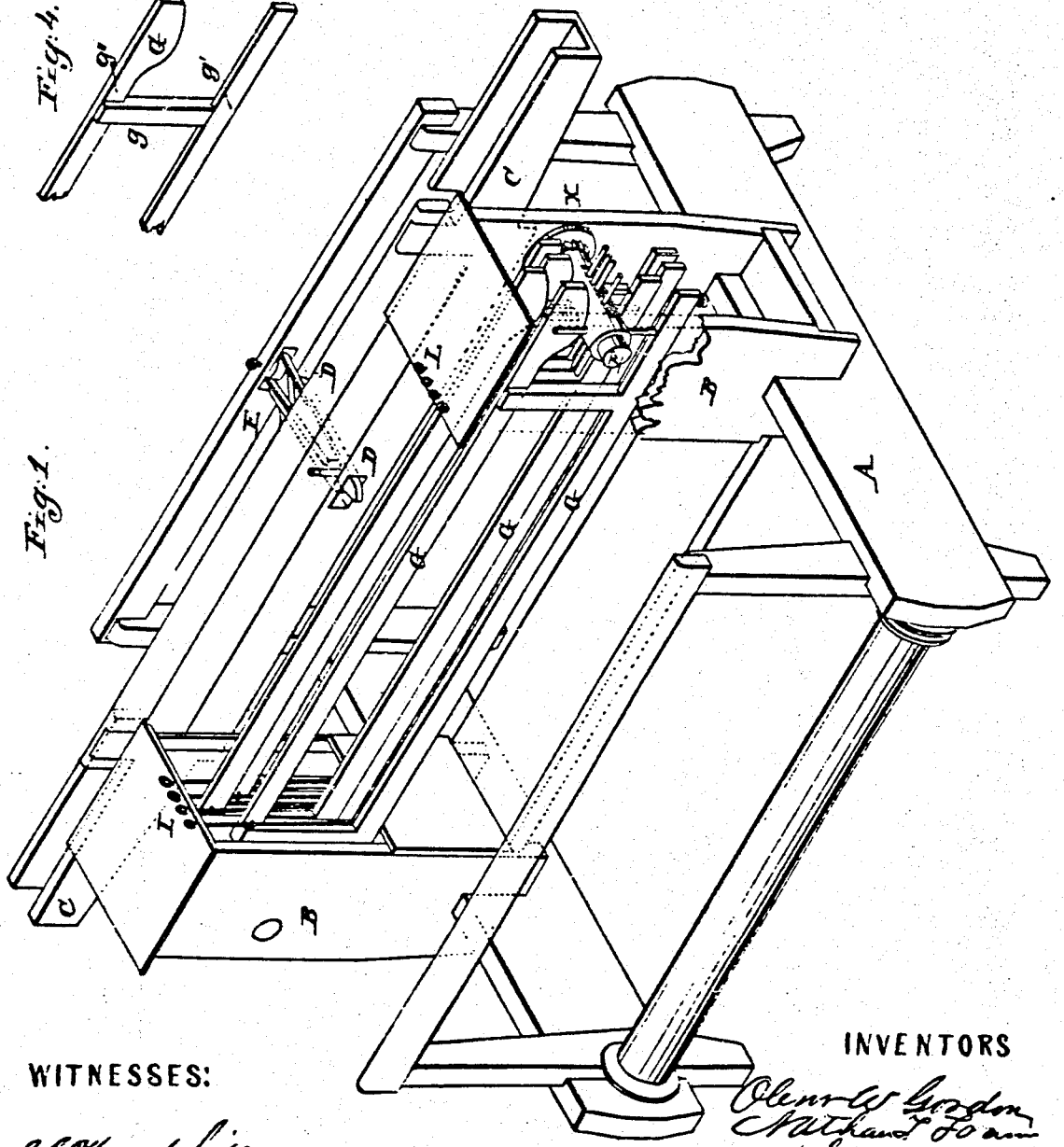
Sheet 1, 2 Sheets

Gordon & Frame.
Hand Loom.

No. 52,101. Patented Jan. 23, 1866.

Fig. 4.

Fig. 1.



WITNESSES:

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Sheets, 2 Sheets.

Gordon & Frame.

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No. 52,161. Patented Jan. 23, 1866.

Fig. 3.

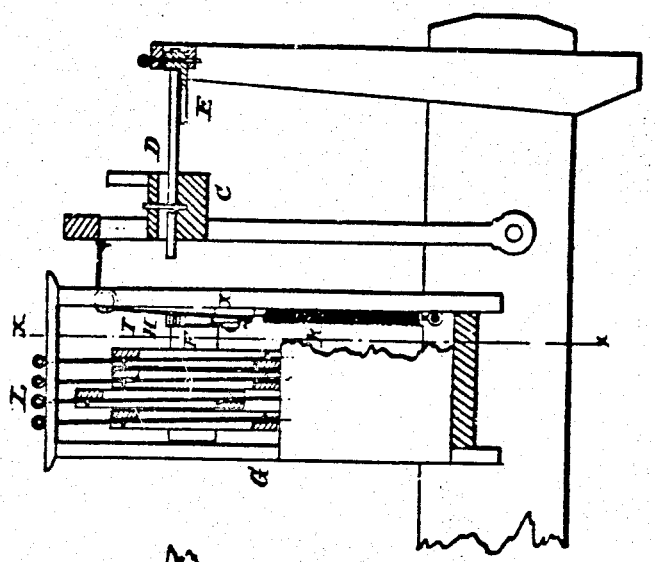
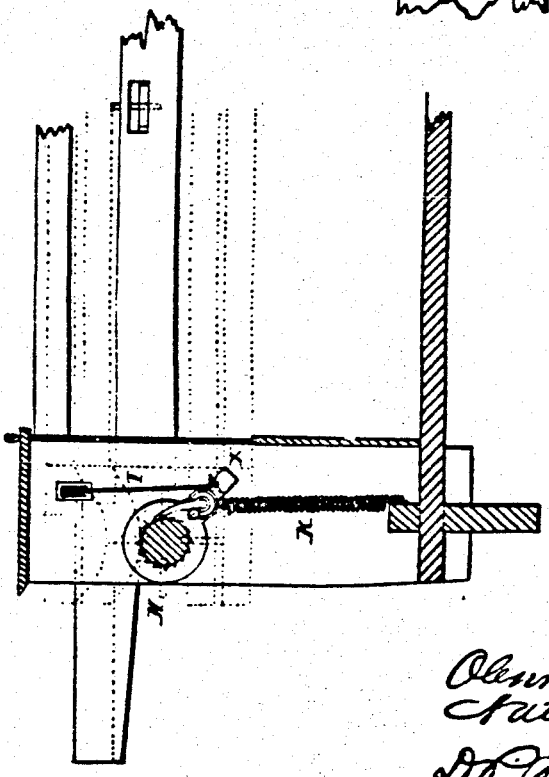


Fig. 2.



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UNITED STATES PATENT OFFICE.

OLIVER W. GORDON AND NATHAN T. FRAME, OF SALEM, IOWA.

IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. 52,161, dated January 23, 1866.

To all whom it may concern:

Be it known that we, OLIVER W. GORDON and NATHAN T. FRAME, of Salem, in the county of Henry and State of Iowa, have invented certain new and useful Improvements in Hand and Power Looms; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, made a part of this specification, in which—

Figure 1 is an isometrical projection. Fig. 2 is a vertical section through one of the cases in a plane parallel with the harness-frame on the line *x x*, Fig. 3. Fig. 3 is a section through the interior of the loom, showing an elevation of the inner face of the casing. Fig. 4 is a view of the end of one of the harness-frames.

The same letters refer to identical parts.

A is the frame supporting the machinery of the loom. To this frame are attached the cases B, inclosing the ends of the harness-frames and the cylinder for actuating the same. C is the batten, of ordinary construction.

The picker-staff E is pivoted to the middle of the breast-beam, and to this picker-staff the hook-formed drivers D are attached by a leathern hinge. Below the drivers plays the picker-staff E, around the cylindrical base of which the leathern hinge of the drivers passes. This hinge is attached in the middle to the base of the picker-staff. The drivers D are hooked upon their interior faces, and are held together at their points by an india-rubber elastic band. The hooks catch upon a pin passing through a slot in the batten, alternately, as the batten is thrown back, and by its forward movement they actuate the picker-staff and communicate motion to the shuttle. In employing the term "forward" we mean to indicate motion from the breast-beam toward the loom.

To the two ends of the hand-rail of the batten are attached, at the junction with the sword of the batten, cords or straps I, passing over pulleys in the casing and attached to a lever, X, as shown in Fig. 2. This lever moves freely by a collar on the cylinder-gudgeon and carries a dog working upon a ratchet keyed to the cylinder. When this cord I is raised by the motion of the batten toward the breast-beam it raises the lever, and by the action of the dog upon the ratchet H communicates a quarter-revolution to the cylinder. When the batten returns in the other direction the lever is drawn down by the action of a spring, K, and, moving on its collar freely, does not move the cylinder.

F is a cylinder the axis of which is at right angles with the plane of the harness-shafts, having on its surface eight holes drilled in each of four rows, the rows being made at distances of ninety degrees from one another. These holes are made to receive four pins in each row, to be adjusted according to the pattern to be worked, and at each revolution these pins give upward or downward motion to the harness-shafts, as may be desired. The pins that give upward motion do not give downward motion, and vice versa.

L are guides to the harness-shafts, so confining the shafts that the pins will always strike them as desired.

G are the harness-shafts, the upper and lower longitudinal parts of which are framed together by cross-pieces, as shown in Fig. 4. These cross-pieces *g* are made of double the thickness of the parts *g' g''*, and the parts *g'* and *g''* are halved onto the extremities of the cross-piece *g* on different sides of the cross-piece, so that the part *g''* shall not be directly over the part *g'*, but so disposed as that the pin, which in ascending shall strike the part *g''*, shall, in descending, not strike the part *g'*, and vice versa, the effect of which arrangement is to communicate a positive motion to the harness-frame both in ascending and descending. Both ends *g'* and *g''* of the horizontal parts of the harness-shafts project a sufficient distance beyond the uprights *g* to receive between them and be acted upon by the pins of the pattern-cylinder.

We have described the portions peculiar to our loom. The other portions of the working mechanism are such as are commonly employed for the respective purposes in other looms.

We do not claim simply raising both ends of the harness-frames by positive action by means of lifting cylinders or cams at both ends of the frame, for the harness-frames are raised by a positive action in a great variety of ways in all looms. Our improvements consist in lowering the harness-frames by a positive action similar to that by which they were raised.

Having now fully explained the construction and operation of our improvements in looms,

what we claim as our invention, and seek to secure by Letters Patent, is—

1. A device for communicating motion from the batten C to the picker-staff E, without the use of auxiliary pulleys, by means of the drivers D and flexible hinge, substantially as set forth.

2. Constructing the harness-shafts G with their uprights *g* and projecting ends *g' g''*, as and for the purposes set forth.

3. Raising and lowering both ends of the harness-shafts simultaneously by a positive action, substantially as and for the purpose set forth.

4. The cylinders F, so arranged as that their axes shall be at right angles with the planes of the harness-shafts, and by means of pins thereon giving a positive motion, both ascending and descending, to the harness-shafts.

5. The combination of the batten C, the cord I, lever, and ratchet H with the cylinder F, substantially as and for the purposes set forth.

6. The removable guides L, in combination with the harness-shafts G, having eyes, or their equivalents, for such guides, constructed and arranged substantially as and for the purpose set forth.

7. The arrangement of the cases B, and the pawl and lever X, and ratchet H, cylinder and harness-shafts, constructed and combined substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

O. W. GORDON.
N. T. FRAME.

Witnesses:
S. D. SWAN,
JOHN TYNER.