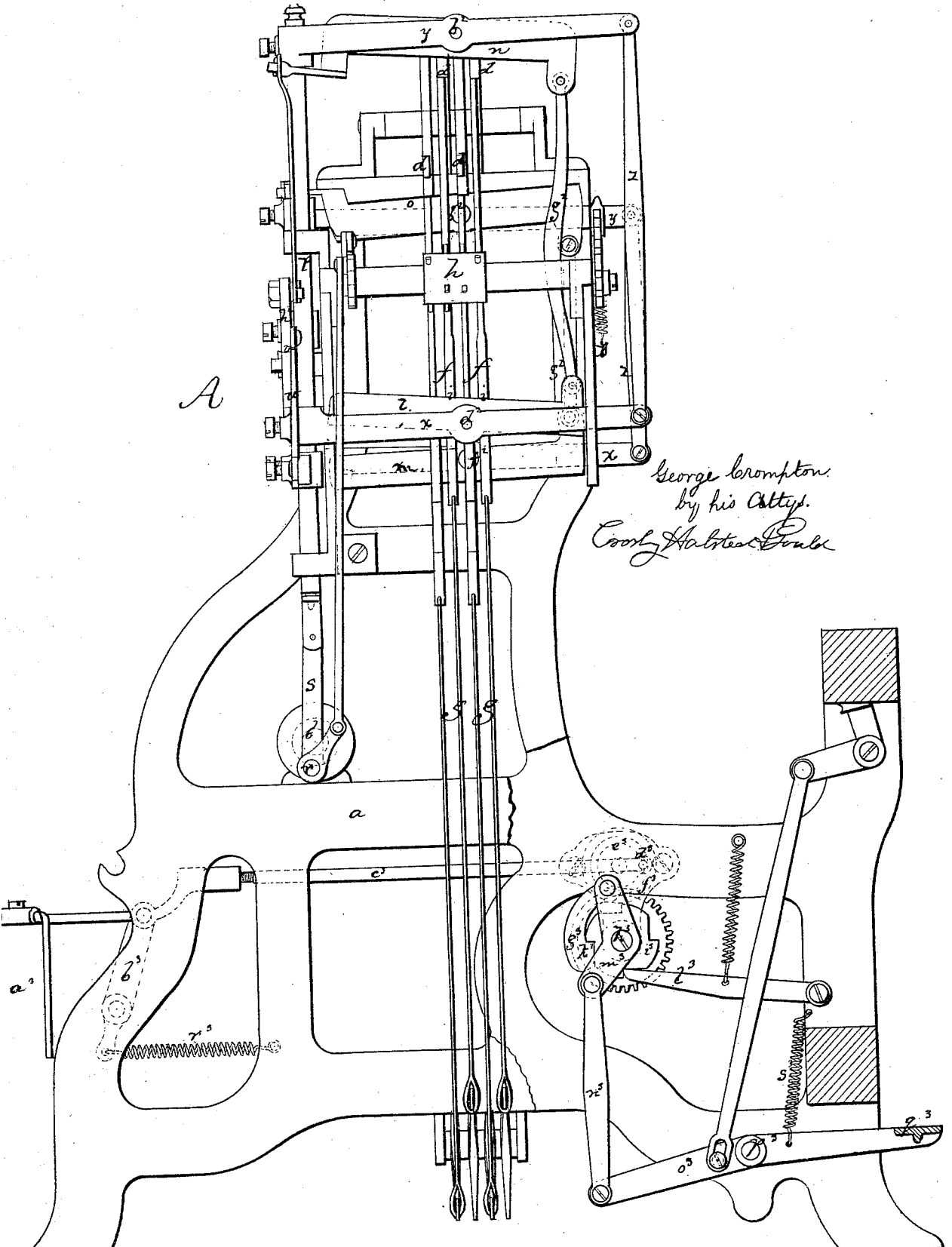


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LOOM.

No. 94,571.

Patented Sept. 7, 1869.



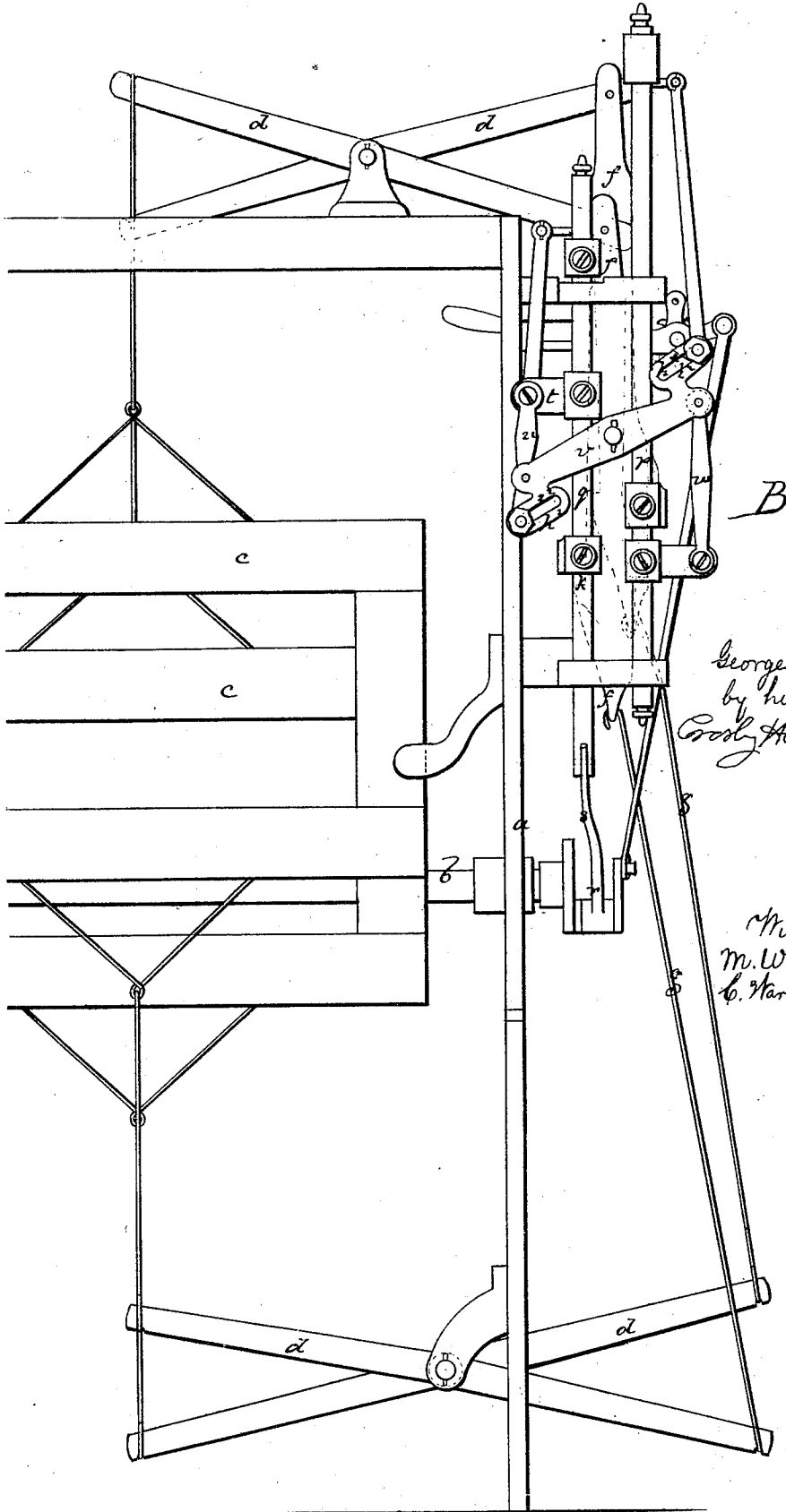
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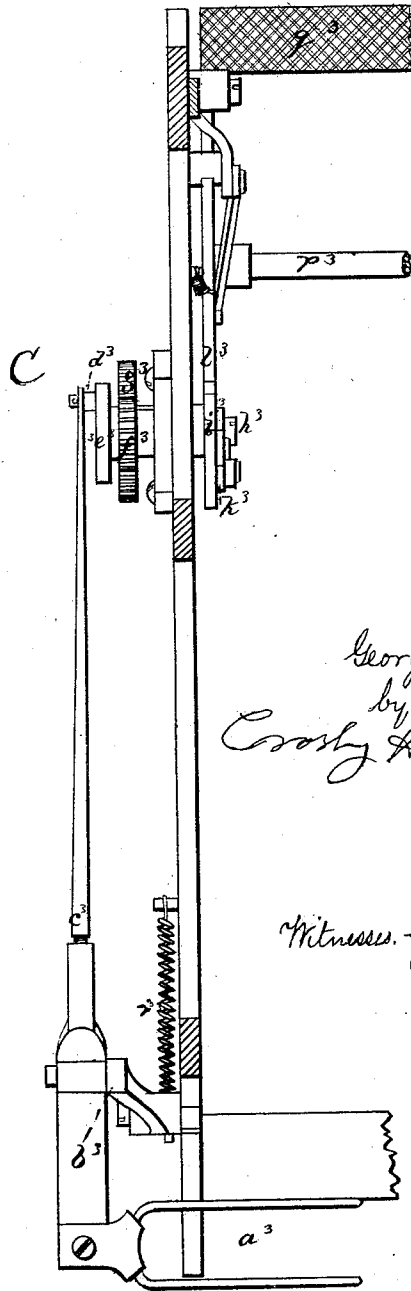
*George Crompton
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M. W. Frothingham.
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United States Patent Office.

GEORGE CROMPTON, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 94,571, dated September 7, 1869.

IMPROVEMENT IN 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 CROMPTON, of Worcester, in the county of Worcester, and State of Massachusetts, have invented Improvements in Looms; and I do hereby declare that the following, taken in connection with the drawings, which accompany and form part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practise it.

My present invention relates in part to the organization of mechanism for working angular lifter, depresser, and evener-bars of fancy looms, and in part to a mechanism, by which the shipper-lever may be "knocked off" and "knocked on" by a treadle or foot-operated lever.

The drawings represent a loom-frame, in which are mounted those parts of a loom-mechanism directly connected with my improvements.

A shows the frame and its mechanism, partly in end elevation and partly in section.

B shows the harness-mechanism in side elevation.

C shows a plan of the shipper-mechanism.

a denotes the frame.

b, the crank-shaft.

c, the series of harness-frames, each suspended or strung between the inner ends of two horizontal levers, *d d*, turning in suitable bearings at the top and bottom of the frame, the outer ends of each two levers being connected by a hooked jack, *f*, and an inclined cording, *g*, the stress of the inclined cording of each jack bearing it against the contour of the pattern-chain or cylinder *h*.

Each hooked jack has a hook, *i*, on its front edge, and a hook, *k*, on its opposite edge, the front hooks of those jacks not pressed inward by the pattern-mechanism lying in the path of upward movement of a reciprocating lifter-bar, *l*, and the rear hooks of such jacks as are pressed inward by the pattern-mechanism lying in the path of downward movement of a reciprocating depresser-bar, *m*, the shed being formed by and in accordance with the movement up and down by the lifter and depresser-bars of the respective jacks, according to the distribution of the jacks effected by the pattern-mechanism, as is readily understood by persons familiar with the construction and operation of these looms.

After the shed is formed and the shuttle thrown, the jacks are evened by two evener-bars, *n o*, one over and one beneath the ends of the upper harness-levers, these eveners, as they move toward each other, clamping the levers together, and bringing the hooks of each set into horizontal line.

These eveners, and the lifter and depresser, are arranged and operated as follows:

On one side of the lifter and depresser-mechanism are two vertical slide-rods, *p q*, sliding in stationary

bearings, fixed to the frame *a*, and having reciprocating movements applied to them from a crank, *r*, on the shaft *b*.

The crank-rod *s* is jointed directly to the end of the slide-rod *q*, as seen at B, and fixed to this rod is an arm, *t*, which is connected by a link, *u*, to one end of a working-beam, *v*, whose other end is connected by a link, *w*, to an arm fixed upon the other slide-rod *p*, motion in the opposite direction being thus imparted by the slide-rod *q* to the slide-rod *p* up or down.

Each slide-rod has fixed to it two horizontal bars, *x y*, parallel to the loom-frame, the opposite ends of these bars being connected by a vertical strut, *z*, the two bars of each slide-rod, and the slide-rod itself and the strut connecting the outer ends of the bars, thus forming a quadrangular frame in which all these four parts are relatively stationary.

To the upper bar *y* of each frame the evener-bar *n* or *o* is pivoted, as seen at *b'*, and to the lower bar of the outer frame the lifter-lever *l* is similarly pivoted, as seen at *d'*, and a depresser-lever, *m*, to the lower bar of the inner frame, as seen at *f'*, one end of each evener-lever being connected to the lifter or depresser in line with it by a link, *g'*, while the other end of each evener is connected to one of two arms *h'*, projecting from the opposite ends of the working-beam *v*, each evener being (by this connection) brought from a horizontal into an inclined position, as the eveners separate, and by its connection with the lifter or depresser, imparting the same inclination thereto, so that the requisite inclination is produced in the jack-hooks, as they are raised or depressed, and in the shed.

The degree of this inclination is varied by means of a slot, *i'*, in each arm *h'*, such slot enabling the joint-pin of the link *g'* to be carried nearer to or further from the point of the working-beam.

It is in this method of effecting the movements or inclination of the lifter, depresser, or evener-levers, and of adjusting the degree of such inclination that the first part of my invention consists.

It will be obvious that instead of jointing the eveners to the arms *h'*, the lifter and depresser may be the members so jointed.

The shipper-mechanism is as follows:

a' denotes the shipper-fork, hung upon a rocker-lever, *b'*, and having a long arm, *c'*, extending toward the front of the loom, as seen at A, the end of this arm being jointed to a crank-pin, *d'*, on a crank-wheel, *e'*, to which is fixed a gear-pinion, *f'*, meshing into a gear-wheel, *g'*, fixed on a shaft, *h'*, turning in a stationary bearing affixed to the frame *a*, this shaft having on its inner end a pawl-wheel, *i'*, with the teeth of which a hook, *k'*, engages, a spring-detainer pawl, *l'*, also engaging with such teeth.

The hook *k'* is hung on the end of one arm of a

bent lever, m^2 , whose other arm is connected by a link, n^2 , to the inner end of a rocker-lever or frame, o^2 , mounted on a rocker-shaft, p^2 , journalled in the ends of the frame a , the outer arms of this lever or frame having fixed thereto a long foot-bar or treadle, q^2 , preferably extending the whole length of the loom.

When the belt is on the fast pulley, the shipper-fork and rod, and the treadle and other mechanism, are in the position shown at A, the crank-pin being on the dead-centre.

When the belt is to be knocked off, the operator, standing at any position along the breast-beam, depresses the treadle with her foot, thereby forcing up the link n^2 , and causing the hook k^2 to actuate the pawl-wheel i^2 , which turns the gear g^2 , and the pinion f^2 , and crank-wheel e^2 , and as soon as the crank-pin is off the dead-centre, a spring, r^2 , throws out the shipper-fork, and shifts the belt, as will be readily understood.

This movement of the shipper-fork brings the crank-pin on the opposite dead-centre, and the fork is locked in position. When the treadle is released, it is drawn up by a spring, s^2 , bringing the treadle and hook to their normal position, the detainer-pawl preventing reverse movement of the pawl-wheel.

To throw on the belt again, the treadle is again depressed, the hook thereby again moves the pawl-wheel and crank-wheel, the treadle having just play enough to cause the crank-pin to be brought on to the opposite dead-centre, and the shipper-fork is thus moved far enough to again knock on the belt, the movement of the crank-pin from one dead-centre to the other producing endwise movement of the shipper-fork, just sufficient to throw the belt from pulley to pulley.

It will thus be seen that the shipper-fork is moved in each direction (to throw the belt on or off the fast pulley) by depression of the treadle, the treadle being automatically returned to position, (after either move-

ment of the fork,) so that the belt may be again changed by depression thereof, by the foot of the operator.

It is in this shipper-mechanism, and in the details thereof, the second part of my invention consists.

It will be obvious that the crank may be operated by a hand-moved mechanism to effect the movements of the fork in either direction, and its retention in either position into which it is moved.

I claim—

1. Lifter, depresser, and evener-levers, which are pivoted to reciprocating bars, attached to the slide-rods, and which are brought into alternately angular and horizontal positions, by their connection together and with a working-beam actuated by the crank-shaft, all substantially as described.

2. Also, in combination with the system of lifter, depresser, and evener-levers, arranged and operated as above set forth, devices for adjustment of the links connecting the working-beam with said levers, substantially as described.

3. Also, in combination with the shipper-fork, the treadle or treadle-frame, arranged and connected with the shipper-fork, substantially as described, to effect the shifting of the belt in either direction, substantially as described.

4. Also, in combination with the shipper-rod, the crank, operated so as to shift the fork and retain it in position on or off the fast pulley, substantially as described.

5. Also, the combination of the shipper-rod, crank-wheel, pawl-wheel, and pawl, pawl-lever and treadle, or their equivalents, connected, combined, and operated together, substantially as described.

GEO. CROMPTON.

Witnesses:

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S. B. KIDDER.