

(No Model.)

T. BLACKBURN.
ADJUSTABLE HEAD FOR WARP BEAMS.

No. 546,878.

Patented Sept. 24, 1895.

FIG. 1.

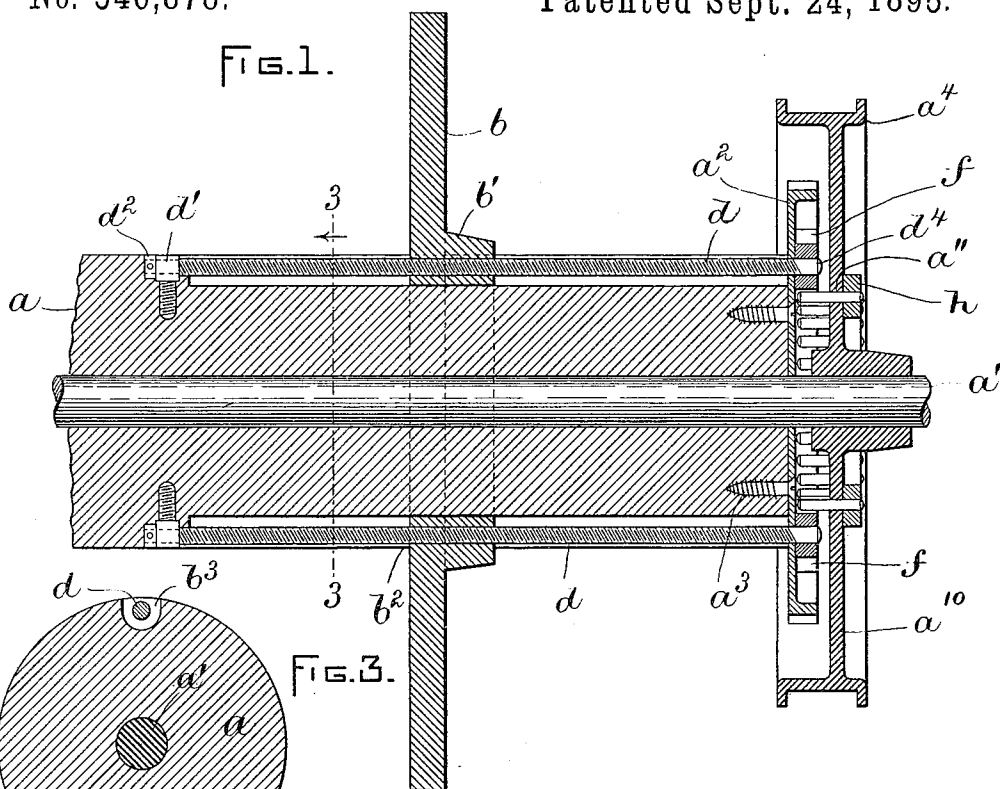


FIG. 3.

FIG. 2.

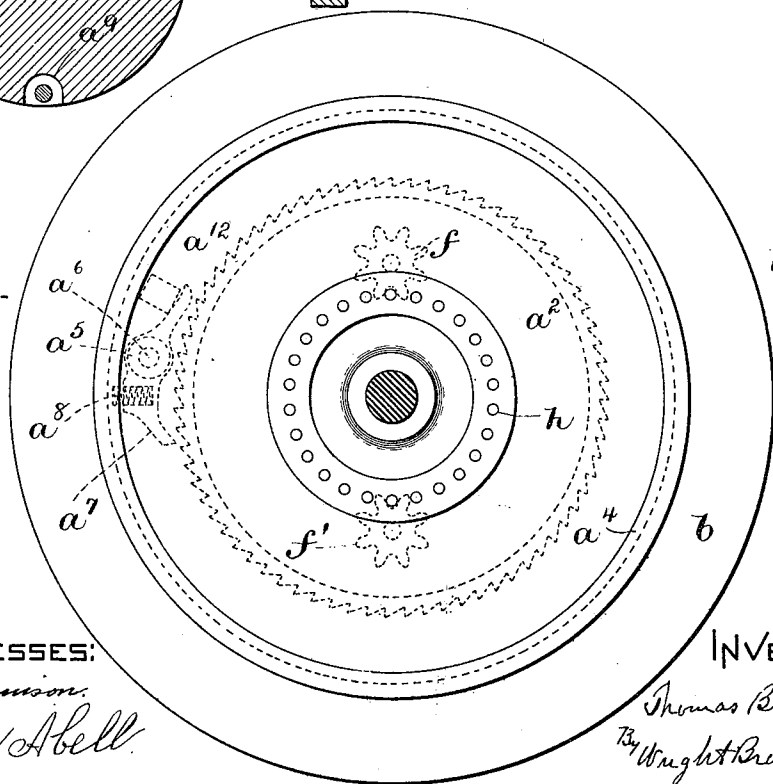
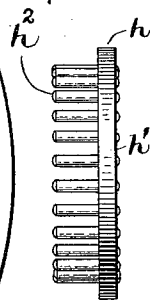


FIG. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS BLACKBURN, OF DOVER, NEW HAMPSHIRE, ASSIGNOR OF ONE-HALF TO JOHN LANCASTER, OF SAME PLACE.

ADJUSTABLE HEAD FOR WARP-BEAMS.

SPECIFICATION forming part of Letters Patent No. 546,878, dated September 24, 1895.

Application filed May 21, 1895. Serial No. 650,037. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BLACKBURN, a citizen of the United States, residing at Dover, in the county of Strafford and State of New Hampshire, have invented certain new and useful Improvements in Adjustable Heads for Warp-Beams, of which the following is a specification.

This invention relates to an improvement in adjustable heads for warp-beams; and it consists in the novel features of construction and relative arrangement of parts hereinafter fully described in the specification, clearly illustrated in the drawings, and particularly pointed out in the claim.

Reference is to be had to the accompanying sheet of drawings, forming a part of this application, in which like characters are used to indicate like parts wherever they occur.

Figure 1 represents in vertical longitudinal section a warp-beam provided with my invention. Fig. 2 represents an end view of a like construction. Fig. 3 represents a cross-sectional view on the lines 3 3 of Fig. 1, looking in the direction of the arrow. Fig. 4 is a detail edge view of the tool hereinafter described.

While my invention may be carried out in several ways, I prefer the construction and arrangement shown in the drawings, in which—
 a represents a portion of one end of a warp-beam. The remaining part of the warp-beam and its opposite head are not shown, since they form no part of my invention. This beam, as shown, is rigidly mounted upon a shaft a' . Secured to the end of the warp-beam is a ratchet a^2 . This ratchet may be secured to the warp-beam in any desired way. I have for the sake of illustration, in order to show some attaching means, illustrated this ratchet as being connected to the warp-beam by means of screws a^3 . Loosely mounted upon the shaft a' , adjacent to the ratchet a^2 , is a wheel or head a^4 . Mounted upon the inside of this head and in a position to engage with the teeth of the ratchet a^2 is a pawl a^5 . This pawl is pivoted to the head a^4 by means of a pin a^6 , and one of its ends is kept in engagement with the teeth of the ratchet a^2 by means of any suitable spring, as a^3 . The beam a , shaft a' , the head or wheel a^4 , ratchet a^2 , and

pawl a^5 are of the ordinary construction and arrangement and require no additional description.

Slidingly mounted upon the beam is my adjustable head b . This is provided with a centrally-apertured hub b' , arranged upon the beam a . This head is designed to be adjusted back and forth on the beam, in order to confine the warp within a space corresponding to the width of the fabric to be woven. This width is the distance between the adjustable head b and a corresponding fixed head (not shown) upon the other end of the beam. Several expedients may be employed for adjusting this head; but I prefer the mechanism herein disclosed.

d represents screw-threaded rods mounted in screw-threaded apertures b^2 , formed in lugs b^3 , integral with the hub b' , and extending into grooves a^9 in the beam. These grooves are of sufficient depth to receive the rod so that the rod will be below or flush with the surface of the beam. The inner ends of these rods are rotatably mounted in eyes d' , that are secured to the beam in any desired way. The object of this construction—that is, the arrangement of the rods with the eyes—is to permit the rod to turn in the nut and at the same time to prevent any longitudinal movement of the rods. This is accomplished by omitting the screw-threads at this end of the rods and making the inside bore of the eyes d' smooth, the rods being maintained in the eyes by means of a collar d^2 , fastened on the ends of the rods. At their outer ends these rods are also free from screw-threads and are arranged in suitable apertures in the ratchet. To the outer ends d^4 of the rods d , that extend through the ratchet, there are rigidly secured spur-gears f . From the foregoing it will be seen that as the rods are rotated by means of the spur-gears f the head b will be adjusted back and forth. The rods are preferably provided with screw-threads having a steep pitch, in order that the head may be quickly adjusted. The head being in one piece and controlled in its movement by the screw-threads, there is no liability of its slipping on the beam after it is adjusted. Any desired means may be employed for turning these rods; but it is nec-

essary that the rods be turned in unison. For this reason I have shown the rods provided at their ends d^4 with spur-gears f , each having the same number of teeth. As a convenient means for operating these gears to turn the rods I have provided the tool h . This, as shown, consists of a disk h' , provided with pins h^2 , arranged in a circle on one side of said disk after the manner of a lantern-gear, the form and construction of this tool being that of a lantern-gear with one disk removed. The web a^{10} of the head a^4 is provided with a circular series of apertures a^{11} , through which the pins h^2 of the tool h pass into a position to engage the teeth of the gears f .

The parts being constructed and arranged as described, the operation of my invention is as follows: It being desired to adjust the head b , the pawl a^5 is thrown out of engagement with the ratchet a^2 and held out in any way, as by inserting a block a^{12} between one end of the ratchet and the side of the head a^4 . This releases the head a^4 from the ratchet and permits the former to turn upon the shaft a' without affecting the beam. The tool h is then inserted, the pins h^2 passing through the apertures a^{11} in a position to engage the teeth of the gears f . Now, by turning the head a^4 the gears f will be rotated, causing the head b to travel back or forth until the desired position is reached. The tool h is then removed, the block a^{12} taken away, and the pawl permitted to return into engagement with the ratchet.

Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all the forms in which it may be made or all the modes of its use, what I claim, and desire to secure by Letters Patent, is—

In combination a shaft a' a warp-beam mounted upon said shaft, a ratchet fast upon the end of said beam, a head or wheel a^4 loosely mounted on said shaft adjacent to said ratchet, a pawl a^5 upon said head arranged to engage said ratchet, a head b slidingly mounted on said beam, screw-threaded rods arranged in screw-threaded apertures in said head b , the inner ends of said rods being loosely held in eyes d' fast to said beam, the outer ends of said rods being arranged in suitable apertures in said ratchet, spur-gears mounted upon said outer ends of said rods, and a tool h having a circular series of pins arranged to be inserted through a circular series of apertures in said wheel a^4 to engage and turn said spur-gears, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 7th day of May, A. D. 1895.

THOMAS BLACKBURN.

Witnesses:

NICHOLAS E. SMITH,
WM. JENKINSON.