 29 which fits the barrel closely. The head 25 may also have a bracing disk 30 provided with an integral intumed shell 31, the greater part of which is in contact with the barrel, but having that portion which is over the slot 11 arched, as at 32.

The means for moving the head 25 along the barrel comprises a screw 40 having screw threads 41 which enter corresponding screw thread grooves formed as at 42 and 43 in walls 12 and 13, respectively, and also screw grooves 45 formed in the floor 16. The screw may have a hexagonal socket 50 to receive a wrench W proportioned to extend through the hole 21 and along slot 11 to the screw.

A clamp 55 surrounds the barrel and has a split lug 56 through which extends a bolt 57 which when tightened holds the clamp tightly to the barrel. The clamp is in position to engage the outer part of the screw 40 to help prevent the latter from moving longitudinally in the slot 11. Since the screw abuts flange edge 29, the head 25 is prevented from moving outwardly or to the right as viewed in Fig. 3, by the clamp as well as the screw. The warp located in the space to the left of the disk 28 in Fig. 3 prevents movement of the warp head in that direction, hence the inner head is held in fixed position along the barrel.

The screw threads 41 will ordinarily engage the underside of the arched part 32 to prevent the screw from moving away from the center of the barrel and hence its engagement with the screw threads in the slot is insured. This feature may, however, be dispensed with if the screw thread grooves in the side walls of the slot are sufficiently deep to retain the screw.

In assembling the beam the movable inner heads 25 will be slipped over the beam barrel and the screws 40 threaded into the slot, then the clamps will be put in place and the friction heads applied as already suggested. The holes 21 will align with the groove 11 and wrench W will be fitted into the sockets of the screws which can be turned and moved toward the center of the barrel. As each screw is turned it will engage the associated flange edge 29 and move the corresponding head forwardly or inwardly. When the proper position is reached, turning of the screws is stopped and the clamps 55 are fitted up against the screws and tightened by means of bolts 57. After the movable heads are adjusted to position, the warp ends are laid over the slot 11 and a rod or bar R is driven into the slot to hold the ends of the warp threads so that winding may begin.

During the winding operation considerable end pressure is exerted on the heads 25 tending to move them toward the friction heads, but this movement is effectively resisted by the screws which are held in the screw thread grooves in the walls and bottom of the slot 11 and also in part by the clamps 55.

If it is desired at a later time to wind a wider beam the clamps are released and the screws turned in a reverse direction, drawing them toward the ends of the barrel, after which the heads are pushed along the barrel by hand into en-

gagement with the screws and the latter may then again be given a forward feeding rotation to bring the heads to their correct new positions.

The screw thread grooves may not be continuous in all instances around the sides and bottom of the slot 11 so that the corners at the bottom of the slot will be continuous without screw thread interruptions and thereby enable the rod to establish a tight fit between the slot walls and the warp thread. This relation, however, is not necessary but is advantageous.

From the foregoing it will be seen that I have provided an improved form of warp beam wherein the false heads which define the warp space are positioned by means of a screw which is fed longitudinally of the beam barrel within the warp rod slot and that because of this relation the entire warp engaging periphery of the barrel can be smooth and free from grooves, thereby providing a proper surface on which to wind fine yarns. It will also be seen that the interengagement between the hub 18 and the slotted part of the barrel prevents said head from turning, thereby correctly positioning the holes 21 in alignment with the slot 11. It will also be seen that the screw is located beyond the warp space and is held at all times out of warp engaging position by the inner or movable heads. The clamps 55 act in the nature of a check to prevent rotation of the screws, but I do not wish necessarily to be limited to them as means for holding the screws against rotation. Furthermore, the arched part 32 of the flange 31 prevents improper upward movement of the screw and holds the latter in correct meshing relation with the screw thread grooves in the slot. While a tubular beam barrel has been shown, yet it is apparent that certain features of the invention are usable on any beam the barrel of which has a slot similar to that shown herein at 11.

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 clamp rod, a barrel having a slot formed therein with walls to receive warp ends and the clamp rod, a warp space defining head movable along the barrel, and means within the slot having rotatable progressively feeding engagement with the walls of the slot and effective by such rotatable engagement to move the head to any one of a plurality of positions.

2. In a warp beam having a clamp rod, a barrel having a longitudinal slot therein to receive the clamp rod, a head slidable along the barrel, and means rotatable within the slot aligned with the warp clamp rod and in operative engagement with the material of the barrel and effective by rotation to move the head along the barrel.

3. In a warp beam, a barrel having a slot extending longitudinally thereof with threaded walls, a warp space defining head movable along the barrel and having a warp engaging surface, and threaded means rotatable in the slot in engagement with the threaded walls and located at all times between the said surface and the adjacent end of the barrel to position said head longitudinally of the barrel.

4. In a warp beam to be used with a warp clamping rod, a barrel having portions defining a slot therein to receive the rod, a head movable along the barrel to assume any one of a plurality

of positions, and a screw having threaded engagement with said portions of the barrel defining the slot and rotatable in and movable progressively along the slot and operatively related to the head to move the latter longitudinally of the barrel.

5 5. In a warp beam to be used with a warp clamping rod, a barrel having walls defining a slot extending longitudinally therein to receive the rod, the wall having screw thread grooves cut therein, a warp space defining head on the barrel, and a screw located in the slot and having threads to be received by the screw thread grooves, said screw rotatable in that part of the slot lying beyond the warp clamping rod to move the head longitudinally of the barrel.

6. In a warp beam, a barrel, substantially parallel longitudinally extending walls formed in the barrel to define between them a slot, said walls having screw thread grooves cut therein, a screw located in the slot and having screw threads to be received by the grooves and rotatable to be moved longitudinally along the barrel and a warp defining space head movable along the barrel and operatively related to the screw to be moved by the latter as the same is turned.

7. In a warp beam, a barrel the entire warp engaging cylindrical surface of which is smooth, longitudinally extending spaced walls forming part of the barrel out of warp engaging position, a head movable along the barrel, and means having a screw thread relation with said walls and rotatable to be moved longitudinally of the barrel and to have cooperative relation with the head to move the latter longitudinally of the barrel.

8. In a warp beam, a barrel the entire warp engaging cylindrical surface of which is smooth, a head movable longitudinally along the barrel, spaced walls carried by the barrel and located in-

wardly with respect to the cylindrical surface of the barrel to be out of engaging relation with the wound warp, said walls having screw thread grooves formed therein, and a screw located between said walls and meshing with the grooves and rotatable to be moved longitudinally of the barrel and to have driving relation with the head.

9. In a warp beam, a barrel having a longitudinal groove extending throughout the length thereof, a head movable along the barrel, and a screw located within the slot and having feeding relation with respect to the sides of the slot, said screw being accessible from one end of the barrel to be rotated and fed along the barrel, said head and screw having operative engagement with each other, whereby feeding of the screw along the slot is effective to move the head to a plurality of positions along the barrel.

10. In a warp beam, a barrel having walls to define a slot therein, a warp space defining head movable along the barrel, rotary means located within and having driving relation with respect to the walls of the slot to move the head along the barrel, and a friction head held to the barrel and having an opening in alignment with the slot of the barrel to afford entry of a tool in the slot to turn the rotary means.

11. In a warp beam, a tubular barrel having inwardly extending walls to define a slot, a warp space defining head movable along the barrel, a feeding member for the head located in the slot and effective when rotated to be fed along the slot to move the head, a friction head having a part to engage the walls to hold said friction head against angular displacement relatively to the slot, said friction head having an opening therein in alignment with the slot to afford entry of a tool in the slot to rotate the member.

ELBRIDGE R. HOLMES.