

(No Model.)

J. MORTON.
LET-OFF MECHANISM FOR LOOMS.

No. 475,595.

Patented May 24, 1892.

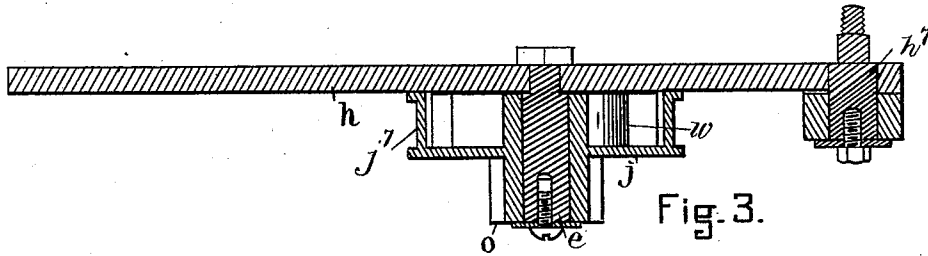


Fig. 3.

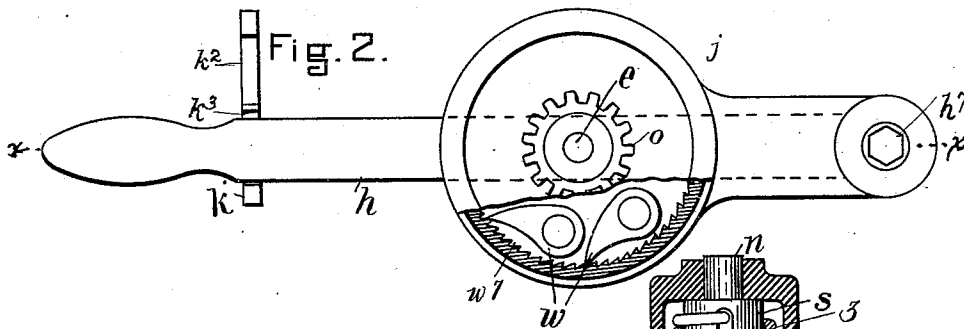


Fig. 2.

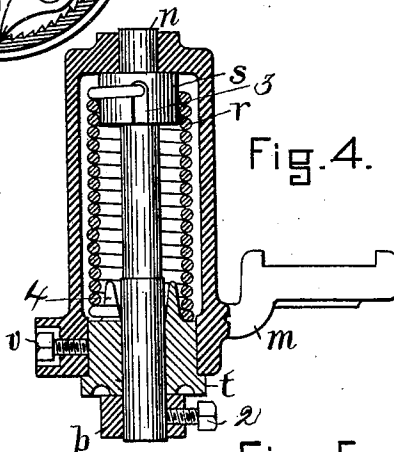


Fig. 4.

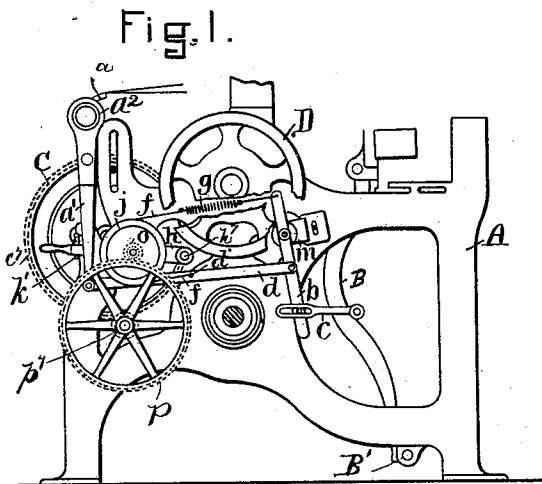


Fig. 1.

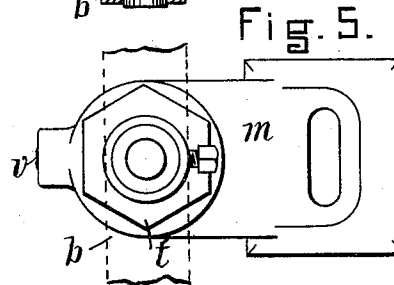


Fig. 5.

WITNESSES:

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LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 475,595, dated May 24, 1892.

Application filed October 2, 1890. Serial No. 366,809. (No model.) Patented in England October 22, 1890, No. 16,865.

To all whom it may concern:

Be it known that I, JAMES MORTON, of Valley Falls, in the county of Providence and State of Rhode Island, have invented certain
5 new and useful improvements in Let-Off Mechanism for Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form
10 a part of this specification.

This invention (for which I have received Letters Patent in Great Britain, No. 16,865, dated October 22, 1890) relates to the devices
15 or mechanisms which are called "let-off motions for looms," and which are applied to looms for the purpose of regulating the tension and the delivery or supply of the warp-threads during the operation of weaving.

20 My invention consists in a novel and improved construction and combination of the devices constituting a let-off motion for looms, the same being intended to maintain an even tension on the warp during the weaving and
25 maintain a proper resistance to the beating up of the weft or filling, and also to provide for the proper delivery of the warp from the warp-beam as the weaving progresses.

The invention will first be described with
30 reference to the accompanying drawings, and then be particularly pointed out and distinctly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a view in side
35 elevation of sufficient of a loom having my invention applied thereto to make clear the character and mode of operation of the latter, parts being removed or broken away to secure clearness. Fig. 2 is a view in side elevation,
40 partly broken away, of the friction-pulley and connected pinion, the supporting-lever, the pawls carried by the said lever, the holding-bracket for the said lever, and the pivot of the lever. Fig. 3 is a view in horizontal section
45 on the plane indicated at $x x$ in Fig. 2. Fig. 4 is a view in section, and Fig. 5 a view in side elevation of certain parts which will be referred to fully hereinafter.

One of the side frames of a loom is shown
50 at A in Fig. 1, one of the lay-swords at B, the lay rock-shaft at B', and the fly-wheel at D.

The warp-beam shown at C has the gear c' formed on the head thereof or connected therewith. The pinion which engages with the gear c' is shown at p' , this pinion being fixed
55 upon the shaft of the gear p . Into the gear p meshes the pinion o , which is connected or formed in one with the friction-pulley j , the said pinion and pulley turning together upon the stud e , projecting outward from the lever
60 h . Lever h is pivoted upon the stud h' , made fast in the loom-frame, and the part thereof adjacent to the stud e is widened and has pivoted thereto two pawls w , the points of these pawls resting upon and engaging with the
65 reversely-directed ratchet-teeth w' , which are formed upon the interior of pulley j . The periphery of pulley j is grooved at j' for the reception of friction band or strap f , which band or strap passes partly around the
70 said pulley and has the end of its upper length connected with the upper arm of a lever b , while the end of the lower length or portion of the band is connected with the rod
75 d , this rod d being at its forward end connected with the lower arm of lever b . The upper length of band or strap f is formed in part of a spring g , which is employed for the purpose of holding the band tight around the pulley j . The rear end of the rod d is con-
80 nected to an arm a' , projecting downwardly from the shaft a^2 of the whip-roll a , the said whip-roll having the wing thereof extended forwardly from the shaft thereof. A pin on the lower arm of the lever b enters a slot in
85 the link c , which is pivoted to the lay-sword B. One end of a stud n (see Fig. 4) enters a hole formed in lever b and is secured therein by screw 2. The other end of the said stud has a bearing at the inner end of the hollow
90 hub of a bracket m , which is bolted to the loom-frame, while at a point adjacent to the lever b the stud has another bearing in a bolster t , set in the outer end of the opening in the hub and secured therein by a screw v .
95 Within the hub the stud is surrounded by a spiral spring r , one end of which spring enters a notch 3, formed in an enlargement or collar s , formed on the inner end of the stud, while the other end of the spring enters a
100 notch or slot 4 in the bolster t .

The spring r acts with a tendency to bear

the lower arm of the lever *b* forward and through the connections described operates to cause the whip-roll to bear upward against the warp-yarns passing over the same. At the same time the said spring, in acting to draw the rod *d* forward, causes the lower length or portion of band *f* to be drawn forward in a manner which causes the teeth *w*⁷ on the interior of the friction-pulley *j* to be held firmly against the points of the pawls *w*, these latter being mounted on pivots carried by lever *h* and serving to prevent rotation of the friction-pulley while the spring continues thus to act. By this action upon the friction-pulley and whip-roll the proper tension on the warp-yarns is maintained. As the weaving proceeds and the cloth is drawn forward by the take-up, the strain on the warp-yarns will increase, and tend to bear down the whip-roll. When the whip-roll is depressed, the arm *a'*, rod *d*, and lower arm of lever *b* will be carried backward against the tension of spring *r*, and as they are thus carried backward the band *f* will be drawn upon in a manner to cause the friction-pulley *j* and connected pinion *o* to be rotated, and the said pinion *o* will operate through the gearing described to partly turn the warp-beam and let off a portion of the warp-yarns. This can happen, however, only when the lay is back in its beat, for when the lay swings forward the link *C* will act to draw forward positively the lower arm of lever *b*, and thereby raise the whip-roll and hold the friction-pulley from turning by keeping the teeth *w*⁷ of said pulley pressed against the pawls *w*. The bolster *t* is intended to be rotated in the hub of bracket *m* whenever it is necessary to adjust the tension of the spring *r*. For this purpose it is provided with a squared or hexagonal head fitted to be engaged by a suitable tool.

When it is desired to adjust the tension of the spring, the screw *v*, by which the bolster is clamped in position in the hub of bracket *m*, is first loosened, then the bolster is turned in the required direction, and finally screw *v* is tightened again. The object in mounting friction-pulley *j* and pinion *o* upon lever *h* is

to enable pinion *o* to be disengaged from gear *p* whenever it is desired to rotate the warp-beam by hand. The free end of the lever is formed as a handle to enable it to be conveniently grasped, and the plate *k'*, which is affixed to the loom-frame, is formed with two notches *k*² *k*³, one above the other, into either of which the lever may be pressed, so as to hold the lever in either its raised or its depressed and normal position.

I claim as my invention—

1. The combination, with the friction-pulley *j* and pinion *o* connected therewith, a train of gears adapted to be placed in gear connection with the warp-beam of a loom, the whip-roll having an arm *a'*, the lay-sword, and the link *c*, connected with the lay-sword, of the lever *b*, the rod *d*, connecting the arm *a'* and the lever *b*, the strap or band *f*, passing partly around the friction-pulley and connected at its ends with the said lever *b* and rod *d*, respectively, the stud *n*, serving as a pivot for lever *b* and the spring *r*, surrounding the stud *n* and having one end thereof connected therewith, all substantially as and for the purposes set forth.

2. The combination, with the friction-pulley *j* and pinion *o* connected therewith, a train of gears adapted to be placed in gear connection with the warp-beam of a loom, the whip-roll having an arm *a'*, the lay-sword, and the link *c*, connected with the lay-sword, of the lever *b*, the rod *d*, connecting the arm *a'* and the lever *b*, the band or strap *f*, passing partly around the friction-pulley and connected at its ends with the said lever *b* and the said rod *d*, respectively, the stud *n*, serving as a pivot for lever *b*, the spring *r*, surrounding said stud and having one end connected therewith, and the adjustable bolster *t*, with which the other end of the said spring is connected, the said bolster having provisions for holding it in set position, substantially as and for the purposes described.

JAMES MORTON.

Witnesses:

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