

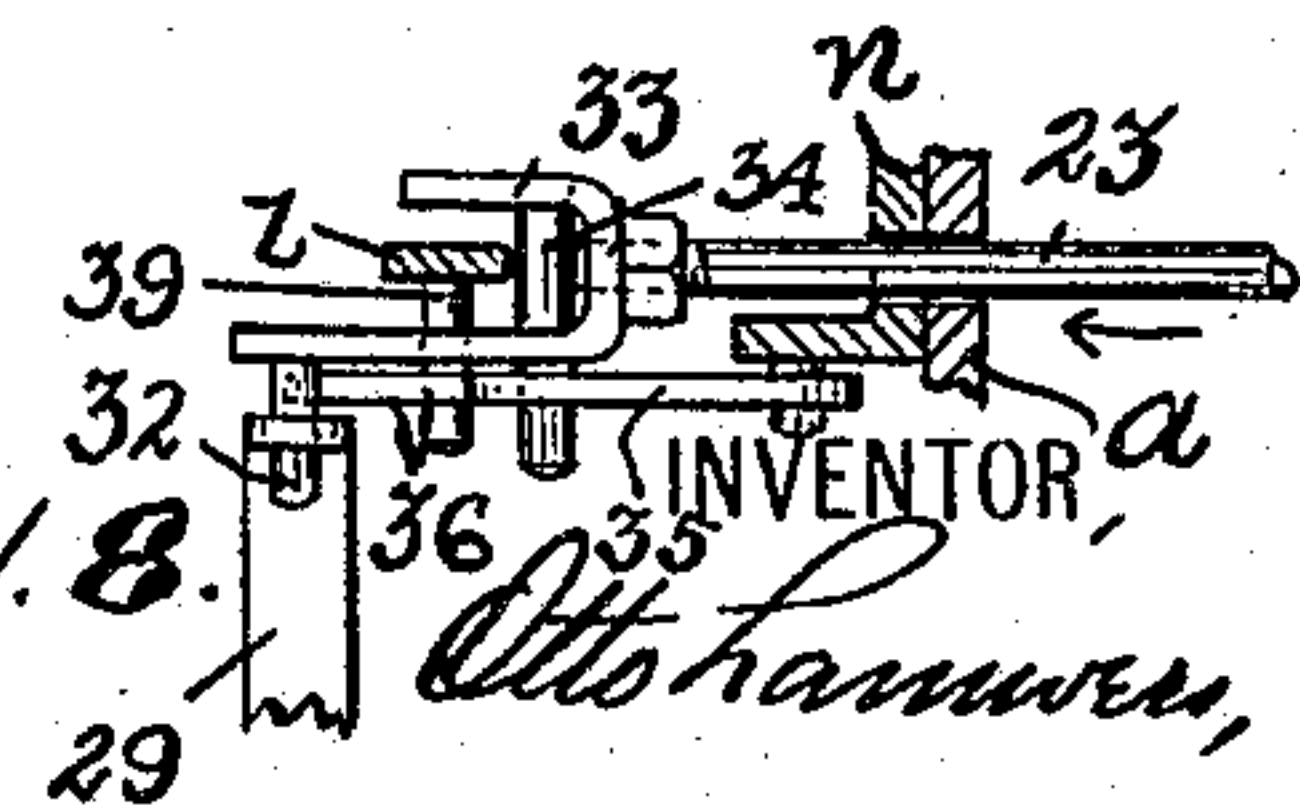
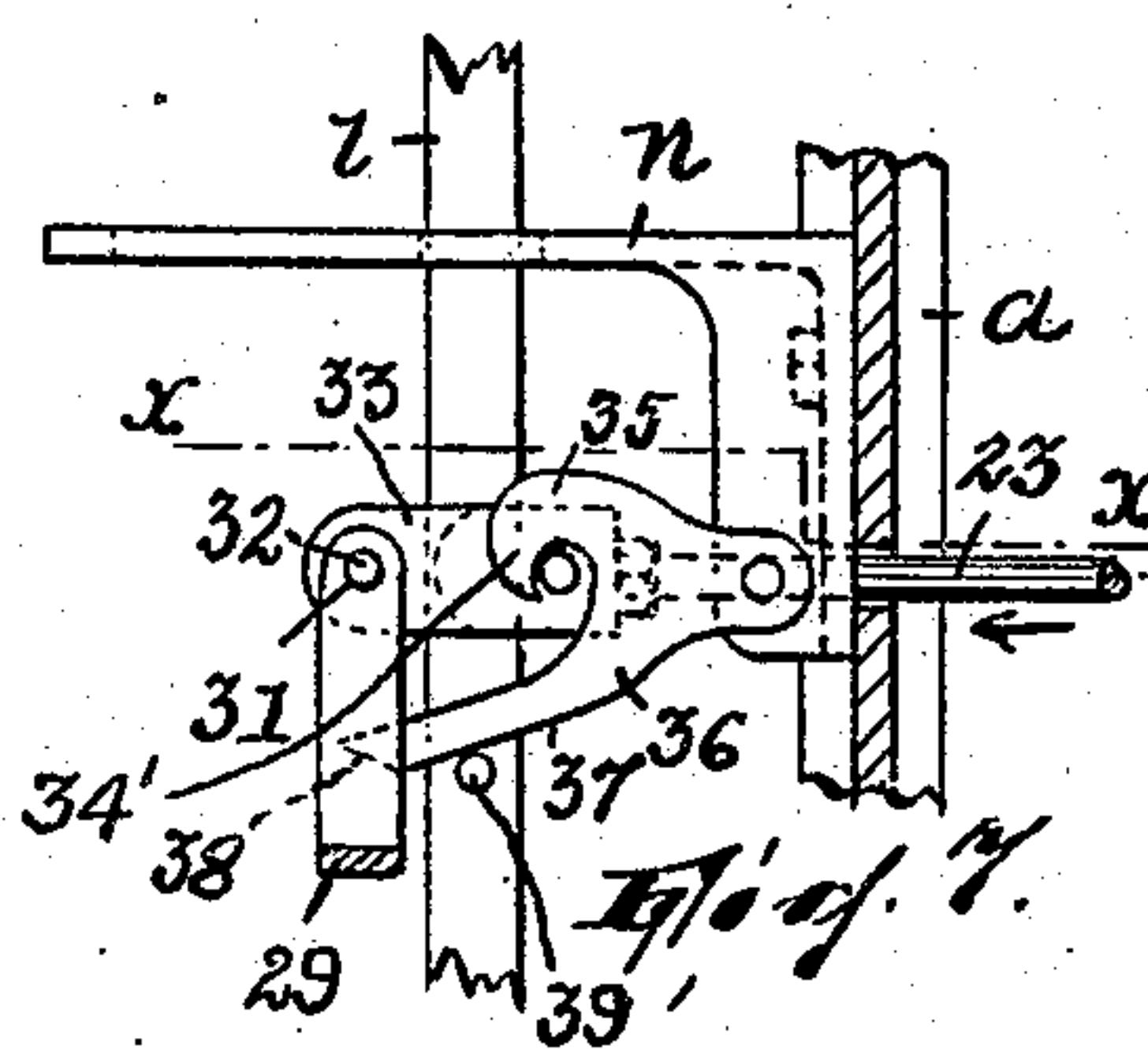
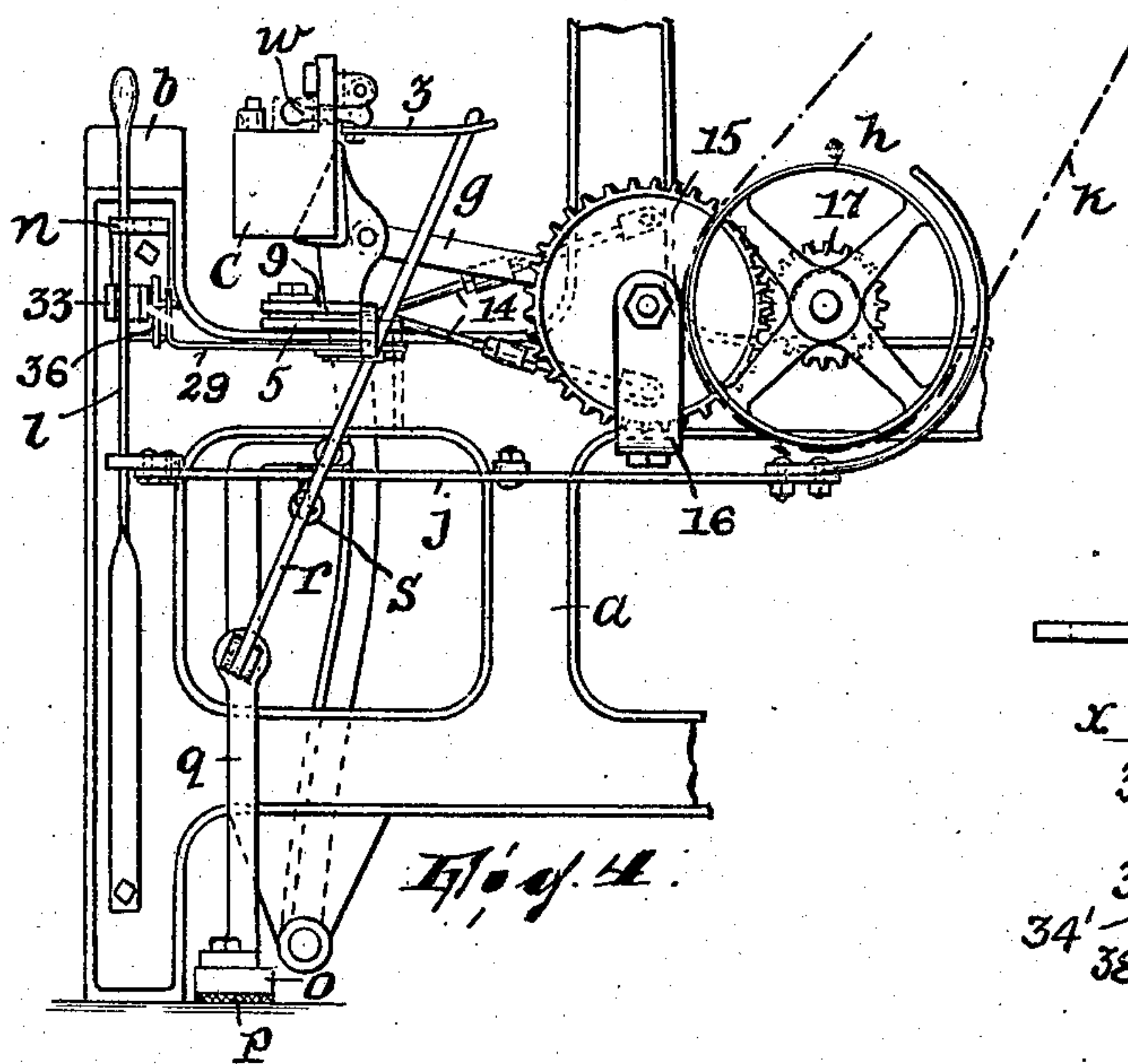
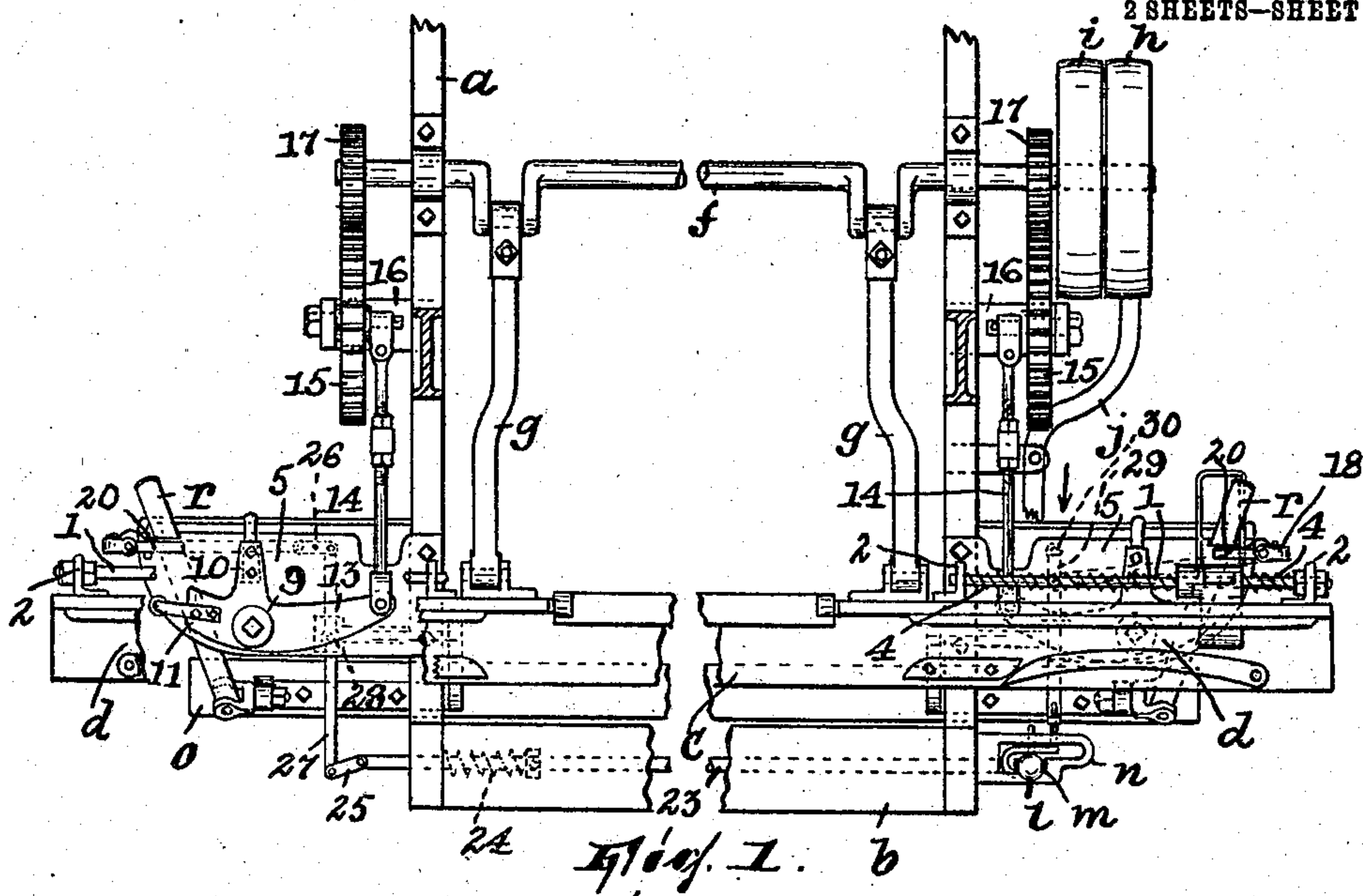
No. 847,952.

PATENTED MAR. 19, 1907.

O. LAMWERS.
SHUTTLE MOTION FOR LOOMS.

APPLICATION FILED JULY 15, 1906.

2 SHEETS—SHEET 1.



WITNESSES: _____

Jm. Mrell.
Adele Glatt.

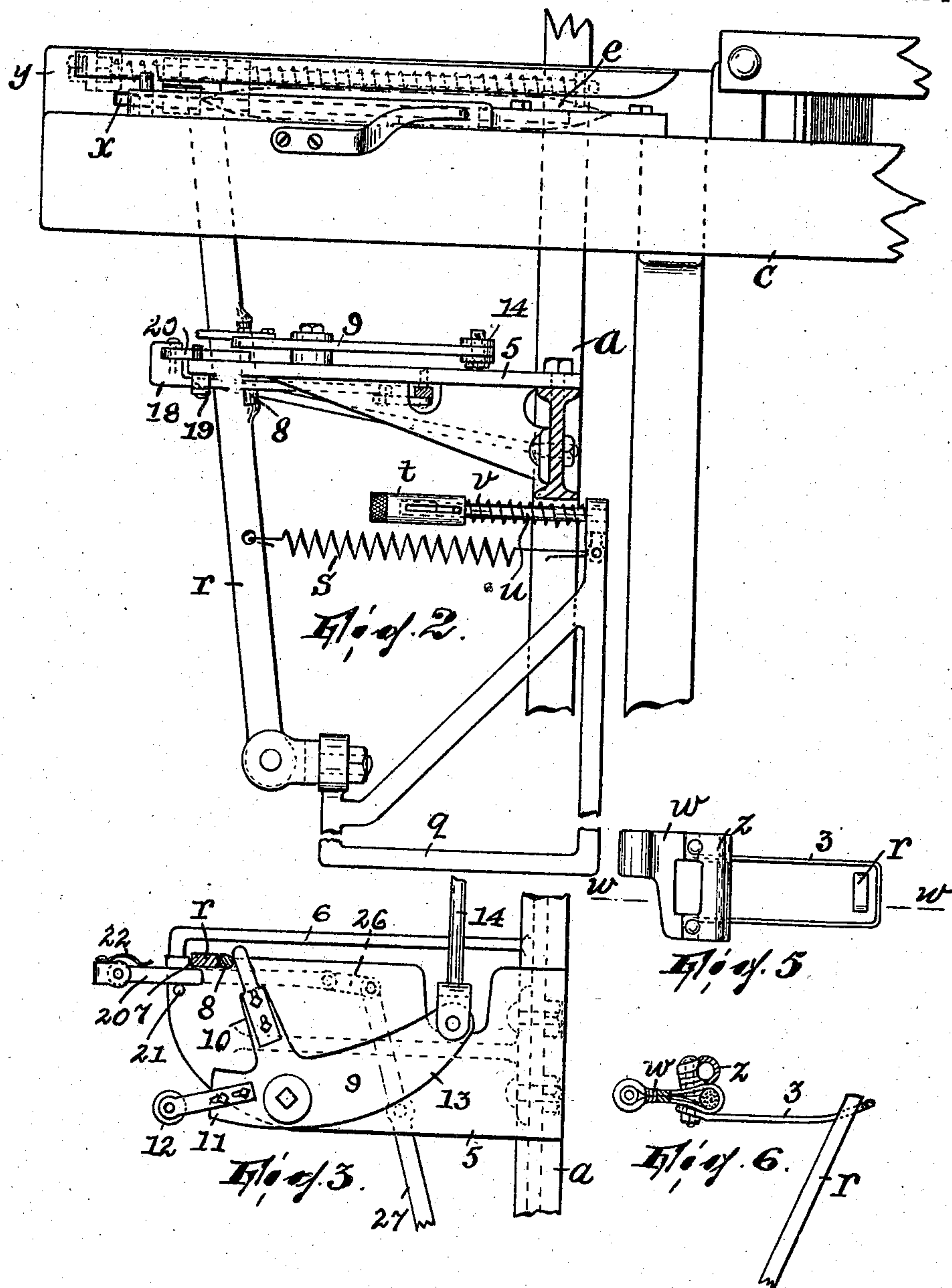
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Otto Lamwers,
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2 SHEETS—SHEET 2.



WITNESSES:

Wm. Zell.
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INVENTOR,

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UNITED STATES PATENT OFFICE.

OTTO LAMWERS, OF PATERSON, NEW JERSEY.

SHUTTLE-MOTION FOR LOOMS.

No. 847,952.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed July 15, 1905. Serial No. 269,830.

To all whom it may concern:

Be it known that I, OTTO LAMWERS, a subject of the Emperor of Germany, residing in Paterson, county of Passaic, State of New Jersey, have invented certain new and useful Improvements in Shuttle-Motions for Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates to looms, and it has reference particularly to the means for actuating the shuttle.

The objects of the invention will be fully explained in describing my improvements, it being sufficient at this point to state generally that the principal advantages are to reduce the vibration and noise usually attending the operation of a loom, simplify the construction, and place the several parts more at the command of the operator, especially when the loom is not being run regularly, but being "turned over" during a few cycles by hand.

Referring to the accompanying drawings, Figure 1 is a plan view of so much of a loom as it is necessary to show in order to illustrate my invention, certain parts being broken away. Fig. 2 is a somewhat-enlarged vertical transverse sectional view of the left-hand portion of the loom, a part of a certain bracket *q* being broken out to save space. Fig. 3 is a plan view of certain parts under the batten seen in Fig. 2, the picker-stick appearing in section. Fig. 4 is a right-hand end view of the loom. Fig. 5 is a plan view of the picker. Fig. 6 shows the picker-stick and the picker, the latter appearing in section on the line *w w* in Fig. 5. Fig. 7 is a vertical transverse sectional view taken just back of the right-hand end of the breast-beam and looking in the direction of the arrow in Fig. 1, and Fig. 8 is a sectional view of Fig. 7 on the line *x x* in said figure.

In the drawings, *a* is the loom-frame; *b*, the breast-beam; *c*, the batten having shuttle-boxes *d* of usual construction at both ends; *e*, the shuttle; *f*, the crank-shaft having its cranks connected with the batten by pitmen *g*, whereby said batten is reciprocated from the shaft *f*; *h i*, fast and loose pulleys, respectively, on shaft *f*; *j*, a belt-shifter ful-

crumed horizontally in one side of the frame *a*; *k*, the drive-belt controlled by said belt-shifter, and *l* the usual elastic controller-lever operatively engaged with the free end of the belt-shifter and adapted to be held against its own tension in the notch *m* of a bracket *n* on the breast-beam. When in this position, said controller-lever keeps the belt *k* on the fast pulley *h*, and when it is released from the notch it springs to the right and throws the belt onto the loose pulley, as usual.

On a base-piece *o*, secured to the floor and preferably resting on a felt or other soft pack *p*, are brackets *q*, one near each end and a little back of the breast-beam. In each bracket is pivoted a picker-stick *r*, the same having pivotal movement longitudinally of the batten, but not, as is usual in ordinary looms, in a direction at right angles to the batten. Each picker-stick is normally pulled inwardly by a spiral spring *s*, connecting it with bracket *q*. A buffer consisting of a sleeve *t*, sliding on an arm *u*, projecting from the bracket *q* and normally pressed outwardly by a spring *v*, coiled about said arm, takes the impact of the picker-stick *r* when the same is drawn inwardly by the spring *s*, as will be hereinafter described.

The picker is shown in Figs. 5 and 6 and comprises a body part *w*, which extends through and slides in a slot *x* in the back wall *y* of the shuttle-box *d*, a tubular portion *z*, which is penetrated by a guide-rod *1*, fixed in brackets *2* to the back of the batten, and a stout wire loop *3*, projecting rearwardly. This loop receives the picker-stick, so that, notwithstanding the fact that the picker-stick has no forward-and-backward movement, the picker and picker-stick are always operatively engaged with each other. Two springs *4* are interposed between the picker and the two brackets *2*, one on each side of the picker, the same counteracting each other and acting to ease the operation of the picker as it is reciprocated by the picker-stick.

5 designates plates, one of which projects horizontally from each end of the loom under the batten. The back edge of each plate and a brace *6*, projecting from the loom-frame and secured to the end of the plate, form a guideway for the picker-stick. Said edge of the plate is formed near its outer end with a notch *7* to receive the picker-stick, and since the picker-stick is elastic it slips into said notch whenever it is opposed thereto.

8 is an antifriction-roller arranged in the inner edge of the picker-stick.

On each plate 5 is fulcrumed to move horizontally a three-armed lever 9. Two of its arms—namely, 10 and 11—are the ones which directly control the picker-stick, the former setting it in the notch 7 and the latter causing it to be disengaged from said notch, so that the spring *s* will pull the picker-stick inwardly, and so throw the shuttle. The arm 11 may carry an antifriction-roller 12. The third arm 13 of said lever 9 is connected by a pitman 14 with a gear 15, which is journaled in a bracket 16, projecting from the side of the loom, and which meshes with another gear 17, fixed on shaft *f*. There being two levers 9, one for each picker-stick, there are of course two of each of the parts 14, 15, 16, and 17. It should be remarked that the relation of the gears 15 and 17 is as two to one and that the pitmen 14 are connected at relatively diametrically opposite points of the gears 15. It should also be remarked that when the batten is full forward the points at which pitmen 14 are connected with the gears 15 are the one up and the other down. The result of this is that when the batten is full back the arm 11 of one of the levers 9 is also full back, while the arm 11 of the other lever is full forward. On every stroke of the batten this relation of the levers will, moreover, be reversed.

The arm 10 of each lever 9 in its vibrations traverses the guideway formed for the picker-stick between plate 5 and brace 6, and if the picker-stick has sprung inwardly to throw the shuttle the next time arm 10 moves outwardly it will return the picker-stick and reset it in notch 7, wiping against the roller 8.

18 is a slide which moves in a bracket 19 on the under side of plate 5 and carries at its free end a finger 20, pivoted therein and projecting over plate 5 between the notch 7 and a stop-pin 21, being normally pressed against said stop-pin by a spring 22 on the slide. According as the slide is drawn inwardly, so as to bring the finger 20 between roller 12 and the picker-stick, (engaged in notch 7,) so the latter will be disengaged from the notch when the roller 12 engages the finger in the vibration of the lever 9. If the slide is moved outwardly, so that the finger is not interposed, then the picker-stick will not be disengaged from the notch.

23 is a thrust-bar which slides in the under side of the breast-beam and is normally pressed to the right by a spring 24. Said thrust-bar is connected with the left-hand slide 18 through the medium of links 25 and 26 and the lever 27, fulcrumed at 28 in the plate 5. The thrust-bar is connected with the right-hand slide by a lever 29, fulcrumed at 30 in the plate 5 and having its free end upturned and formed with a hole 31, receiv-

ing a pin 32 on a U-shaped head 33, carried by the thrust-bar 23. Normally the spring 24 tends to keep the slides 18 in their outermost position, so that in the vibrations of the levers 9 the fingers 20 will not be engaged by the arms 11 of the levers, and hence the picker-sticks will not be released from their notches. Thus the weaver can operate the loom by hand through a few cycles without the shuttle being thrown.

In order that the slides 18 may be so controlled that when the loom is put into operation the picker-sticks will act, the U-shaped head 33 is placed in alinement with the controller-lever *l*, said head carrying a pin 24, which when the controller-lever is thrown over into the notch *m* takes the impact of the latter, with the result that the thrust-bar 23 is moved to the left against the tension of its spring and the fingers 20 moved into position to be engaged by the rollers 12 of levers 9.

It may be desirable to at times turn the loom over through a few cycles by hand only and at this time to have the shuttle working. For this reason a hook 35, pivoted in the bracket *n* and adapted to engage the pin 34 to hold the thrust-bar against the tension of its spring, (with the fingers 20 in operative position,) may be provided. The weaver grasps the rod 23 and draws it toward the left until the pin 34 wipes under the rounded end 34' of hook 35 and is caught by the latter. This hook has a downwardly-projecting finger 36, having an inclined lower face 37 and its free end beveled on its under side, as at 38. The inclined lower face 37 is adapted to be engaged by a pin 39 on the controller-lever, which when the controller-lever moves to throw off the power raises the hook 36, so that it will not prevent the thrust-bar following the controller-lever under tension of its spring 24. The bevel 38, on the other hand, permits the pin 39 to raise, and so pass the hook, when (it being assumed that the controller-lever was last thrown off, although the hook 36 was holding the thrust-bar, so that the latter kept the fingers 20 in working position) the power is again thrown on by moving the controller-lever into engagement with its notch *m*.

My invention results in the following advantages: First, since the shuttle-impelling medium—the springs 4—act always with the same force and without reference to the speed of the loom (as does the ordinary cam-actuated picker-stick) the shuttle will never, unless unduly impeded, be incompletely boxed, even when the loom is turned over slowly, as by hand. Hence the shuttle may be left on the batten at all times for regular operation, and so far as the shuttle is concerned the loom is always ready to start. Second, the loom can be operated by hand (with the power off) with the shuttle either in action or out of action, and, third, since the cams

and shafts necessary therefor are eliminated and the means for throwing the shuttle is mounted independently of the loom-frame on a detached vibration-proof base noise and vibration of the loom are very materially reduced.

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

10 1. The combination of the frame, the batten, means for reciprocating the batten, a picker movable longitudinally of the batten, means for actuating the picker having a running engagement therewith in a direction
15 transverse of the batten, and supporting means, detached from the frame, for sustaining said picker-actuating means, substantially as described.

20 2. The combination of the frame, the batten, the shuttle, elastic means for throwing the shuttle, means for holding said shuttle-throwing means under tension, a lever movable in one direction to set said shuttle-throwing means in engagement with its holding means and in the other direction to re-
25 lease said shuttle-throwing means from the holding means, and means, comprising a going part, for vibrating said lever, substantially as described.

30 3. The combination of the frame, the batten, the shuttle, a picker-stick, a spring normally drawing the picker-stick inwardly, means for holding the picker-stick with the spring under tension, a lever movable in one
35 direction to set said picker-stick in engagement with its holding means and in the other direction to release said picker-stick from the holding means, and means, comprising a going part, for vibrating said lever, substantially
40 as described.

4. The combination of a frame, a batten, a shuttle, a picker-stick, a spring normally drawing the picker-stick inwardly, means for holding the picker-stick with the spring under tension, a lever movable in one direction
45 to bring one portion thereof into engagement with and set said picker-stick in engagement with its holding means and in the other direction to bring another portion thereof into approximate, but not actual, contact with said
50 picker-stick, a finger interposable between

said picker-stick and said last-named portion of the lever and adapted, when interposed, to transmit the action of the lever to the picker-stick and release the latter from its holding
55 means, and means for vibrating the lever, substantially as described.

5. The combination of the frame, the batten, the shuttle, a picker-stick, a spring normally drawing the picker-stick inwardly, means for holding the picker-stick with the
60 spring under tension, a lever movable in one direction to bring one portion thereof into engagement with and set said picker-stick into engagement with its holding means and
65 in the other direction to bring another portion thereof into approximate, but not actual, contact with said picker-stick, a finger interposable between said picker-stick and
70 said last-named portion of the lever and adapted, when interposed, to transmit the action of the lever to the picker-stick and release the latter from its holding means, means
75 for normally holding said finger out of interposition with respect to the picker-stick and said last-named portion of the lever and a controller-lever, said controller-lever being
80 adapted to actuate said last-named means and thereby interpose said finger, substantially as described.

6. The combination of the frame, the batten, the shuttle, means for actuating the batten and the shuttle, the controller-lever, and means, controlled by said controller-lever, for rendering that portion of the said means
85 which actuates the shuttle inoperative at will, substantially as described.

7. The combination of the frame, the batten, the shuttle, means for actuating the batten and the shuttle, means for rendering that
90 portion of the said means which actuates the shuttle inoperative, and means for securing said last-named means in position to leave said portion operative, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of July, 1905.

OTTO LAMWERS.

Witnesses:

JOHN W. STEWARD,
WM. D. BELL.