

S. T. Thomas. Loom.

Sheet 1-2 Sheets.

N^o 34,381.

Patented Feb. 11, 1862.

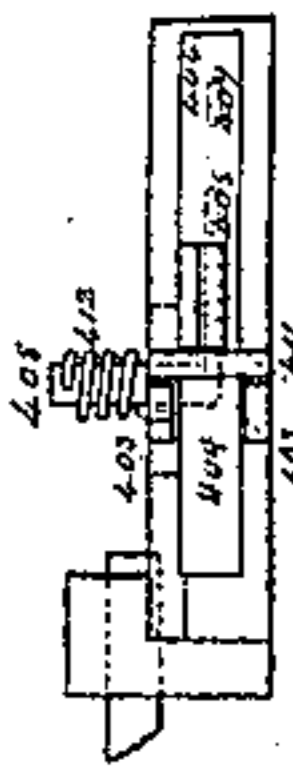


Fig. 7.

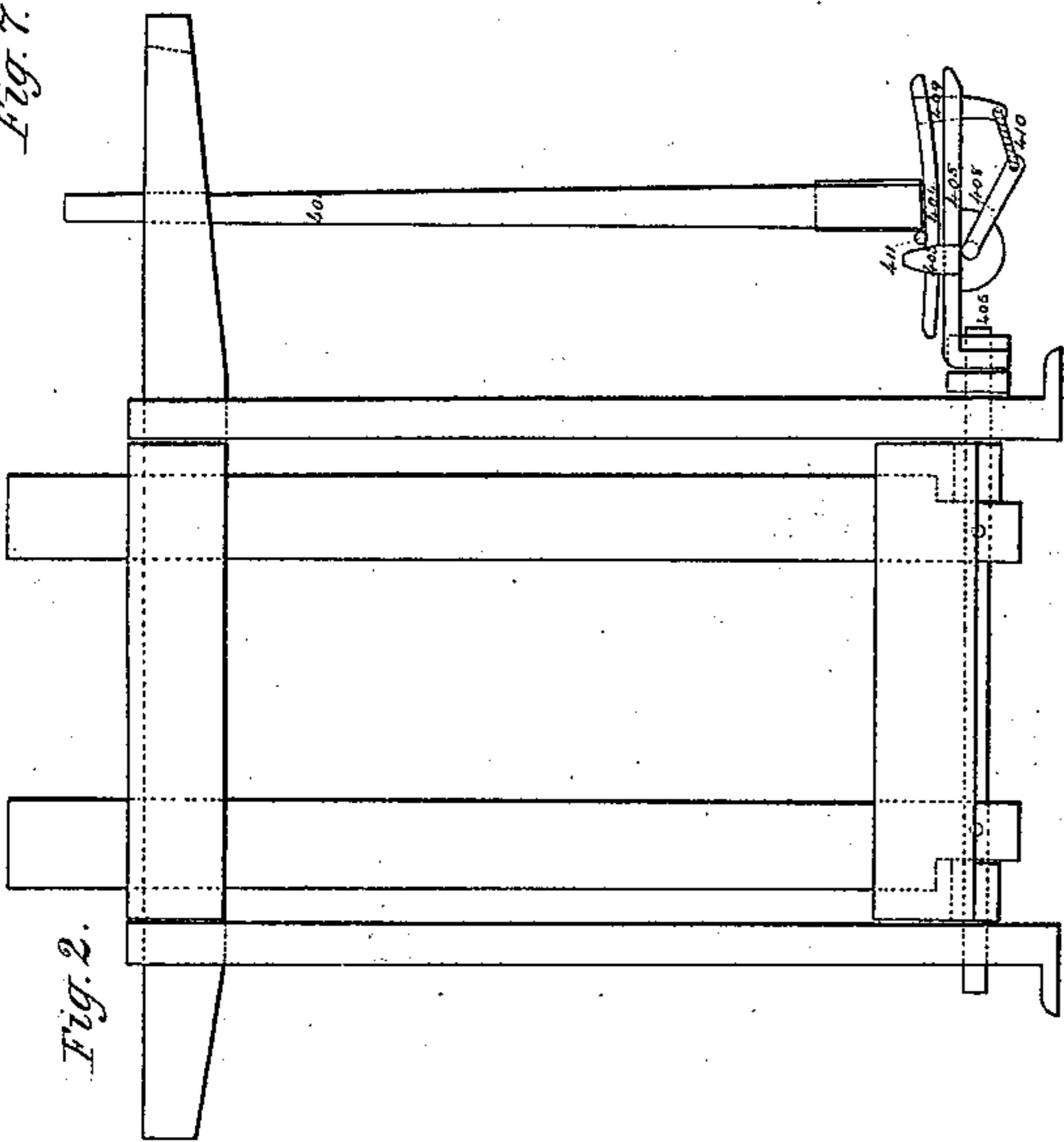


Fig. 2.

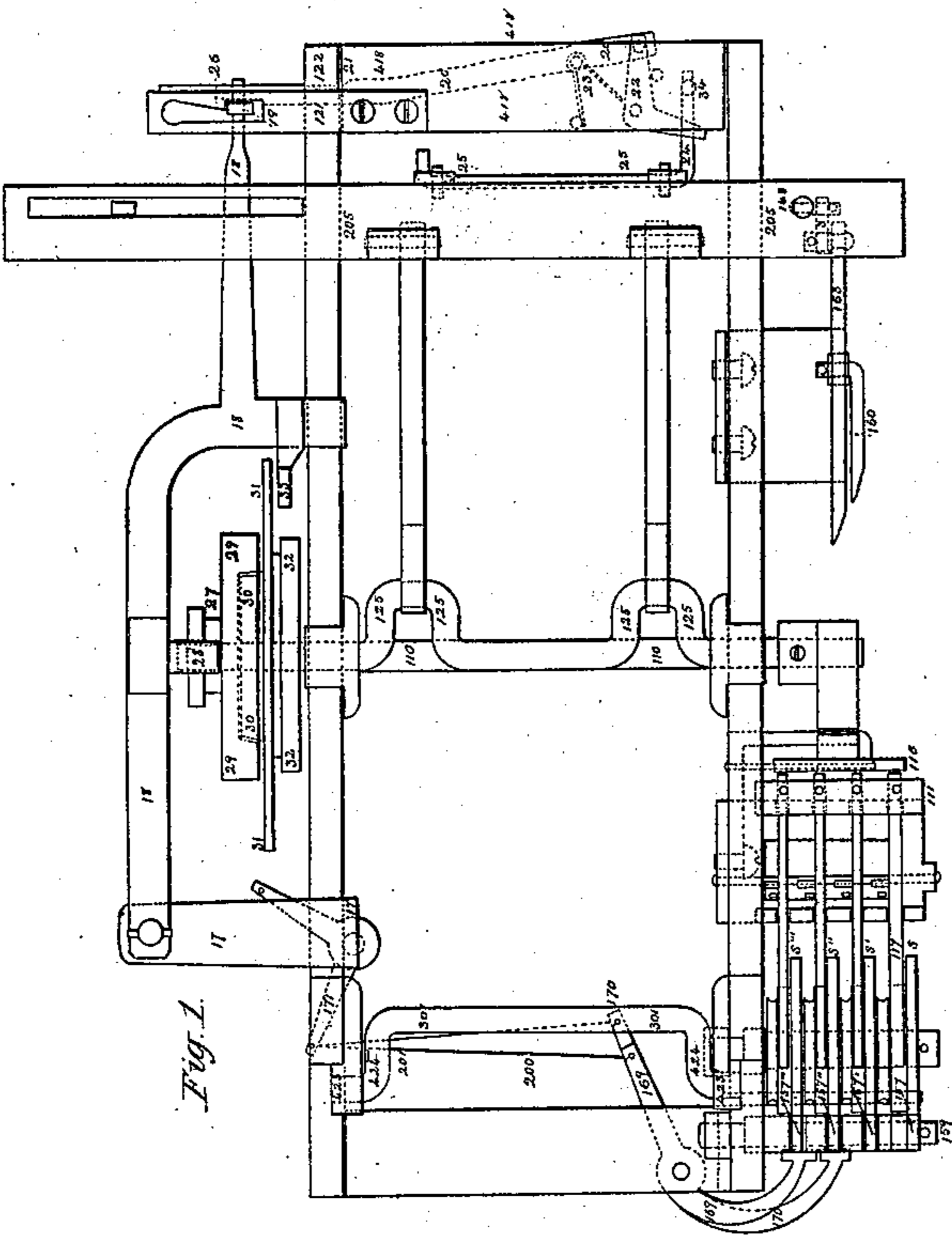


Fig. 1.

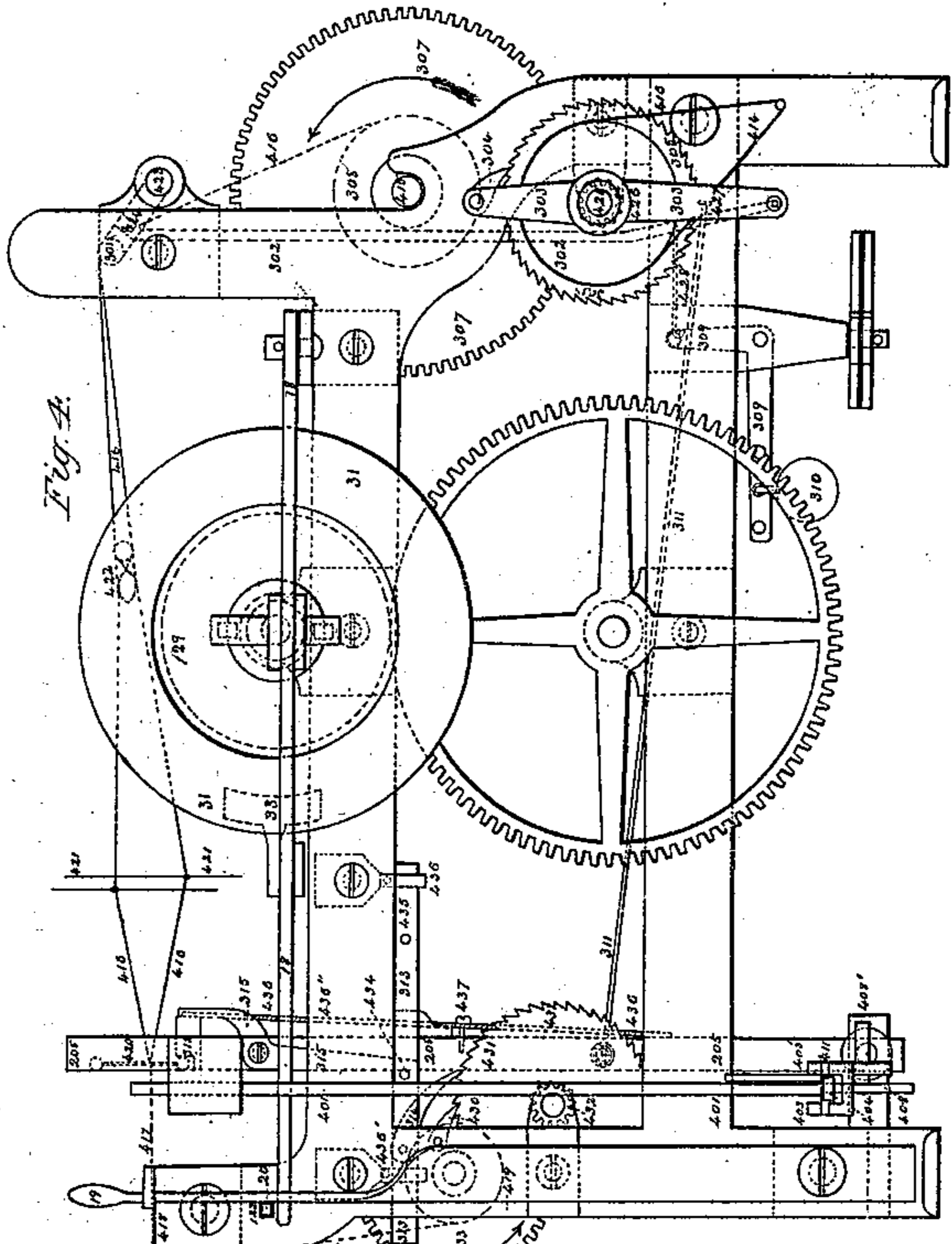


Fig. 4.

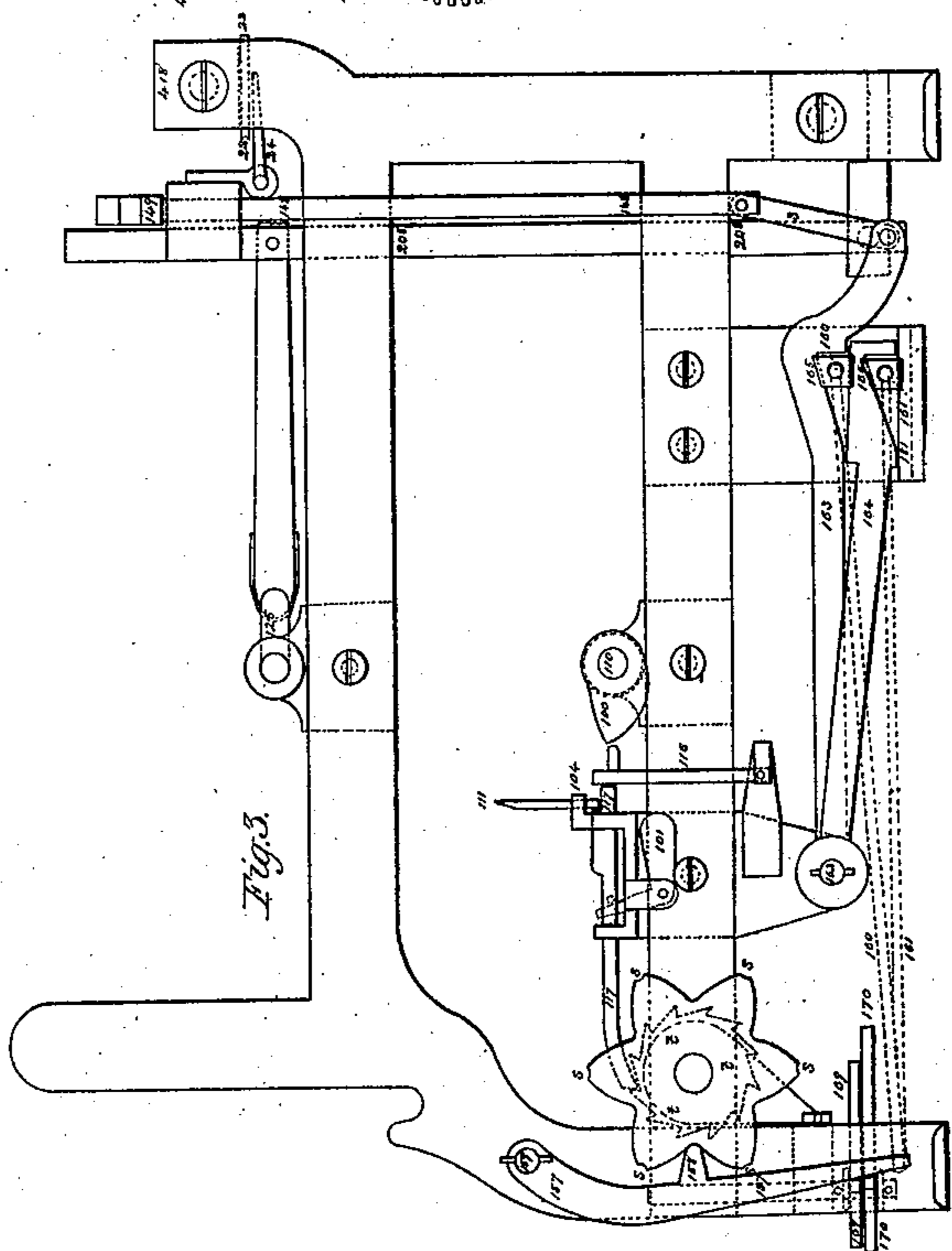


Fig. 3.

Witnesses
Edward Blake
J. M. Batchelder

Inventor
Samuel T. Thomas

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Fig. 5.

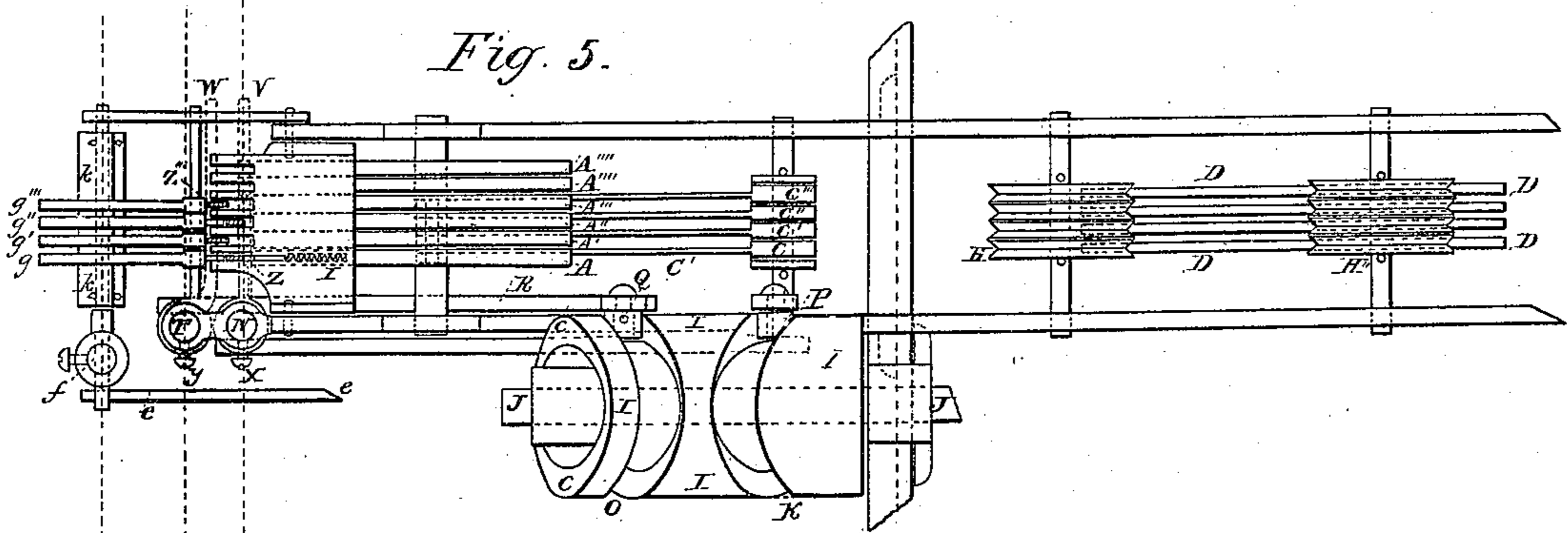
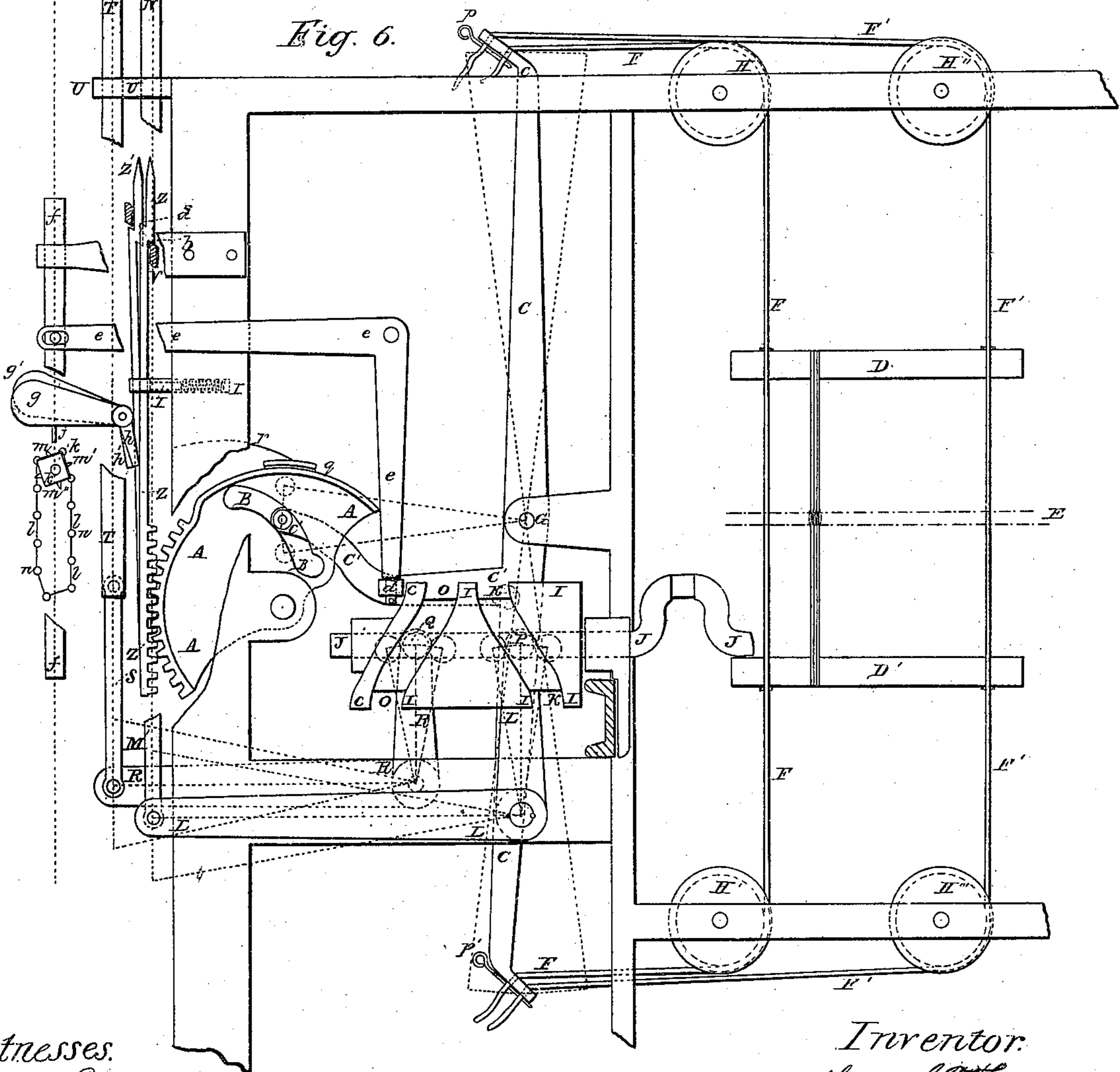


Fig. 6.



Witnesses:

Edward Blake
J. M. Ditchfield

Inventor:

Samuel T. Thomas

UNITED STATES PATENT OFFICE.

SAMUEL T. THOMAS, OF LACONIA, NEW HAMPSHIRE.

IMPROVEMENT IN FANCY-LOOMS.

Specification forming part of Letters Patent No. 34,381, dated February 11, 1862.

To all whom it may concern:

Be it known that I, SAMUEL THOMAS, of Laconia, in the county of Belknap and State of New Hampshire, have invented an Improvement in Fancy-Looms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure I, Sheet A, is a plan of the loom. Fig. II, Sheet A, is a front elevation. Fig. III, Sheet A, is a side elevation. Fig. IV, Sheet A, is a side elevation. Fig. VII, Sheet A, is a plan of the shuttle-driver; Fig. V, Sheet B, plan of scroll-cam and harness motions. Fig. VI, Sheet B, is an elevation of the same.

I will first describe the harness motions, which are produced by the scroll-cam I, as shown on Sheet B, Figs. V and VI.

The crank-shaft J, turning on suitable bearings attached to the frame of the loom, carries at one end a scroll-cam I, this cam, as well as other parts of the mechanism, being represented in the position they occupy when the harness D E D' is at the center of its traverse. The scroll-cam is adjustable upon the crank-shaft J, by which means the time of the action of the harnesses is made to correspond with the motion of the lay. The spiral groove K in this cam receives the friction-wheel P, that is attached to the upper end of the right-angled lever L. As the cam revolves the friction-wheel follows the groove and elevates or depresses the other end of the lever L. To this end of the bent lever vertical rods are attached, which rise and fall at any required time and raise or depress the harnesses. The distance traversed by the end of the bent lever L is governed by the respective lengths of its long and short arms and also by the shape of the groove K in the scroll-cam. A similar bent lever R and its friction-roller Q are moved by the groove O in the same cam, and the vertical movement of the end of the two levers L and R is used for operating the harnesses in any desired manner, either in looms of my construction or in any other kind of looms.

My improvement in the shipper and brake for starting and stopping the loom is represented on Sheet A, Figs. I, III, and IV. The protector-rod is seen at 25, and projecting

from one end of it at right angles is the dagger 24. If the shuttle fails to reach the box, this dagger comes in contact with one end of the bent lever 22 and moves it a short distance. The other end of the bent lever is jointed to the bar 20, the motion of which brings an inclined plane 21 (near one end of the bar) in contact with one side of the slot 122, made in the loom-frame, through which the bar passes, thus moving the shipper-spring 19 out of the notch 26. This allows the shipper 18 and its attached brake 33 to move horizontally against the flange 31, and it is there held by the tension of the shipper-spring 19. This same motion of the shipper 18, acting through the clutch and collar 27 28, removes the driving-pulley 29 from contact with the driving-cone 30. The friction is thus applied to the flange 31 at the same instant that the driving-cone is released. The lay is thus arrested and its momentum nearly overcome before the dagger 24 forces the bent lever 22 against the fixed stop 34, thus avoiding the sudden concussion that takes place by the stoppage of a loom by means of the apparatus heretofore in use.

When the stoppage of the loom is caused by the breaking of the filling, the brake 33 instantly stops the loom, so that the main crank makes but about half a revolution, while the shippers commonly used allow the crank to continue in motion, and the shuttle makes several shots before the loom is stopped.

I will now explain the action of the star-cams, the slide-wedges, draw-wires, and attached parts that communicate vertical motion to the shuttle-boxes for the purpose of changing the colors of the filling or weft. The cam 100, attached to cam-shaft 110, acts upon the rocker-lever 116, which moves the horizontal pawl 117 (when the wire 111, leading to the shuttle-box jacquard, is in the proper position) and turns the ratchet 1 and its attached cam 3 at proper intervals. The series of vertical bent levers 157 157', which are acted upon by their respective star-cams, ratchets, and pawls of the series, are suspended from the fixed pin 159, and have on one of their sides a projection or short arm 158. At the lower ends of 157 and 157' the wires 160 and 161 are attached, and extend nearly parallel with each other to the wedges

165 and 166, the lower wedge 166 traversing at its lower edge upon a fixed slide or guide 181, while its upper edge runs in contact with an inclined plane formed upon the lower side and near the end of a rocker-lever 164. The other wedge 165 traverses on a slide at the top of lever 164, and its upper edge runs against the lower side of rocker-lever 163. The free end of this lever 163 extends beyond the wedge and is jointed to the shuttle-box lifting-rod 148. The two suspended levers 157'' and 157''' connect with the bent levers 169 170, which pull the wires 200 201, extending across the loom, which connect, respectively, with bent levers 171, which give motion to slides and wedges (corresponding to the slides and wedges 165 166) and move the shuttle-boxes upon the opposite side of the loom at proper intervals.

The apparatus for rolling up the cloth, called the "take-up," is shown on Sheet A, Fig. IV, this operation being controlled by the horizontal motion of the reed. The fighter-bar 312 is supported in the frame of the lay, its front edge resting against the lower band of the reed 420, against which it is held by the long springs 436'' 436''', having screws at 437 to regulate the pressure of the fighter-bar upon the reed. On one side of the loom, at the edge of the lay 205, a bent lever 315 is attached, its upper part resting against the fighter 312, and its lower part of such length as to meet the pins 434 435, that project from the side of the horizontal sliding bar 313. This bar traverses in the guides 436 436', and carries near its front end the pawl 314, which moves the ratchet-wheel 431 and the pinion 432 (which is fast to the same shaft as the ratchet) and drives the gear 433, that is attached to the cloth-beam 419. A catch-pawl 430 is fastened to the frame of the loom and plays in the ratchet-wheel 431. When the reed strikes the cloth with sufficient force to drive the fighter back a short distance, the bent lever 315 strikes the pin 434 and moves the slide 313 forward. This carries the pawl 314 forward and drops it into the next tooth of the ratchet. At the back stroke of the lay the lever 315 strikes the pin 435 and turns the ratchet-wheel, giving motion by means of

the gears and pinion before described to the cloth-beam 419, which winds up the cloth and draws more warp forward, the strain of the cloth upon the beam being sustained by the pawl 430. This mode of operating the "let-off" and "take-up" motions not only keeps the warp at a uniform tension, but it also prevents the loom from making thin places in the fabric, because if the reed does not strike the cloth with sufficient force to drive the fighter back to a given point the take-up ceases to draw the warp forward, and by regulating the weight 310 on the lever 309 any amount of tension may be given to the web that is desirable, and the let-off motion will not deliver the warp until it receives the amount of tension required.

I am aware that looms have been stopped by causing the lay to release a shifting-lever, which was made to operate a brake also; but

What I claim is—

1. The mode of partially overcoming the momentum of the lay by means of the inclined plane, bent lever 22, brake, and flange, or their equivalents, previous to the final arrest of the dagger by a fixed stop.

2. The mode of elevating the shuttle-box levers by means of the slide-wedges traversing in single or double guides and operated by the draw-wires and series of connected levers, combined with the series of star-cams and ratchets acting on one or both sides of the loom, as set forth.

3. The combined action of two or more wedges or inclined planes, one above the other, for elevating the shuttle-box, by means of which the extreme distance traversed by the box is about equal to the sum of the height of the large ends of the wedges.

4. The arresting or governing of the feed or take-up motion that operates the cloth-beam by means of the action of the reed and fighter, the cloth-beam and fighter being connected by the lever 315, slide 313, pawl 314, and ratchet 431, or their equivalents, as herein described.

SAMUEL T. THOMAS. [L. S.]

In presence of—

EDWARD BLAKE,
J. M. BATHELDER.