G. KELLER.

TENSION DEVICE FOR WARP BEAMS.

APPLICATION FILED AUG. 23, 1907. RENEWED SEPT. 15, 1909.

941,201. Patented Nov. 23, 1909.

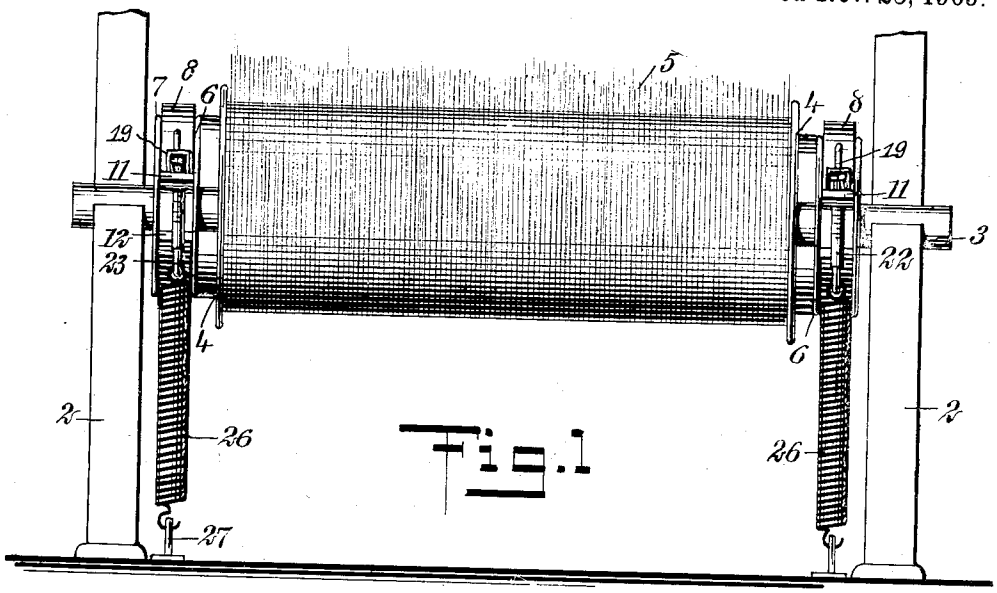

Fig. 1

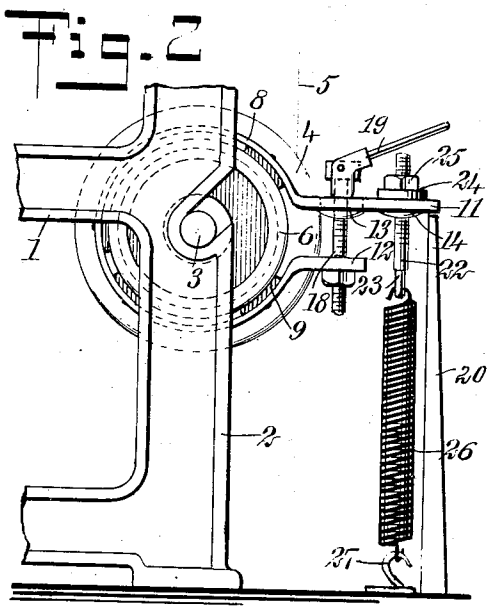

Fig. 2

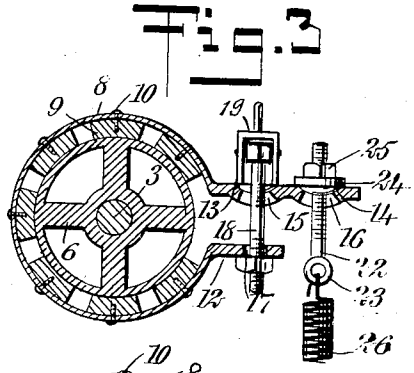

Fig. 3

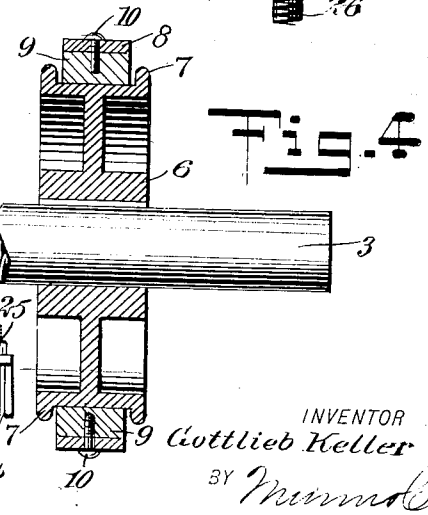

Fig. 4

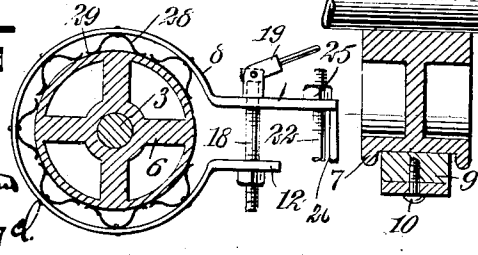

Fig. 5

WITNESSES

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TENSION DEVICE FOR WARP-BEAMS.

941,201. Specification of Letters Patent. Patented Nov. 23, 1909.

Application filed August 23, 1907, Serial No. 389,822. Renewed September 15, 1909. Serial No. 517,919.

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.

This invention relates to tension devices for warp beams, and is particularly useful in connection with looms in which the warp beams are provided with drums for the attachment of tension weights in the conventional manner.

The object of the invention is to provide a tension device simple, strong and durable in construction and which is adapted to replace the weights usually employed at the present time to keep the warp threads under tension, while at the same time utilizing the disk or drum provided upon the warp beams in connection with the weights.

A further object of the invention is to provide a device of this character in which the tension of the warp threads can be easily adjusted and regulated by the operator, and in which, if so desired, the warp threads may be unwound for purposes of observation and the like.

This invention consists in the construction and combination of parts to be more fully described hereinafter and more particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is an end elevation of a loom showing a warp beam having my device attached thereto; Fig. 2 is a side elevation of the warp beam; Fig. 3 is a vertical cross section through the device; Fig. 4 is an enlarged vertical section through the device; and Fig. 5 is a side view, partly in section, of a modified form of my invention.

Before proceeding to a more detailed explanation of my invention, it should be understood that in weaving cloth and the like, it is necessary that the warp threads, which are gradually unrolled from the warp beam as the weaving progresses, should be maintained under a certain degree of tension to insure a proper weave. This tension should be such that the threads are taut, but are, nevertheless, gradually unwound from the warp beam without much difficulty. It has been customary heretofore to provide the shaft upon which the warp beam is mounted, with a drum, upon which is wound a rope having at one depending end a weight, this weight tending to rotate the warp beam in a direction opposite to the direction in which the warp threads are unwound, thus keeping the threads under tension as the unwinding proceeds. My invention is designed to replace these weights while utilizing the drum provided therefor, in the looms of conventional construction.

Referring more particularly to the drawings, 1 represents the frame of a loom having bearings in the end uprights 2 in which is mounted a transverse shaft 3. The transverse shaft 3 carries the warp beam 4 upon which are rolled the warp threads 5. Between the warp beam and the frame near the ends of the shaft, are rigidly mounted drums 6 of the usual form, having lateral flanges 7. Upon these drums are ordinarily wound the ropes with their weights, which give the necessary tension to the warp threads.

I provide a circular band 8 of thin sheet metal, or other similar material, which is passed about a drum 6, as in the case of a band brake. Between the band and the drum is a series of friction blocks 9 secured to the band by means of screws or bolts 10. The ends 11 and 12 of the band are laterally and parallelly disposed, as appears most clearly in Fig. 3. The end 11 is provided with two curved recesses 13 and 14 having openings 15 and 16 respectively. The end 12 of the band has an opening 17 therethrough. A bolt 18 is located in the openings 17 and 15 of the ends 12 and 11, and is pivotally connected with a cam lever 19 under the control of the operator for conveniently opening and closing the band 8. The cam lever 19 rests on the end 11 and the nut of the bolt 18 screws against the underside of the end 12. By means of the bolt 18 the ends of the band may be forced together and any required degree of tension may be thus given to the warp threads by the friction of the blocks 9 against the drum. When it is desired to quickly release the tension, the operator simply throws the cam lever 19 over.

A bolt 22, having an eye 23 at its lower end, is located in the opening 16 and is

provided with a curved washer 24 and a nut 25. A helical spring 26 has one end removably hooked, or otherwise secured, to the eye 23, and the other end similarly secured to a hook 27 mounted upon the floor adjacent to the loom or upon the frame of the loom itself. The tension of the springs 26 may be adjusted by means of the bolt 22. A stop rod 20 limits the downward movement of the end 11 of the band 8.

The warp threads are unwound from the warp beam in a series of short advances, and not continuously. The initial friction between the band and the drum is greater than the tension of the spring, and thus at each advance of the warp threads, the band turns for a short distance with the drum until the tension of the spring becomes greater than the friction, whereupon the spring pulls down upon the end 11 of the band, and returns the same to its normal position, of course, always maintaining the threads under the proper tension, and at no time permitting the same to become slack. Should the weaver desire to examine the unwound threads upon the beam, it is merely necessary for him to unhook the spring 26 from the eye 23, and to rotate the warp beam and unwind the threads as far as he may desire. The tension of the warp beam can be easily adjusted by simply loosening or tightening the bolt 18, and thereby correspondingly decreasing or increasing the pressure of the band and blocks upon the drum.

Fig. 5 illustrates a modified form of my invention, in which the blocks 9 are replaced by curved leaf springs 28 having bent ends 29 which press upon the drum. These springs will be found of advantage when the drum has had considerable wear and therefore has an uneven surface against which the blocks 9 would not press uniformly.

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

1. In a loom, the combination, with a warp beam, of a band encompassing said beam and frictionally engaging the same, said band having separated ends, an adjustable member connecting said ends whereby said ends are limited in moving apart, means for flexibly connecting one of said ends to a support, and a stop unconnected with said band and adapted to be engaged by one of said ends to limits its movement in one direction.

2. In a loom, the combination with a warp beam, of a band encompassing said beam and frictionally engaging the same, said band having the ends separated and laterally disposed, a member removably connecting said ends, means for adjusting said member to vary the tension of said band, said member serving to limit said ends against movement away from one another, means for resilently connecting one of said ends to a support, and a fixed stop independent of said band, and adapted to be engaged by said end resiliently secured to the support, to limit the movement in one direction of the same.

3. In a loom, the combination of a warp beam having a shaft and a drum on said shaft, with a band passed about said drum and having laterally disposed ends and blocks between said band and said drum, a bolt adapted to secure said ends one to the other, a spring secured to a fixed support and removably mounted at one of said ends of said band, and a cam lever connected with the said bolt for releasing the band quickly.

4. In a loom, the combination, with a warp beam having a shaft, and a drum on said shaft, of a band encompassing said drum and having laterally disposed and separated ends, spaced members secured to said band and frictionally engaging said drum, a bolt secured to one of said ends and having an adjustable engagement with the other of said ends, a spring secured to a fixed support and removably mounted at one of said ends of said band, and a stop rod adapted to limit the movement of one of said ends in one direction.

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

GOTTLIEB KELLER.

Witnesses:

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JOHN K. BRACHVOGEL.