(No Model.)

S. M. HAMBLIN.

LET-OFF MECHANISM FOR LOOMS.

No. 390,962. Patented Oct. 9, 1888.

Fig. 1.

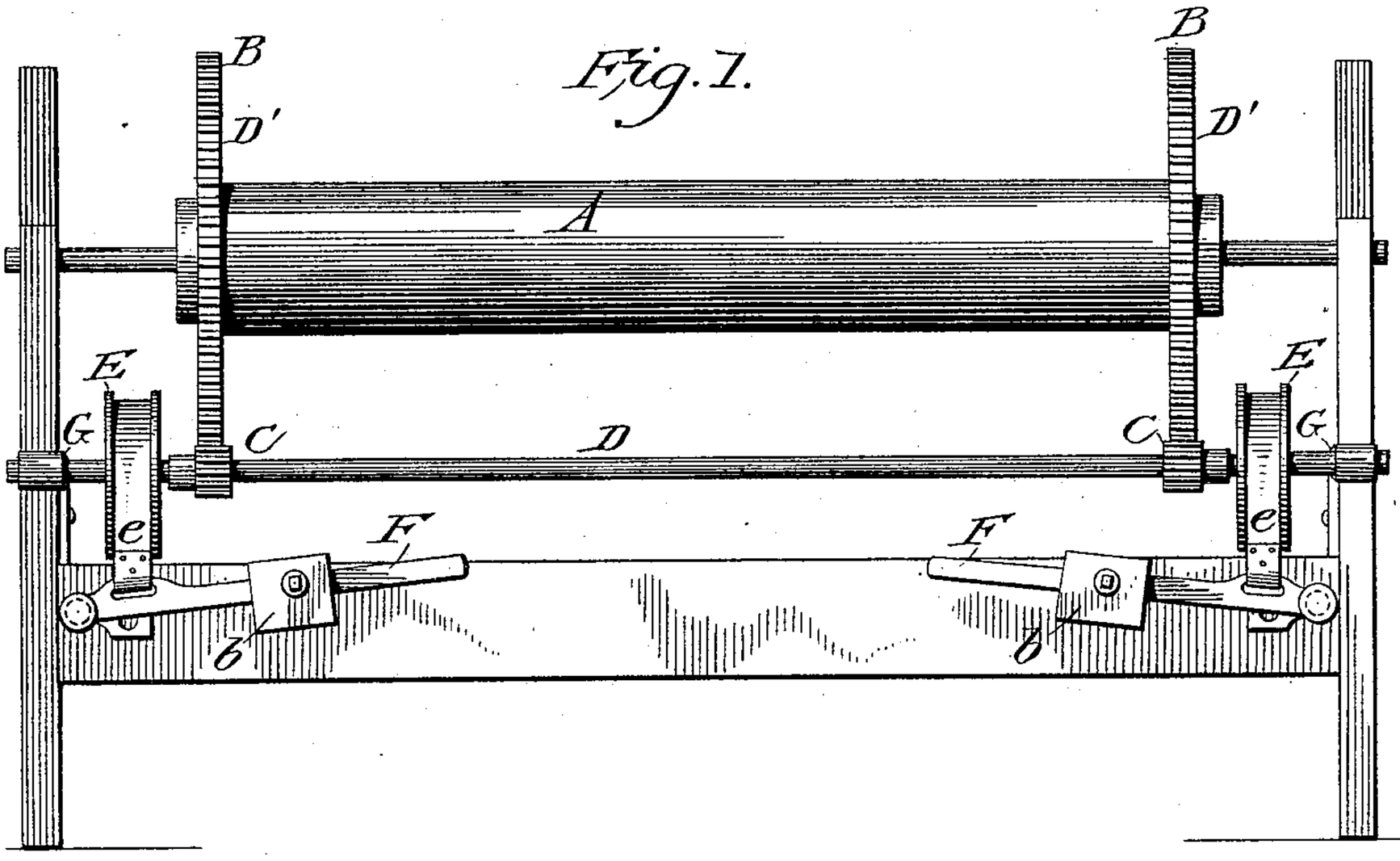
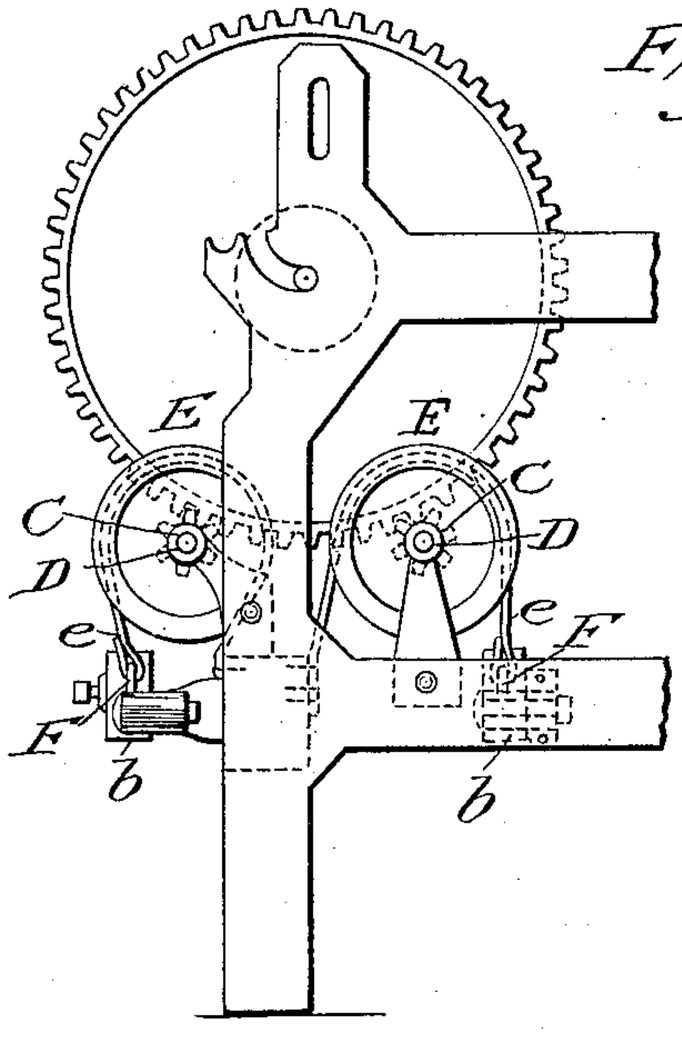


Fig. 2.



Witnesses.
Wm. A. Wilk
Jas. W. Brohaun.

Inventor:
Stephen M. Hamblin.
per. Edw. M. Dowell & Co.
Attys.

UNITED STATES PATENT OFFICE.

STEPHEN M. HAMBLIN, OF PLYMOUTH, MASSACHUSETTS.

LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 390,962, dated October 9, 1888.

Application filed March 3, 1888. Serial No. 266,110. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN M. HAMBLIN, a citizen of the United States, residing at Plymouth, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Let Off Mechanism for Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in let-off mechanism for looms.

It has for its object to promote an even and steady motion of the warp as it is given off, and consequently a similar effect in the movement of the cloth as the same is taken up.

A general description I give as follows: At opposite ends of the warp-beam, properly journaled in the frame of the loom, are fixed heads provided on their edges with gear-teeth. Below the said beam and on either side of a center line running vertically through the same are rods journaled in the frame of the loom, each of which is provided with two pinions, the teeth of which engage the teeth of the heads of the warp-beam at the opposite ends thereof. These rods have each fast thereon two flanged drums or pulleys, over which pass belts fastened by one end to the frame of the loom, and at their other ends said belts are secured to levers pivoted in the said loom's frame. The levers aforesaid, four in number, are provided with weights, which slide upon them, which, when moved inwardly or outwardly, serve to tighten or loosen the said belts on their respective pulleys and control the movement of the warp-beam about its axis, and thus decrease or increase the tension of the warp.

In my drawings, Figure 1 is a front elevation showing the let-off mechanism as applied to a loom. Fig. 2 is a side elevation of the same.

Similar reference-letters indicate like parts in both of the figures.

Referring to the drawings, A is the warp-beam provided with heads B B, on the edges of which are the gear-teeth D′ D′.

D D are shafts journaled in the frame of the loom provided with pinions C C C C, which mesh with the teeth on the warp-beam heads. Upon the shafts D are fixed also pulleys or drums E E E E, provided with guide flanges, and over these drums pass the belts *e e e e*, fastened each by one end to the frame of the loom directly, and at their opposite ends said belts are secured to the levers F F F F, pivoted in the said frame of the loom.

Weights *b b b b* are adjustably fixed to the levers F, and may be moved and clamped at proper points of adjustment between the fulcrums of the said levers and their ends.

It will be understood that I use in my device four pulleys and four belts, and with them four levers, so that each head of the warp-beam is under the influence of two belts. In this arrangement a very little weight is required to each of the levers, and said levers require but little adjustment.

The movement of the warp-beam is communicated to the pulleys E through the gear-teeth of the beam and the pinions on the shafts D, said movement being modified by the amount of friction produced by the weights upon their respective bands or belts.

In the United States Patent No. 3,954 it may be noticed that the friction-wheel, over which the friction-strap passes, and the pinion which acts upon the gears of the warp-beam are one, or so closely connected that their position is fixed, and they can only be used upon the loom for which they are expressly built. It may be mentioned, also, that the warp-beam must be just such a length, in order that the gears may fit into the pinion of the let-off. In my invention the pinions are movable, and can be adjusted to any length of warp-beam and can be used on any loom of any make. This is considered to be a matter of considerable advantage, as sometimes it is desirable to change the width of the weave on the same loom, and this could not be done with a let-off such as is shown in the Patent No. 3,954.

Another advantage of my invention is in the two pinions—one for each end of the warp-beam—mounted on one shaft and working in unison. By this arrangement I get an equal tension at both ends of the warp-beam, which is not the case when the tension is only at one end of the beam.

In my invention I get the same absolutely even lay of the filling in open as in close weaving, and I can readily change from one to the other in the same weave without touching the

tension-weights. This effect cannot, I believe, be had with any other let-off now in use. It is often the case, too, that some of the teeth in the gears of the beam-heads are broken, and in the Patent No. 3,954, should such an accident happen, every time the broken part was reached the beam would slip and make a bad place in the fabric. With my arrangement such slipping would be impossible, unless the teeth should be broken from both heads of the beam at exactly opposite points.

Another advantage of my invention is found in the increased tension that may be put upon the warps, and the fact that the cradling arrangement of the two shafts and the support it gives to the warp-beam prevents in some degree the jumping of the latter, so common in light looms, especially when running at a high rate of speed.

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

The combination, with the warp-beam and the toothed heads fixed thereon, of the shafts D, the pinions fixed on said shafts meshing with said toothed heads, drums E, fixed on said shafts D, the levers F, provided with adjustable weights pivoted to the frame of the loom, and bolts *e*, secured directly to the said frame and to the said levers F, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

STEPHEN M. HAMBLIN.

Witnesses:
A. C. BARNES,
HERBERT MORISSEY.