

Oct. 12, 1926.

1,603,075

C. EGGART

LOOM

Filed July 27, 1925

Fig. 1.

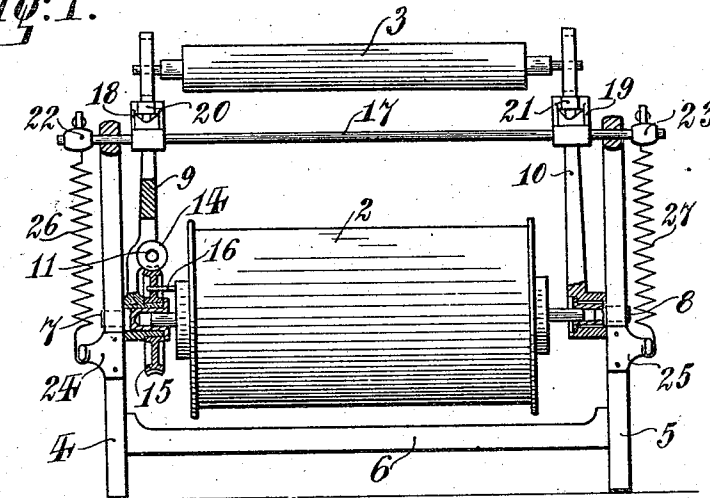
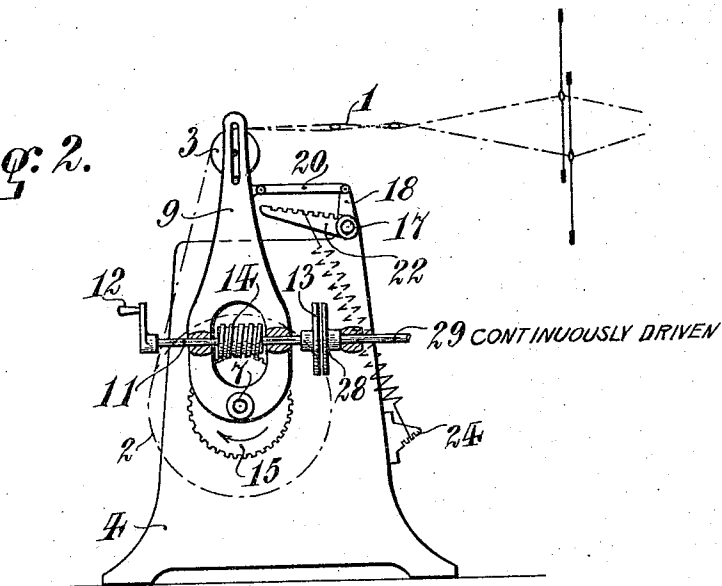


Fig. 2.



INVENTOR

Carl Eggart

BY

Redding, Greely, Olsen, Campbell  
ATTORNEYS

Patented Oct. 12, 1926.

1,603,075

# UNITED STATES PATENT OFFICE.

CARL EGGART, OF ARBON, SWITZERLAND, ASSIGNOR TO SOCIETE ANONYME ADOLPHE SAURER, OF ARBON, SWITZERLAND, A CORPORATION OF SWITZERLAND.

## LOOM.

Application filed July 27, 1925, Serial No. 46,212, and in Germany March 10, 1925.

In another application for Letters Patent of the United States Ser. No. 737,494, filed September 13, 1924, there are shown mechanisms for regulating the tension of the warp as it unwinds from the warp beam in which the warp beam is itself mounted so as to be shiftable toward and from the shed of the loom and in which means are provided whereby the unwinding of the warp from the beam is controlled through the bodily movement of the warp beam. The provision for bodily movement of the warp beam requires supports, either sliding or swinging, which must be strong enough to carry the substantial weight of the beam and the warp thereon and therefore involve a substantial item of expense besides some inconvenience in placing and removing the warp beam. In accordance with the present invention provision is made whereby the unwinding of the warp beam is similarly controlled by the tension on the warp while the warp beam rotates on a relatively fixed axis and the disadvantages due to the mounting of the beam so that it may have bodily movement are eliminated. Furthermore the warp beam is made to oscillate about its axis in harmony with the oscillations of the movably supported guide roller over which the warp threads pass to the shed so that the tension of the warp threads remains constant during the unwinding of the warp threads from the beam. The invention will be explained more fully hereinafter with reference to the accompanying drawing in which it is illustrated and in which—

Figure 1 is a view in elevation of one embodiment of the invention, partly in vertical section, to show details of construction.

Figure 2 is a view of the same in elevation as seen from the left hand in Figure 1.

In the illustrated embodiment of the invention the warp 1 is wound as usual on a warp beam 2, which is supported for rotation as hereinafter described and from which the warp is led over a guide or roller 3 toward the shed of the loom as indicated in Figure 2. In the construction shown the support for the warp beam has side frames 4, 5, connected by a cross beam 6 and suitable bearing members, 7, 8, carried by the side frames, are arranged to receive the ends of the spindle of the warp beam. On the bearing members 7, 8, may be mounted for

oscillation arms 9, 10, which at their upper ends support the guide roller 3. In one of the arms, as 9, is mounted a shaft 11 which may be provided at one end with an operating hand crank 12 and at the other end with a friction disc 13. A worm 14 on the shaft 11 meshes with a gear 15 mounted on the corresponding bearing member 7 and engaged with the warp beam so as to rotate therewith, as by a pin 16.

Also mounted in the side frames 4, 5, is a rock shaft 17 which is connected, through arms 18, 19, and links 20, 21, with the arms or carriers 9, 10. Arms 22, 23 fixed to the rock shaft 17, receive adjustably suitable tension devices, such as the springs 26, 27, which may be anchored to the side frames, as at 24, 25, the tendency of the tension devices being to press the guide roll 3 away from the shed of the loom. In operative relation with the shaft 11 and its friction disc 13, is a driving means, shown as comprising a coacting friction disc 28 on a shaft 29 which is rotated continuously from some convenient part of the loom mechanism.

When the warp beam, with its load of warp, has been placed in the supporting frame the warps are led over the guide roller 3 and are connected to the take-up roll of the loom as usual. As the operation of weaving is carried on and the slack of the warp threads is taken up, the rotation of beam is at first prevented through the engagement of the worm 14 with the gear 15, but when the slack has been taken up by the movement of the guide roller under the influence of the tension devices the shaft 11, which carries the worm 14, is brought into operative relation, as through contact of the friction discs 13, 28, with the continuously rotating shaft 29, so that the warp beam is rotated to let off the warp threads. The movement of the guide roller 3 away from the shed of the loom to take up the slack of the warp threads under the influence of the tension devices 26, 27, causes the worm shaft 11 to be by this movement operatively disengaged from the driving means 28, 29 until such time as the beam should be rotated again to let off more warp. These phases of action succeed each other in the continued operation of the loom.

It will be understood that when the guide roller oscillates as a result of the slackening and tightening of the warp threads the warp

beam, being connected with the carrier arms through the worm and worm gear, partakes of the movement of the guide roller, oscillating upon its own axis in harmony with the oscillations of the guide roller. This oscillation of the warp beam upon its axis causes the friction discs 13, 28 to be moved into or out of contact and the warp beam to be rotated or to have its rotation interrupted as the case may be. Winding off of the warp threads therefore takes place or ceases as the tension tends to increase or diminish and the tension of the warp threads is thereby maintained constant during the unwinding and regardless of the reduction in diameter of the beam with its load.

It will be observed that the mechanism required is simple, inexpensive and compact, and that space is saved through the mounting of the warp beam below the guide roller 3, without losing the advantage that in all positions of the warp beam and with the continually changing diameter thereof, proper tension on the work is maintained at all times.

I claim as my invention:

1. The combination of a warp beam mounted to rotate on a relatively fixed axis, a gear mounted to rotate therewith, a guide roller over which the warp is passed from the warp beam on its way to the shed of the loom, oscillating carrier arms supporting the guide roller, tension devices operatively connected with the carrier arms, a gear supported by one of the carrier arms to move therewith in engagement with the first mentioned gear the said gears being irreversible, and continuously operating driving means into and out of operative relation with which the last mentioned gear is moved in the movement of the carrier arm.

2. The combination of a warp beam mounted to rotate on a relatively fixed axis, a gear mounted to rotate therewith, a guide roller over which the warp is passed from the warp beam on its way to the shed of the loom, oscillating carrier arms supporting the guide roller, tension devices operatively connected with the carrier arms, a worm shaft supported by one of the carrier arms to move therewith and having a worm in engagement

with said gear, and continuously operating driving means into and out of operative relation with which said worm shaft is moved with the movement of the carrier arm.

3. The combination of a warp beam mounted to rotate on a relatively fixed axis, a gear mounted to rotate therewith, a guide roller over which the warp is passed from the warp beam on its way to the shed of the loom, oscillating carrier arms supporting the guide roller, tension devices operatively connected with the carrier arms, a worm shaft supported by one of the carrier arms to move therewith and having a worm in engagement with said gear and a friction disc, and a continuously driven shaft in alignment with said worm shaft and having a friction disc for coaction with the friction disc of the worm shaft and into and out of operative relation with which the friction disc on the worm shaft is moved with the movement of the carrier arms.

4. The combination of a warp beam mounted to rotate on a relatively fixed axis, a gear mounted to rotate therewith, a guide roller over which the warp is passed from the warp beam on its way to the shed of the loom tension devices in operative relation therewith, a shaft in operative relation with said gear, a support movable in harmony with the guide roller and by which the guide roller and the shaft are supported for bodily movement, and continuously operating driving means into and out of operative relation with which said shaft is moved in the movement of said support.

5. The combination of a warp beam mounted to rotate on a relatively fixed axis, a guide roller over which the warp threads are passed from the warp beam on the way to the shed of the loom, oscillating carrier arms supporting the guide roller, tension devices operatively connected with the carrier arms, means whereby the warp beam is caused to oscillate about its axis in harmony with the oscillations of the guide roller, and means whereby the warp beam is rotated to unwind the warps.

This specification signed this 6th day of July A. D. 1925.

CARL EGGART.