No. 858,761. PATENTED JULY 2, 1907.

E. H. RYON.

WARP BEAM FOR LOOMS.

APPLICATION FILED JAN. 22, 1907.

2 SHEETS—SHEET 1.

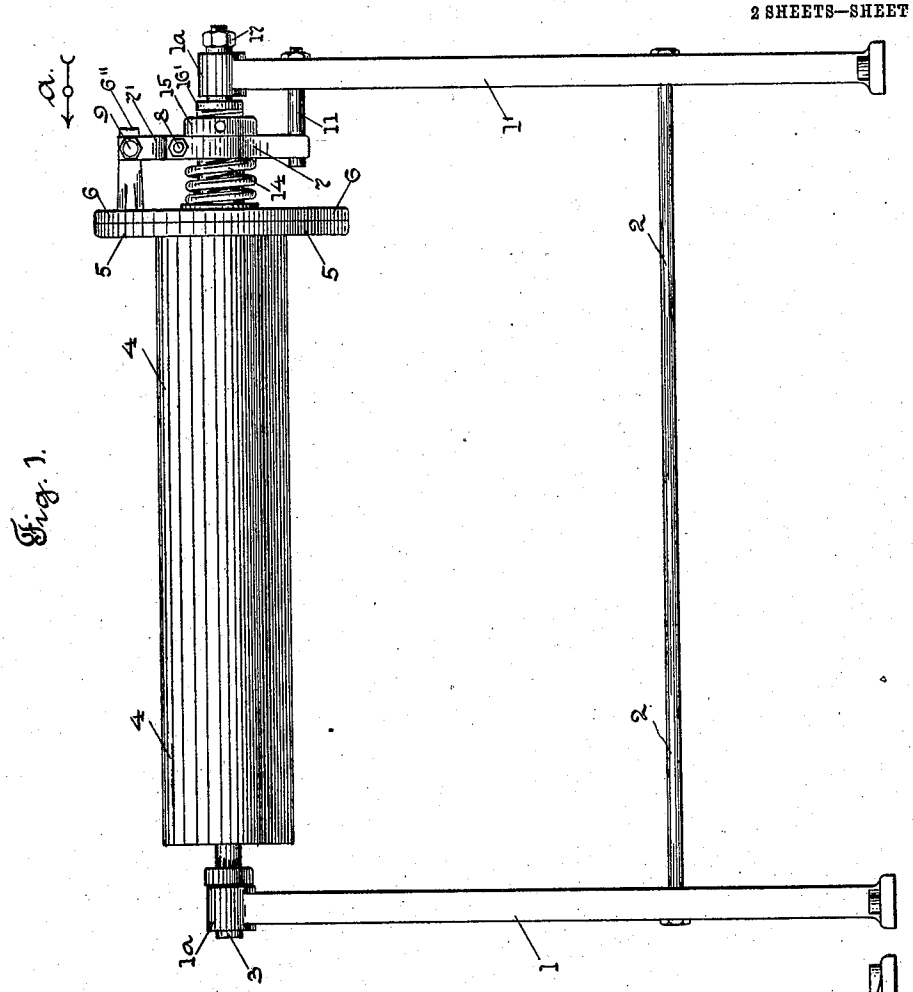

Fig. 1.

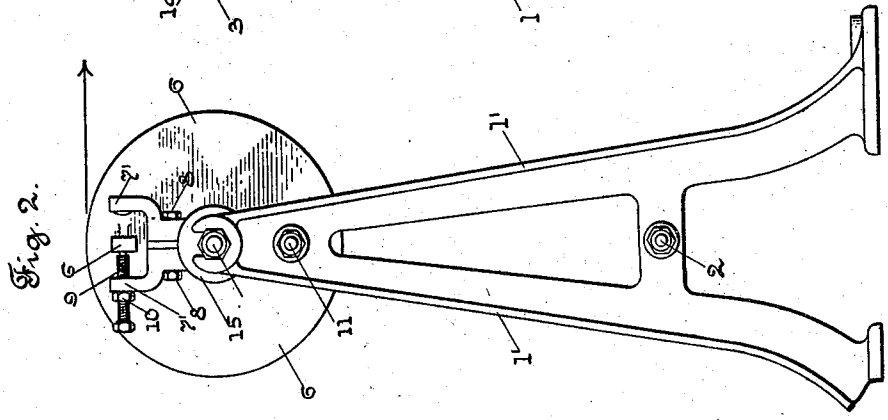

Fig. 2.

Witnesses
M. Bredt.
M. Haas.

Inventor
Egpa H. Ryon.
By John A. Dewey
Attorney.

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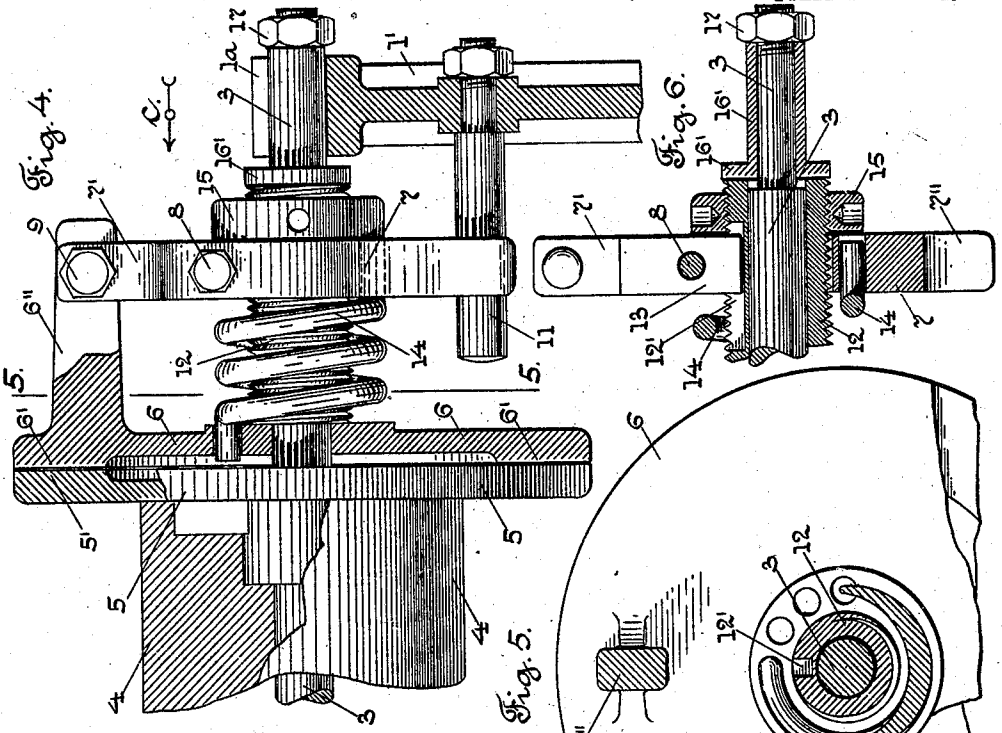

Fig. 4.

Fig. 6.

Fig. 5.

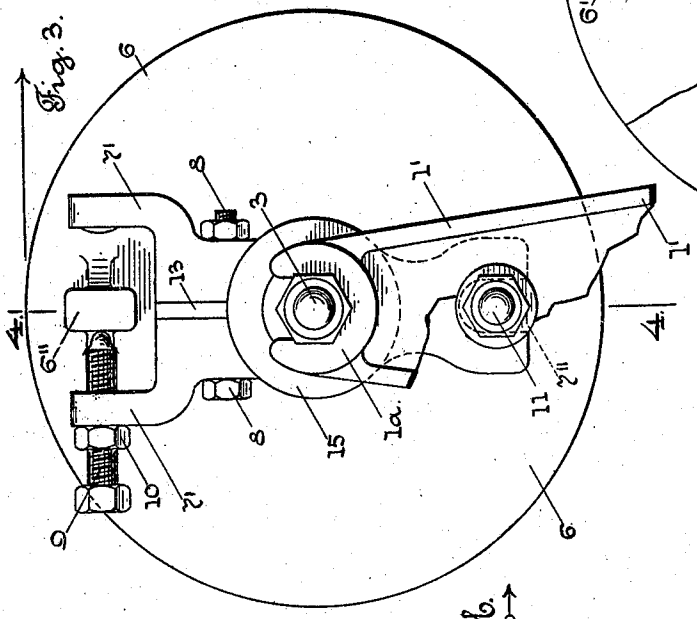

Fig. 3.

Witnesses
M. Bredt.
M. Baas.

Inventor
Eppa H. Ryon.
By John S. Dewey
Attorney.

UNITED STATES PATENT OFFICE.

EPPA H. RYON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

WARP-BEAM FOR LOOMS.

No. 858,761. Specification of Letters Patent. Patented July 2, 1907.

Application filed January 22, 1907. Serial No. 353,469.

To all whom it may concern:

Be it known that I, EPPA H. RYON, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Warp-Beams for Looms, of which the following is a specification.

My invention relates to warp beams for looms, and more particularly to a let off and brake motion for a warp beam, which is particularly adapted to be used in case of light warps, as silk and cotton.

The object of my invention is to provide an improved let off and brake motion for a warp beam, by means of which an easy, even, and smooth let off motion for the warp beam, and also a spring tension or brake motion for the warp beam is obtained, and the warp beam is turned back, when the warp is slackened and false filling has to be cut out, etc.

In my improvements I use a single helically coiled spring, which acts as an expansion spring, and also as a torsional spring; said spring holds the frictional disk of the brake motion in engagement with the disk or head on the warp beam, and also turns the same backward when the warp is slackened.

I have shown in the drawings a warp beam detached from a loom, and mounted on supporting beam stands, and having my improvements combined therewith.

Referring to the drawings:—Figure 1 shows two beam stands, and a warp beam with my improvements combined therewith. Fig. 2 is an end view of the parts shown in Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 shows, on an enlarged scale, the parts shown in the upper part of Fig. 2. Fig. 4 is a partial section, on line 4, 4, Fig. 3, looking in the direction of arrow *b*, same figure. Fig. 5 is a section, on line 5, 5, Fig. 4, looking in the direction of arrow *c*, same figure. Fig. 6 is a partial vertical section of the parts shown at the right in Fig. 4; the supporting beam stand is not shown in this figure.

In the accompanying drawings, 1 and 1′ are the two beam stands, in this instance shown as made separate from the loom, and adapted to be bolted or secured to the floor, and connected together by a transverse rod 2. The upper ends of the beam stands 1 and 1′ have bearings 1ª for the shaft 3, carrying the warp beam 4 fast thereon. The warp beam 4 has fast on one end a disk 5, forming the warp beam head. A second disk 6 is loosely mounted on the shaft 3, and has a friction face 6′ thereon, adapted to engage the friction face 5′ on the disk or beam head 5. The disk 6 has a projection or lug 6″ thereon, which is adapted to extend between the fork or yoke shaped end 7′ of an arm 7, which is loosely mounted on a threaded collar, to be hereinafter described. One of the ends of the fork shaped end 7′ of the arm 7, carries an adjusting screw 9, which may be turned in or out in a threaded hole in said end, and secured in its adjusted position by a nut 10. The inner end of the adjusting screw 9 is adapted to engage the lug 6″. The lower end of the arm 7 has an open end slot 7″ therein, through which extends a stud 11 secured in the beam head stand 1′.

Loosely mounted on the shaft 3 of the beam 4 is a collar or sleeve 12, having an external thread thereon. The threaded collar 12 has an elongated groove or recess 12′ therein, into which extends the lower end of a plate 13, secured in a slot or opening in the arm 7, by a bolt 8 see Fig. 6. Through the plate 13 extending into the elongated groove or recess 12′ in the threaded collar 12, said collar is prevented from turning on the shaft 3.

Encircling the threaded collar 12 is a helically coiled expansion and torsional spring 14, one end of which is secured to the disk 6, by extending into one of a series of holes 6ª therein, and the other end to the arm 7, see Fig. 6. By means of the holes 6ª, the tension of said spring may be adjusted. A nut 15 is mounted on the threaded collar 12, and adapted to be turned thereon to compress the spring 14, and increase the frictional engagement between the disks 5 and 6, or turned in the opposite direction to reduce the frictional engagement between said disks.

A bushing 16 is mounted on the reduced end of the warp beam shaft 3, see Fig. 6, and is held thereon by a nut 17. The inner end of the bushing 16 has an annular projection or flange 16′ thereon, which bears against the outer end of the threaded collar 12. The bushing 16 forms a journal for the warp beam shaft 3, at one end thereof, and is loosely mounted in the open end slot on the upper end of the beam stand 1′.

In the operation of the loom, and the drawing off of the warps from the warp beam 4, the warps are drawn off in the direction of the arrow, Figs. 2, and 3, and the tension of the warps will rotate the warp beam 4, and with the head 5 thereon in frictional engagement with the disk 6 through the action of the expansion spring 14, will rotate the disk 6, and cause the lug 6″ thereon to move away from the adjusting screw 9, and engage the opposite end of the fork shaped end 7′ of the arm 7. The stud 11 engaging the arm 7, will hold the arm 7 stationary and prevent any rotary movement thereof, so that after the lug 6″ has engaged the other end of the forked end 7′ of the arm 7, the disk 6 will be prevented from further rotation, and will act as a tension or brake motion, through the spring 14 forcing the disk 6 into frictional engagement with the disk or beam head 5. When the warp is slackened, the spring 14 will act as a torsional spring to turn the disk 6, and also the disk 5 and warp beam 4 backward. The adjustment of the nut 15 on the threaded collar 12, as above stated, will regulate the action of the spring 14.

By means of my improvements, the warp threads as they are drawn off from the warp beam will have a light tension which may be regulated as desired, and there will be a smooth and even let off movement of the warp beam, and the single spring 14 acts to apply friction between the disks 6 and 5, and also to cause the disks 6 and 5, and the warp beam 4 to turn backward when the warp is slackened.

It will be understood that the details of construction of my improvements may be varied if desired.

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

1. In a brake motion for warp beams, a beam, a friction disk thereon, a second disk, and a single helically coiled spring, acting as an expansion spring, and also as a torsional spring to hold said disks in frictional engagement and to turn said disks and beam backward when the warp is slackened.

2. In a warp beam let off and brake mechanism, the combination with a friction beam head, of a friction disk loosely mounted on the shaft or journal of the warp beam and said shaft or journal, and said disk having a projection thereon to extend between the fork or yoke shaped end of an arm, and said arm loosely mounted on a threaded collar or sleeve, and held from rotating thereon, and said threaded collar loose on the shaft or journal of the warp beam, and held from rotating thereon, and a helically coiled spring encircling said threaded collar and connected with said friction disk having a projection thereon, and with said arm, and means for adjusting the tension of said spring.

3. In a warp beam let off and brake mechanism, the combination with a friction beam head, of a friction disk loosely mounted on the shaft or journal of the warp beam and said shaft or journal, and said disk having a projection thereon to extend between the fork or yoke shaped end of an arm carrying an adjusting screw, and said arm loosely mounted on a threaded collar or sleeve, and held from rotating thereon, and said threaded collar loose on the shaft or journal of the warp beam, and held from rotating thereon, and a helically coiled spring encircling said threaded collar and connected with said friction disk having a projection thereon, and with said arm, and means for adjusting the tension of said spring.

EPPA H. RYON.

Witnesses:
J. C. DEWEY,
M. HAAS.