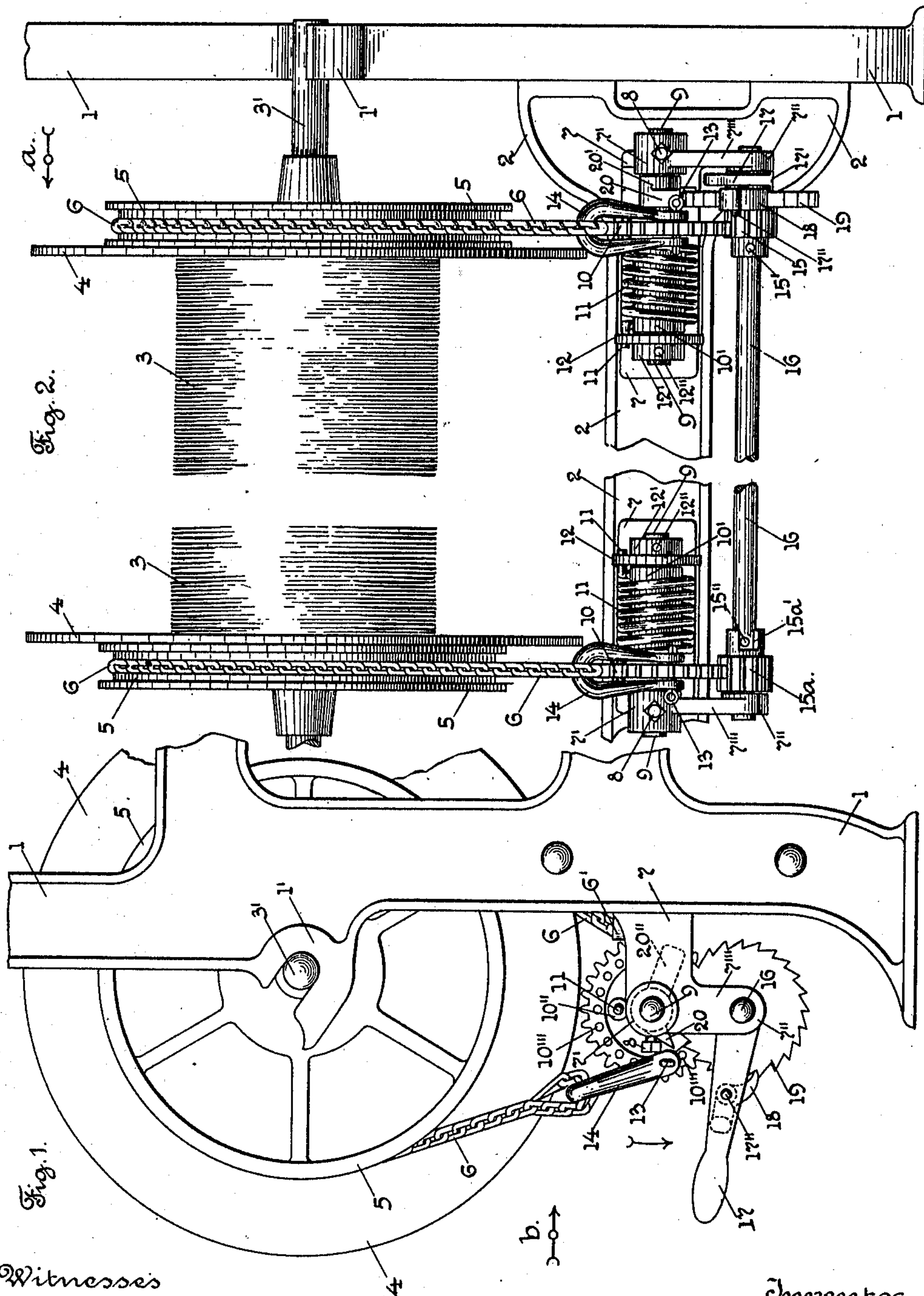


E. H. RYON.
LET-OFF MECHANISM FOR LOOMS.
APPLICATION FILED NOV. 8, 1909.

993,718.

Patented May 30, 1911

2 SHEETS—SHEET 1.



Witnesses
M. Bredt.
W. Haas.

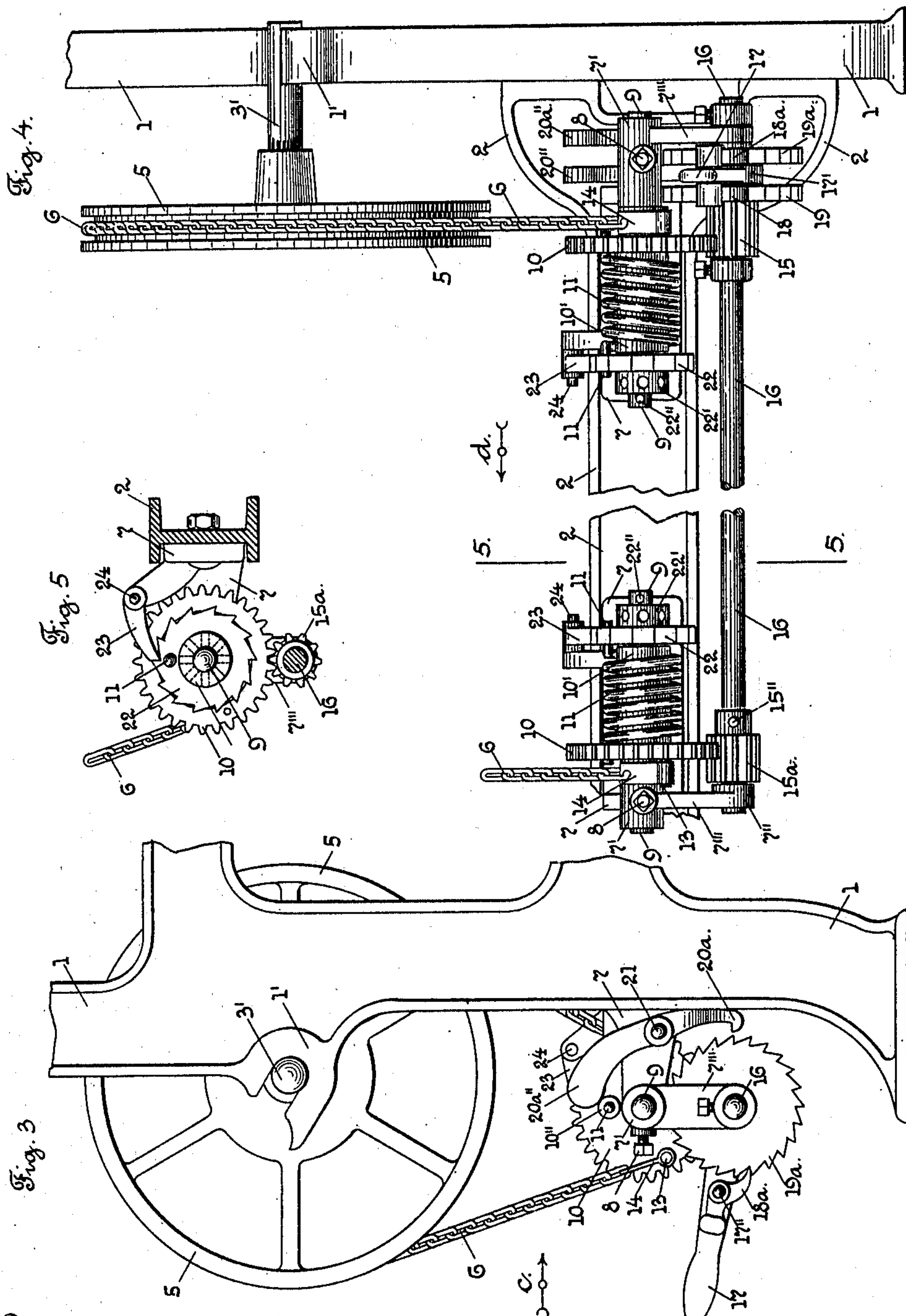
Inventor
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W. Head.

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UNITED STATES PATENT OFFICE.

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

LET-OFF MECHANISM FOR LOOMS.

993,718.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed November 8, 1909. Serial No. 526,725.

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 Let-Off Mechanism for Looms, of which the following is a specification.

My invention relates to a let off mechanism for looms, and particularly to a spring friction let off mechanism, and the object of my invention is to improve upon a spring friction let off mechanism as ordinarily made, and particularly to provide means for easily changing the tension on the spring.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have only shown in the drawings a detached portion of a loom, and my spring friction let off mechanism applied thereto, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is an end view of a detached portion of a loom frame, and the warp beam, and my improvements in let off mechanism combined therewith, looking in the direction of arrow *a*, Fig. 2. Fig. 2 shows a rear view of the loom frame and one end of the warp beam, and the let off mechanism, looking in the direction of arrow *b*, Fig. 1. Fig. 3 corresponds to Fig. 1, but shows a modified construction of my improvements in let off mechanism. Fig. 4 shows a rear view of the let off mechanism shown in Fig. 3, looking in the direction of arrow *c*, same figure, and Fig. 5 is a section, on line 5, 5, Fig. 4, looking in the direction of arrow *d*, same figure.

In the accompanying drawings, 1 is the loom side or end frame, 2 is a cross girt secured to the loom side. The loom side 1 has suitable bearings 1' for the journal 3' on the warp beam 3.

4 is the beam head, and 5 the brake or friction drum attached to and rotatable with the beam, and of any usual construction. The brake band passing around the friction drum 5 is shown in this instance as a chain 6, which is secured at one end to a stationary block 6', see Fig. 1, and its other end is connected with my improvements in spring

friction let off mechanism. The chain 6 acts to apply friction to the drum 5 on the warp beam 3, to regulate the tension on the warp.

All of the above mentioned parts may be of any usual and well known construction.

I will now describe my improvements in spring friction let off mechanism shown in Figs. 1 and 2.

The cross girt 2 has secured thereto, in this instance on each end, a stand or bracket 7, see Fig. 1, on which is a hub or boss 7', in which is secured, by a set screw 8, a horizontally extending stud 9. On the stud 9 is loosely mounted the hub 10' extending out from one side of a gear 10. The gear 10 has a boss 10'' thereon, see Fig. 1, into which extends one end of a helically coiled torsion spring 11. The spring 11 encircles the hub 10' on the gear 10, and its other end extends through a disk 12, which has its hub 12' secured on the inner end of the stud 9 by a pin 12''. The gear 10 has therein a series of holes 10''' which are adapted to receive a cotter pin 13, which acts to pivotally attach the yoke or link 14 to the gear 10. To the link 14 is attached one end of the friction chain 6. The torsion spring 11 acts to move the spur gear 10 in the direction indicated by the arrow in Fig. 1, and to communicate tension to the friction chain 6. The gear 10 is in mesh with a pinion 15, secured by a pin 15' upon a transverse shaft 16, which is loosely mounted at each end in a bearing 7'' on the downwardly extending arm 7''' on the stand 7. On one end of the shaft 16 is loosely mounted the hub 17' of a hand lever 17; said hand lever 17 has a pin 17'' thereon, on which is mounted a weighted pawl 18, which is adapted to engage a ratchet gear 19, preferably rigidly connected to the pinion 15. The opposite end of the transverse shaft 16 has in this instance a pinion 15^a loosely mounted thereon. The hub of said pinion has a recess at 15^a' into which extends a pin 15'' adapted to hold the pinion 15^a on the shaft 16 and allows it to preferably have a little loose motion thereon.

A hold pawl 20 has its hub 20' loosely mounted on the stud 9, and has a weighted portion 20'' thereon, see Fig. 1. The pawl 20 is adapted to engage the teeth of the ratchet 19, by lifting the weighted end 20''. In case the weaver wishes to release the fric-

tion chain 6 on the drum 5 on the warp beam, he moves the hand lever 17, (see Fig. 1,) downwardly, and through the engagement of the pawl 18 with the ratchet 19, it
 5 rotates the pinion 15, and through said pinion turns the gear 10 in the opposite direction from that indicated by the arrow in Fig. 1. The rotation of the gear 10 carries the link 14 with it, and releases the tension
 10 on the chain 6 against the action of the torsion spring 11, and the raising of the weighted part 20'' on the hold fast pawl 20 will bring said pawl 20 into engagement with the ratchet 19, and said ratchet will be
 15 held and prevented from rotating, and through the pinion 15, will hold the gear 10 against the action of the torsion spring 11. When it is desired to apply friction of the chain 6 on the friction drum 5, the hold fast
 20 pawl 20 is released from the ratchet 19, and the torsion spring 11 acts to turn the gear 10 in the direction of the arrow in Fig. 1, to apply tension to the chain 6. When it is desired to vary the tension of the
 25 torsion spring 11, to increase or decrease its action, the cotter pin 13 is withdrawn from a hole in the gear 10, and is placed in another hole in said gear, according to whether the tension on said torsion spring 11 is to be
 30 increased or decreased.

In my modified construction of the spring friction let off mechanism, shown in Figs. 3, 4, and 5, I use in this instance two ratchet
 35 gears 19 and 19^a. The ratchet gear 19 which is rigidly connected with the pinion 15 is loosely mounted upon the transverse shaft 16, and is adapted to be engaged by the pawl 18 on the hand lever 17. A second pawl 18^a is attached to the hand lever 17, and is
 40 adapted to engage the second ratchet gear 19^a. The ratchet gear 19^a is secured upon the transverse shaft 16, and operates the pinion 15^a on the opposite end of said shaft, and is in this instance fastened upon said shaft
 45 by the pin 15''. Two hold pawls 20 and 20^a have their hubs loosely mounted on the stud 21, and have a weighted portion 20'' and 20^a'' thereon. Said pawls are adapted to engage the ratchets 19 and 19^a, respectively,
 50 by lifting the weighted ends 20'' and 20^a''. In this case the friction let off mechanism on each side is entirely independent, and the weaver may release the friction chain on each drum 5 separately, as desired. The
 55 helically coiled torsion spring 11, which encircles the hub 10' on the gear 10, has its other end extending through a ratchet gear 22, which has its hub 22' loosely mounted on the inner end of the stud 9, and secured
 60 by a pin 22''. The hub 22' has therein a series of holes which are adapted to receive a pin or rod to turn the ratchet, in order to vary the tension of the torsion spring. A pawl 23, see Fig. 5, is mounted on a stud 24
 65 and is adapted to engage the teeth of the

ratchet 22, to hold said ratchet in position, and to prevent it from rotating.

The advantages of my improvements in spring let off mechanism for looms will be readily appreciated by those skilled in the
 70 art.

It will be understood that each friction device at each end of the loom is independent of the other friction device during the normal operation of the loom, and that my
 75 improvements consist mainly in mechanism whereby the friction may be released on both ends of the beam simultaneously, for convenience in adjusting the warp to the reed, after a pick-out, etc. 80

My improvements are very simple in construction, and may be readily applied to a loom, and the friction on the warp beam may be increased or decreased as desired, and may be taken off entirely. 85

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: 90

1. A let-off mechanism for looms, having a yielding friction device for each end of the spool or beam, a friction band or surface connecting each of said devices with
 95 the beam, a ratchet connected with each of said devices by gearing, a rock shaft connecting one of said ratchets with one of said devices, means to manually operate both of said ratchets by said devices, to slacken the
 100 bands at both ends of the beams simultaneously.

2. A let-off mechanism for looms, having a yielding friction device, including a flexible band for each end of the spool or beam, a
 105 rock shaft, and means, including adjacent ratchets and pawls, located at one end of the loom, on said rock shaft, and manually operating said devices at both ends simultaneously, to slacken said bands. 110

3. A let-off mechanism for looms, comprising a ratchet and gear, both loose on a stud or pinion, a torsion spring connected with said ratchet and gear, a pawl to hold the
 115 ratchet, a brake band or chain connected to said gear, all located at each end of the loom, and means, including ratchets having pinions attached thereto, to move said gears manually, to slacken said bands or chains
 120 simultaneously.

4. In a let-off mechanism for looms, a friction device at each end of the loom, comprising a ratchet, and a gear, both loose on a stud or pin, and a torsion spring connected
 125 with said ratchet and gear, a pawl to hold the ratchet, a brake band connected with each of said gears, and connections, including a rock shaft and pinions intermediate said gears, and means to operate said con-
 130 nections manually.

5. In a let off mechanism for looms, a friction device located at each end of the loom, and including a ratchet and a gear, a spring connecting said ratchet and gear, a
5 brake band connected with each of said gears, a pinion meshing with each of said gears, and means, including ratchets and a rock shaft, for operating said pinions separately, or simultaneously.
- 10 6. In a let-off mechanism of the class described, a friction band or the like for each end of the beam, a torsion spring having a ratchet attached thereto for each band, to
control the tension thereof and said ratchet, and a gear operated by said ratchet, and 15
each of said springs operating independently of the other during the normal operation of the loom, and means, including a lever operatively connected to said ratchets, whereby
the tension on said bands may be released 20
separately or simultaneously, to adjust the position of the beam.

EPPA H. RYON.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
