

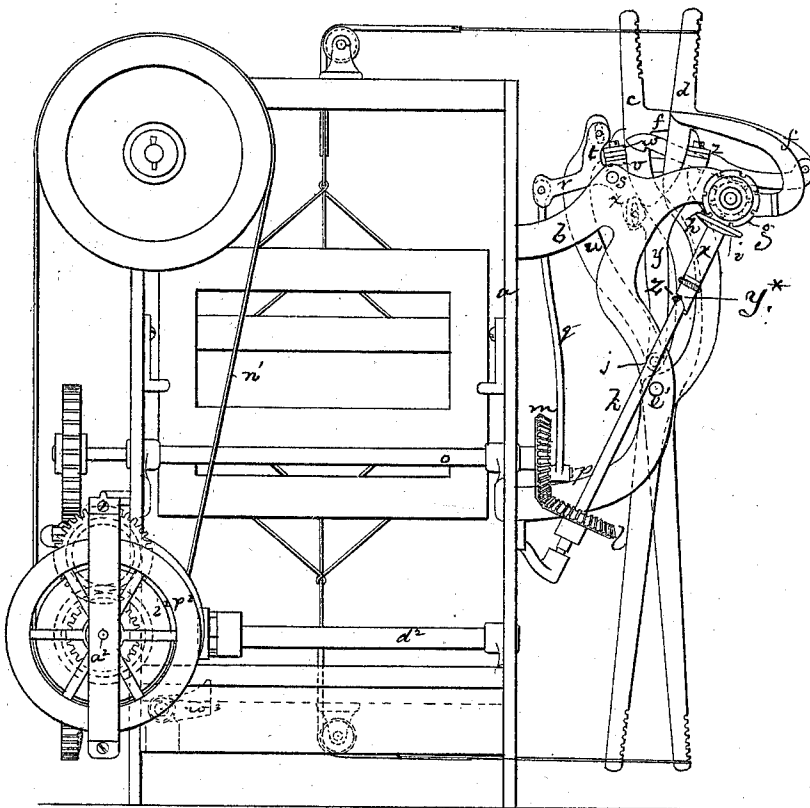
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G. CROMPTON.
Looms.

No. 140,894.

Patented July 15, 1873.

Fig 1.



Witnesses.
Mo. W. Frothingham.
L. H. Batimer.

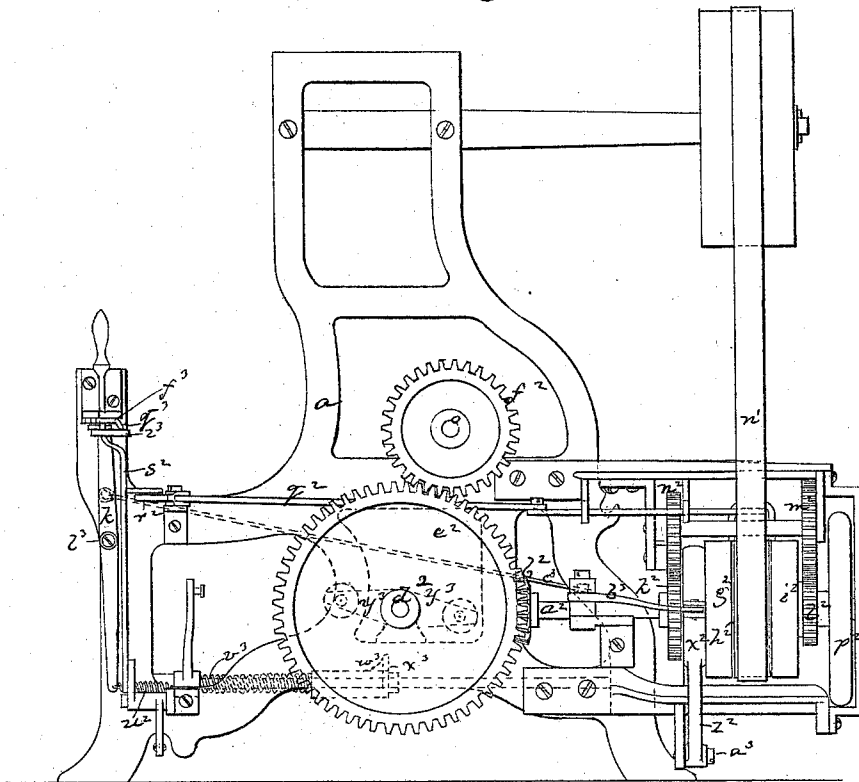
Inventor.
George Crompton.
By his Atty.
Crosby & Gould

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Patented July 15, 1873.

Fig. 2.



Witnesses.
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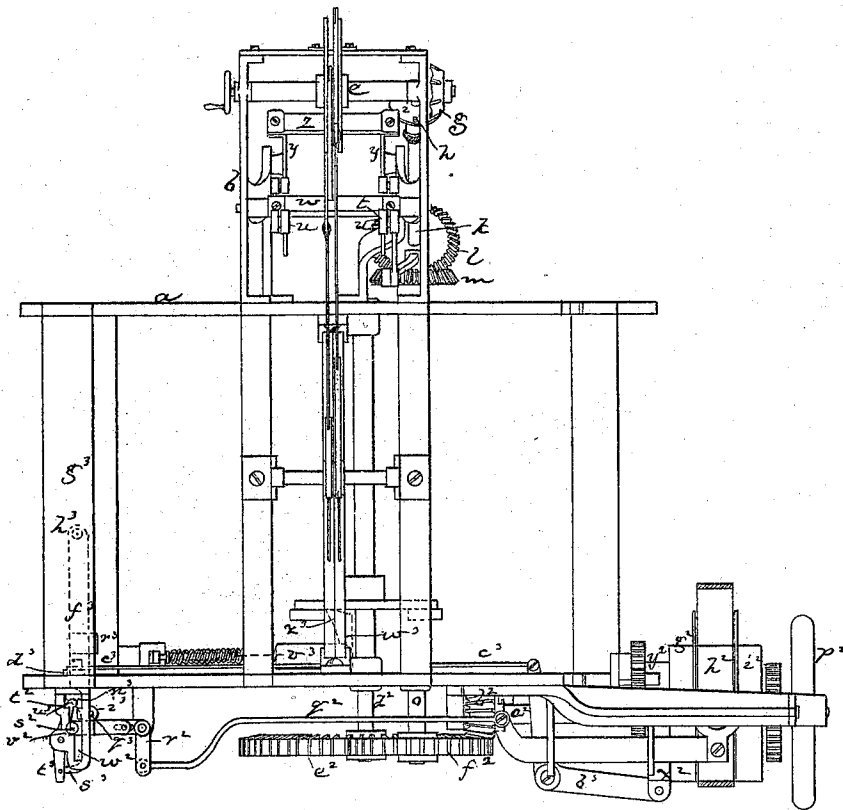
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Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE CROMPTON, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. **140,894**, dated July 15, 1873; application filed November 9, 1872.

To all whom it may concern:

Be it known that I, GEORGE CROMPTON, of the city and county of Worcester, in the State of Massachusetts, have invented an Improvement 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 practice it.

My invention relates partly to the arrangement of the driving and shipping motions of a loom, and partly to the arrangement of the harness motion. The harness motion is of that class in which upright harness-levers are employed; and my invention consists in the specific organization of the harness mechanism in connection with the mechanism that actuates it; and this, and the details of construction and arrangement of the general driving mechanism constituting my invention, will be best understood from the description thereof.

The drawing represents a loom frame and mechanism embodying my invention.

Figure 1 shows the loom in side elevation. Fig. 2 is an end elevation thereof. Fig. 3 is a plan.

a denotes the loom-frame. *b* is the frame or part of the frame in which the harness motion is mounted. *c d* denote two of the upright levers of the harness mechanism pivoted at *e*, and connected at top and bottom with the top and bottom of the respective harness-leaves, and each having an outwardly-extending arm, *f*, to the outer end of which is jointed a jack bar or lever, the weight of which carries it toward a pattern-cylinder, *e*, the pins of the cylinder raising the jacks to throw them into position to be caught by the lifter-bar, while such jacks as remain resting upon the cylinder will be moved by the depresser-bar. At one end of the pattern-cylinder shaft is a crown-wheel, *g*, into the notches of which a pin, *h*, of a wheel, *i*, intermittently engages, the wheel *i* being on the upper end of a shaft, *k*, carrying at its lower end a bevel-wheel, *l*, driven by a bevel-wheel, *m*, on the shaft *o*, the crown-wheel connection enabling the pattern-cylinder to be freely turned in either direction. On the shaft *k* that carries the pin-

wheel *i*, the pin of which intermittently engages with the wheel *g* of the pattern-cylinder, is a sleeve, *x*, which directly carries the wheel *i*, and immediately beneath this sleeve *x* is a sleeve-cam, *y**, the straight edge of which is adapted to bear when the cam is turned for operative action of the parts against a pin, *z*, on the shaft, and thus hold the parts *i* and *g* in close relation; but when the cam-sleeve is so turned as to bring its cam edge or incline against pin *z*, this sleeve may be lowered on the shaft, and thus permit the sleeve *x* also to be lowered to disengage the pin-wheel from the wheel *g*. This enables the pattern-cylinder to be thrown out of engagement with the harness and other mechanism, so that the cylinder can be freely turned for repairs, inspection, &c., without the necessity of taking down the machine or any part of it. To a crank-pin, *p*, extending from the wheel *m*, a link, *q*, is jointed, the opposite end of said link being jointed to an arm, *r*, of a rocker-lever fulcrumed on a shaft, *s*, the upright arm *t* of this lever, and a similar arm at the opposite end of the shaft *s*, being jointed to the tops of levers *u* that carry the depresser-bar *v* and evener-bar *w*, and the pendent arms *x* being jointed to the tops of levers *y* that carry the lifter and evener-bar *z*, the levers *u* and *y* being pivoted upon a shaft, *j*. The levers *u y* are thrown outward and drawn inward by the rocking movement imparted to the lever-arm *r* by its connection with the shaft *o*, and by such movement of the lever the lifter, depresser, and evener-bars are reciprocated to successively distribute and even the harness-levers. The hooks of the jack-bars that are thrown up by the pins of the pattern-cylinder engage with the outer edge of the lifter-bar *z*, causing the harness-levers, to which such hooks are connected, to be so moved as to raise the harness-leaves connected to such levers, and the hooks that are not raised are in position to catch the depresser-bar and cause the levers connected therewith to be so moved as to depress the harness-leaves connected thereto, inward movement of the levers *u y* causing the inner edge of the lifter-bar *z*, and the inner edge of the evener-bar *w* to bring the levers into one plane and even the harness-levers. *a*² denotes

the main shaft of the loom, said shaft having a pinion, b^2 , meshing into and driving a gear on the shaft d^2 , the gear e^2 meshing into and driving a pinion, f^2 , on the shaft o . At the outer end of the shaft a^2 are three pulleys, g^2 , h^2 , i^2 , the pulley h^2 being a loose pulley, the pulley g^2 being fast upon the shaft, and the pulley i^2 being a reversing-pulley, loose upon the shaft, but connecting with a gear, k^2 , fast upon the shaft, by a train of gear-wheels, l^2 , m^2 , n^2 , rotation of the pulley g^2 by the driving-belt n^1 turning the shaft a^2 to drive the loom, and rotation of the pulley i^2 by the driving-belt in the same direction reversing the movement of the main shaft. The loose pulley turns on a sleeve, upon the outer end of which is fixed a fly-wheel, p^2 , and the belt is made of such width that, when it is shifted from the loose pulley h^2 to the fast pulley g^2 , it laps over and continues to drive the loose pulley, so that the rotation of the main shaft is governed by the momentum of the fly-wheel, while, when the belt is slipped back to the loose pulley, which is made wider than the fast pulley, the loom mechanism is instantly released from the momentum of the fly-wheel, enabling the brake to quickly stop the loom. The shipper-fork is connected to a shipper-rod, q^2 , jointed at its outer end to one arm of a bent lever, r^2 , whose other arm is jointed to the upright shipper-lever s^2 .

When the lever is thrown in so as to rest against a shoulder, t^2 , to which it is held by a suitable spring, u^2 , the shipper-rod is drawn back, so that the fork holds the belt upon the fast pulley. When thrown from such shoulder it is drawn outward by the stress of the spring and lodges against a shoulder, v^2 , causing the shipper-rod to be moved outward to force the belt onto the loose pulley. If the lever be released from this shoulder and forced out to the outer end of the slot w^2 , the shipper-rod will be still further moved, and will force the belt onto the reversing-pulley to reverse the motion of the main shaft and the mechanism directly driven by it.

x^2 denotes a brake, made to partially encompass the periphery of a brake-wheel, y^2 , fast on the main shaft, this brake being on top of an arm, z^2 , pivoted at a^3 . The brake is jointed to one arm of a lever, b^3 , whose other arm is connected, by a rod, c^3 , with a vertical lever, d^3 , pivoted at e^3 , said lever d^3 being connected at its top with a horizontal lever, f^3 , lying under the beam g^3 , and pivoted at h^3 , this lever f^3 extending through the frame a , its outer end being just over an arm, i^3 , extending from the top of a vertical lever, k^3 , fulcrumed at l^3 , the lower arm of the lever k^3 being drawn inward by the stress of the spring u^2 .

When the shipper-lever is thrown in and into engagement with the inner shoulder t^2 , it presses against a projection, n^3 , from the arm i^3 , and throws back the lever k^3 . The lever k^3 and its connections with the brake are then loose, and the brake is held out of contact

with the wheel y^2 by a slight spring. But when the shipper-lever is slipped from the shoulder t^2 to the shoulder v^2 to slip the belt upon the loose pulley, it passes the projection n^3 , and the arm i^3 is then thrown in by the stress of the spring u^2 , and a pin, q^3 , upon said arm strikes the lever f^3 , throwing it back, and causing it to press back the lever k^3 , the movement of which draws up the brake-rod c^3 , and causes the lever b^3 to press the brake to the wheel, so that the movement of the shipper-lever to shift the belt also automatically applies the brake to stop the main shaft.

The horizontal lever f^3 has a projection, r^3 , which is struck by the lathe-dagger to knock off the loom, the lever extending through the frame, and having at its outer end an arm, s^3 , which lies against the end of a lever, t^3 , at the opposite end of which is a projection, u^3 , lying against the shipper-lever.

When the lever f^3 is struck by the dagger its end presses out the outer arm of the lever t^3 , thereby forcing the inner arm thereof against the shipper-lever, and dislodging it from the notch t^2 , the spring u^2 then causing the shipper-lever to be thrown to the shoulder v^2 , and shifting the belt from the fast to the loose pulley, the movement of the shipper-lever causing the brake to be automatically applied, as before described.

v^3 denotes the picker-shaft. Upon this shaft is an arm, w^3 , splined to the shaft so as to turn it, but sliding on the shaft, and having upon one side an inclined face, x^3 , and on the other side a straight face. Upon the shaft d^2 are two opposite arms, y^3 , and, as the shaft turns forward to operate the lathe, the arms y^3 alternately strike the incline x^3 and turn the shaft and throw the picker-staff; but when the shaft d^2 is moving reversely the arms y^3 , in striking the back of the arm w^3 , slide said arm on the shaft, and impart no motion to the shaft, so that, in reversing the movement of the shaft d^3 and of the mechanism of the loom, the picker-staff motion is inactive, and no shuttle is thrown.

I claim—

1. The combination and arrangement, substantially as shown and described, of the gears l , m , shaft k , pin-wheel i , crown-wheel g , and pattern-chain or cylinder, with respect to the upright harness-levers, the jack resting upon the pattern-chain or cylinder, and the lifter, depresser, and eveners-bars operated by the rocker-arms, levers u , y and link q connecting the arm r with the wheel.

2. In combination with the loom mechanism, the pulley g^2 fast upon the shaft a^2 , and the loose pulley h^2 fast upon an auxiliary shaft which bears the fly-wheel p^2 , and a shipper mechanism holding the belt with relation to both pulleys, substantially as and for the purpose described.

3. In combination with the fast pulley g^2 , loose pulley h^2 , and reversing-pulley i^2 , a brake mechanism and a shipper mechanism, that in shifting the belt to the loose pulley applies

the brake x^2 , and in shipping the belt to the reverse or fast pulley releases the brake, substantially as described.

4. The combination of the lever f^3 , operated by the dagger to release the shipper-lever, with the lever d^3 that applies the brake x^2 by means of the intermediate devices, substantially as described.

5. In combination with the shaft v^3 that operates the picker-staff, the sliding cam or incline x^3 that is turned by the arms y^3 on the shaft d^2 in the forward movement of said shaft, but is slid upon said shaft by said arms with-

out rotating it when the motion of the shaft is reversed.

6. In combination with the harness and driving mechanism, a pattern-chain or cylinder, arranged to be thrown out of operative connection with the harness and driving mechanism at the will of the operator by means of the adjustable sleeve x and cam-sleeve y^* on the rotating shaft, substantially as shown and described.

Witnesses:

GEO. CROMPTON.

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J. B. SYME.