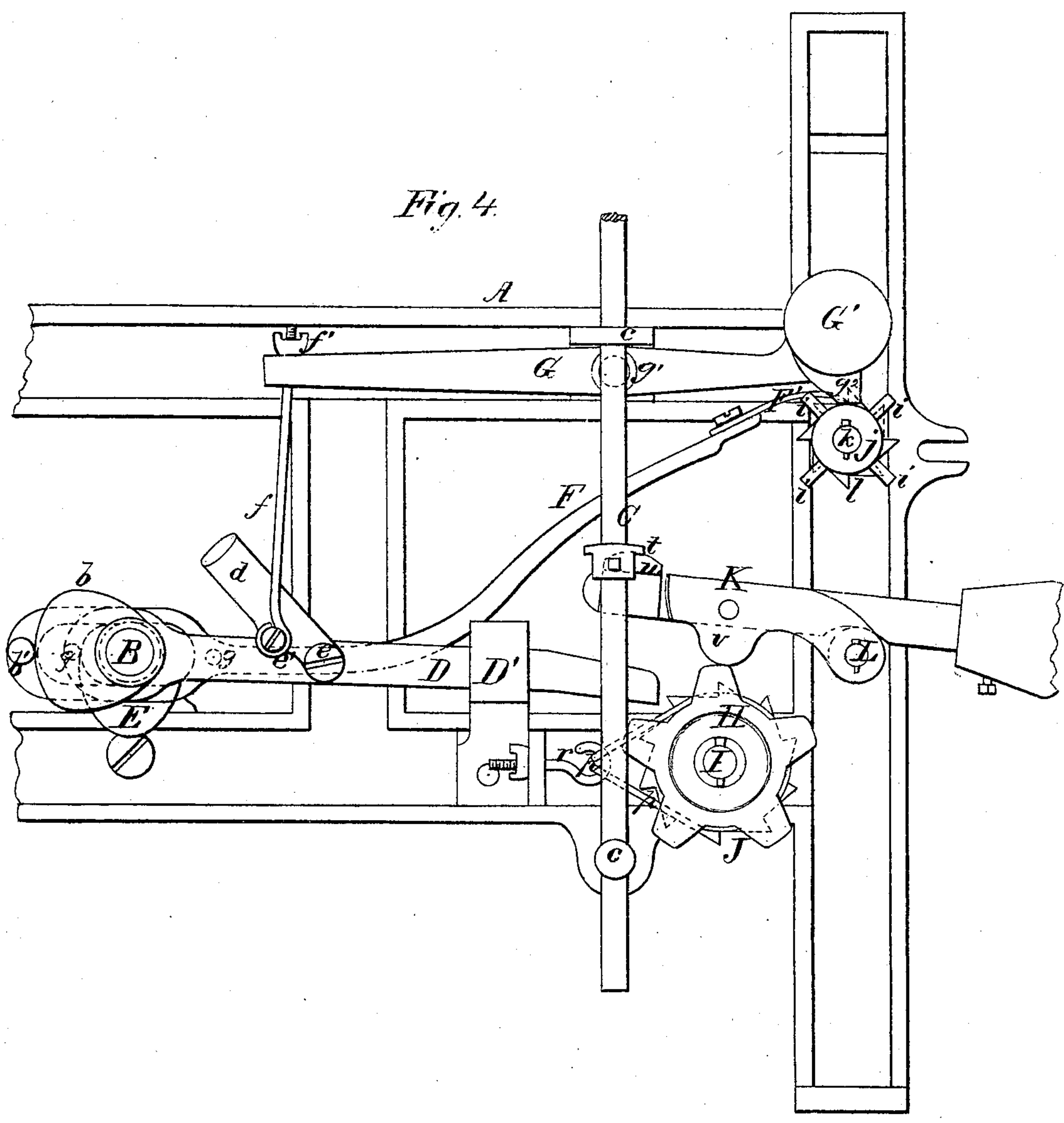


B. H. JENKS.
Shuttle-Box Motions.

No. 134,069.

Patented Dec. 17, 1872.



Witnesses:
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BARTON H. JENKS, OF BRIDESBURG, PENNSYLVANIA.

IMPROVEMENT IN SHUTTLE-BOX MOTIONS.

Specification forming part of Letters Patent No. 134,069, dated December 17, 1872.

To all whom it may concern:

Be it known that I, BARTON H. JENKS, of Bridesburg, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Box-Motion for Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1, Plate 1, is an elevation of one side of a loom-frame having my improved box-motion applied to it; Fig. 2, Plate 1, is a top view of the cams on the main shaft and portions of the pawl, and the pushing-rod and its dog; Fig. 3, Plate 1, is a top view of the compound loaded lever which operates the box-rod; and Fig. 4, Plate 2, is a similar view of the same parts shown in Fig. 1, indicating the dog on the pushing-rod in the position it assumes when one of the pins on the index-drum raises the loaded end of the index-lever.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements on devices for moving shuttle-boxes in looms for weaving fancy-colored fabrics. The nature of my invention consists, first, in providing a reciprocating pushing-rod, which operates the star-ratchet that lifts the box-rod with a pivoted dog, which is controlled by an index wheel or chain, so that the said ratchet will not be moved except when an index pin or roller, as the case may be, is brought into such position as to lift the loaded end of the index-lever, as will be hereinafter explained; second, in adapting the pushing-rod which moves the star-ratchet to serve also as a means for holding said ratchet from turning too far as long as the pushing-rod remains in a forward position, thereby steadying the star-ratchet and allowing the loom to be run at a high rate of speed, as will be hereinafter explained.

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

In the accompanying drawing, A represents one side of a loom-frame. B is the main driving-shaft of the loom. C is the box-rod, which receives vertical motion through guides, and carries upon its upper end the shuttle-boxes. D is a push-lever, which is guided by shaft B

at one end, and by a fixed bracket, D', near the other end, and which receives a reciprocating endwise motion from a single throw-cam, *b*, on shaft B. The cam *b* acts upon a stud, *b'*, on rod D, to give this rod its backward strokes, and it acts upon a swinging dog, *d*, to give this rod its forward strokes. The shaft B passes through an oblong slot or yoke of the push-rod D, and when the dog *d* is in the position shown in Fig. 1 said rod will receive a forward and backward stroke during every revolution of the shaft B; but when the free end of the dog *d* is raised, as indicated in Fig. 4, the rod D will be moved back, and allowed to remain at rest in this position. The inclined end of the push-rod operates upon ratchet-teeth J, which are on the drum of a star-ratchet, H. Its drum and ratchet-teeth J turn about a fixed stud, I, on frame A, and around the drum of this ratchet a friction-band passes, which is held and kept under proper tension by an adjustable hook, *r*. There are exactly double the number of ratchet-teeth J that there are leaves on the star-ratchet H, so that it requires two forward strokes of the push-rod acting on the teeth J to move the star-ratchet a distance equal to the space between two of its leaves. The slot through the fixed bracket D', through which the push-rod D plays, is made long enough vertically to allow this rod to drop slightly when it leaves the teeth J, as shown in Fig. 4; and as this rod is moved forward and acts upon a tooth of ratchet J, it will continue to rise until it reaches the termination of this forward stroke, when its upper edge will abut against the upper end of the slot through bracket D', as shown in Fig. 1, thereby preventing the star-ratchet from being turned either forward or backward. By this means the push-rod is caused to lock the star-ratchet, and to hold it steady as long as the free end of this rod remains in a forward position. K is a compound loaded lever, which has its fulcrum at L, and which is constructed with a tooth, *v*, on its lower edge, that rests upon the perimeter of the star-ratchet. Upon one arm of this lever K the box-rod C is supported by a toe, *t*, resting upon the convex surface of a piece, *u*, made fast to said lever. The lever K is composed of two arms jointed together in such manner that, should the box-rod meet with any con-

siderable resistance in its upward stroke, the weight on one of the arms of said lever would rise, and allow a leaf of the star-ratchet H to pass beneath the tooth v on the other arm of said lever without liability of deranging or breaking the loom.

I have fully described the peculiarities of the lever K in an application for Letters Patent previously made by me.

The dog d , which is pivoted to the push-lever D, is constructed with an overhanging lip, d' , shown in Fig. 2, which will rest upon the upper edge of the push-rod D when the dog is in line therewith, as shown in Fig. 1. To this dog, at e' , a rod, f , is pivoted, the upper end of which is connected, by a nut, f' , to the long-arm of a loaded index-lever, G, which lever is pivoted to frame A at g^1 , and provided with a tooth, g^2 , on the loaded end G'. Beneath the tooth g^2 is an index-wheel, j , carrying four radial studs, i , of equal length, which are arranged at equal distances apart and in the same plane. This index-wheel is applied upon a stud, k , and provided on one end with double the number of ratchet-teeth l that there are studs i . The index-wheel is moved about its axis by means of a pawl-arm, F, acting upon the ratchet-teeth l , which arm is slotted at its lower end, and receives through this slot the shaft B. The elliptical cam E on shaft B, acting on studs $g g$ on arm F, communicates a reciprocating motion to this arm.

Instead of the studded index-wheel herein described, an index-chain, composed of rollers or of knobs or studs, may be used.

It will be seen from the above description that the dog d on the pushing-lever D is controlled by the index-wheel in such manner that the star-ratchet which lifts and depresses the box-rod C, is moved about its axis, and

the pushing-lever moved forward only when a stud, i , on the index-wheel is caused to lift the loaded end of the index-lever, for when the tooth g^2 lies between two studs, $i i$, as shown in Fig. 4, the weight G' will hold up the free end of the dog d out of the path of the cam b in its rotation.

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

1. In combination, the reciprocating pushing-rod D, which operates the star-ratchet of the shuttle-box motion, the dog d , pivoted to the said rod, and controlled by an index-wheel or chain, or their substantial equivalents, all so arranged and operating that the pushing-rod is reciprocated only when the dog is placed by the index-wheel within the path of an actuating device, for the purpose set forth.

2. The index-wheel and also the star-ratchets, or their respective equivalents, receiving their motion from a single shaft through the mediums of cams b E, a pawl, F, a pushing-lever, D, and a dog, d , whereby the star-ratchet and the pushing-lever are moved only when a pin on the index wheel or chain is moved beneath an index-lever, G, substantially as described.

3. The pushing-lever D, arranged to work through a guide, D', so as to hold the star-ratchet H when acting upon the ratchet-teeth J, substantially as described.

4. The compound lever K, in combination with the pushing-lever D, dog d , and star-ratchet H, all arranged as and for the purpose set forth.

BARTON H. JENKS.

Witnesses:

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