

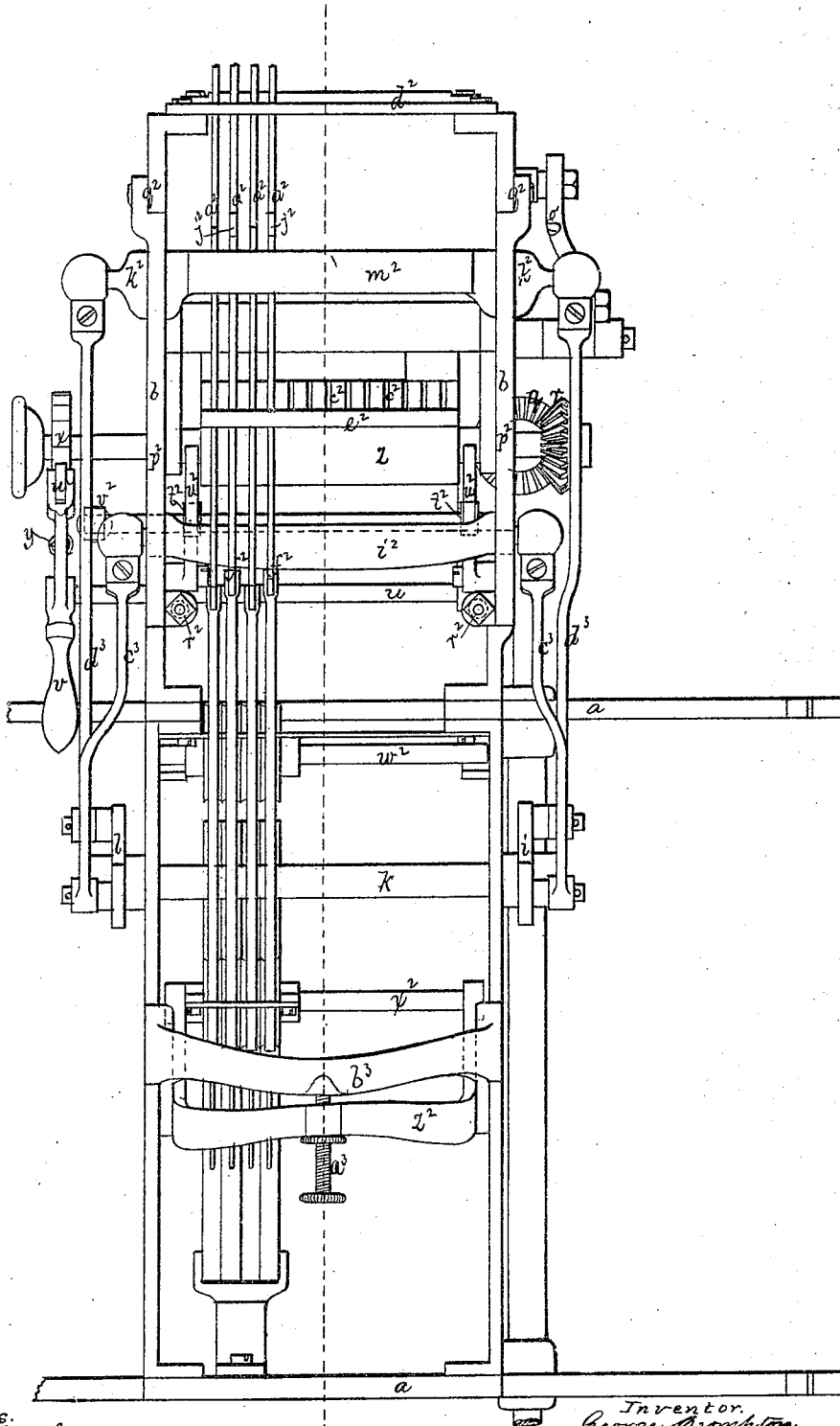
G. CROMPTON.

Loom-Shedding Mechanism.

No. 141,768.

Fig. 1.

Patented August 12, 1873.



Witnesses.
 M. W. Frothingham
 J. H. Vinton.

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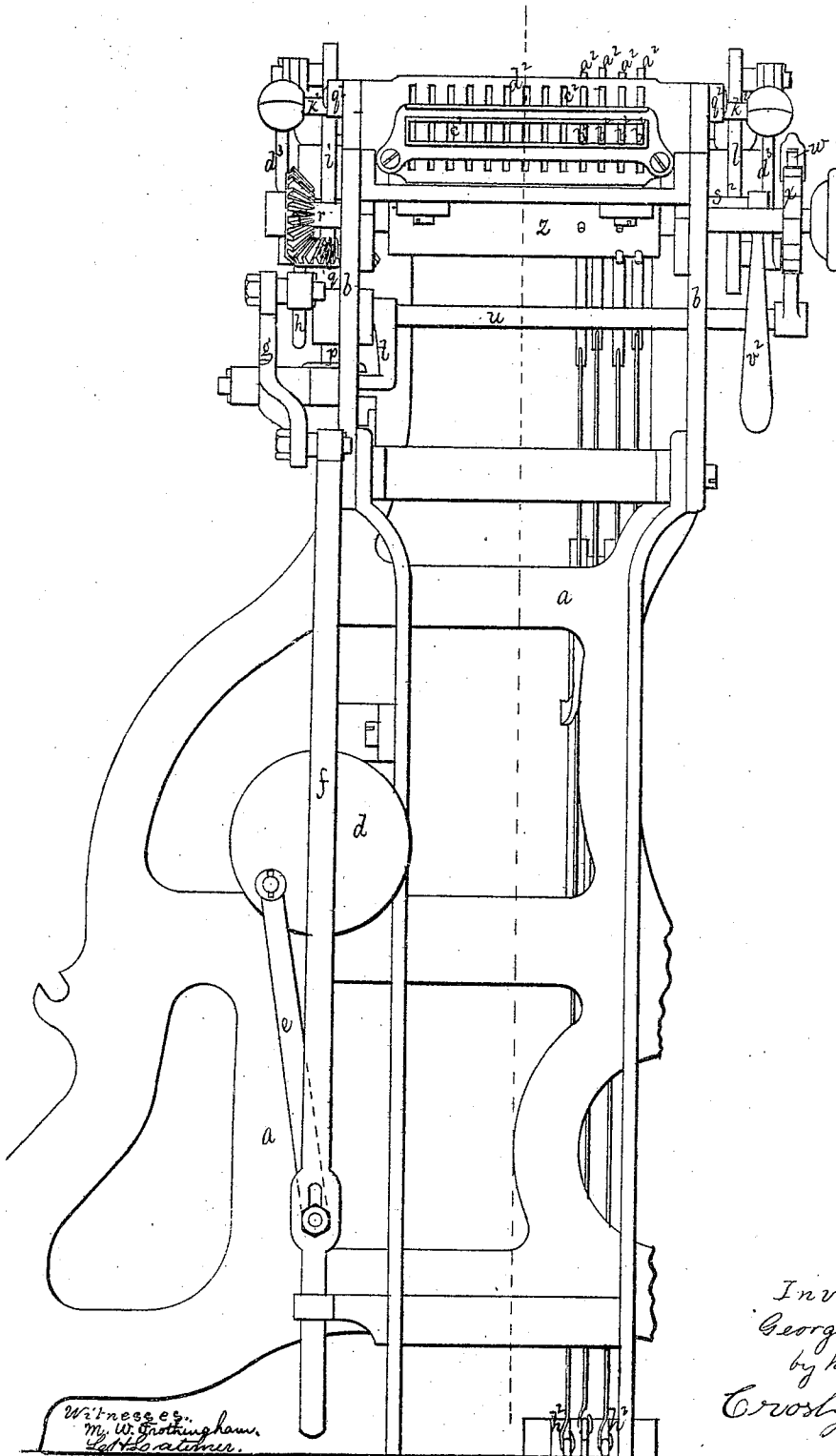
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Fig. 2.



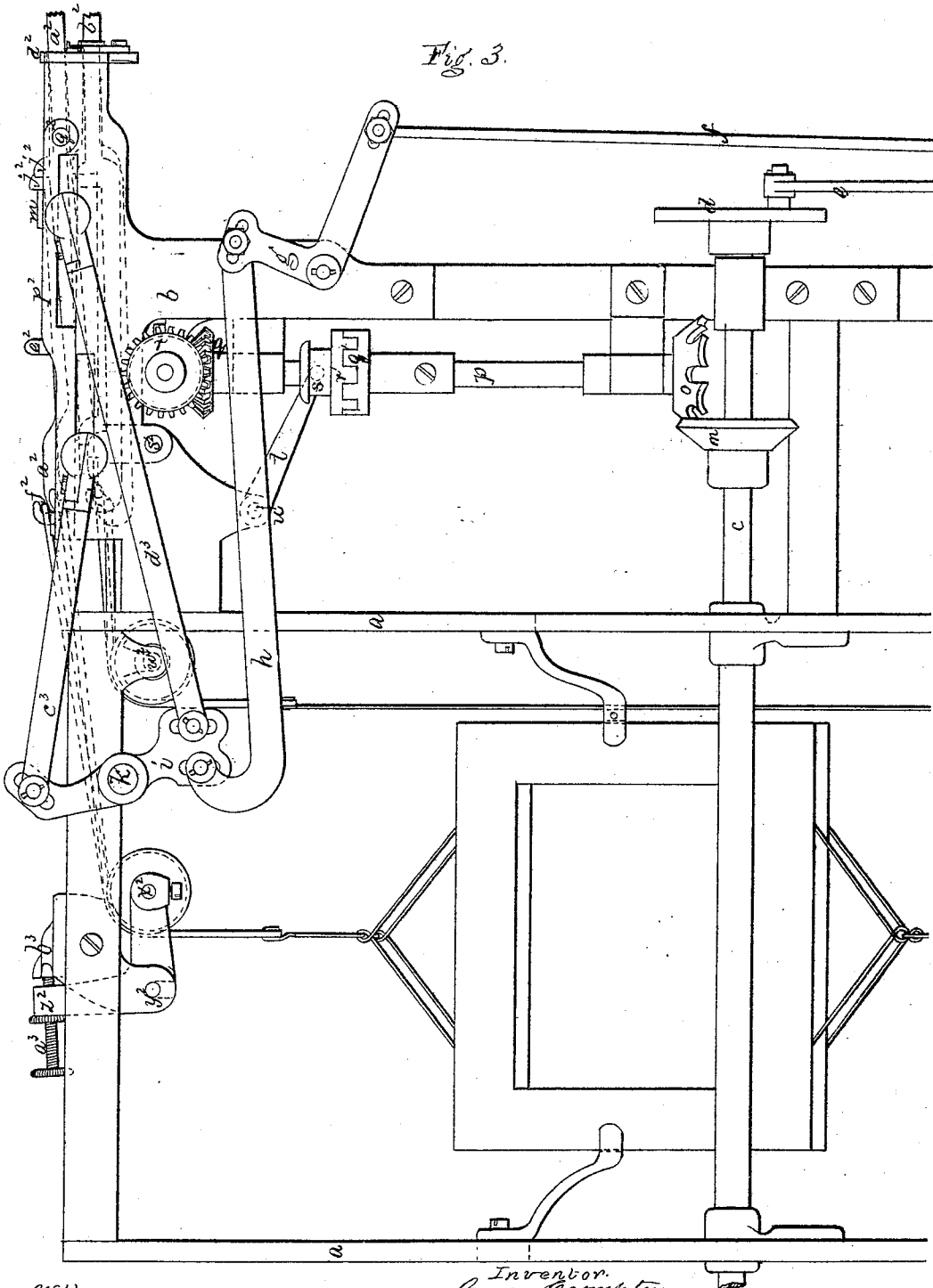
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L. H. Palmer.

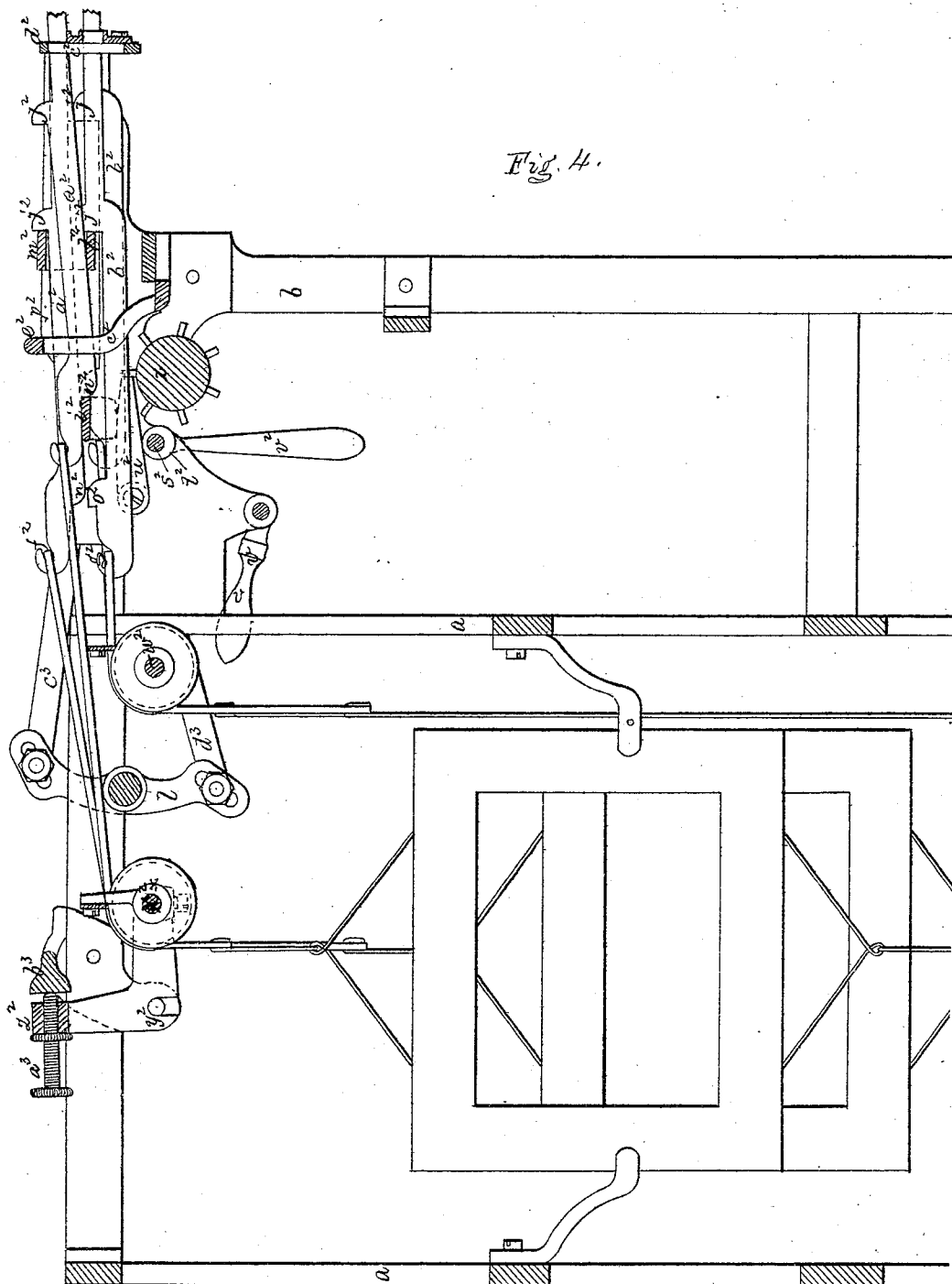
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UNITED STATES PATENT OFFICE.

GEORGE CROMPTON, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN LOOM-SHEDDING MECHANISMS.

Specification forming part of Letters Patent No. **141,768**, dated August 12, 1873; application filed November 11, 1872.

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 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.

The invention relates particularly to details of construction and arrangement of the harness mechanism of that class of fancy looms in which the top and bottom of each harness-leaf is connected with the inner ends of two upper and lower horizontal jack-bars, the two bars for each leaf of harness being in the same vertical plane and sliding in vertical slots in suitable guide-plates.

The drawing represents a harness mechanism embodying my invention.

Figure 1 shows the mechanism in plan. Fig. 2 is an end elevation of it. Fig. 3 is a side elevation. Fig. 4 is a sectional elevation.

a denotes the loom-frame; *b*, the frame that directly supports the harness-motion and pattern mechanism; *c*, the shaft that actuates the harness mechanism and the pattern mechanism. This shaft has at its outer end a crank-wheel, *d*, connected by a link, *e*, with a vertical slide-rod, *f*, whose upper end is jointed to one arm of a lever, *g*, the other arm of said lever being connected by a link, *h*, with a rocker, *i*, on a shaft, *k*, that carries at its opposite end another rocker, *l*, the opposite arm of these respective rockers being jointed to the respective ends of the lifter, depresser, and eveners bars, the movements of the rockers effected by their connection with the shaft *c*, reciprocating the said bars to actuate the jack mechanism. The shaft *c* also carries a wheel, *m*, a pin extending from which, intermittently, engages with the notches of a crown-wheel, *o*, on the foot of a shaft, *p*, at the upper end of which is a bevel-wheel, *q*, meshing into and driving a bevel-gear, *r*, on the end of the shaft or journal of the pattern-cylinder, the intermittent movement of the pattern-cylinder being thus produced from the shaft. By means of the crown-wheel *o* and pin-wheel *n* the shaft may be freely turned in either direction, or as

freely in one as in the opposite direction, and to actuate the lifter, depresser, and eveners mechanism without moving the pattern-cylinder or changing the shed, or to enable the cylinder to be turned independently from the other mechanism, I make the shaft *p* in two parts connected by a clutch-wheel, *q*¹, and sliding clutch *r*¹, the wheel *q*¹ being fast on the lower part of the shaft, and the clutch *r*¹ sliding on the upper part of the shaft, but being splined to it. Into a groove, *s*, formed around the hub of the clutch *r*¹ an arm, *t*, enters, said arm extending from one end of a shaft, *u*, at whose other end is a hand-lever, *v*. By depressing this handle the clutch *r*¹ is raised and disconnected from the clutch-wheel, and the cylinder may then be turned by hand for inspecting or changing the pins, or the warps may be raised and lowered, the downward movement of the arm *v* raising the detainer-roll *w* that enters the notches of the wheel *x* of the pattern-cylinder to hold the cylinder in position without changing the shed or moving the cylinder. When the lever *v* is released a spring, *y*, throws down the arm *t*, re-engages the clutch *r*¹ and clutch-wheel *q*¹, and brings the roll *w* against the wheel *x*. *a*² denotes the upper set of jack-bars, and *b*² the lower set, each pair for each leaf of the harness being placed with one bar directly over the other, and passing through vertical guide-slots *c*² in two plates, *d*² *e*². At the inner end of each is a notch, *f*² or *g*², the upper harness-cording running from the top of the harness-leaf over a suitable guide-sheave to the notch *f*² of the upper jack-bar, and the bottom cording to the inner end of a lever, *h*², whose outer end is connected by a wire and cording to the notch *g*² of the lower jack-bar. Adjacent to the inner ends of the jack-bars the upper bars *a*² pass over a single lifter and depresser bar, *i*², and the lower bars *b*² under said bar *i*², and beyond the range of slide movement of said bar *i*² the lower jack-bars *b*² pass over the pattern-cylinder *z*, the pins of the cylinder acting directly only upon the lower jack-bars, while beyond the cylinder the jack-bars *a*² *b*² of both sets pass under a single eveners-bar, *k*², which bar, however, is slotted, or made in two parts the lower jack-bars *b*² passing under and engaging with the lower part *l*² of the eveners

bar, and the upper jack-bars a^2 passing under and engaging with the upper part m^2 thereof, it being necessary, therefore, only to have two connections for each end of the lifter, depresser, and evener bars, which connections are effected by a single rocker, one arm of the rocker i being jointed to one end of the lifter and depresser bar i^2 , and the other arm of said rocker to the adjacent end of the evener-bar k^2 , while the corresponding arms of the other rocker l are similarly jointed to the opposite ends of the lifter and depresser bar i^2 and evener-bar k^2 .

To effect the distribution of the jack-bars, each upper bar a^2 has an under hook, n^2 , and each lower bar b^2 has a top hook, o^2 , each pair of hooks n^2 o^2 being in line or in the plane of the outer side of the lifter and depresser bar i^2 when the jacks are evened, and one or the other of them being always in position to be moved by the lifter and depresser bar when it advances. The upper jack-bar is normally in connection with the lifter and depresser bar, being held against it by the stress of the harness cording, and if it is not moved from such position by the rise of the jack-bar beneath it (by a pin of the pattern cylinder) the lifter and depresser bar will move it outward and raise the harness-leaf connected to it, the bar beneath it being moved in the opposite direction by the rise of the harness-leaf. But if the lower jack-bar be raised by a pin of the cylinder, it will raise the bar over it, throwing the hook of the latter bar out of the path of movement of the lifter and depresser bar, and its own hook into such path of movement, so that the lower bar will be moved forward by the lifter and depresser bar, and will thereby depress the harness-leaf connected thereto, the upper bar being drawn inward by the movement of the harness-leaf. Thus the upper jack-bars are always lifters and the lower jack-bars depressers in their positive or forward movements, or their movements directly effected by the lifter and depresser bar, their opposite movements being negative, or effected by the movements of the harness-leaves to which they are connected.

Each jack-bar a^2 b^2 is made with an upwardly-extended hook, j^2 , and whichever jacks are drawn inward by the harness-leaves their hooks will follow the part of the evener-bar, above which they project, the two parts of the evener-bar being thus always in position to even all the jacks, the upper jacks drawn in being carried back by the upper part of the bar, and the lower jacks drawn in being carried back by the lower part of the bar, and all being thus evened.

To enable the lifter and depresser bar to yield, so that in case of disarrangement of the pins of the pattern cylinder they shall not be broken, such bar slides under levers

p^2 , pivoted at q^2 and held down to the bar i^2 by springs r^2 , encircling rods running through the ends of the levers, these levers yielding and permitting the lifter and depresser bars to yield and let the pins or rolls pass without breaking.

To enable all the warps to be raised at once, a shaft, s^2 , is used, this shaft carrying eccentrics t^2 , upon which rest pivoted arms u^2 , whose free ends extend under projections from the lifter and depresser bar. By turning a handle, v^2 , at the end of the shaft the eccentrics raise the arms u^2 , which raise the lifter and depresser bar. The shed having been formed, such rise of the bar will free it from the engagement with the lower jacks, which may be engaged therewith, and the harness-leaves connected to such jacks will then be free, and may be raised with their warps.

The lifter and depresser bar (in this movement) is raised against the stress of the springs r^2 , and when the eccentrics are turned back the stress of the springs forces back the lifter and depresser bar. The sheaves for the cording of the lower jack-bars turn upon a pin, w^2 , resting in stationary bearings, but the sheaves for the cording of the upper jack-bars turn on a pin, x^2 , mounted in bearings in a pivoted frame, made adjustable, to regulate the stress upon the cording and harness leaves. These bearings are in horizontal arms of the yoke or frame, and said frame mounted on pivots y^2 has upright arms connected by a cross-bar, z^2 . Through this bar a nut-thread is cut, and an adjusting-screw, a^3 , works through this nut-thread and against the face of the stationary bar b^3 , the sheaves being raised or lowered by turning the screw, and the screw being kept in position by a suitable check-nut.

I claim—

1. The link h , in combination with the rockers i l , and bell-crank lever g , and reciprocating slide-rod f , substantially as shown and described.
2. The arms or levers p^2 and springs r^2 , substantially as shown and described, in combination with the lifter and depresser bar i^2 .
3. The shaft s^2 , eccentrics t^2 , and arms u^2 , or their equivalents, for raising the lifter and depresser bar, substantially as shown and described.
4. The shaft p provided with the clutch q^1 and crown-wheel, combined with the sliding clutch, its shaft and gear-wheel, the pattern-cylinder, and the two-armed shaft u t v , the arm v acting against the wheel x of the pattern-cylinder, and all operating as described.

GEO. CROMPTON.

Witnesses:

J. A. WARE,
J. B. SYME.