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Improvement in Loom-Stopping Mechanisms

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L. J. KNOWLES.
Loom-Stopping Mechanisms.

No. 142,401.

Patented September 2, 1873.

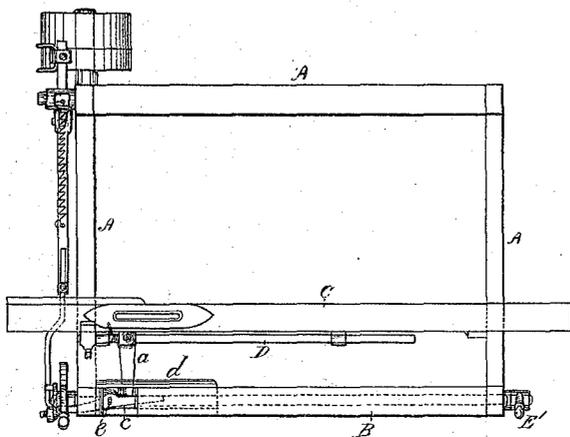


Fig:1.

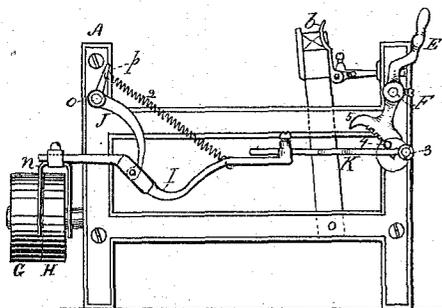


Fig:2.

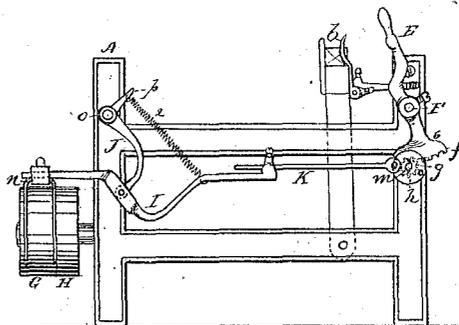


Fig:3.

WITNESSES:

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IMPROVEMENT IN LOOM-STOPPING MECHANISMS.

Specification forming part of Letters Patent No. **142,401**, dated September 2, 1873; application filed June 17, 1873.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Looms; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings which form a part of this specification, and in which—

Figure 1 represents a top or plan view of so much of a loom as is necessary to illustrate my present improvements. Fig. 2 represents an end view of the loom with the parts in position, as shown in Fig. 1; and Fig. 3 represents a similar end view of the loom, some of the parts being shown in different positions, as will be hereafter explained.

To enable others skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it in detail.

My present improvements relate to the shipper device; and the nature of the invention consists, first, in an improved shipper knocking-off lever, and the combination with the same with the loom, as will be hereafter explained; second, in the combination of a rack and pinion device with the shipper-handle, as will be hereafter explained; and, third, in the combination, with the shipper device, of a spring and stop, as will be hereafter explained.

In the drawings, the parts marked A represent the main frame of the loom; B, the breast-beam; C, the lay, and D, the rod to which the knocking-off dog *a* and shuttle-spring *b* are attached. These parts may be made in the usual manner. *c* is a knocking-off lever arranged within the slot or groove of a projection, *d*, of frame A, and below the breast-beam—one end of the latter being shown broken away to expose the knocking-off lever *c*. Lever *c* is held in place by a small pin, *e*, which enters an oblong hole in the said lever, as indicated in Fig. 1; the outer end of the lever extends through a hole in the loom-frame and passes in front of the left-hand shipper-lever E, which is secured on the end of the shipper-rod F, and which rod is fitted to turn in suitable bearings in the loom-frame A, and extends from side to side of the loom-frame under the breast-beam, as indicated in

dotted lines, Fig. 1, and has a right-hand lever, E', attached to it, whereby the shipper device can be operated from either end of the loom. The lower end of shipper-lever E is provided with a rack, *f*, which takes into small cog-gear *g*, upon the inner side of the blank-wheel *h*, both being supported and turning upon a stud, *m*, in the side of the loom-frame A. G represents the loose pulley and H the tight pulley; *n*, the shipper-fork, which is attached to the outer end of belt-arm I, hinged to and supported by swinging arm J, which turns on a stud, *o*, projecting from the side of the loom-frame, and having an extension, *p*, to which one end of a spiral spring, 2, is attached, the other end being secured to the front part of belt-arm I, as fully indicated in Figs. 2 and 3. A rod, K, is rigidly fastened to the front end of belt-arm I, while its front end is slipped upon stud 3, projecting from the blank-wheel *h*. The back of the knocking-off lever may be made straight instead of convex, as shown, and the supporting-back, against which it rests, made convex, or the back of the lever and its back-support may be both convex or rounding, if preferred. This form of lever may be applied to the various kinds of shipping devices.

From the foregoing description it will be seen that the tendency of spring 2 is to throw the shipper-fork *n* opposite the loose pulley G, as shown in Fig. 3.

By drawing either of the shipper-levers E E' forward to the position shown in Fig. 2, the belt will be shipped onto the tight pulley H, where it will be securely held until the shipper device is operated by hand or by dog *a*, since stud 3 is thrown up past the center, but is prevented from being drawn over by pin 4 projecting from the blank-wheel, and which pin strikes upon the top of rod K, as indicated in Fig. 2. The back of the knocking-off lever *c* is rounded, and rests against the front of the slot in which it is placed, as indicated in Fig. 1; consequently, when dog *a* strikes the inner end of said lever, as indicated in Fig. 1, the fulcrum upon which it turns is near its outer end, or between its outer end and pin *e*, while, after the shipper-arms have been thrown forward far enough to turn stud 3 down past the center of stud *m*, lever *c* rolls

back so that its fulcrum is transferred to a point between dog *a* and pin *e*. The practical effect of this mode of construction is that the force of the lay of the loom acts upon the long arm of the lever until the shipping device is moved into a position where it can be operated by spring 2, after which it operates upon the short end of the lever, thereby causing the outer end of lever *c* to move with greater speed, thus greatly aiding the spring in throwing the belt upon the loose pulley. In lieu of the blank-wheel *h* a simple crank may be used; and in lieu of the rack *f* and gear *g*, chains, straps, or other similar devices, may be employed, in which case the chains should be so combined with the lower end of the shipper-lever and the wheel or crank-shaft, that one chain would wind upon the shaft when the other was unwound, and thus give a positive motion to the shipper in both directions when the shipper-lever was moved back and forth. Even a single chain may be used, the ends of the chain being attached to the respective ends 5 and 6 of the lower broad part of the shipper-lever and the body of the chain, making one or more turns about the shaft of the crank or wheel *h*. The crank device may be combined with a shipper-lever and a single rod or connection with the belt-fork or guide *n*, or other similar device. All these devices may be made in various forms without departing from the principle of my invention, which consists mainly in combining a crank device and stop with the shipper-handle and belt-fork or guide, whereby the belt will be held on or off of the tight pulley, by the crank passing by the dead-point or center, until arrested by the stop, and from which position it must be moved by the operator or automatic mechanical device.

Those skilled in the art to which my invention belongs will readily appreciate the practical advantages of my said improvement, since the device is so constructed and arranged that the belt is retained very securely either upon the tight or loose pulley, as the case may be, while it can be quickly shifted from one posi-

tion to the other, as above explained. Then, again, it will be observed that the operative does not have to impart to the shipper-lever any lateral motion in shifting the belt, a simple back-and-forth motion being sufficient. In lieu of the stop-pin 4, in wheel *h*, a stop-pin can be inserted in some part of the loom or frame to arrest and retain the shipper in position when the belt is on the tight pulley. When the shipper-lever *E* is in the position shown in Fig. 3, the curved end 5 strikes against the teeth of gear *g*, and thus arrests and holds the wheel or crank stationary after it has passed the dead-point or center. Any other suitable device or mode may be used for this purpose. It will be observed that the action of the knocking-off lever on the shipper-lever continues until the belt is thrown upon the loose pulley; consequently the belt would be shipped even if the spring should fail to act, or was omitted entirely.

Having described my improvements in looms, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the shipper-lever *E* and rod *K*, of rack *f* upon the end of the shipper-lever, gear *g*, and wheel *h*, substantially as and for the purposes set forth.

2. The combination, with the shipper-lever *E*, belt-arm *I*, rod *K*, rack *f*, gear *g*, and wheel *h*, of pin 4, spring 2, and hinged arm *J*, substantially as and for the purposes set forth.

3. The combination, with belt-arm *I* and rod *K*, of wheel *h*, or its described equivalent, provided with a stop-pin, substantially as and for the purposes set forth.

4. The combination of the loosely-pivoted knocking-off lever *c*, having its side curved with the grooved bracket *d* on the loom-frame, shipper-lever, and dog *a*, substantially as and for the purposes set forth.

LUCIUS J. KNOWLES.

Witnesses:

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