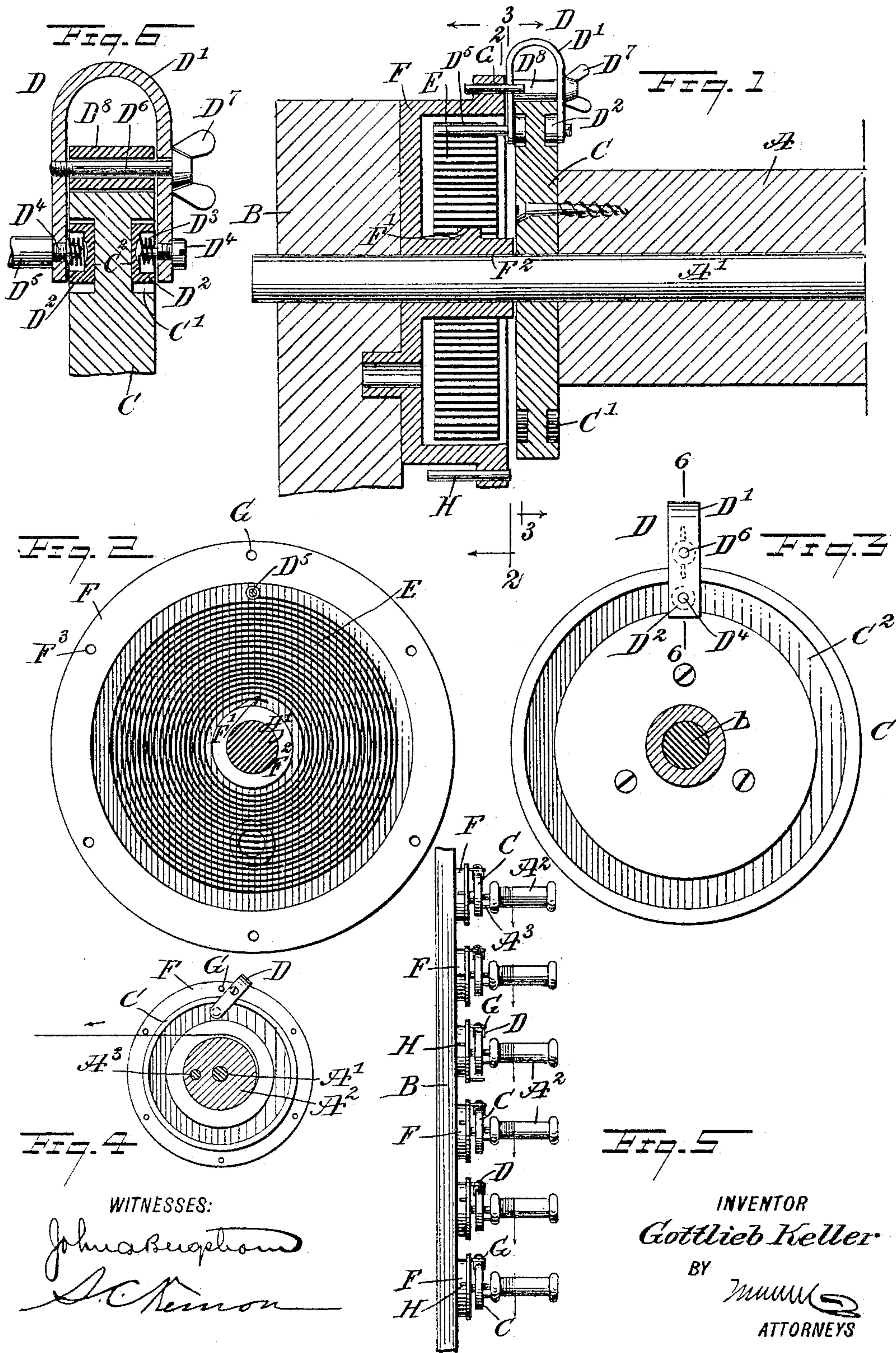


No. 801,595.

PATENTED OCT. 10, 1905.

G. KELLER.
TENSION DEVICE FOR WARP BEAMS.

APPLICATION FILED NOV. 18, 1904.



WITNESSES:

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GOTTLIEB KELLER, OF NEW YORK, N. Y., ASSIGNOR TO KELLER MACHINE COMPANY, A CORPORATION OF NEW YORK.

TENSION DEVICE FOR WARP-BEAMS.

No. 801,595.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed November 18, 1904. Serial No. 233,354.

To all whom it may concern:

Be it known that I, GOTTLIEB KELLER, a citizen of the Republic of Switzerland, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Tension Device for Warp-Beams, of which the following is a full, clear, and exact description.

The invention relates to tension devices for warp-beams, such as shown and described in the Letters Patent of the United States No. 768,464, granted to me August 23, 1904.

The object of the present invention is to provide a new and improved tension device for warp-beams or warp-carrying spools having a long range of movement and designed with a view to take up comparatively little room and to allow direct application of the device on the warp-beam or warp-carrying spool without the use of interposed gear-wheels.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal sectional elevation of the improvement as applied to a warp-beam. Fig. 2 is a sectional side elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a similar view of the same on the line 3 3 of Fig. 1. Fig. 4 is a side elevation of the improvement as applied to a warp-carrying spool, such as is used on ribbon-loom, the spool being shown in section. Fig. 5 is a front elevation of the improvement as applied to a set of warp-carrying spools for a ribbon-loom, and Fig. 6 is an enlarged cross-section of the improvement on the line 6 6 of Fig. 3.

The warp-beam A has its shaft A' journaled in suitable bearings on a loom-frame B, and on one end of the said warp-beam A is secured a wheel C, engaged by a bifurcated friction device D, pressed on by one end of a spring E, contained in a spring-casing F, secured to the frame B, adjacent to the wheel C, as plainly indicated in Fig. 1. The friction device D is preferably curved at D', the two members thereof carrying friction-disks D², extending in annular grooves C', formed on the faces of the wheel C, the inner sur-

faces of the said friction-disks D² pressing against the surfaces C' of the web at the grooved portions, as plainly indicated in Figs. 1 and 6. The disks D² are preferably cup-shaped and are pressed on by springs D³, held on screw-rods D⁴, screwing in the free ends of the said members of the bifurcated device, one of the said screw-rods D⁴ having an extension D⁵, projecting into the spring-casing F and engaging the outer end of the helical spring E, secured at its inner end to a hook F', arranged on the hub F² of the casing F. The members of the device D are connected with each other outside of the peripheral face of the wheel C by a bolt D⁶, having a wing-nut D⁷, adapted to be screwed up or unscrewed by the operator to press the said members of the device more or less together to cause the disks D² to bear with more or less friction against the surfaces C' of the web of the wheel C. A friction-roller D⁸ is journaled on the clamping-bolt D⁶ and bears on the peripheral face of the wheel C.

On the spring-casing F is held a stop-pin G, extending into the path of the friction device D to limit the bodily movement of the said device with the wheel C after the desired tension has been given to the warp-beam A and the warp thereon, so that the warp-beam A rotates under the tension of the device D and its spring E, while the said device D is held against further movement, but gives the desired tension to the wheel C and the warp-beam A by the friction-disks D².

It is understood that the spring E can be put under the desired amount of tension according to the nature of the warp on the warp-beam, so that the desired amount of tension is given to the warp while the loom is in operation.

In case the warp becomes slack then the friction device D immediately turns the warp-beam A in the reverse direction, so as to wind up the warp, the warp-beam A and the wheel C being capable of making a complete revolution—that is, until the friction device D again strikes the pin G.

In case it is desired to slack the warp it is only necessary for the operator to turn the warp-beam A in the reverse direction a desired distance, and then another pin H is inserted in one of a series of apertures F³, formed on the spring-casing F for the friction device D to abut against, so as to prevent complete

return movement of the wheel C and the warp-beam A.

In the arrangement shown in Figs. 4 and 5 the warp-beam in the form of a warp-carrying spool A² is provided with a pin A³, engaging an aperture in the wheel C, so that the spool and the wheel C rotate together. Otherwise the construction is the same as above described with reference to the warp-beam A, and hence further description of this particular application of the device is not deemed necessary, it being, however, understood that the operation is the same as described with reference to the warp-beam.

From the foregoing it will be seen that the device is very simple and durable in construction, takes up very little room, and can be quickly adjusted to give any desired amount of tension to the warp, at the same time providing a long range of movement to permit taking up a considerable amount of warp whenever the work is slacked.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A tension device for warp-beams comprising a wheel rotating with the warp-beam, and a spring-pressed friction-clamp engaging the said wheel and having a limited movement bodily with the wheel and a sliding movement with relation to the wheel when under tension, to allow the wheel to rotate under tension.

2. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, and an adjustable friction-clamp engaging the said wheel and having a limited movement bodily with the wheel and a sliding connection with the wheel when the latter is under a predetermined amount of tension, to allow the wheel to rotate under tension.

3. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, an adjustable friction-clamp engaging the said wheel and having a limited movement bodily with the wheel and a sliding connection with the wheel when the latter is under a predetermined amount of tension, to allow the wheel to rotate under tension, and a helical spring fixed at one end and connected at its other end with the said friction-clamp.

4. A tension device for warp-beams comprising a wheel rotating with the warp-beam, a bifurcated friction member straddling the peripheral portion of the said wheel and in clamping engagement therewith, and a helical spring fixed at one end and connected at its other end with the said bifurcated friction member.

5. A tension device for warp-beams comprising a wheel rotating with the warp-beam, a bifurcated friction member straddling the peripheral portion of the said wheel and in clamping engagement therewith, a helical spring fixed at one end and connected at the other end with the said bifurcated friction

member, and a fixed stop in the path of the said bifurcated friction member.

6. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a bifurcated friction member straddling the peripheral portion of the said wheel and in clamping engagement therewith, a helical spring fixed at one end and connected at its other end with the said bifurcated friction member, and adjustable stopping means in the path of the said bifurcated friction member.

7. A tension device for warp-beams, comprising a wheel rotating with the warp-beam and provided with annular grooves on its faces, and a member provided with friction-disks extending in said annular grooves and having means for exerting pressure against the sides of the web of the wheel at the grooved portions.

8. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a bifurcated member straddling the peripheral portion of the said wheel, and friction-disks on the said bifurcated member, engaging and exerting pressure against the sides of the web of the wheel.

9. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a bifurcated member straddling the peripheral portion of the said wheel, friction-disks on the said member, engaging the web of the wheel, and an adjusting device thereon, for adjusting the said clamping-disks relative to the said wheel.

10. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a bifurcated member straddling the peripheral portion of the said wheel, friction-disks on the said member, engaging the web of the wheel, and springs pressing the said friction-disks.

11. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a member provided with devices bearing on and exerting pressure against the sides of the web of the said wheel, and a friction-roller journaled on the said member and bearing on the peripheral face of the said wheel.

12. A tension device for warp-beams, comprising a fixed spring-casing, a wheel rotating with the warp-beam, a clamping device engaging the said wheel, and a helical spring in the said casing and attached at one end thereto, the other end of the spring being connected with the said clamping device.

13. A tension device for warp-beams, comprising a fixed spring-casing, a wheel rotating with the warp-beam, a clamping device engaging the said wheel, a helical spring in the said casing and attached at one end thereto, the other end of the spring being connected with the said clamping device, and means on the said tension device, for increasing or decreasing the friction between the clamping device and the said wheel.

14. A tension device for warp-beams, comprising a fixed spring-casing, a wheel rotating with the warp-beam, a clamping device engaging the said wheel, a helical spring in the said casing and attached at one end thereto, the other end of the spring being connected with the said clamping device, and a stop-pin on the said casing, extending into the path of the said clamping device.

15. A tension device for warp-beams, comprising a fixed spring-casing, a wheel rotating with the warp-beam, a clamping device engaging the said wheel, a helical spring in the said casing and attached at one end thereto, the other end of the spring being connected with the said clamping device, and a stop-pin on the said casing, extending into the path of the said clamping device, the said casing having a plurality of spaced apertures for the reception of the said stop-pin.

16. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a spring-clamp provided with friction-disks engaging the web of the wheel, means for adjusting the spring-clamp relative to the wheel and springs pressing the said friction-disks.

17. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a spring-clamp engaging the web of said wheel and adapted to exert pressure thereon, and means for adjusting the tension of the spring-

clamp to cause the same to bear with more or less friction against the web of the wheel.

18. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a spring-clamp engaging the said wheel, means for adjusting the tension of the spring-clamp, and a helical spring fixed at one end and connected at its other end with the said spring-clamp.

19. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a spring-clamp engaging the web of said wheel, an adjusting device for the spring-clamp, a rod projecting from the spring-clamp, a helical spring fixed at one end and connected at its other end with said projecting rod, and a stop in the path of said spring-clamp.

20. A tension device for warp-beams, comprising a wheel rotating with the warp-beam, a bifurcated spring-clamp having its members engaging the web of the wheel, and an adjusting device connecting the members of the clamp, and adapted to press the said members more or less toward each other.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GOTTLIEB KELLER.

Witnesses:

THEO. G. HOSTER,

EVERARD BOLTON MARSHALL.