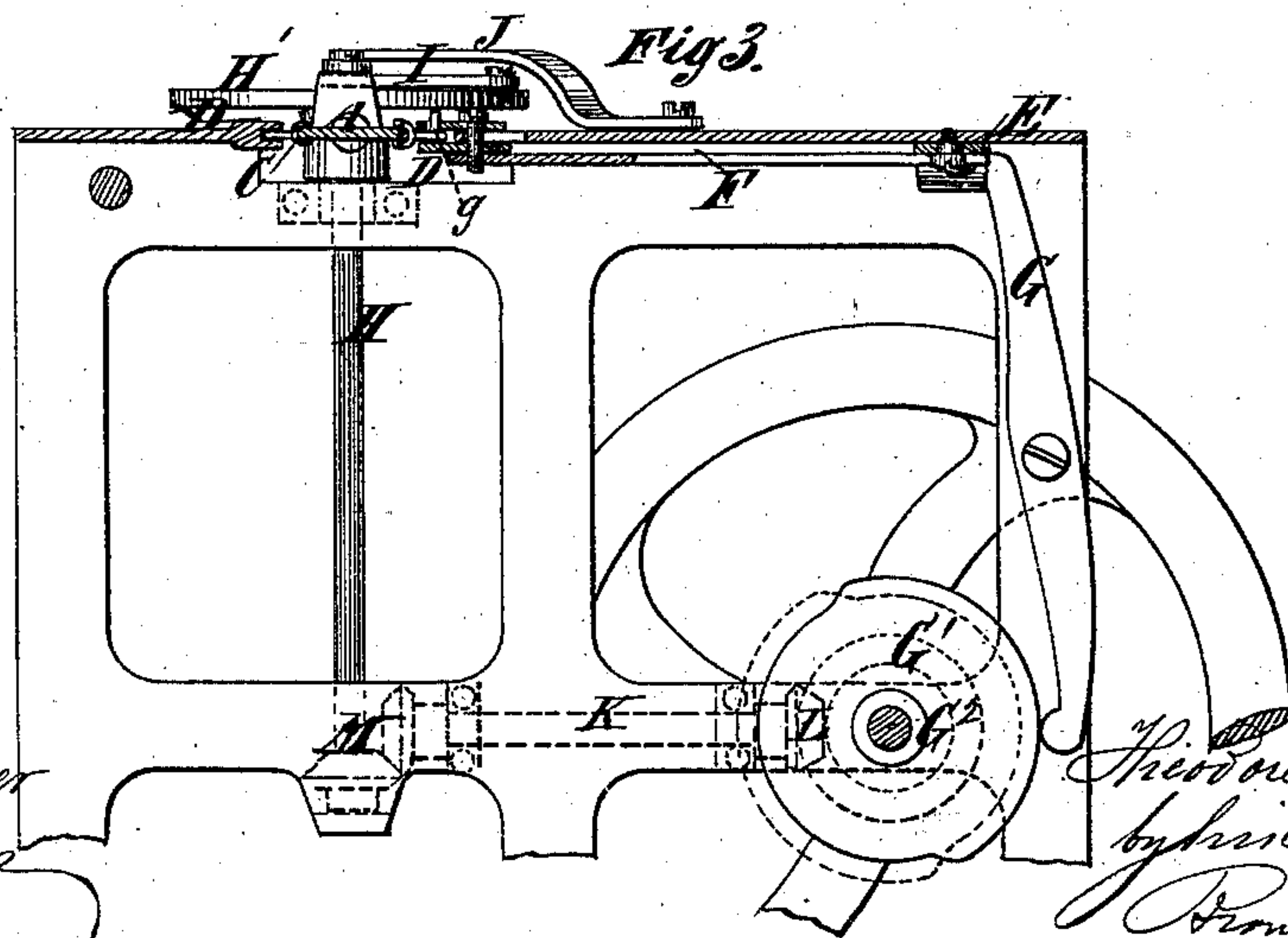
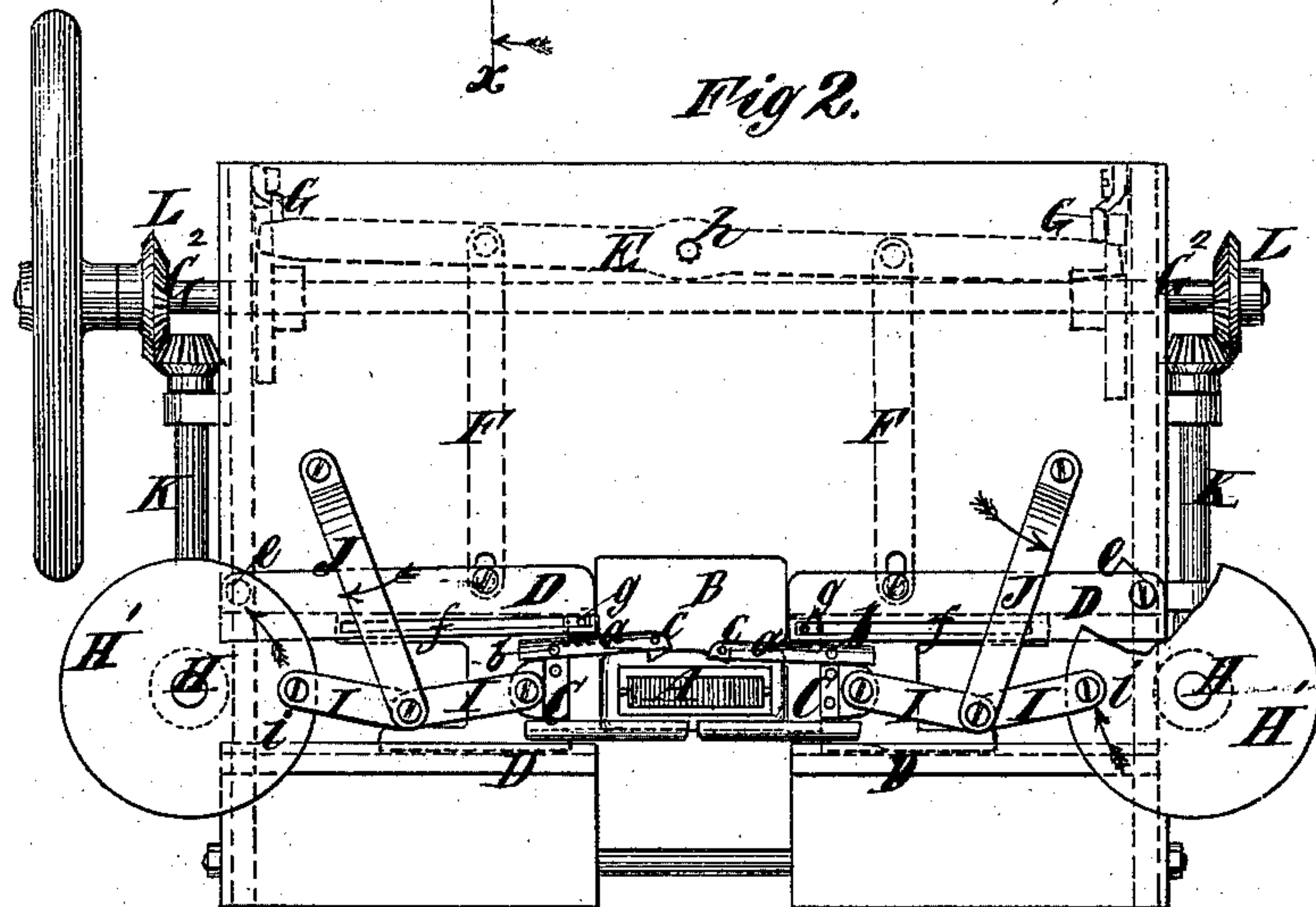
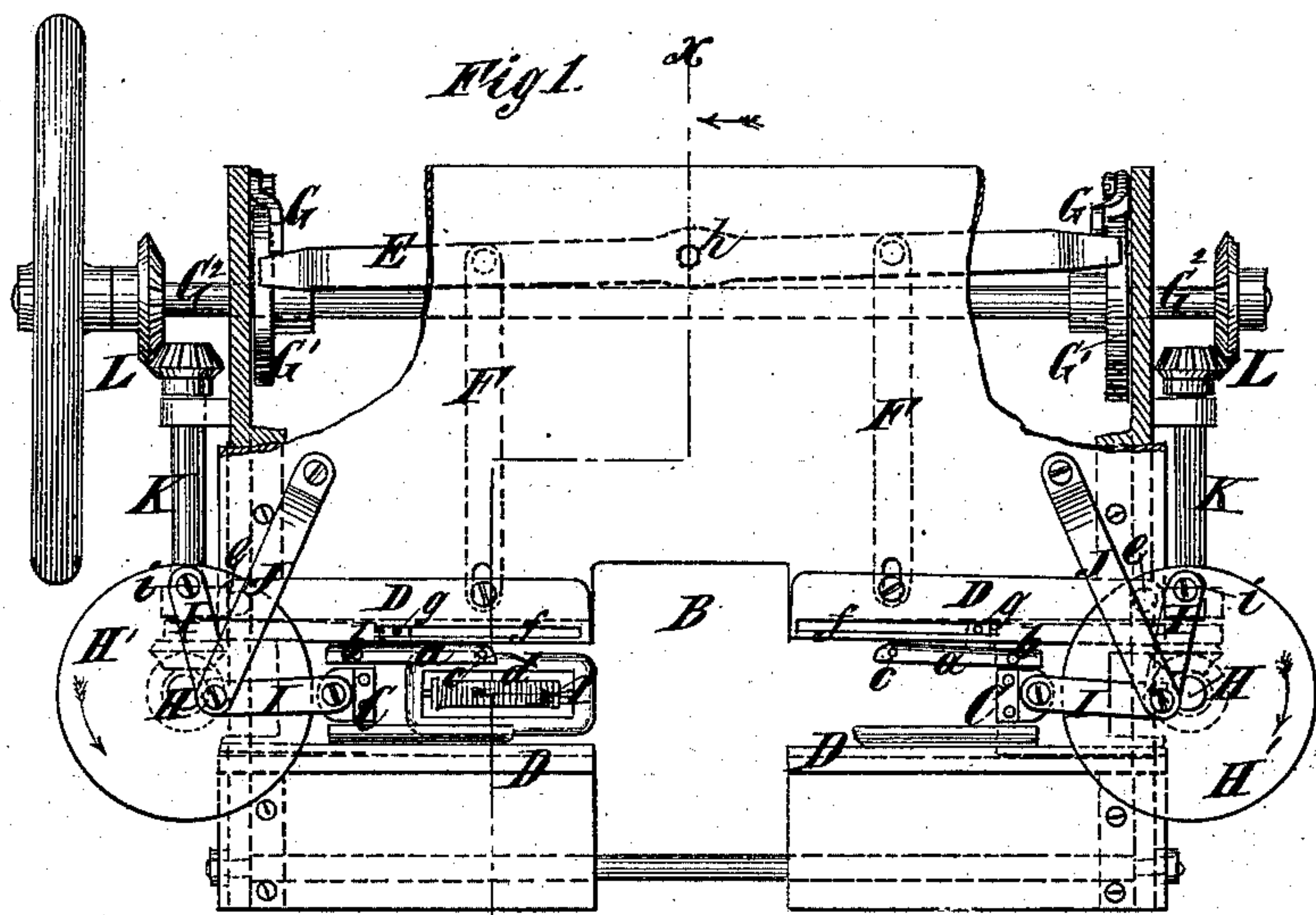


T. A. WEBER.
Shuttle Motion for Looms.
No. 235,661. Patented Dec. 21, 1880.



Witnesses
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UNITED STATES PATENT OFFICE.

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SHUTTLE-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 235,661, dated December 21, 1880.

Application filed December 26, 1879.

To all whom it may concern:

Be it known that I, THEODORE A. WEBER, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Shuttle-Motions for Looms, of which the following is a specification.

Although my invention may be embodied in looms of various kinds, it is especially intended for use in what are known as "narrow-ware" looms for weaving narrow fabrics.

My invention relates to that class of looms in which are employed shuttle-carriers having hinged sides, which are arranged to reciprocate in raceways on opposite sides of the loom and to advance into the warp in opposite directions, one of which carries the shuttle partly through the warp and delivers it to the other carrier, which, as it retires, takes the shuttle the remaining distance through the warp.

My invention consists in a novel arrangement of mechanism for effecting the engagement of either carrier with the shuttle and the disengagement of the other carrier therefrom.

My invention also consists in a novel arrangement of mechanism for reciprocating the shuttle-carriers, whereby I am enabled to increase the speed of the loom without increasing the wear and tear.

In the accompanying drawings, Figure 1 represents a plan of a portion of a loom embodying my improvements, portions of the frame-work being broken away to better illustrate my invention. Fig. 2 represents another plan view, showing the parts in different position from Fig. 1; and Fig. 3 represents a transverse section upon a larger scale through the loom on the dotted line *xx*, Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates the shuttle, which has its inner portion removed to accommodate a bobbin-spool, and B designates an opening in the frame-work of the loom, through which the lay may beat up, and which is slightly wider than the warp.

C designates shuttle-carriers, one of which is arranged at each side of the warp-threads, and which are adapted to be reciprocated in the raceway D. These carriers are here shown

as provided with grooves for the reception of the shuttle, and are adapted to be advanced alternately, partly through the open shed, to carry the shuttle and support it until grasped by the other carrier.

In order to provide for the automatic release of the shuttle by the carriers and their automatic engagement with it, I have represented one side, *a*, of each carrier as hinged at *b* to the body of the carrier, and as provided at the other or free end with a pin, *c*, which constitutes a catch and engages with notches *d* in the side of the shuttle. The side *a* of the carrier C might, however, be provided with a notch, and the side of the shuttle with a hook, if desirable, or both sides of the carrier might be hinged and made with or without catches.

As the hinged sides *a* of the shuttle-carriers engage with the shuttle upon its sides, their movement in opening and closing is approximately parallel with the face of the web, and hence they add nothing to the depth of the shuttle, as would be the case were they arranged to engage with the upper and under sides of the shuttle, and consequently do not require a wide opening in the shed.

In order to provide for keeping the catches on the carrier in engagement with the shuttle, and for disengaging them therefrom at the proper time, I have represented one of each of the race-bars D as pivoted at its end *e* to the frame of the loom, and as provided in its top side with a slot, *f*, in which a pin, *g*, projecting from the carrier C, works.

E designates a horizontally-oscillating lever, pivoted at *h* to the under side of the frame of the loom, and connected by links F with the two movable race-bars D. Consequently at each movement of the lever E one of the race-bars D is moved out, withdrawing the catch *c* from one of the notches *d* in the shuttle and releasing it from one carrier, while the other race-bar is moved inward, pressing the catch *c* into the other notch *d* in the shuttle and firmly locking the shuttle to the other carrier.

G designates levers arranged at each end of the lever E, and connected at their upper ends with the ends of said lever, while their lower ends rest against cams G', arranged upon a shaft, G², which is supported in proper bearing

ings in the frame of the loom. These cams are set with their greatest throw at opposite points, so as to permit one of the levers G to recede while the other is forced out.

5 The mechanism for imparting the proper reciprocating movements to the carriers here represented for this purpose consists of vertical shafts H, provided at their upper ends with cranks H', in which are crank-pins i.
 10 I designates links connecting these crank-pins with the carriers C, and J designates radius-links, to which the pairs of links I are pivoted at their juncture, and which constitutes a fulcrum for said links I. The arrangement of the links I and radius-bars J for
 15 imparting motion to the shuttle-carriers provides for a very long dwell when the shuttle-carriers are at their extreme opposite points, to afford an opportunity for the lay to beat up, and if the link I, which is connected to the
 20 crank, is made of a length nearly equal to the radius of the crank, as here represented, this dwell will occupy nearly one-half of the rotation of the shaft H.

25 In the present instance motion is communicated from the main shaft G² to the shaft H by means of horizontally-arranged shafts K and pairs of bevel-gear wheels L M; but other mechanism might be substituted, if desirable.

30 By the term "hinged," as applied to the laterally-movable side pieces, a, of the carriers, I do not mean it to be understood that the said pieces are necessarily pivoted, as it is obvious that the said pieces may have elastic or flexi-

ble connections of any kind which will permit 35 of their being opened and closed with a positive movement by such mechanism as is herein described for that purpose.

By my invention I enable a very short shuttle to be used, and as said shuttle has no open- 40 ings near its ends for the engagement of operating-fingers by which the shuttle is moved, nearly the whole length of the shuttle may be cut away for the reception of a long bobbin. I also provide for working the shuttle at a 45 very rapid speed, as the mechanism for imparting motion to the shuttle-carriers all operates with a continuously-rotary motion.

What I claim as my invention, and desire to secure by Letters Patent, is— 50

1. The combination, with the shuttle A, shuttle-carriers C, having the hinged sides a, provided with projecting pins g, and mechanism for reciprocating said carriers, of the race- 55 bars D, provided with grooves f for receiving said pins, the lever E, links F, levers G, and cams G', substantially as specified.

2. The combination, with the shuttle-carriers C and raceways D D, of the shafts H, mechanism for imparting to said shafts a continu- 60 ous rotary motion, cranks H', links I, connecting said cranks and said carriers, and the radius links or bars J, substantially as specified.

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Witnesses:

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