

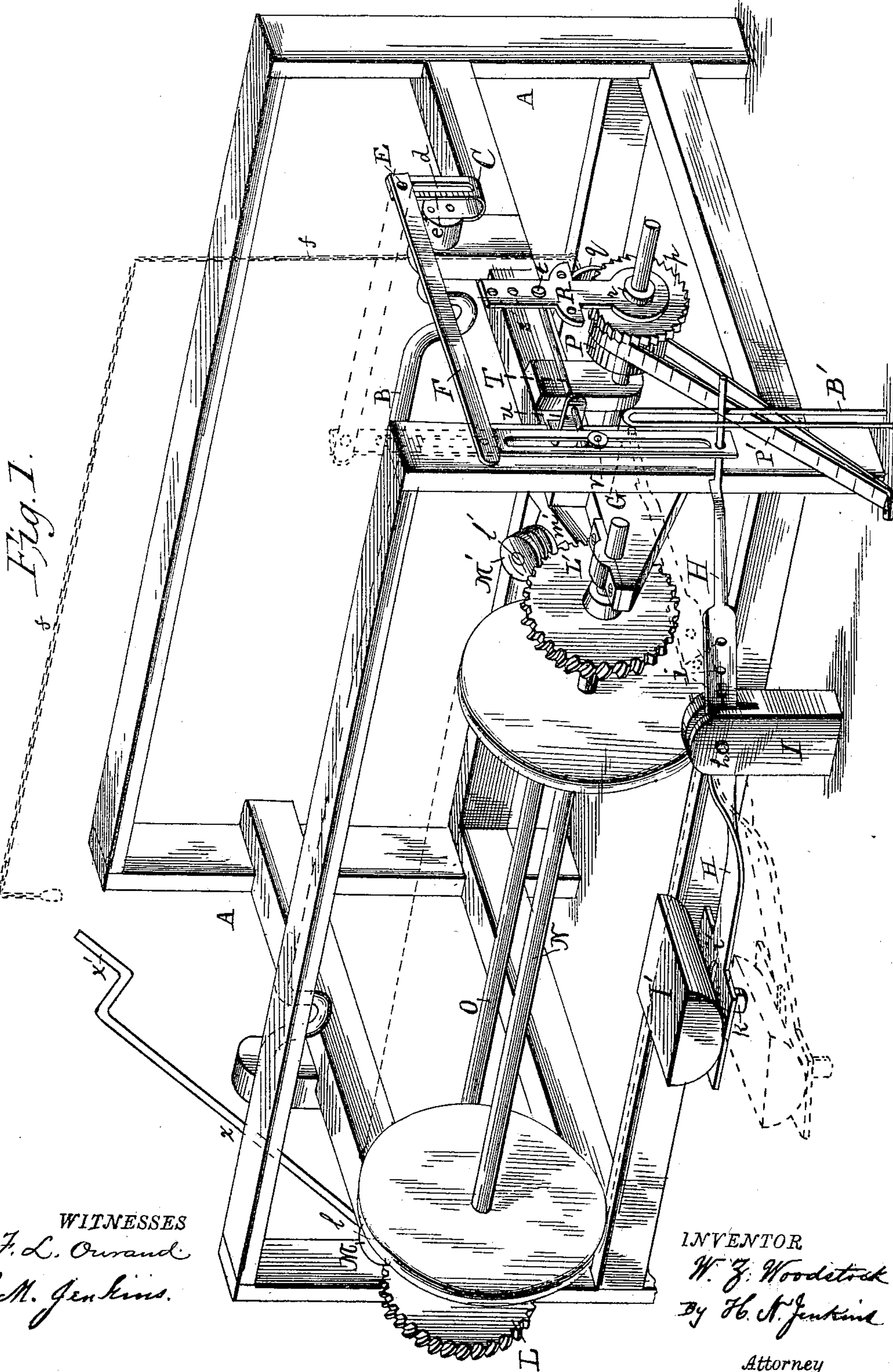
(No Model.)

2 Sheets—Sheet 1.

W. Z. WOODSTOCK.
LET-OFF MECHANISM FOR LOOMS.

No. 344,336.

Patented June 22, 1886.



(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

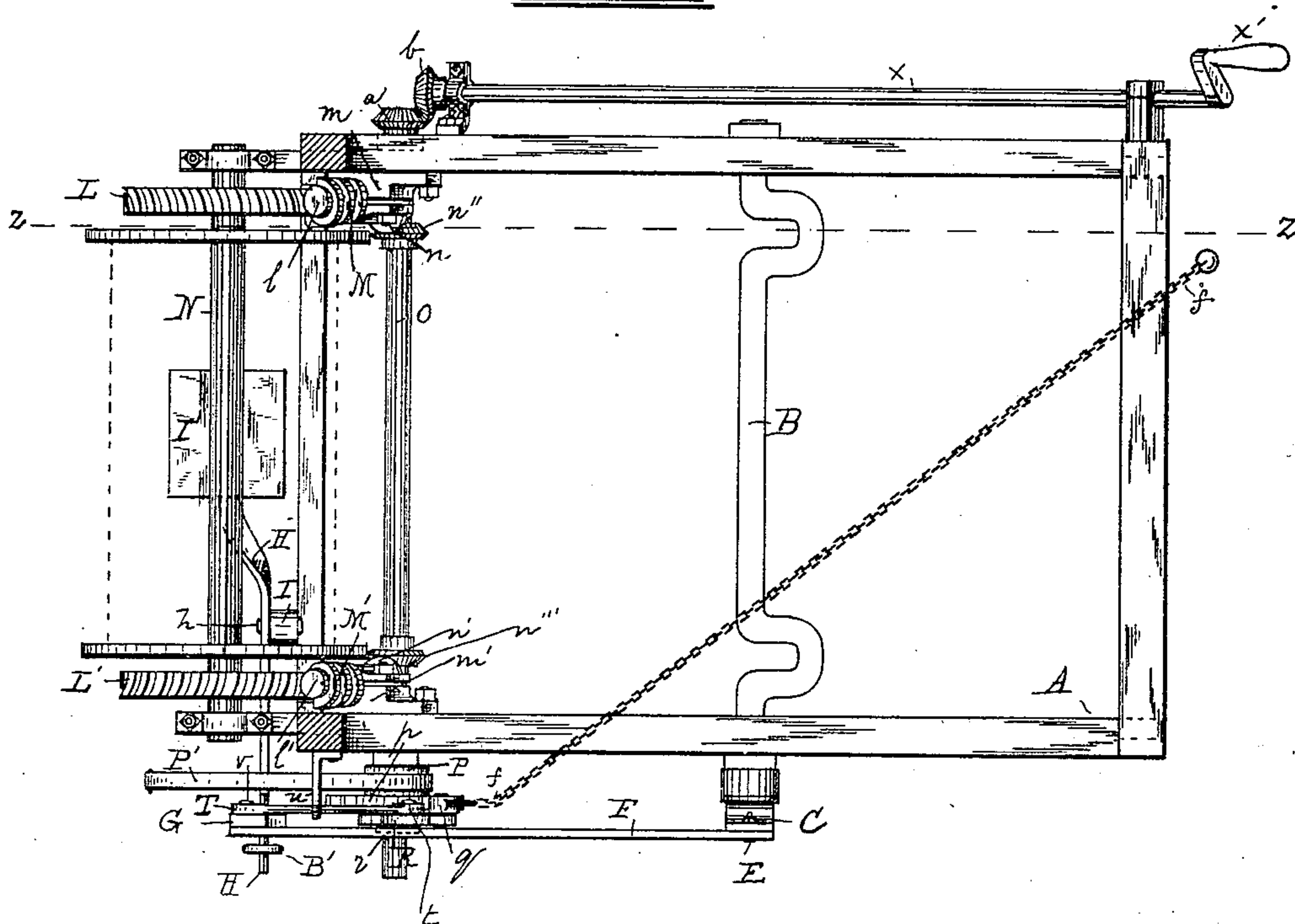
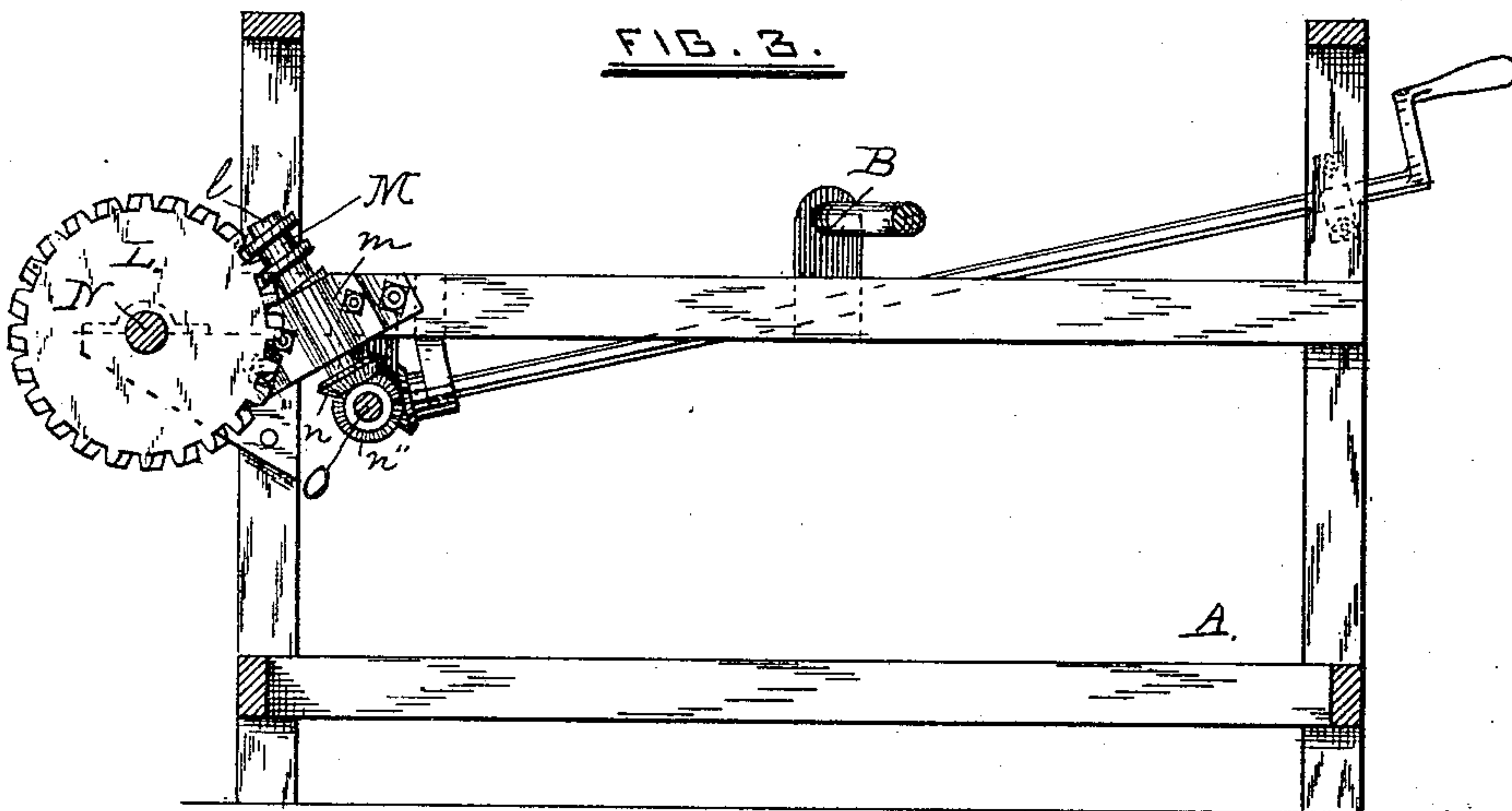


FIG. 3.



Witnesses

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By his Attorney

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UNITED STATES PATENT OFFICE.

WARREN Z. WOODSTOCK, OF CARTHAGE, MISSOURI, ASSIGNOR OF ONE-HALF
TO ALFRED A. ULMAN, OF BAY ST. LOUIS, MISSISSIPPI.

LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 344,336, dated June 22, 1886.

Application filed February 28, 1885. Serial No. 157,395. (No model.)

To all whom it may concern:

Be it known that I, WARREN Z. WOODSTOCK, a citizen of the United States, and a resident of Carthage, county of Jasper, State of Missouri, have invented new and useful Improvements in Let-Off Mechanisms for Looms, of which the following is a full and exact description, reference being had to the accompanying drawings, making part of this specification.

10 This invention consists of certain improvements whereby the warp-beam of a loom is given a positive motion, varying in speed according to the amount of warp thereon, the object being to increase the speed of the warp-beam as the warp is let off from the same, and thus insure an equal amount of warp per given number of picks.

My invention will be better understood by referring to the accompanying drawings, whereon Figure 1 is a perspective view of a loom-frame and parts of loom with which my improvements are connected. Fig. 2 is a plan or top view thereof, and Fig. 3 is a vertical longitudinal section through the line *z z* of Fig. 2.

25 The frame, designated by the letter A, will serve to illustrate that of an ordinary loom, and B the crank-shaft thereof. The latter I make somewhat longer than ordinarily, so as to project beyond one of its journal-bearings, and on this end I key or otherwise secure a crank, C, the arm of which is curved back over the eye thereof and provided with a slot, *d*, for the reception of a crank-pin, E, the stem of which is threaded and provided with a nut or jam-nuts, to permit of its being secured at any prescribed distance from the central line of the shaft. The face of the crank-arm is marked or otherwise provided with a gage, *e*, in order that the crank-pin E may be adjusted to suit the weight of goods to be woven. The wrist of the aforesaid crank-pin is connected by a rod, F, with the upper end of a slotted lever, G, the lower end of which is perforated for the reception of the outer end of a pad-lever, H, which is provided with a series of perforations, *i*, to admit of its being adjustably connected by a pin, *h*, with the stand I. The inner end of the lever H is provided with a longitudinal vertical slot, *i'*, of sufficient width to receive a flat pin, *k*, projecting from the under

surface of the pad I'. This pad has a flat top and a curved or semicircular bottom, in order that its upper surface may maintain a horizontal position during the upward or downward movement of the lever, and thus press closely against the warp until the inner end of the same has been released or unwound from the warp-beam N. The peculiar formation of the aforesaid slot and pin insures the keeping of the pad in proper line without in any manner interfering with the rocking thereof. The warp-beam is provided near its journal-bearings with worm-wheels L L', which are engaged by worms M M', forming part of or secured to the upper ends of shafts *l l'*, which operate in journal-bearings *m m'*, connected with the inner sides of the loom-frame. The lower ends of the shafts *l l'* are provided with bevel-pinions *n n'*, (see Fig. 2,) for engaging similar pinions, *n'' n'''*, of a shaft, O. The shaft O is journaled in the sides of the loom-frame, and on one of its projecting ends is secured a friction-pulley, P, and a ratchet-wheel, *p*. The teeth of the latter are engaged by a pawl, *q*, which is pivoted to a lever, R, that is loosely fitted on the end of the shaft O, and held thereon by a collar, *r*. The movable end or arm of the lever R is provided with a series of perforations, *s*, to receive a wrist-pin, *t*, on which is journaled one end of a rod, T, which operates in a guide, *u*, and has its opposite end connected by a pin, *v*, with the slotted portion of the vibrating lever G.

From the arrangement thus far described it will be seen that by turning the lay-shaft a vibrating motion is imparted to the lever G, which motion is communicated through the rod T to the lever R. The latter, through its pawl *q*, causes the shaft O to rotate and impart a similar motion to the warp-beam. The pad in the meantime is pressed closely against the warp by reason of the weight of the mechanism connected with the outer end of its lever.

Around the pulley P of the shaft O is fitted a friction clamp or band, P', for preventing any movement of the shaft, except when being rotated by the lever and its pawl-connection.

At one end of the shaft O is keyed or otherwise secured a bevel-pinion, *a*, which is engaged by a similar pinion, *b*, on a rod, *x*, having

ing a handle, x' , through the instrumentality of which the warp-beam can be turned backward, when desired. Before attempting to operate this part of the mechanism, the pawl 5 of the ratchet-lever should be raised clear of the teeth of the ratchet-wheel, for which purpose a rope or chain, f , is connected with said pawl, and the opposite end of said rope or chain is carried over the upper part of the 10 loom-frame to within reach near the handle of the rod x .

B' is a slotted stand, in which the outer end of the pad-lever is vertically guided. This stand is not absolutely required; but it serves 15 to keep the lever in line, and thus insures the proper action of its pad against the under surface of the warp-roll.

In the operation of my improvements the adjustment of the pad-lever is such that its 20 pad shall be constantly in contact with the roll of warp on the warp-beam, so that any decrease in the diameter of said roll caused by the withdrawal of warp therefrom will be followed by an upward movement of the pad and 25 a downward tendency of the opposite end of the pad-lever and the slotted lever connected therewith, thus changing the point of connection between the latter and the ratchet-lever, increasing the stroke of the lever and parts

effected thereby, and insuring an equalization 30 of warp to a given number of picks.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the crank-shaft provided with crank C, the pad-lever H and pad I, slotted lever G, rod F, connecting-rod T, 35 lever R, and pawl q , with the ratchet-wheel p , shaft O, the warp-beam, and gearing, substantially as described, between the shaft O and 40 warp-beam, as and for the purpose set forth.

2. In combination with the warp-beam N, shaft O, and connecting gearing, as described, the bevel-pinion a , and ratchet-wheel p , arranged at opposite ends of the shaft O, the 45 lever R, having a pawl adapted to engage the ratchet-wheel p , means for actuating the lever R, the chain f , whereby the pawl is disengaged from the ratchet-wheel, and the rod x , having a bevel-pinion, b , adapted to engage the pin- 50 ion a , substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

WARREN Z. WOODSTOCK.

Witnesses:

GEO. W. COX,
W. D. ARNOLD.