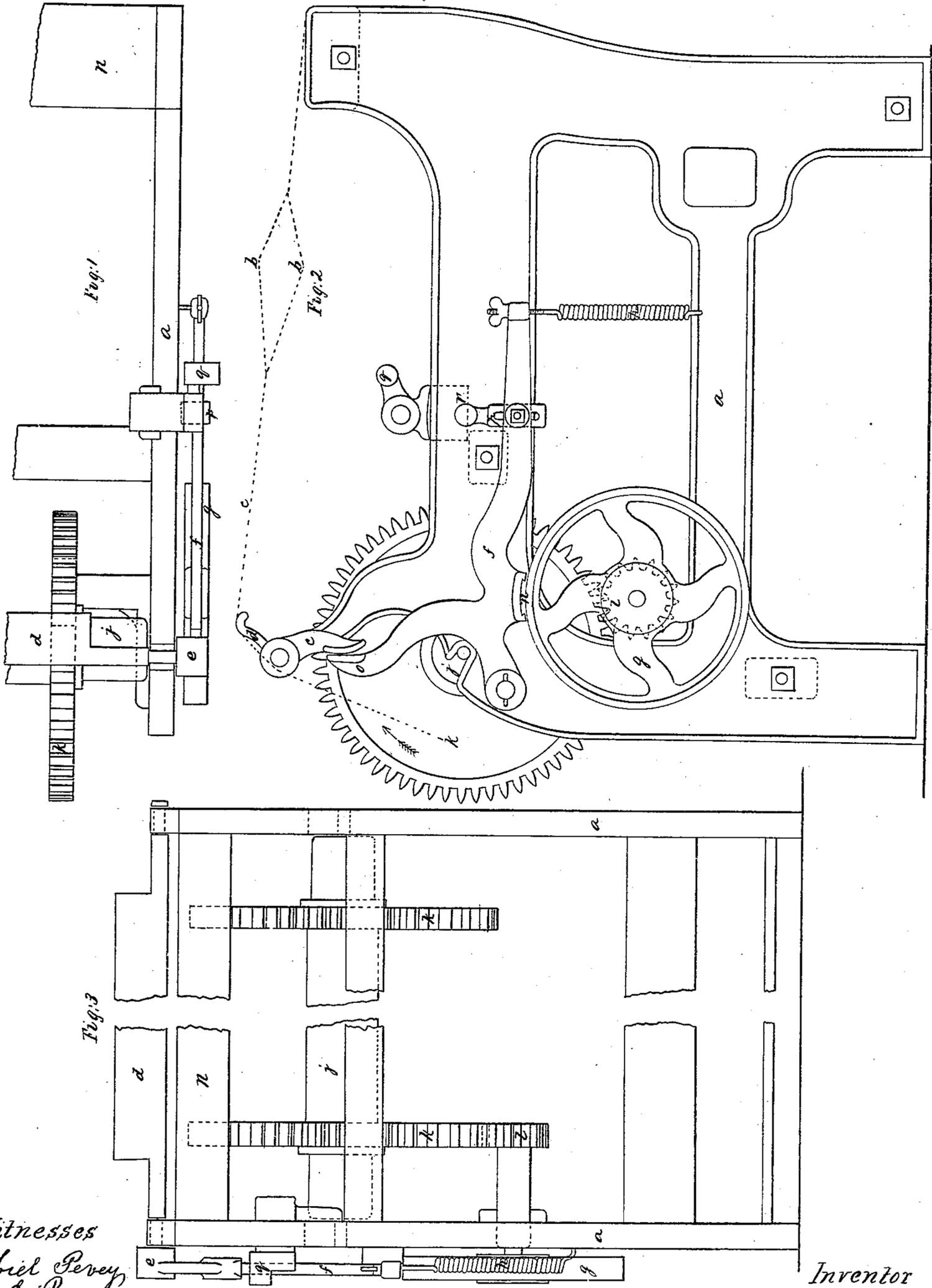


*G. Richardson.
Let-Off Motion.*

N^o 64,147.

Patented Apr. 23, 1867.



*Witnesses
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United States Patent Office.

GEORGE RICHARDSON, OF LOWELL, MASSACHUSETTS.

Letters Patent No. 64,147, dated April 23, 1867.

IMPROVEMENT IN LET-OFF FOR LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE RICHARDSON, of Lowell, county of Middlesex, and State of Massachusetts, have invented new and useful improvements in Let-Off Motion for Looms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and letters of reference marked thereon.

The nature of my invention consists in providing a loom with friction-pulley, gears, friction-lever with reception-arm and pad, and a whip-roll finger, arranged and combined in a peculiar manner, substantially as herein specified, all for the purpose of giving a more perfect and positive let-off to the yarn or warp from the beam, which will enable the manufacturer to weave or make a more perfect fabric or cloth.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 represents a plan of a loom with my improvements attached.

Figure 2 represents a side elevation of the same.

Figure 3 represents an end elevation.

a represents the loom sides; *b b* the warp shades; *c* the warp; *d* the whip-roll; *e* the whip-roll finger; *f* the friction-lever; *g* the friction-pulley; *h* the tension-spring; *j* the yarn-beam; *k* the yarn-beam gear; *l* the pinion; *m* the friction-pad; *n* the breast-beam; *o* the arm projecting from friction-lever; *p* the adjustable brake; *q* the pawl or cam.

Hitherto manufacturers have experienced great difficulty in weaving cloths or fabrics, arising from imperfect letting-off of the warps from the beam. In order to weave perfect, even cloth, every thread of woof must be wove into the warp, the exact and same distance one from another, or a given, fixed number of threads for every inch in length of cloth in the entire web. The number of threads to the inch having been first determined, and all other things being equal, this object is attained. The positive motion of the reed or sley, secured in the lathe, acting against the woof throws or beats forward a thread of woof, and leaves it at every stroke precisely the same distance parallel to and from the centre of the crank. Thus it follows that if every thread of woof laid in the warps be of the same size, and is beat up with equal force by the reed, the strain on the warps will be equal, and each motion of the ley will require an equal quantity of warp to be let off. And further, this let-off or relief from the yarn-beam, to produce the desired result, should occur as near as possible at the moment when the shades or sheds are farthest extended for the reception of the shuttle with its woof, and when the reed is the farthest back from the cloth. And, again, it is equally as important and necessary that this relief or let-off should cease, and the yarn-beam be firmly held or stopped by the brake when the reed strikes the cloth.

I have, as I believe, produced these beneficial results as follows: The yarn-beam *j* is filled with yarn for the warp of the cloth; the yarn is then drawn over the whip-roll *d* and breast-beam *n*, and secured to the cloth-beam, having previously been drawn through harness and reed or sley, the reed having been adjusted and secured in the lathe, the harness strapped and hung. The weaver with woof in shuttle, by aid of power, passes it through the shades *b b*. This thread of woof, which has been left by the shuttle, is then instantly beat up or thrown forward by the reed to its full extent. This thread of woof beat up in the warp, in connection with the extension of the shades *b b* or shedding motion, produced by suitable harness-operating mechanism, causes corresponding additional tension to the warp *c*, which acts on the whip-roll *d*, operating the whip-roll finger *e*, which instantly acts upon the projecting-arm *o* of the lever *f* in this manner, at the same instant raising the friction-pad *m* from the friction-pulley *g*, thus allowing the yarn to turn the yarn-beam in the direction of the arrow until sufficient warp is let off. This gives the required relief, equivalent to the last thread thrown crossing and the extension of the warp *c*. The warp having been let off sufficiently the whip-roll *d* rises and allows the friction-pad *m* to resume its former seat on the friction-pulley *g*, where it is held by aid of the tension-spring *h* acting on the end of the lever *f*. The tappet *q* is operated in such manner that it strikes the projection of the adjustable stand *p* on the friction-lever *f* at the time the sley is beating up the weft, and forces the lever in contact with the friction-pulley *g* and prevents any letting off of warp. It is apparent that should the lathe continue its usual motion, and no weft be thrown in the shed of the warps, the let-off will stop and be entirely

at rest, as no action would be communicated to the friction-lever *f* without the thread of woof or filling is passed through the shades *b b* and receives its required stroke.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. I claim the combination and arrangement of the whip-roll *d* with its finger *e*, the lever *f*, tension-spring *h*, friction-pad *m*, and friction-pulley *g*, of any form or shape, substantially as and for the purpose herein set forth.

2. I claim the cam or pawl *q* in combination with the adjustable stand *p r* and friction-brake *f*, as and for the purpose herein described.

3. I claim allowing the let-off at the time of the extension of the sheds of the warp by its action on the whip-roll, and completely stopping the let-off at the time of beating up the woof by means independent of the whip-roll, substantially as herein specified.

GEORGE RICHARDSON.

Witnesses:

ABIEL PEVEY,
GEO. E. PEVEY.