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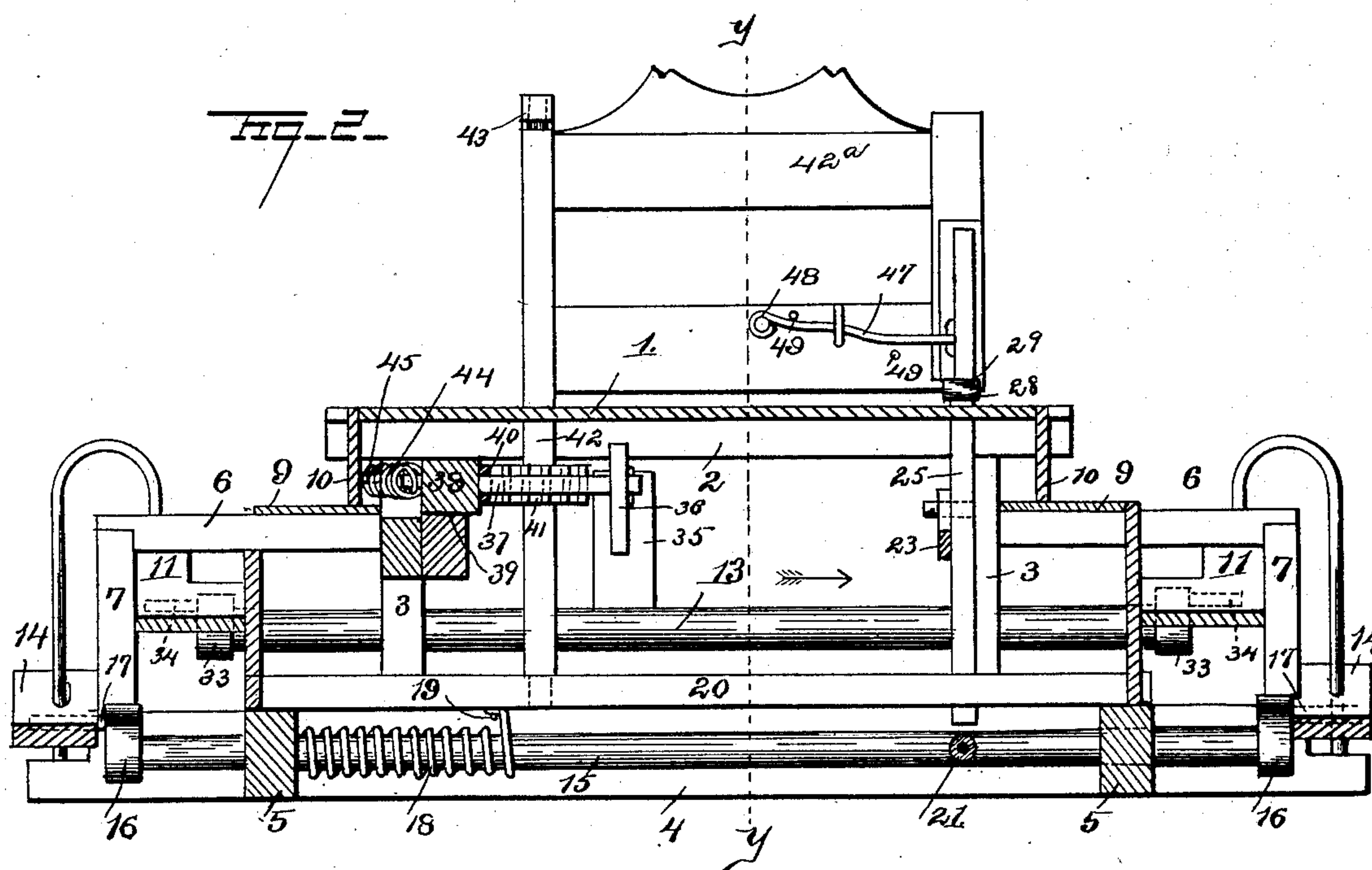
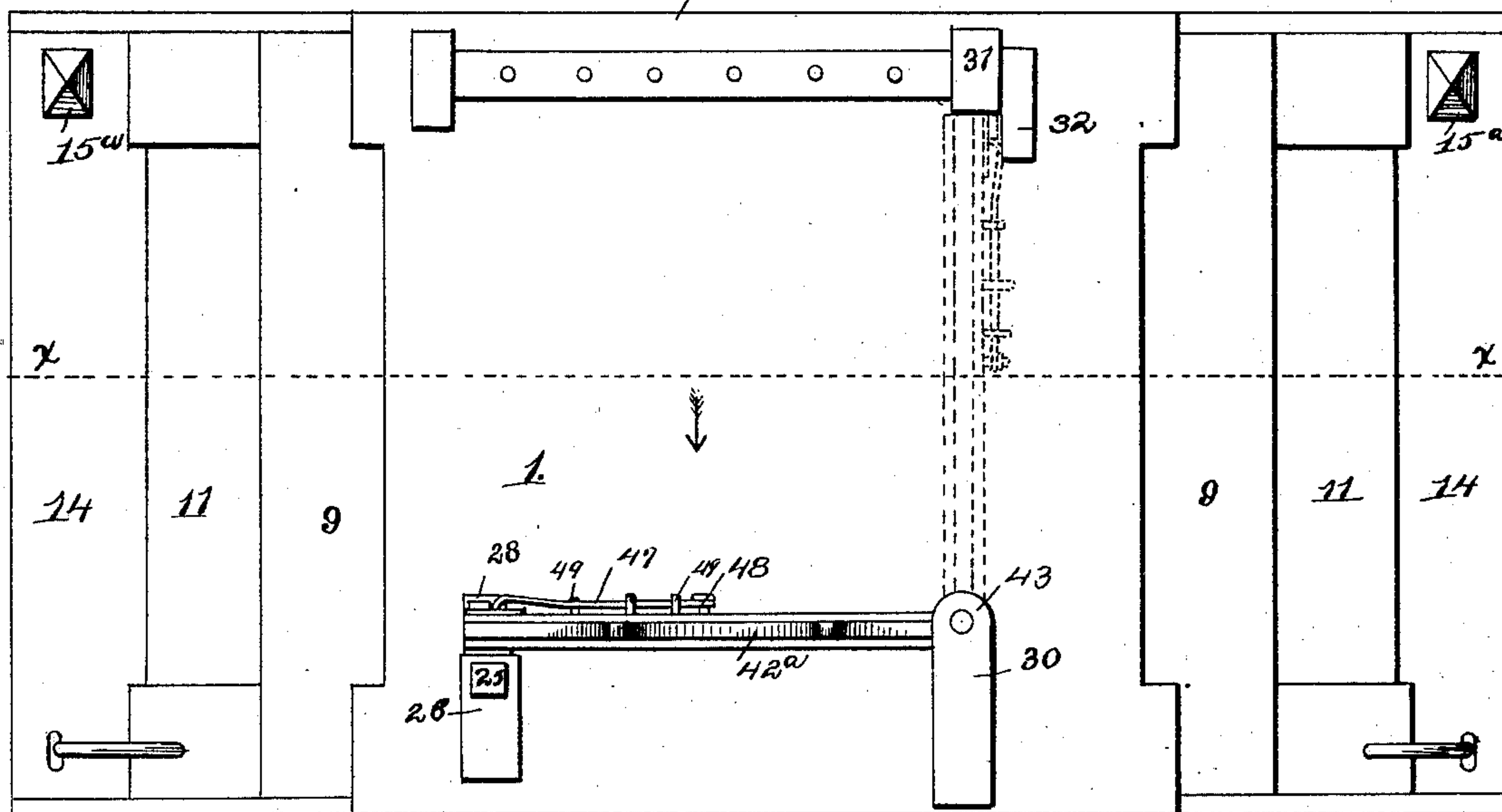
2 Sheets—Sheet 1.

S. M. WILLIAMSON, Jr.

AUTOMATIC GATE.

No. 374,226.

Patented Dec. 6, 1887.



Witnesses

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(Model.)

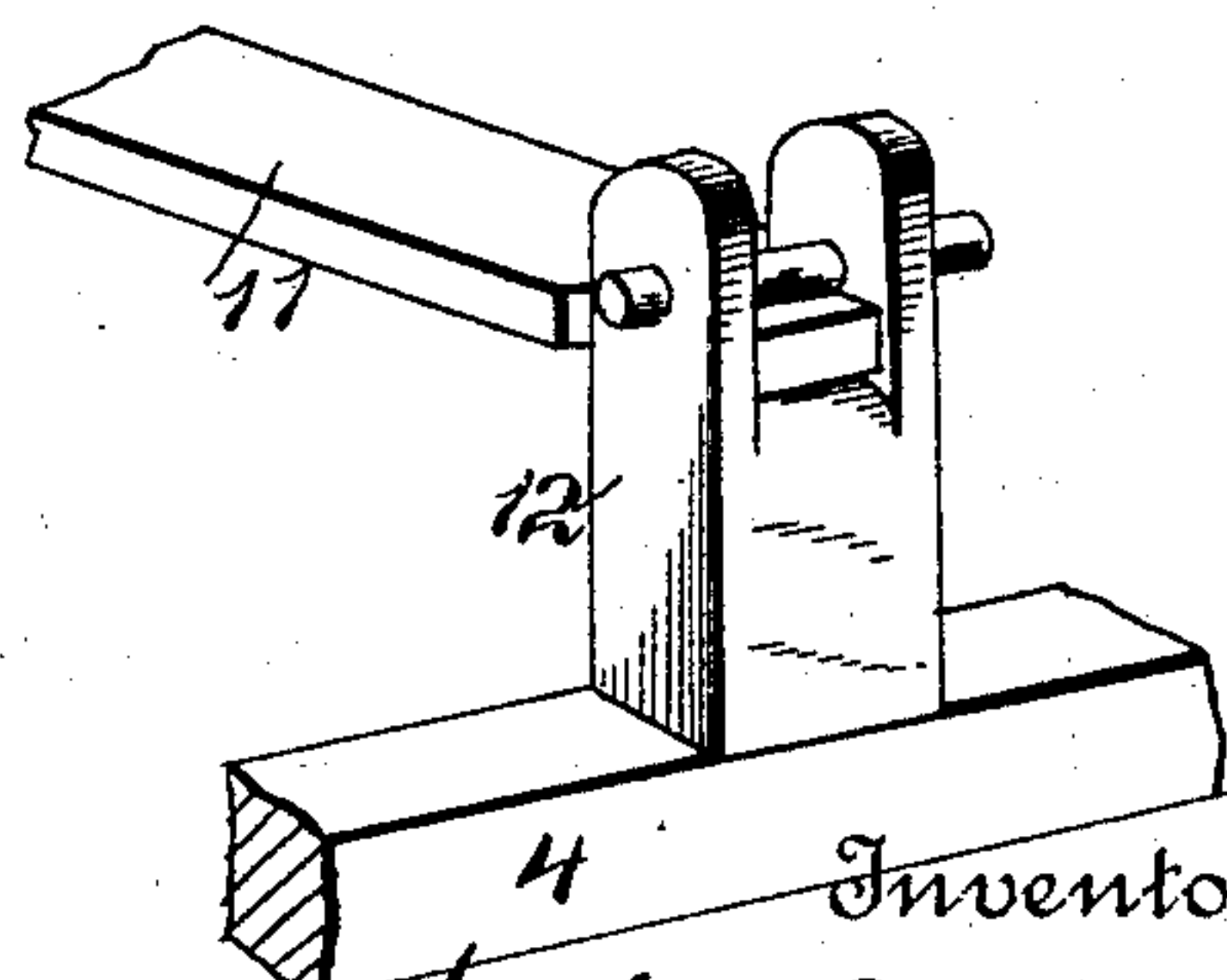
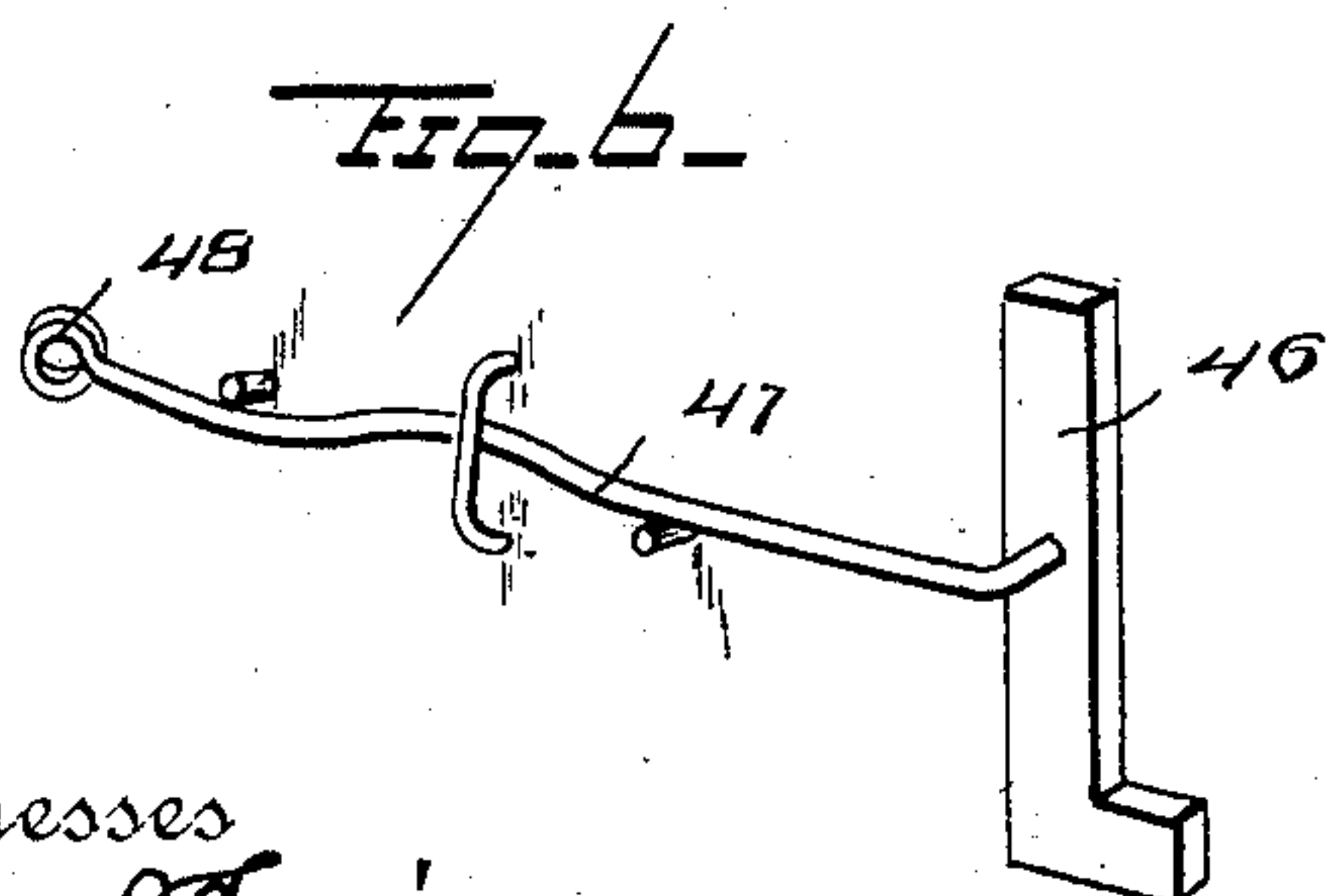
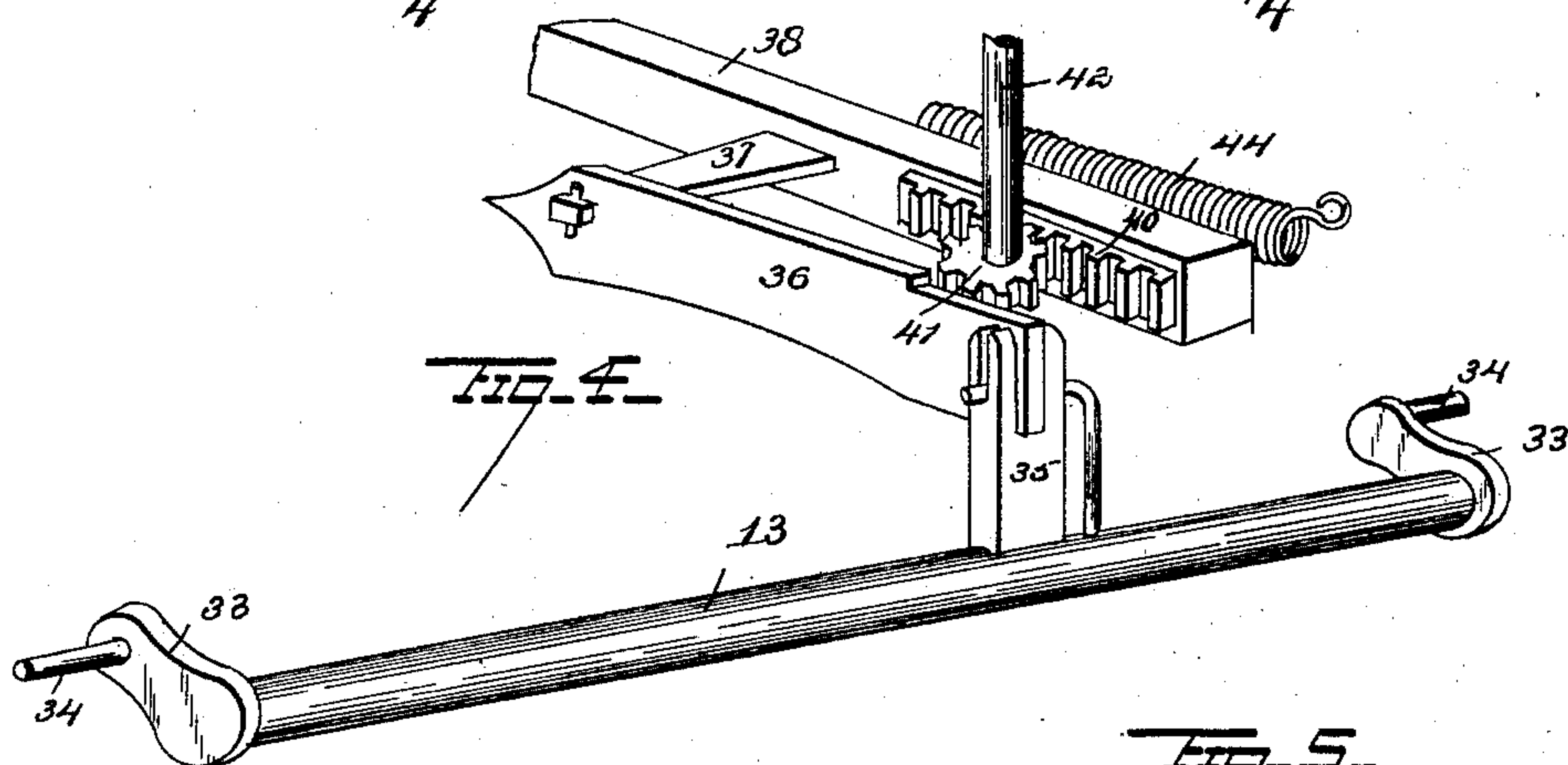
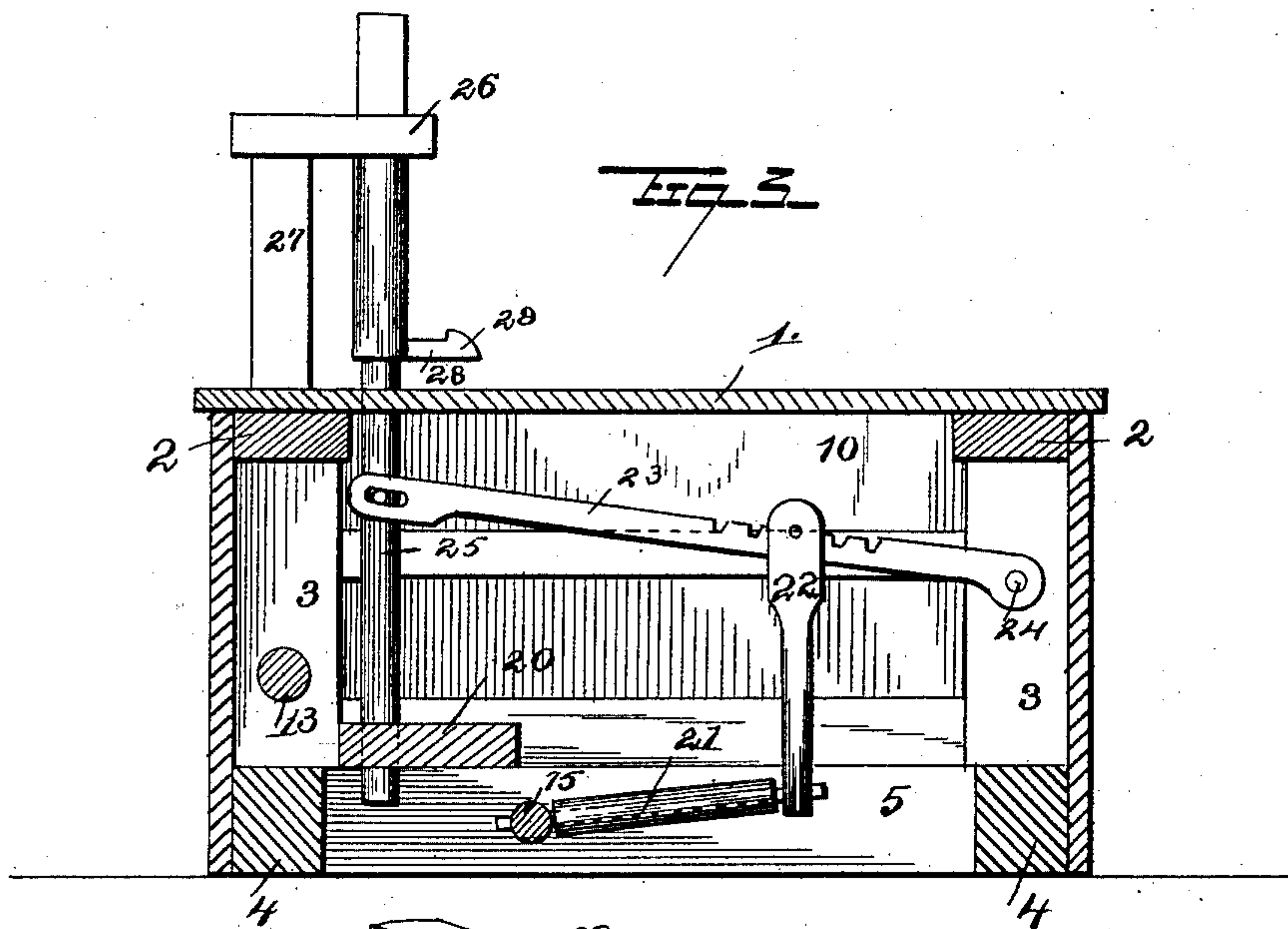
2 Sheets—Sheet 2.

S. M. WILLIAMSON, Jr.

AUTOMATIC GATE.

No. 374,226.

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UNITED STATES PATENT OFFICE.

SETH MABERRY WILLIAMSON, JR., OF McMINNVILLE, TENNESSEE, ASSIGNOR
OF ONE-HALF TO CHARLES E. SEARCY, OF SAME PLACE.

AUTOMATIC GATE.

SPECIFICATION forming part of Letters Patent No. 374,226, dated December 6, 1887.

Application filed September 17, 1884. Renewed May 12, 1887. Serial No. 237,989. (Model.)

To all whom it may concern:

Be it known that I, SETH MABERRY WILLIAMSON, Jr., a citizen of the United States, residing at McMinnville, in the county of Warren and State of Tennessee, have invented a new and useful Automatic Gate, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in automatic swinging gates; and it consists in the peculiar combination and novel construction and arrangement of the various parts for service, substantially as hereinafter fully set forth, and specifically pointed out in the claims.

The object of my invention is to provide an improved swinging gate to be located in a road, path, or other place, which shall be automatically opened and retained in such position when a passer ascends the steps on one side of a platform, thereby permitting him to pass through the gate without requiring him to open it, and which, when he descends the steps on the opposite side of the platform, will be automatically closed, to provide means for automatically locking the gate in its open and closed positions, and to improve the operating mechanisms in minor details, so that they will be simple, durable, and strong in construction and thoroughly effective and reliable in operation.

In the accompanying drawings, which illustrate an automatic swinging gate embodying my invention, Figure 1 is a top plan view with the gate in its opened position, showing it closed in dotted lines. Fig. 2 is a longitudinal sectional view on the line *x x* of Fig. 1, looking in the direction indicated by the arrow. Fig. 3 is a transverse vertical sectional view on the line *y y* of Fig. 2. Fig. 4 is a detached detail view of the mechanism for operating the gate. Fig. 5 is a detail view of the manner of hinging the steps. Fig. 6 is a like view of the gate-latching mechanism.

Referring to the drawings, in which similar figures of reference denote like parts in all the figures, 1 designates the elevated platform, which is of any desired form, preferably square, and is supported on longitudinal sills 2, which rest on and are secured to vertical supports or

uprights 3, arranged at the ends of the longitudinal supporting-sills and the corners of the platform 1. These vertical standards or uprights are in turn secured on longitudinal base-sills 4, which are connected and braced by transverse sills 5, so as to form a rigid main frame on which the steps and the risers therefor are supported and held. Horizontal supports 6 are arranged immediately above the longitudinal sills 4, and one end of each of these supports is secured rigidly to one of the standards 3, while the other end of the support is upheld by a vertical standard, 7, and to the supports 6 are rigidly secured the upper rigid step or steps, 9, and the risers 10 are secured to the steps 9 and the platform 1. The movable middle step, 11, is pivoted or hinged at one end in a suitable support, 12, that is rigidly secured to one of the longitudinal base-sills 4, while the opposite end of the said step 11 rests on and is supported by a crank-arm of a main rock-shaft, 13, and the corresponding end of the lower movable step, 14, is provided with a vertical perforation, through which is passed the lower end of a post, 15, to pivotally hold the step 14 in place, and the opposite free end of the step 14 rests on and is supported by a crank of an auxiliary rock-shaft, 15, in a similar manner to the step 11. I thus employ two oscillating or movable steps on both sides of the platform, the lower step, 14, being adapted to actuate the latch mechanism to release the gate, and the step 11 to actuate the gate mechanism to open the gate when a person ascends the steps on either side of the platform, any preferred number of rigid steps above the step 11 being employed, according to the height of the platform 1 from the ground.

I will now proceed to describe the latch mechanism for releasing the gate when the step 14 is trod upon by a person descending the step on either side of the platform. The auxiliary shaft 15 extends longitudinally of the gate at one side of one of the longitudinal base-sills thereof, and it is journaled in openings formed in the transverse connecting-beams 5 of the main frame, or in suitable bearings secured thereto, as may be desired. The extremities of the rock-shaft terminate a short distance on one side of the oscillating steps 14,

and on these extreme ends of the said shaft are rigidly secured crank-arms 16, which are arranged in line with each other and provided at their free ends with right-angled crank-pins 5 17, which lie beneath and support the movable steps 14. A retracting-spring, 18, is coiled around the auxiliary rock-shaft 15, near or at one end thereof, for the purpose of normally holding the rock-shaft in such a position that the pins 17 of its crank-arms are in 10 contact with the steps 14 at all times, one end of the spring being connected with the shaft and the other end thereof being secured to a pin, 19, which is affixed to a board, 20, arranged beneath the platform and concealed from view thereby. The auxiliary rock-shaft carries an arm or rod, 21, which is rigidly secured thereon and extends outwardly therefrom, and the free end of this arm is pivotally 20 connected to a vertically-disposed link or pitman, 22, which in turn is pivoted to a lever, 23, at or near the middle of the latter. This lever is disposed in substantially a horizontal position, and is pivoted at one end to one of the vertical standards or uprights 3 of the 25 main frame, as at 24, and the opposite free end of the lever is pivoted to a vertically-movable or reciprocating rod or bar, 25. This rod or bar extends through and is guided in vertical transverse openings or apertures formed in the elevated platform 1 and the bottom board, 20, and the upper end of the said rod or bar is made square or of any other preferred angular form in cross-section and works in a 30 similarly-shaped eye or opening of a guide, 26, that is rigidly and permanently affixed to the latch-post 27, arranged at one corner of and supported by the elevated platform 1.

When either of the steps 14, on opposite 40 sides of the platform, is loaded by the weight of the traveler stepping thereon, the free end of said step is depressed and actuates one of the crank-arms of the auxiliary rock-shaft 15 to partially rotate or turn the latter against the tension of the coiled retractile spring thereon, and the arm 21 and link 22 are correspondingly depressed to lower the free end of the pivoted lever 23, which in turn forces the bar or rod 25 downwardly, and thus with- 45 draws the catch carried thereby away from the latch of the swinging gate, as more fully described presently. When the steps 14 are relieved of the weight of the traveler, the coiled retractile spring turns the auxiliary rock-shaft 50 15 to actuate the cranks thereon and return the said oscillating steps 14 to their normal position for instant use again, and the arms and links 21 and 22, as well as the pivoted lever 23, are elevated to carry the bar or rod 25 55 upwardly, so that the catch thereon lies in the path of the latch carried by the swinging gate. The vertically-reciprocating bar 25 carries a catch, 28, that projects outwardly therefrom, and is provided near its free end with a shoulder, 29, which projects above the upper face 60 of the catch, so that the latch of the gate can engage therewith and prevent the gate from

closing, and the bar is prevented from rotating by the guide, so that the catch thereon will not be turned out of its proper position to adapt 70 the latch to engage therewith. The platform 1 carries the hinge-post 30, which is arranged in line with and on the same side of the platform 1 as the latch-post 27, and a gate-post, 31, arranged on the opposite side of the platform to 75 the hinge-post 30 and in line therewith, and provided with a batten or guard-panel, 32, which is rigidly affixed thereto and projects at one of its side edges beyond the said gate-post, so that the free edge of the gate abuts 80 against the said extended edge of the guard-panel and is prevented from further swinging movement in closing the gate. The platform on the side where the gate-post 21 is located is further provided with a short section of a 85 fence, of any preferred construction, to prevent a passer from accidentally stepping or falling off the platform.

I will now proceed to describe the mechanism for opening the gate when the passer 90 or traveler ascends the steps on one side of the platform by treading upon one of the oscillating steps 11, and for closing the gate when it is released from the catch of the bar or rod 25 by the passers descending the steps 95 upon the opposite side of the platform. The main rock-shaft 13 extends longitudinally across the gate-frame and through transverse openings in the vertical standards 3, in which it is journaled, or in suitable bearings affixed 100 thereto. The ends of the main rock-shaft carry right-angled crank-arms 33, that are arranged in line with each other, and the free ends of these crank-arms are provided with rigid crank-pins 34, which fit beneath and support 105 the free ends of the oscillating steps 11. The main rock-shaft is also provided with a vertical arm, 35, that is rigidly secured thereto and moves with the rock-shaft, and to the free end of this arm is pivotally connected the 110 outer end of a link or bar, 36, which extends beneath the platform, and the free end of this link is in turn connected with a pin or stud, 37, of a reciprocating slide, 38. This slide rests and is free to move longitudinally on the 115 upper surface of a way or track, 39, that is rigidly secured on two adjacent vertical standards or uprights, 3, and the pin or stud 37 is rigidly affixed to the slide and extends outwardly therefrom, so that the link 36 can be 120 readily connected thereto. A rack, 40, is rigidly affixed to and carried by the reciprocating slide, and this rack meshes with a pinion, 41, that is secured on a vertical shaft or spindle, 42, which extends through and is 125 journaled in openings or bearings in the platform 1 and bottom board, 20. This spindle or shaft is arranged between the link 35 and the reciprocating rack and slide, and it carries a gate, 42^a, of any preferred or suitable pattern, 130 which is opened and closed when the spindle is rotated, according to the direction of rotation thereof, the upper end of the spindle being journaled in an eye or opening of a bear-

ing-plate, 43, that is rigidly affixed to the upper end of the hinge-post. A coiled retracting-spring, 44, is connected at one end to a pin, 45, of the main frame, and at its opposite end to the reciprocating slide, so that the latter is normally drawn to one side of the platform to close the gate.

A passer ascending the steps on one side of the platform will tread upon the pivoted step 11 and depress the free end of the same to actuate the main rock-shaft through the crank-arm thereon, which will force the arm 35 and the link 36 in one direction to draw the reciprocating slide and the rack carried thereby away from the side of the platform in which the gate-carrying spindle is journaled, so that the pinion and the said spindle are rotated or turned to open the gate and distend the coiled retracting-spring, and the retracting-spring draws the slide and rack to their normal positions and closes the gate when the pivoted step is relieved of the weight of the passer.

The swinging gate carries a vertically-movable latch, 46, which is fitted or guided in a recess or between ways at the free end of the gate, and to this latch is connected a spring-arm, 47, which supports the latch and serves to normally depress the latter, so that when the gate is swung open it will strike the beveled end of the catch on the vertically-reciprocating bar or rod, and thus hold the gate in open position. The spring-arm has a coiled end, 48, and it is suitably secured on the gate, and the movements of the said arm and the latch actuated thereby are limited by stop pins 49, arranged on opposite sides of the arm and secured in the gate.

When the gate opens in the manner hereinbefore described, the lower end of the latch strikes the beveled face of the catch on the vertically-reciprocating bar, and the latch is elevated by the impact of the lower end thereof on the catch, so that it will ride freely over the beveled face of the catch to interlock with the shoulder on the catch; and when the latch-bar is depressed by the mechanism hereinbefore described the shoulder of the catch is drawn away from the latch to allow the gate to be closed by the action on the spindle of the rack and the retracting-spring, the catch on the reciprocating bar being returned to its normal position, so that it lies in the path of the latch to be automatically engaged therewith when the gate is opened.

The operation of my invention will be readily understood from the foregoing description taken in connection with the drawings. When the weight of the traveler is thrown on either of the steps 11, the main rock-shaft will be turned and operate the sliding rack, which will turn the pinion and its shaft to swing the gate open, and thereby cause its latch to engage the catch on the vertically-movable bar and thus hold the gate open until the steps 14 are stepped upon to release the catch, when the gate-carrying spindle or shaft will be reciprocated or turned by the rack and pinion and the spring connected with the rack to swing the gate shut.

Although the gate may be opened and closed by a person of very light weight, four-footed animals cannot open the gate and pass through, for the reason that when they have opened the gate with their fore feet their hind feet will come upon the lower step, 11, and close the gate before they can pass through. The frame-work is closed at the sides by housing, so that nothing can pass beneath the platform to interfere with the operating mechanism.

Having thus described my invention, I claim—

1. The combination, with the main frame provided with the hinge-post, a vertically-reciprocating bar or rod carrying a catch, and a stop-post, of a main rock-shaft having an arm, a reciprocating rack, connections intermediate of the rack and the arm of the rock-shaft, a retracting-spring connected with the rock-shaft, a spindle carrying a gate and a pinion that meshes with the rack, a latch supported on the gate, an auxiliary rock-shaft connected with the bar carrying the catch, and the independent oscillating steps for actuating the rock-shafts, substantially as described.

2. In an automatic gate, the combination of the main and auxiliary rock-shafts, the independent steps for oscillating the said shafts, the gate carried by a shaft and having a latch, a slide, connections intermediate of the main rock-shaft, the slide, and the gate-shaft for actuating the latter, a vertically-movable bar carrying a catch, and pitmen intermediate of the latch-bar and the auxiliary rock-shaft, substantially as described.

3. The combination of the main and auxiliary rock-shafts having cranks at their extremities, the independent oscillating steps normally resting on the crank-arms at their free ends, a rock-shaft carrying a gate and a pinion, a reciprocating rack meshing with the pinion of the gate-shaft, pitmen intermediate of the rack and the main rock-shaft, a retracting-spring connected with the rack, a vertically-movable bar having a catch, connections intermediate of the latch-bar and the auxiliary rock-shaft, a retracting-spring connected to the auxiliary rock-shaft, and a latch supported on the gate and adapted to engage the catch, substantially as described.

4. The combination of the main and auxiliary rock-shafts having the cranks, the independent pivoted steps supported at their ends on the cranks, a spring-actuated reciprocating rack connected with and actuated by the main rock-shaft, a spindle carrying a gate and a pinion meshing with the rack to be actuated thereby, a latch supported on the gate, a vertically-reciprocating bar having a catch normally arranged in the path of the latch on the gate, link-connections intermediate of the latch-bar and the auxiliary rock-shaft, and a retracting-spring connected with the auxiliary

rock-shaft for normally holding the latch-bar in an elevated position, substantially as described.

5 5. The combination of a swinging gate, a vertically-reciprocating bar having a catch, a sliding latch carried by the gate, a spring arm supporting the latch, and the stops for limiting the play of the arm, substantially as described.

10 6. The combination, with a swinging gate carrying a spring-pressed latch, of an auxiliary rock-shaft, a vertically-movable bar carrying a catch normally arranged in the path of the latch, a pivoted lever connected to the
15 bar, and pitmen intermediate of the lever and the said rock-shaft, substantially as described.

7. The combination of a main rock-shaft having a crank, a pivoted step normally resting on the crank-arms, a way or track, a reciprocating slide supported on the main rock- 20 shaft, a pitman intermediate of the arm and the slide, a spring connected with the slide, and a shaft carrying a gate and a pinion meshing with the rack, substantially as described. 25

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

SETH MABERRY WILLIAMSON, JR.

Witnesses:

J. B. RITCHEY,

R. P. HUDSON.