

H. WYMAN.
FANCY LOOM.

No. 176,113

Patented April 11, 1876.

Fig. 8.

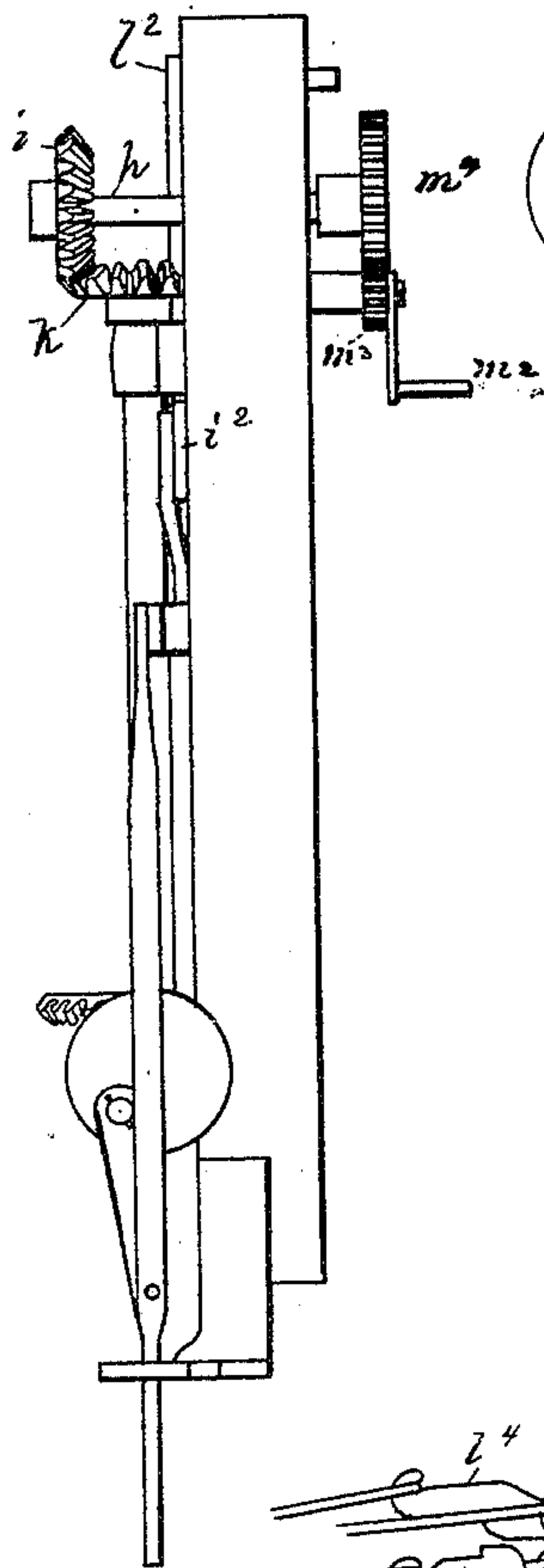


Fig. 1.

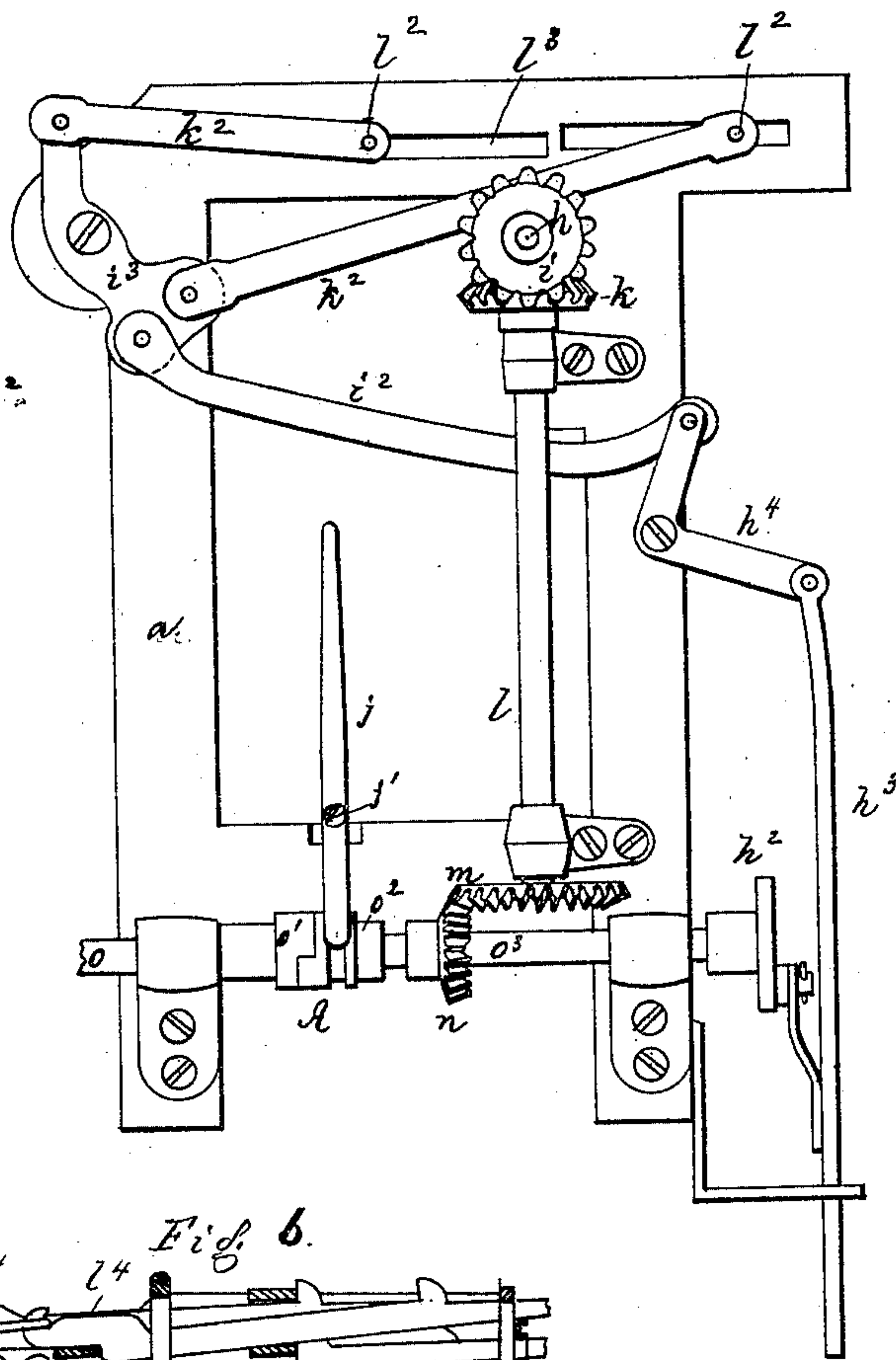
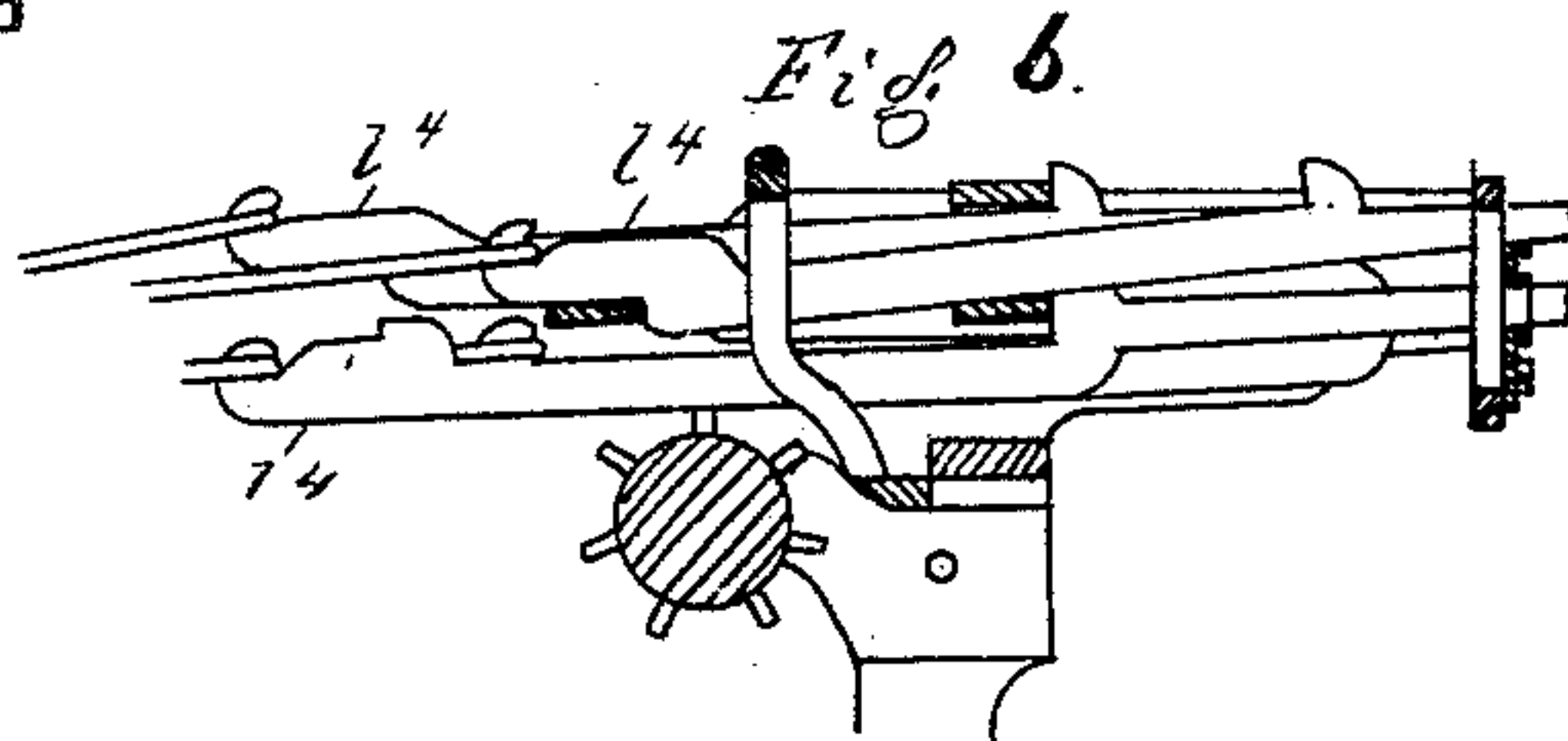


Fig. 6.



WITNESSES.

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Fig. 3.

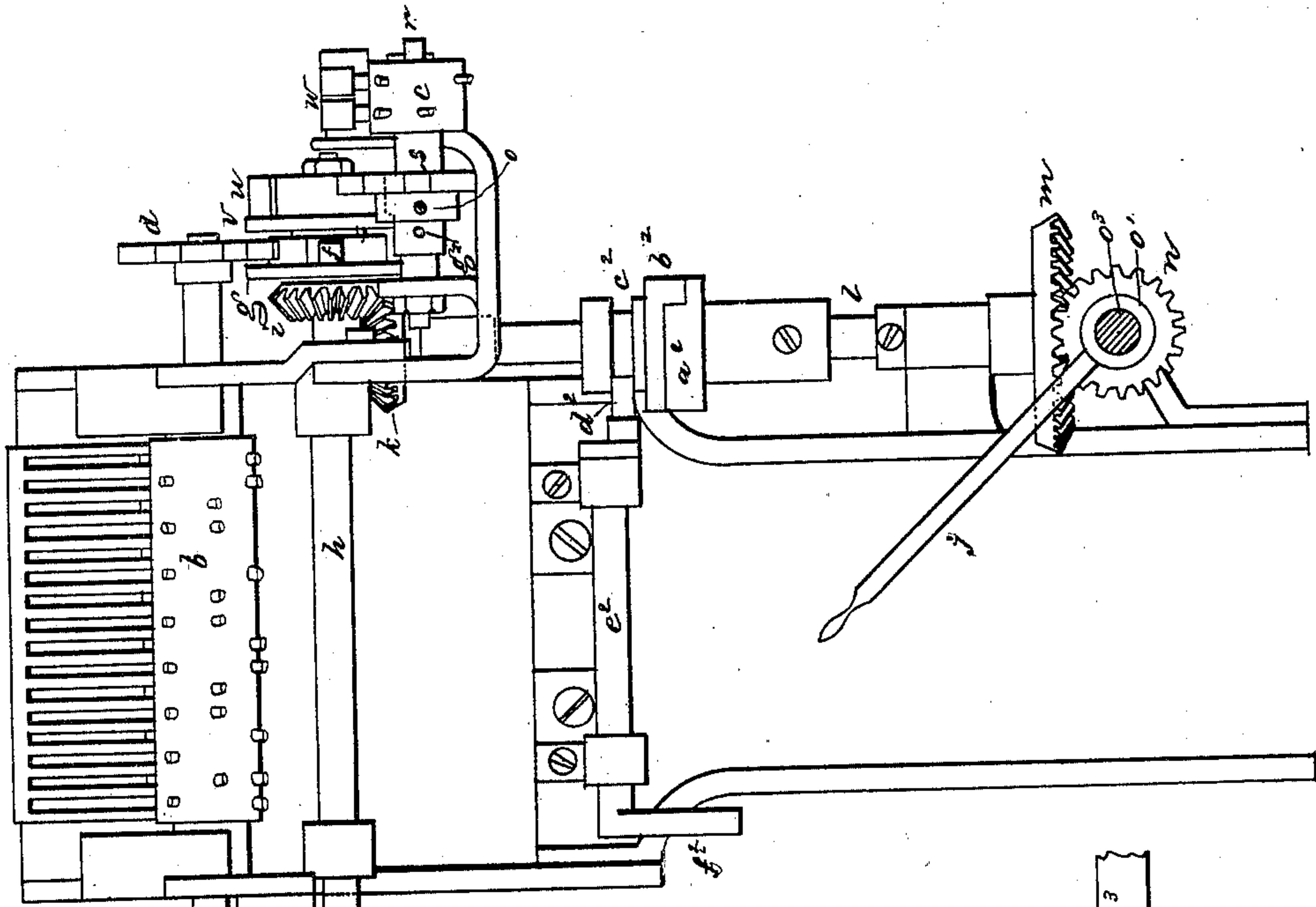


Fig. 7.

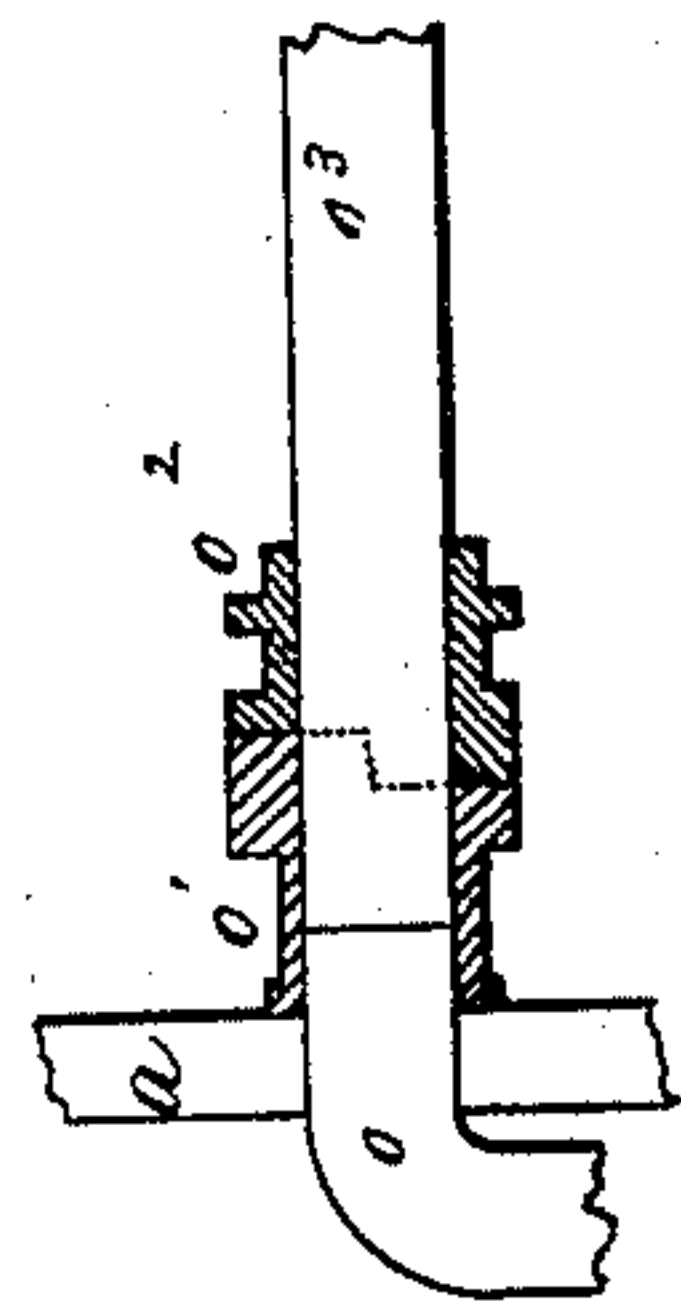
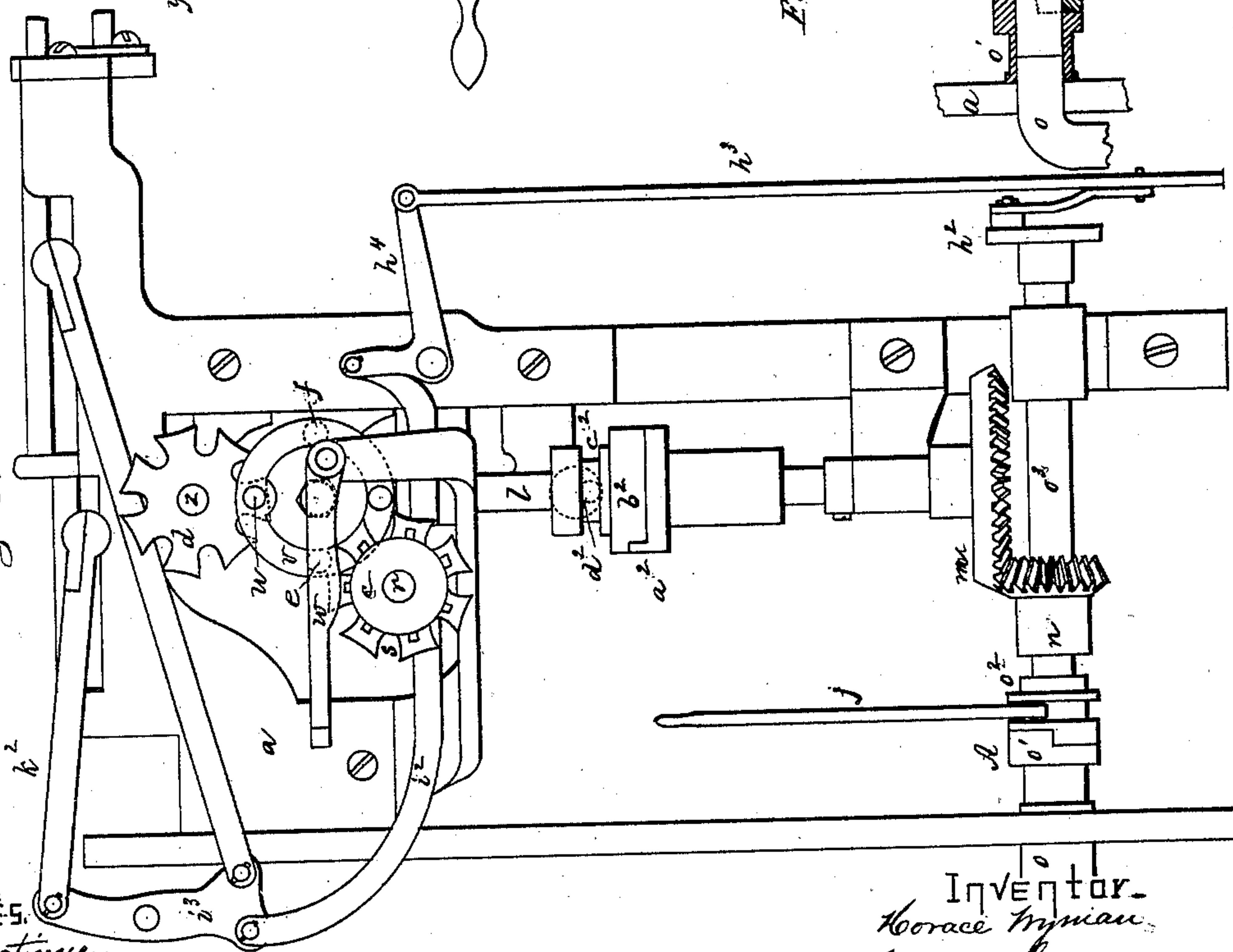


Fig. 2.



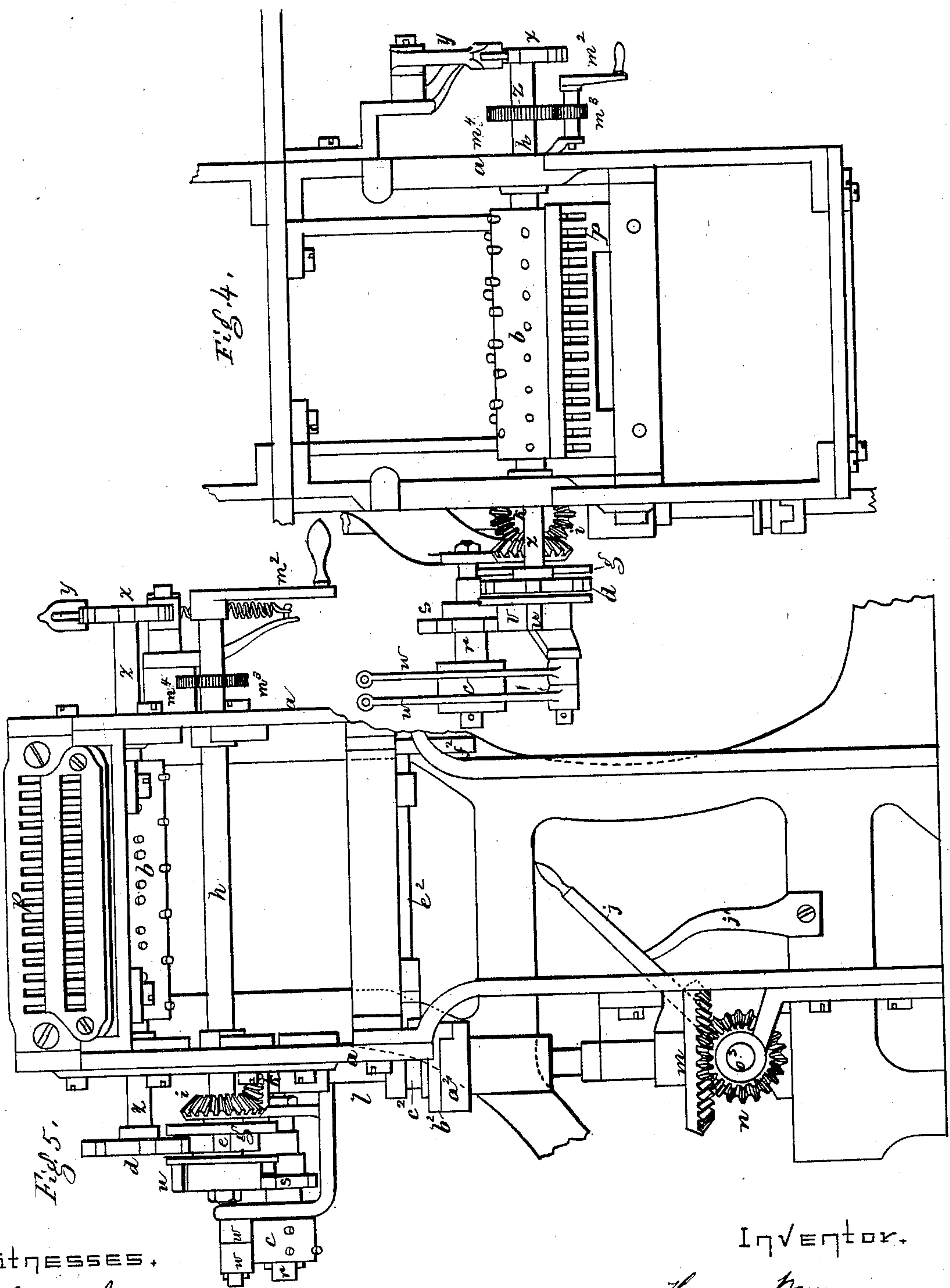
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W. Pratt.

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UNITED STATES PATENT OFFICE.

HORACE WYMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO GEORGE CROMPTON, OF SAME PLACE.

IMPROVEMENT IN FANCY-LOOMS.

Specification forming part of Letters Patent No. **176,113**, dated April 11, 1876; application filed May 21, 1875.

To all whom it may concern:

Be it known that I, HORACE WYMAN, of Worcester, county of Worcester, State of Massachusetts, have invented an Improvement in Fancy-Looms, of which the following is a specification:

This invention relates to looms, and has for its object such a construction of parts as will permit the attendant to suspend the operation of the lay or batten while the shedding mechanism and pattern-cylinder of the shuttle-box mechanism, or either, may be operated either forward or backward, so as to find a broken pick in the true shed. This my present invention is specially adapted to the fancy-loom described in Patent No. 156,630, granted November 10, 1874, to George Crompton and myself, and to which reference is made. In such patented loom the pattern-cylinders for the harness and shuttle-box mechanisms derive movement through pin-wheels on a horizontal cross-shaft, which is connected through bevel-gear with and moved by a vertical shaft in gear with the crank or lay shaft, the vertical shaft being provided with a clutch to disengage the pattern mechanism from the other parts of the loom, to permit the pattern mechanism to be reversed or the lay to be moved without disturbing the pattern. In such patent the bevel-pinion for operating the shaft extending from the crank-shaft to the shaft for actuating the pattern mechanism was carried directly by the crank-shaft, which is shown as extended beyond the loom-side. I now attach such bevel-pinion to a shedding-shaft adapted to have its connection with the crank or moving shaft of the loom broken, at the pleasure of the operator, through the action of a clutch, whereby the operation of the crank-shaft may be suspended while the shedding and pattern cylinder of the shuttle-box mechanism, or either, may be moved forward or backward in either direction to find a true shed, such mechanism being under the complete and easy control of the attendant.

Figure 1 represents, in a detached view, the mechanism directly employed to disconnect the shedding mechanism and pattern-cylinder of shuttle-box mechanism from the crank-shaft; Fig. 2, a side elevation of the loom,

such as described in Patent No. 156,630, provided with my present invention; Fig. 3, an end view thereof; Fig. 4, a plan; Fig. 5, a rear view. Fig. 6 represents a detail view of the jacks; Fig. 7, a section through the clutch, and Fig. 8 an end view of Fig. 1.

In this present invention I employ to designate parts such letters as are employed to designate in such patent like parts. In the frame *a* is supported the pattern-cylinder *b* for the harness mechanism, and the pattern-cylinder *c* for the drop or shifting shuttle-boxes, which may be of any well-known kind. The shaft of the pattern-cylinder *b* has a notched wheel, *d*, which is intermittingly turned by pins *e f*, extending from a pin-wheel, *g*, connected with a cross-shaft, *h*, provided with a bevel-gear, *i*, meshing into a like gear, *k*, on a vertical or connecting shaft, *l*, having a second bevel wheel, *m*, engaging with a bevel-pinion, *n*, on the shedding-shaft, connected by a clutch-box, *A*, with the main crank or driven shaft *o*. The gears are so proportioned that the pin-wheel *g* turns half a revolution at each rotation of the crank-shaft; but as the pin-wheel has two pins the pattern-cylinder *b* is moved one step at each rotation of the crank-shaft. The pattern cylinder or surface *c* for the drop or shifting shuttle-boxes is mounted upon a stud or pin, *r*, and carries a star or notched wheel, *s*, which is intermittingly engaged to actuate the cylinder *c* by a pin, *u*, extending from a pin-wheel, *v*, fixed on cross-shaft *h*. The pin *u* operates the cylinder *c* but once during two rotations of the shaft *o*. The arms *w*, for selecting the drop-boxes, rest on the pattern-cylinder *c*, and are raised at the proper times by the protuberances of the cylinder. A stop-wheel, *x*, on the end of the shaft carrying the pattern-cylinder *b*, is engaged by a roll on the spring-lever *y*, as usual, to retain the cylinder when not moved positively. The pin-wheel *v*, actuating the pattern-cylinder *c*, is shown as carrying two pins, one of which is so short as not to enter the notches of wheel *s*; but sometimes it is desirable to move the cylinder *c* at each movement of the other pattern-cylinder *b*, or at each change of shed; and to permit this the wheel *s* is made adjustable on

the shaft r , so that it may be adjusted laterally to be in engagement with one or both pins. The crank-shaft o , in this my invention, extends through the loom-frame where it has fixed to it the part o^1 of a clutch-box, A, the other half, o^2 , of the clutch being connected with a shedding-shaft, o^3 , in this instance shown as supported at one end within the part o^1 of the clutch-box A, and in line with the, or at the end of, shaft o . This shedding-shaft carries the bevel-pinion n , which engages the pinion m on the shaft l , for moving the cross-shaft h , and actuating the pattern mechanisms for the harness and shuttle-boxes. This shaft l may be a straight shaft, as shown in Fig. 1, or it may be divided and provided with a disconnecter, $a^2 b^2$, Fig. 2, the part a^2 being fitted on the lower part of the shaft, and b^2 being splined to the upper part of the shaft, so as to move with but slide thereon when it is desired to simply disconnect the pattern-cylinders from the crank-shaft, to permit them to be turned through a handle or crank without changing the shed. The part o^2 of the shedding-box A is connected with the clutch-shaft o^3 by means of a spline, so that it may be moved thereon by the shipping-handle j , having its fulcrum at j' . The shedding-shaft o^3 carries at its end a crank-disk, h^2 , connected by a link with a slide-bar, h^3 , which, through a lever, h^4 , link i^2 , lever i^3 , and links k^2 , operate the lifter and depressor bars l^2 , working in guideways l^3 , and adapted to engage hooked jacks l^4 , connected by cords, or cords and levers, with the harness-frames, the jacks being selected by the protuberances of the pattern-cylinder to form sheds in the usual manner. In place of the particular harness mechanism and jacks herein described, I might employ any other of the well-known harness mechanism, as shown in fancy-loom. The shedding mechanism and the mechanism for indicating a change of shuttle-boxes have, it will be seen, their movement from the shedding-shaft, and it in turn is connected by clutch A with the crank-shaft which operates the lay. Now, when the parts of clutch A are in engagement the lay and shedding mechanisms

and pattern-cylinder of the shuttle-box mechanism operate regularly; but if a mispick or other imperfection occurs in the weaving the lever j is moved by the attendant, thereby unclutching the clutch-box and disconnecting the shedding-shaft from the crank-shaft, and the crank-shaft is then stopped. Then the shedding-shaft is operated from a source other than the crank-shaft, permitting the lay to remain at rest, and during the movement of the shedding-shaft, which may take place in either direction, the shedding mechanism and pattern-cylinder of the shuttle-box mechanism may be turned backward or forward to find the true shed, and then the clutch A may be engaged and the loom be started forward in the regular way. The shaft o^3 is herein shown as deriving its independent motion from a short horizontal hand-shaft, r^3 , having a crank or handle, m^2 , at its front end, and within the control of the operator. This shaft r^3 has a small pinion, through which the shedding-shaft is moved when disconnected from the crank-shaft, the pinion being made small, and the crank sufficiently large to enable the shedding-shaft to be easily moved by hand through the pinion m^4 and shafts h l .

It will be evident that the exact location of the shedding-shaft, as shown, may be departed from without changing this my invention.

Having described my invention, I claim—

The crank-shaft, clutch, shedding-shaft, and connecting-shaft l , in combination with the pinion and crank on the shedding-shaft, the one adapted to operate the connecting-shaft to move the pattern-surface, and the other to move connecting-links adapted to operate the lifter and depressor, and with a shaft and pinion adapted to operate these parts after they are disconnected from the crank-shaft to find a true shed, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HORACE WYMAN.

Witnesses:

J. A. WARE,

J. B. LYME.