4. Sheets. Sheet. 1.

G. Crompton,

Loom Shedding.

No. 111.324. Patented Jan. 31. 1871.

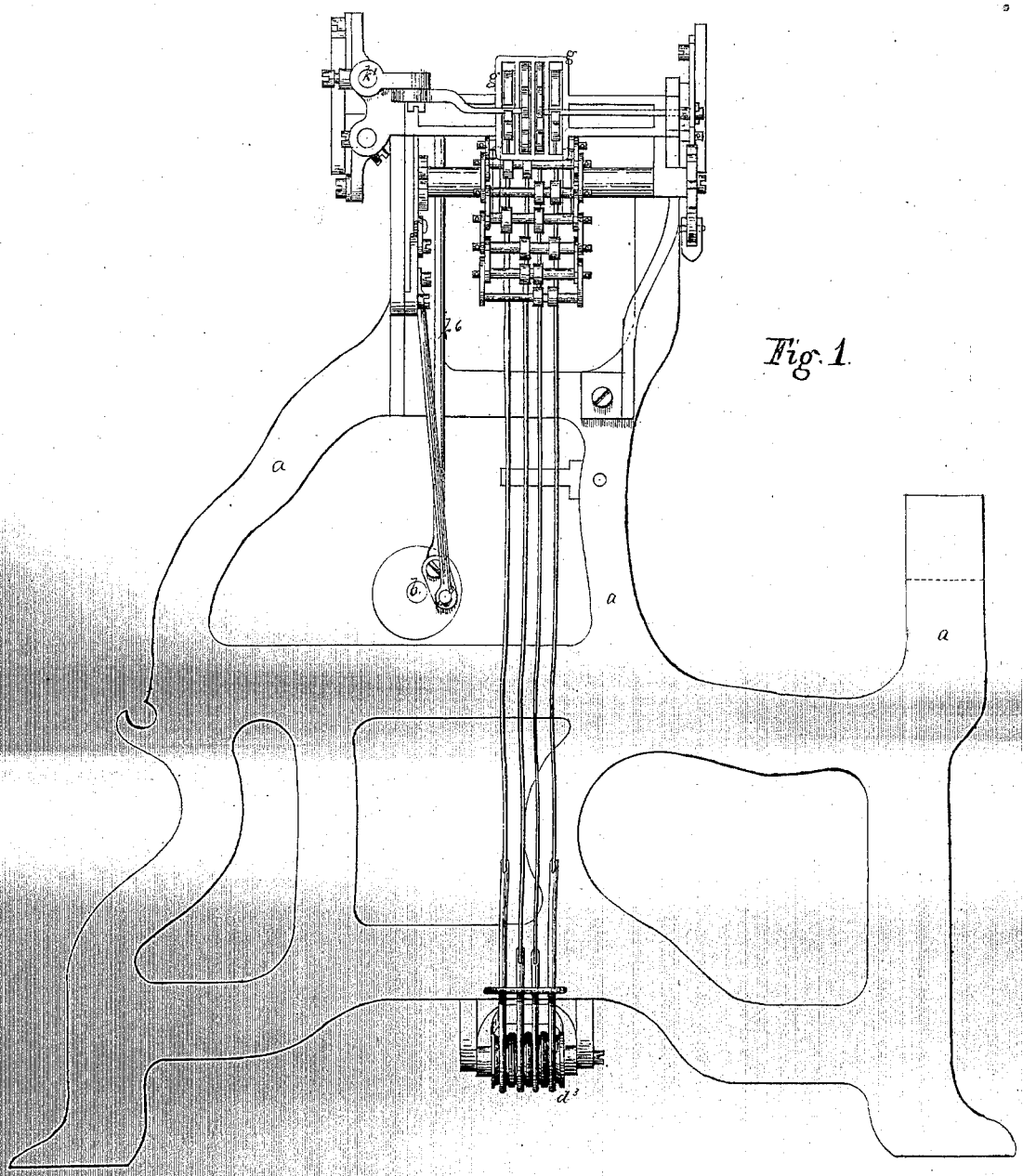

Fig. 1.

Geo Crompton, INVENTOR

Witnesses

4 Sheets, Sheet 3.

G. Crompton,

Loom Shedding.

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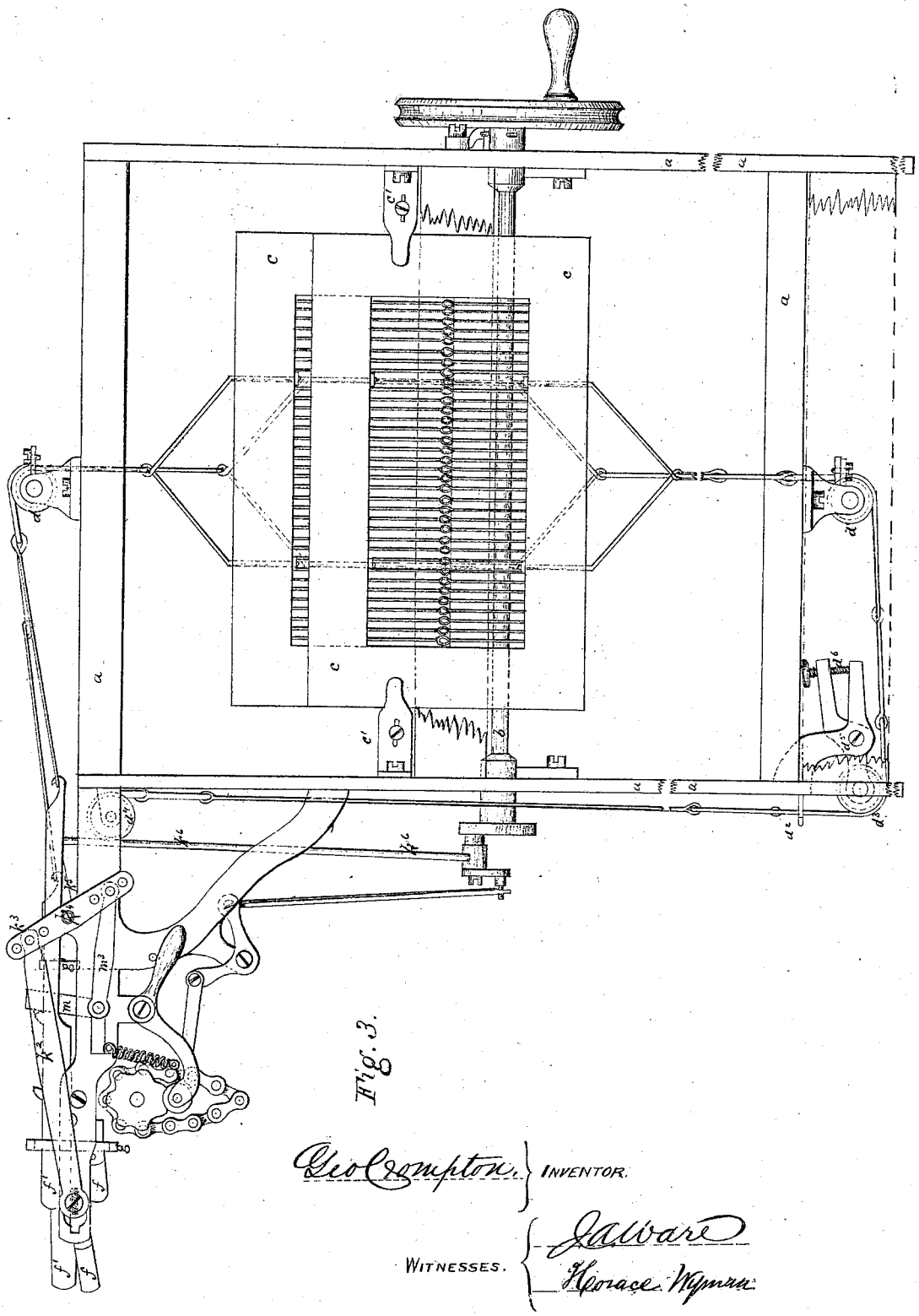


Fig. 3.

Geo. Crompton. } INVENTOR.

WITNESSES. { Jas. Ware
Horace Wyman

4 Sheets Sheet 4.

G. Crompton,

Loom, Shedding.

No. 111,324. Patented Jan. 31 1871.

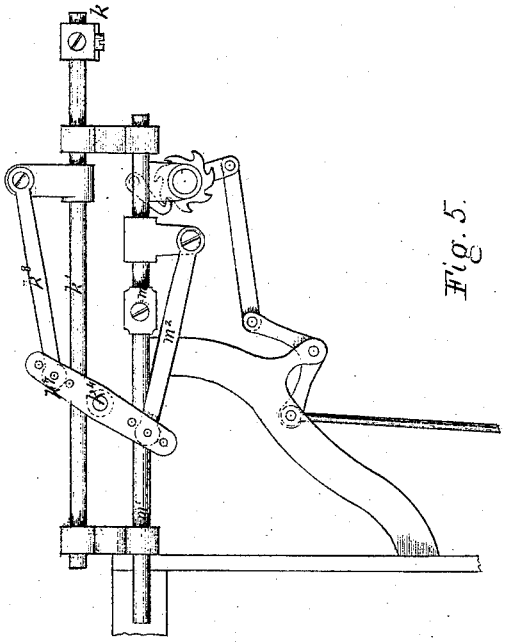


Fig. 5.

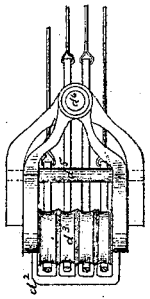


Fig. 6.

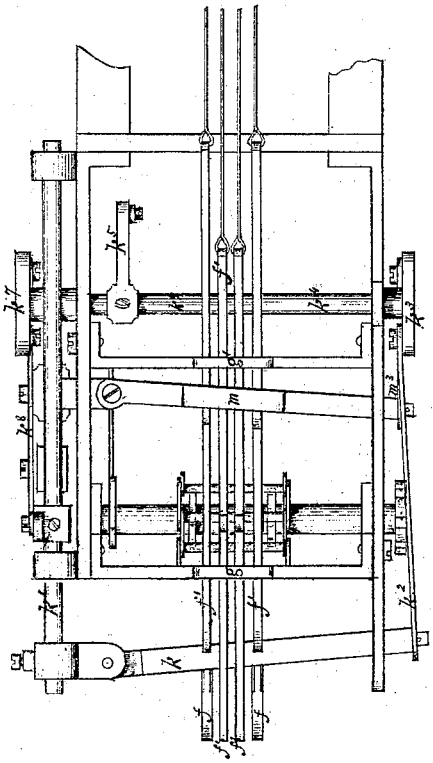


Fig. 4.

Geo Crompton INVENTOR.

WITNESSES. J. Ware

Horace Wyman

UNITED STATES PATENT OFFICE.

GEORGE CROMPTON, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN HARNESS-OPERATING MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. **111,324**, dated January 31, 1871.

To all whom it may concern:

Be it known that I, GEORGE CROMPTON, of the city of Worcester, county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in the Mechanism Connected with and Operating the Heddle-Leaves of Looms so as to form the shed; and that the following, taken in connection with the drawing, is a full, clear, and exact description thereof.

In the drawing, Figure 1 is a side elevation of the loom, exhibiting the invention in the proposed form. Fig. 2 is a skeleton elevation of one leaf of heddles and parts connected with and operating the same. Fig. 3 is an elevation taken behind the breast-beam, exhibiting all parts necessary for moving the heddles. Fig. 4 is a plan or top view of the jacks, elevator, and depressor and evener. Fig. 5 is a skeleton elevation taken from the rear of the loom. Fig. 6 is a plan of tightening apparatus.

These improvements have been devised with a view of securing a very light and easy-running train of mechanical devices for operating the leaves of heddles of fancy-looms; but parts of the invention are useful in other looms.

The first part of the invention consists in a combination of a flexible connection with pulleys, heddle-leaves, and two jacks for each leaf of heddles, and also a lifter, depressor, and evener, in such manner that these two jacks move simultaneously in opposite directions whenever the heddles are being moved, thus dispensing with any levers in the connection from the jacks to the leaves of heddles.

The other parts of the invention consist in certain arrangements and combinations of parts, which will be hereafter specified.

In the drawing, the loom-frame is represented at *a a*, one shaft of the loom at *b*, and the leaves of heddles at *c c*, which may, if desired, slide in guides *c' c'*.

Above and below the leaves of heddles two sets of pulleys, *d d*^{1}, are mounted in the loom-frame, one pulley in each set for each heddle; and in connection with these pulleys and others used in the loom, guides *d*^{2} *d*^{2} *d*^{2} may be employed, preventing the cords or straps from leaving the scores of the pulleys.

A third set of pulleys, *d*^{3}, is arranged and secured near the bottom of the frame, and a fourth set, *d*^{4}, at or near the upper part thereof. These pulleys may be differently arranged and still have the proper effect in guiding the cords or flexible connection between the heddle-leaves and the jacks; and more sets of pulleys may be employed, but four sets are sufficient for the purpose.

One or more of these sets of pulleys may be mounted upon a movable carriage in such manner that a change of position of the pulleys will take up the slack of the flexible connection between the heddle-leaves and the jacks.

I have shown the device as applied to the pulleys *d*^{3}, which are mounted in carriage, pivoted at *d*^{5}, and adjustable by means of a screw, *d*^{6}.

Each pulley of any one set may have a separate adjusting arrangement. To the top and bottom of each leaf of heddles is secured a flexible connection, which may be composed partly of cords or straps and wires or rods, or wholly of cords or straps. The connection preferred is of wire at *e*, of a strap at *e*^{1}, and of wire at *e*^{2} for the top of each leaf of heddles, and of wire at *e*^{3}, strap at *e*^{4}, wire at *e*^{5}, strap at *e*^{6}, wire at *e*^{7}, and strap at *e*^{8} for the connection from the bottom of each leaf of heddles.

I shall in future use the term "flexible connection" as comprehending the connections from both top and bottom of a leaf of heddles to the jacks corresponding with that leaf of heddles.

The jacks *f f'*, two for each leaf of heddles, are secured at one end to the ends of the flexible connections, and are arranged, by preference, horizontally, so as to move in horizontal lines, or nearly so, being supported in proper ways or grids, *g g'*, supported on a bracket extended from one side of the loom-frame.

By examination of the drawing (especially Fig. 2) it will be perceived that the pulleys and flexible connection make such a union between the heddle-leaves and the two jacks pertaining to one leaf of heddles that the latter can only move in opposite directions at the same time; and no matter how the pulleys are arranged, or how many sets are employed, and whether the jacks be vertical, inclined, or horizontal, this point must always be kept in

horizontal planes and near the top of the loom are the best arrangement in fancy-looms, and I have devised the connection so as to permit of the jacks being so arranged when the connection is made up of cords or wires.

I claim as my invention—

1. A pair of jacks, a leaf of heddles, a flexible connection, and an elevator, depressor, and evener, substantially as described, and so combined that the jacks of each pair are connected with the harness-frames without the intervention of levers, and are forced to move simultaneously in opposite directions, as specified.

2. In combination with the above, the tightening device acting on the flexible connection, substantially as described.

3. The pair of jacks, constructed as described, arranged horizontally at the upper part of the loom, and both of them above a pattern mechanism, and connected, substantially as set forth, with a leaf of heddles.

4. A pair of jacks moving simultaneously in opposite directions, and an elevator and depressor, and a pattern mechanism, one of the shoulders of one of said jacks being pivoted and constructed and combined substantially in the manner described, so as to avoid breaking in case of accidental erroneous movement of the pattern mechanism.

5. Two horizontal notched jacks, attached, as described, to one leaf of heddles, in combination with a blade arranged between the jacks, and acting as an elevator and depressor, all substantially as described.

GEO. CROMPTON.

Witnesses:

J. A. WARE,

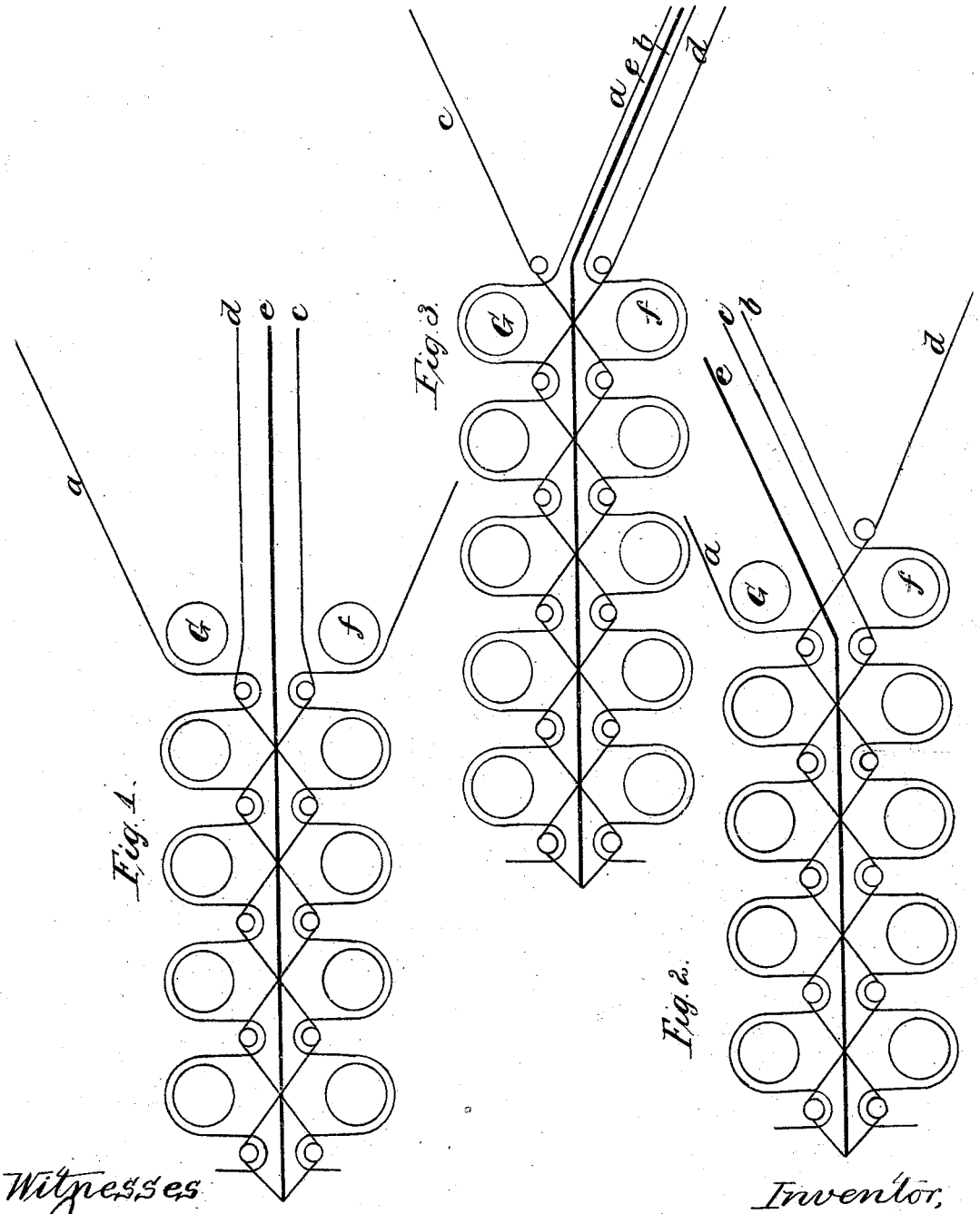
HORACE WYMAN.

Sheet 1-2 Sheets.

G. Crompton.

Carpet.

No. 111,325. Patented Jan. 31, 1871.



Witnesses
J. Albare
F. A. Howard.

Inventor,
Geo Crompton