(No Model.) 2 Sheets—Sheet 1.

J. H. MORRIS.

GATE.

No. 545,521. Patented Sept. 3, 1895.

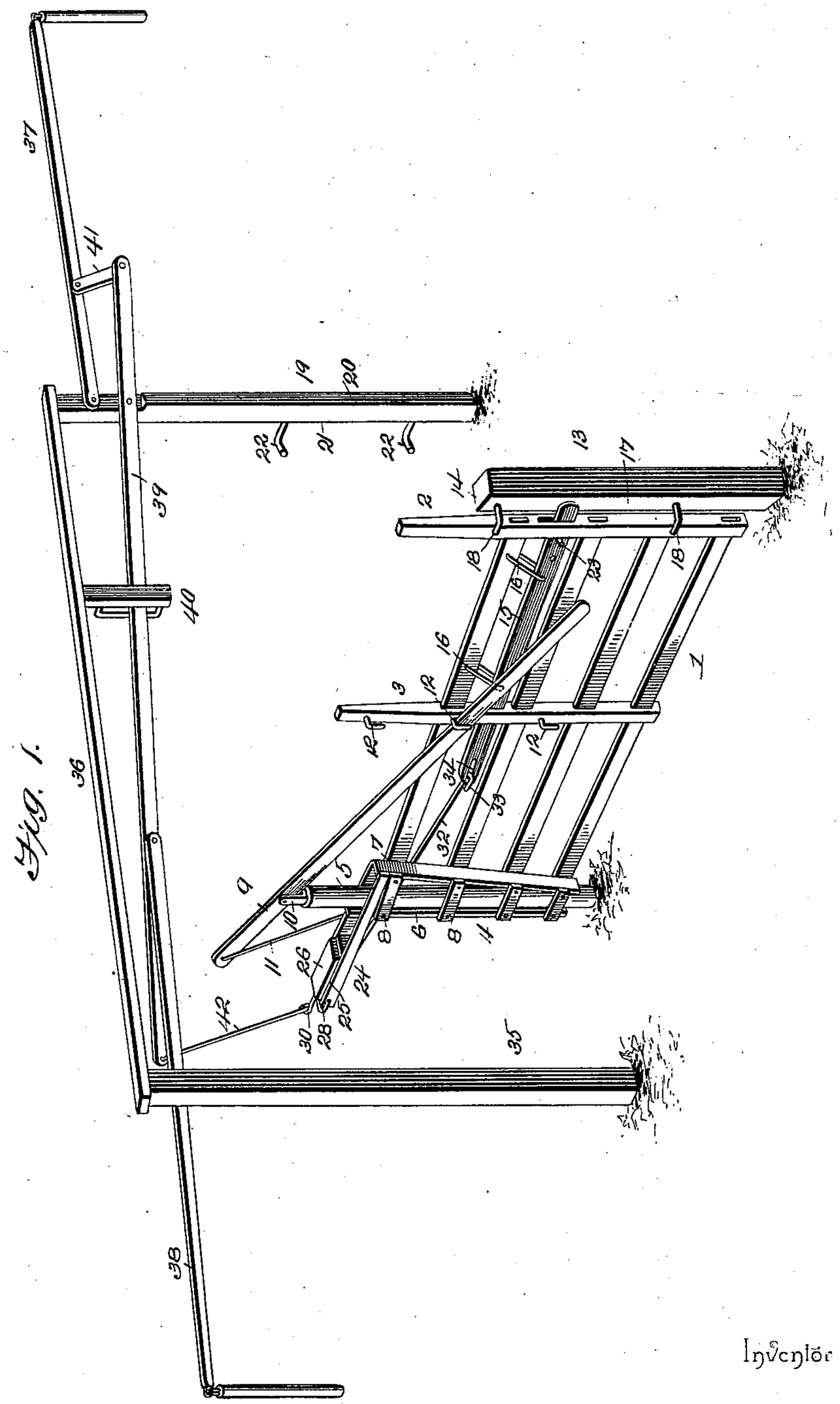

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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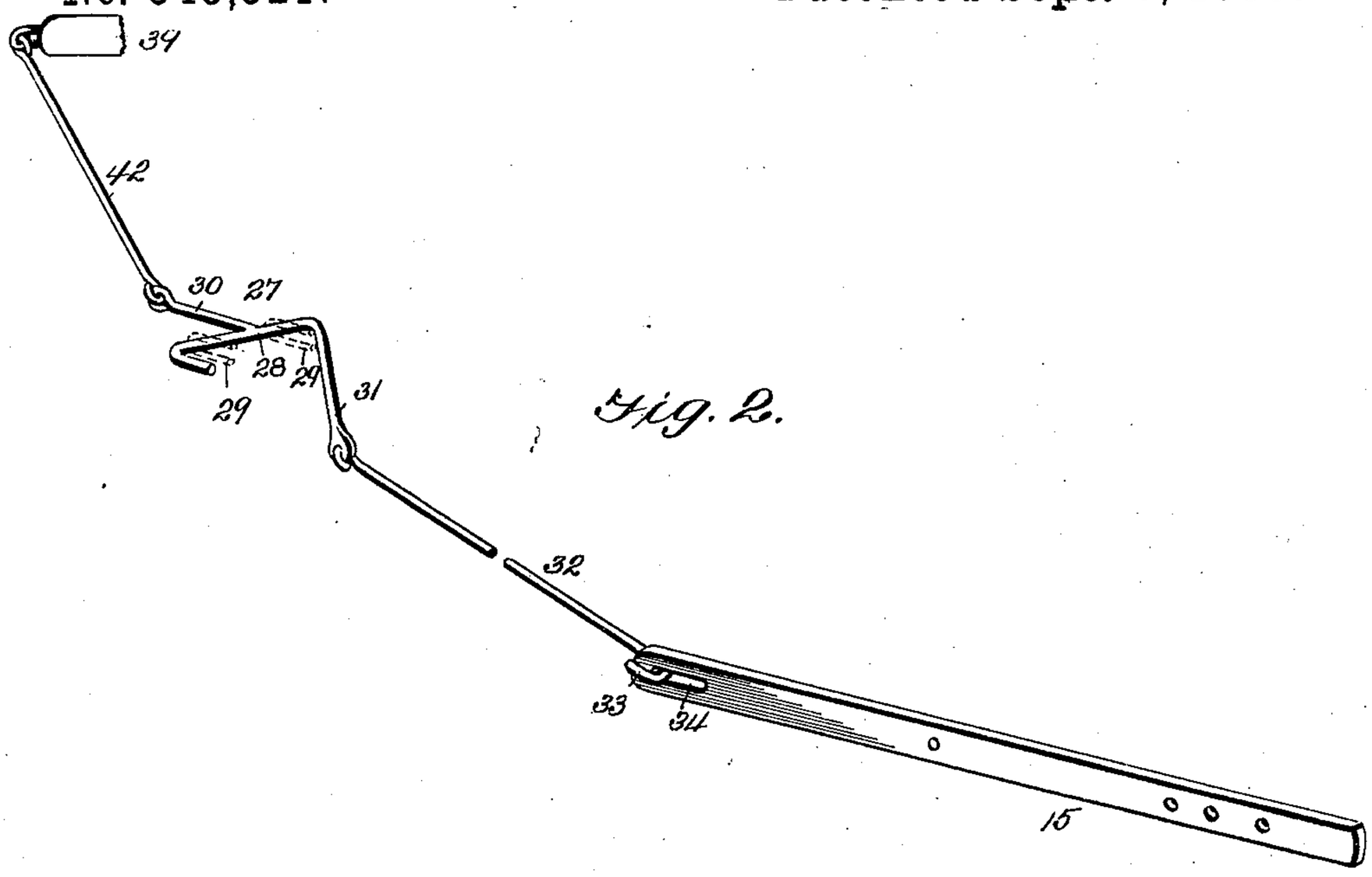
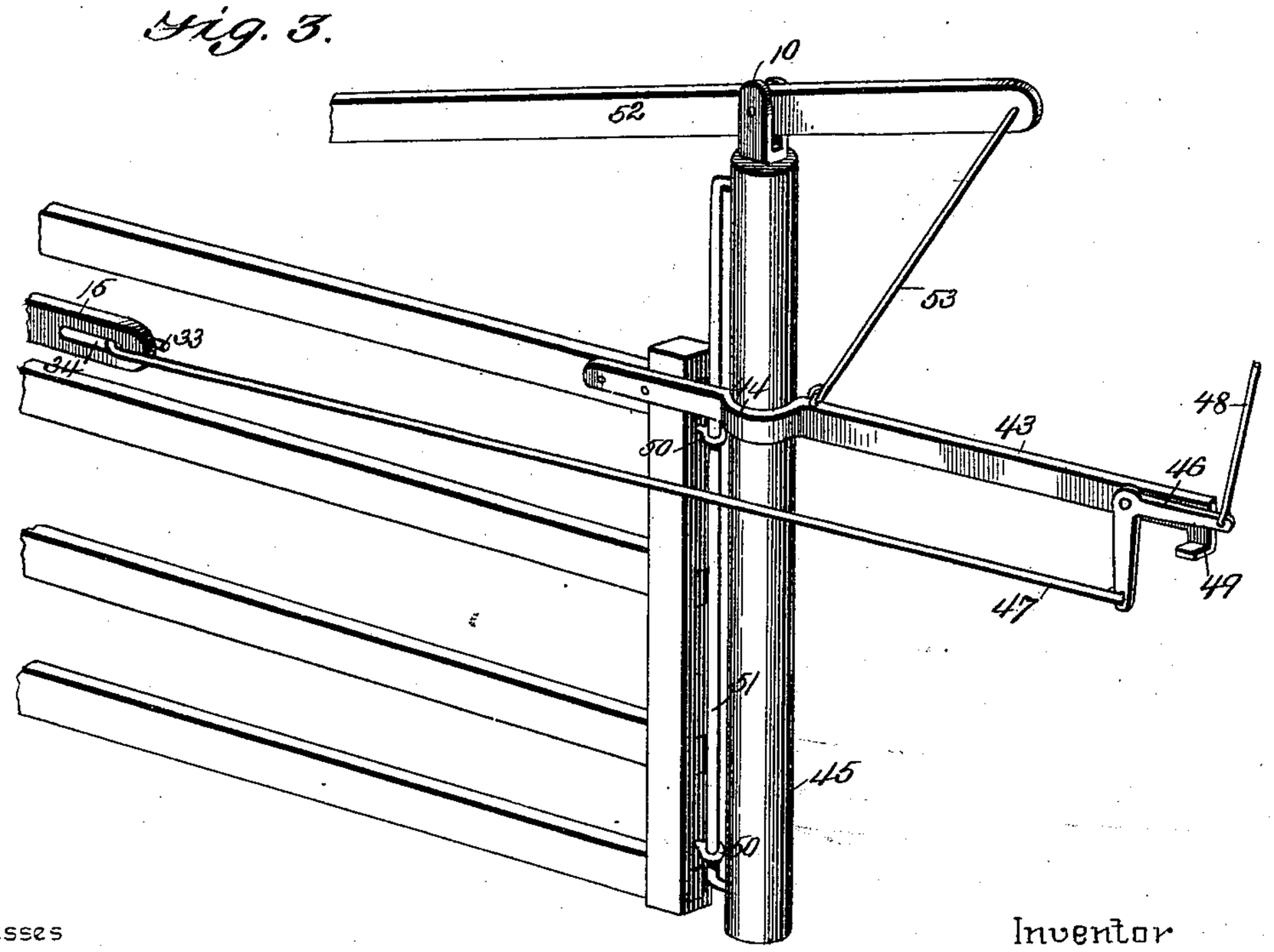


Fig. 2.

Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN H. MORRIS, OF MAQUOKETA, IOWA.

GATE.

SPECIFICATION forming part of Letters Patent No. 545,521, dated September 3, 1895.

Application filed January 19, 1895. Serial No. 535,521. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MORRIS, a citizen of the United States, residing at Maquoketa, in the county of Jackson and State of Iowa, have invented a new and useful Gate, of which the following is a specification.

My invention relates to gates; and the object in view is to provide a simple and efficient construction of apparatus for opening and closing a gate at a distance from the posts thereof, whereby the same may be manipulated from horseback or a vehicle without dismounting.

Further objects and advantages of the invention will appear from the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a gate-operating mechanism constructed in accordance with my invention. Fig. 2 is a detail view showing the means for communicating motion from the intermediate lever to the gate-latch. Fig. 3 is a perspective view of a slightly-modified form of apparatus adapted for use in connection with a gate which is hinged to the side of a post.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a swinging gate consisting, preferably, of horizontal rails connected by vertical bars 2 and 3, located respectively at the free end and at an intermediate point of the gate, and a frame 4 located at the inner end of the gate and adapted to receive the hinge-post 5. The frame 4 comprises a vertical bar 6, secured to the inner extremities of the rails and disposed vertically or perpendicular to the rails, a second bar 7 spaced from the bar 6 and inclined therefrom toward its upper end, whereby the upper ends of the bars comprising the frame are spaced farther apart than the lower ends thereof, and horizontal strips 8 connecting said bars at one side and opposite the extremites of the rails which form the other side of the frame. This construction of hinge provides for arranging the gate in a horizontal position, as shown in Fig. 1, and for inclining the same upward toward its free end in order that it may pass over an obstruction. The arrangement of the inner side of the frame 4 in a position perpendicular to the rails insures the horizontal position of the gate under ordinary conditions. Mounted upon the top of the post 5, which is round in cross-section to provide for an easy swinging movement of the gate, is a lifting-lever 9, which is pivotally connected to a swivel 10, whereby the lever may follow the movements of the gate, and the short arm of this lever is connected by a chain or wire 11 with the inner end bar of the gate, while the long arm thereof is adapted to engage one of a series of hooks 12, arranged at intervals on the intermediate bar 3. By this arrangement, as in the apparatus shown and described in my former patent, No. 520,533, the gate may be arranged at any desired elevation to provide for free swinging movement when the surface of the ground is irregular or when obstructed by snow or ice.

The catch-post 13, which is arranged contiguous to the free end of the gate, when the latter is in its closed position, is rectangular in cross-section and is set with its sides at an inclination to the plane of the gate, whereby the side 14 serves as a continuous inclined guide to repress the latch 15 when the gate is swung toward its closed position. This latch is connected to one of the rails of the gate by means of swinging links 16, which are set at such an inclination toward the free end of the gate as to cause the latch normally to project beyond the end bar 2, whereby when the gate is in its closed position the free or outer end of the latch engages the side 17 of the post, stops 18 being arranged at intervals and spaced from said side 17 to check the movement of the gate. Thus one side of the gate-post serves to repress the latch as the gate is closed, while the other side forms a continuous catch for engaging the latch, and by utilizing the post in this way the means for engaging the latch are continuous and operate effectively in any vertical position of the gate. A stop-post 19, also rectangular in cross-section, is set with its sides at an inclination to the plane of the gate when the latter is in its open position, one of its sides 20 serving to repress the latch while another side 21 serves as a catch, spaced stops 22 being arranged to check the movement of the gate as it is swung to its open position. A stop-pin 23 is employed to limit the outward movement of the latch.

Projecting from the gate beyond the hinge-

post is an arm 24, which is preferably provided with a receptacle 25 for counterbalancing-weights 26, and mounted upon the extremity of the arm is a bell-crank lever 27, comprising a rock-shaft 28, fitted in keepers 29, an arm 30, and a second arm 31 which is connected by a wire 32 with the inner end of the latch. The wire is provided with a hook-shaped portion 33 to engage a slot 34 in the inner end of the latch, whereby the latter may have movement independently of the wire.

Arranged upon the opposite side of the hinge-post from the stop-post 19 is a post 35, which is connected to said stop-post by means of a horizontal rail 36, and pivotally mounted upon said posts, respectively, are the hand-levers 37 and 38. An intermediate lever 39 is pivotally mounted at an intermediate point upon the stop-post, and operates in a keeper or guide 40, which depends from the bar connecting said posts, the hand-lever 37, which is a lever of the second order, being connected at an intermediate point to the short arm of the intermediate lever by a link 41, and the hand-lever 38, which is pivoted at an intermediate point and is a lever of the first order, being pivotally connected at its extremity to an intermediate part of said intermediate lever. The free end of the long arm of the intermediate lever is connected by a link 42 with the arm 30 of the bell-crank lever. This being the construction of the apparatus it will be seen that the downward movement of the free end of either hand-lever will cause an upward movement of the long arm of the intermediate lever, said intermediate lever being arranged at an inclination to the plane of the gate when the latter is in either its open or closed position, whereby the free end of said long arm occupies a position between those taken by the free end of the arm which is carried by the gate when the gate is closed or open. Thus when the long arm of the intermediate lever is elevated by the downward movement of one of the hand-levers the link which connects said arm of the intermediate lever to the arm of the bell-crank lever lifts said arm of the bell-crank arm sufficiently to disengage the latch from the catch-post and at the same time draws the free end of the gate-arm toward the plane of the intermediate lever. This impulse is sufficient to swing the gate from its closed to its open position or vice versa, and therefore, after giving the gate this impulse, the hand-lever should be released, in order that the intermediate lever may be free to yield to the movement of the gate. Inasmuch as the hand-lever 38 projects inward beyond this pivotal point, and the major portion of the intermediate lever is between its pivot point and its point of connection with the gate, it will be seen that upon releasing the hand-lever the weight of these inner portions of the hand-lever 38 and the intermediate lever will cause downward pressure upon the link connecting the intermediate lever to the gate-arm. Thus, after drawing the gate-arm to the plane of the intermediate lever, the momentum of the gate will carry the gate-arm sufficiently to incline the connecting-link in the opposite direction to that previously occupied, and upon releasing the hand-lever the weight of the inner portion of the intermediate lever will push the gate-arm to the position which it must occupy when the gate ceases its swinging movement. It will be understood that the same movement is necessary to open as to close the gate, owing to the location of the free end of the intermediate lever between the vertical planes of the gate-arm when the gate is in its closed or open positions.

In Fig. 3 I have shown a modified construction of my apparatus adapted for use in connection with a gate which is hinged to the side of a post in the ordinary way, the same consisting of a gate-arm 43 adapted to be secured to the gate and provided at an intermediate point with a bow 44 for extending around the post 45. Pivotally mounted upon the free end of this gate-arm is a bell-crank lever 46, to one arm of which is attached a wire 47 for connection with the gate-latch, and to the other arm of which is attached the link 48 for connection with the intermediate lever of the gate opening and closing device, a stop 49 being arranged to engage the arms of the bell-crank lever and thus limit its movement.

It will be understood that the operation of the modified apparatus is identical with that hereinbefore described, and if desirable the gate may be arranged for vertical adjustment, as in the preferred construction, by providing it with eyes 50 slidably mounted upon a hinge or pintle-rod 51, and applying the elevating device consisting of an elevating-lever 52, a connecting wire or chain 53, and hooks 54, to engage and hold the elevating-lever in its adjusted positions.

It will be understood that in practice various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, I claim—

1. The combination with a swinging gate having an arm projecting in rear of its pivotal point, of opposite hand levers of the first and second orders, respectively, an intermediate lever pivoted between its ends and having the extremity of its long arm arranged above the gate arm and at a point between the vertical planes of the gate arm when the gate is in its open and closed positions, the arms of the intermediate lever being connected to the hand levers whereby a downward movement of the outer end of either hand lever will cause the elevation of the extremity of the long arm of the intermediate lever, a bell-crank lever mounted upon the gate arm, a latch on the gate connected to one arm of said bell-crank lever, and connections between the said extremity of the intermedi-

ate lever and the other arm of the bell-crank lever, whereby the gate latch is retracted to release the gate and lateral strain is exerted upon the gate arm through the bell-crank lever to impart a swinging movement to the gate, substantially as specified.

2. The combination of a swinging-gate having an arm projecting beyond its pivotal point, of pivotal hand-levers arranged with their free ends upon opposite sides of the plane of the gate when the latter is in its closed position, an intermediate lever pivoted between its extremities, its short arm being connected to one of the hand-levers between its pivotal point and its outer end, and its long arm being connected at an intermediate point to the extremity of the inner arm of the other hand-lever which is pivoted at an intermediate point, the free end of the long arm of the intermediate lever being arranged in a plane midway between the vertical planes of the gate when in its closed and open positions and above the plane of the gate-arm, and a link connecting said extremity of the long arm of the intermediate lever with the end of the gate-arm, whereby downward movement of either hand-lever will cause an upward movement of the long arm of the intermediate lever to impart swinging movement to the gate, and whereby the weight of the long arm of the intermediate lever operating through the link by which it is connected to the gate-arm continues said movement of the gate, substantially as specified.

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

JOHN H. MORRIS.

Witnesses:
O. F. SAMPSON,
L. D. PHILLIPS.