

No. 666,376.

Patented Jan. 22, 1901.

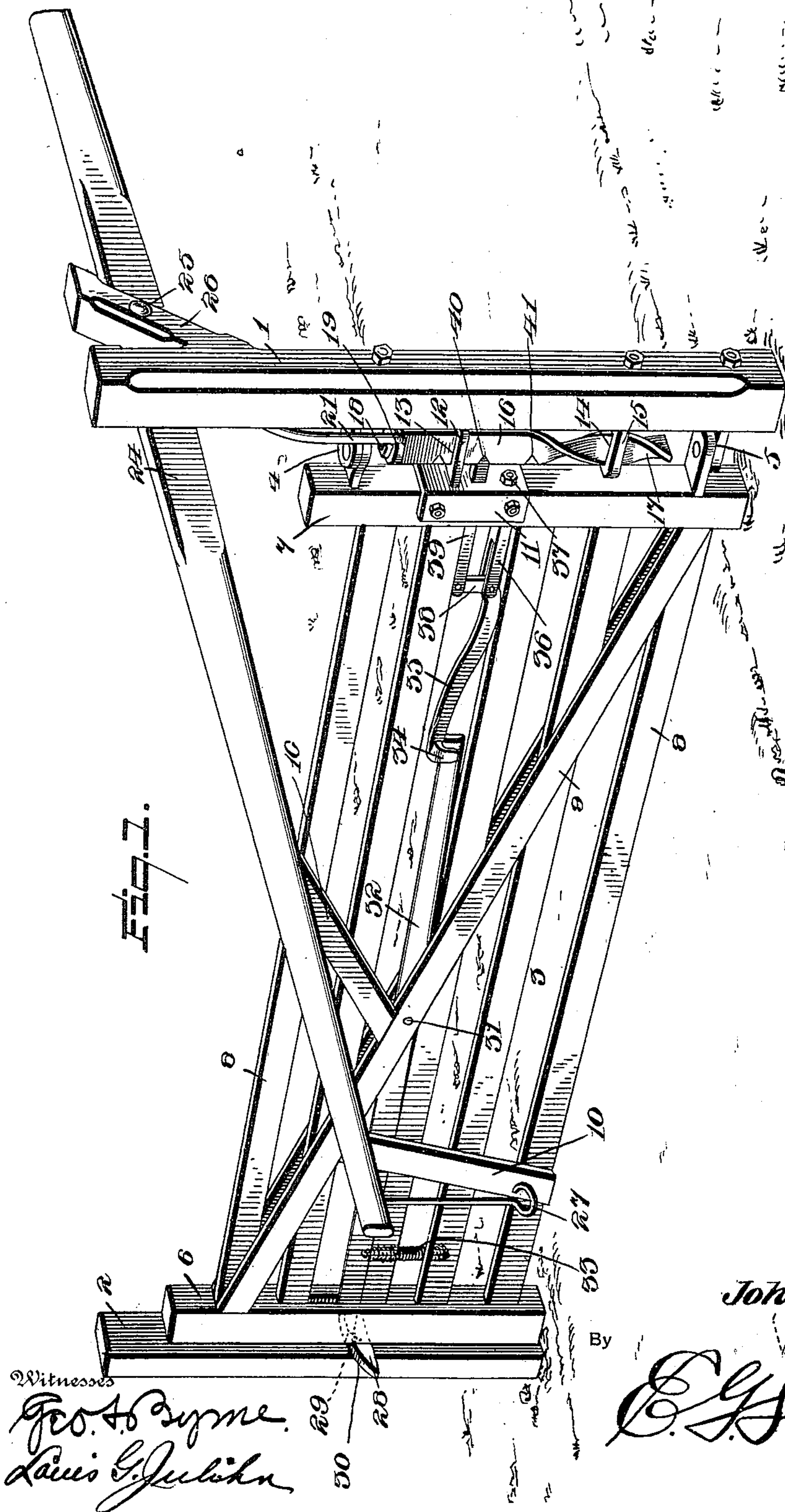
J. W. CARSON.

GATE.

(Application filed May 21, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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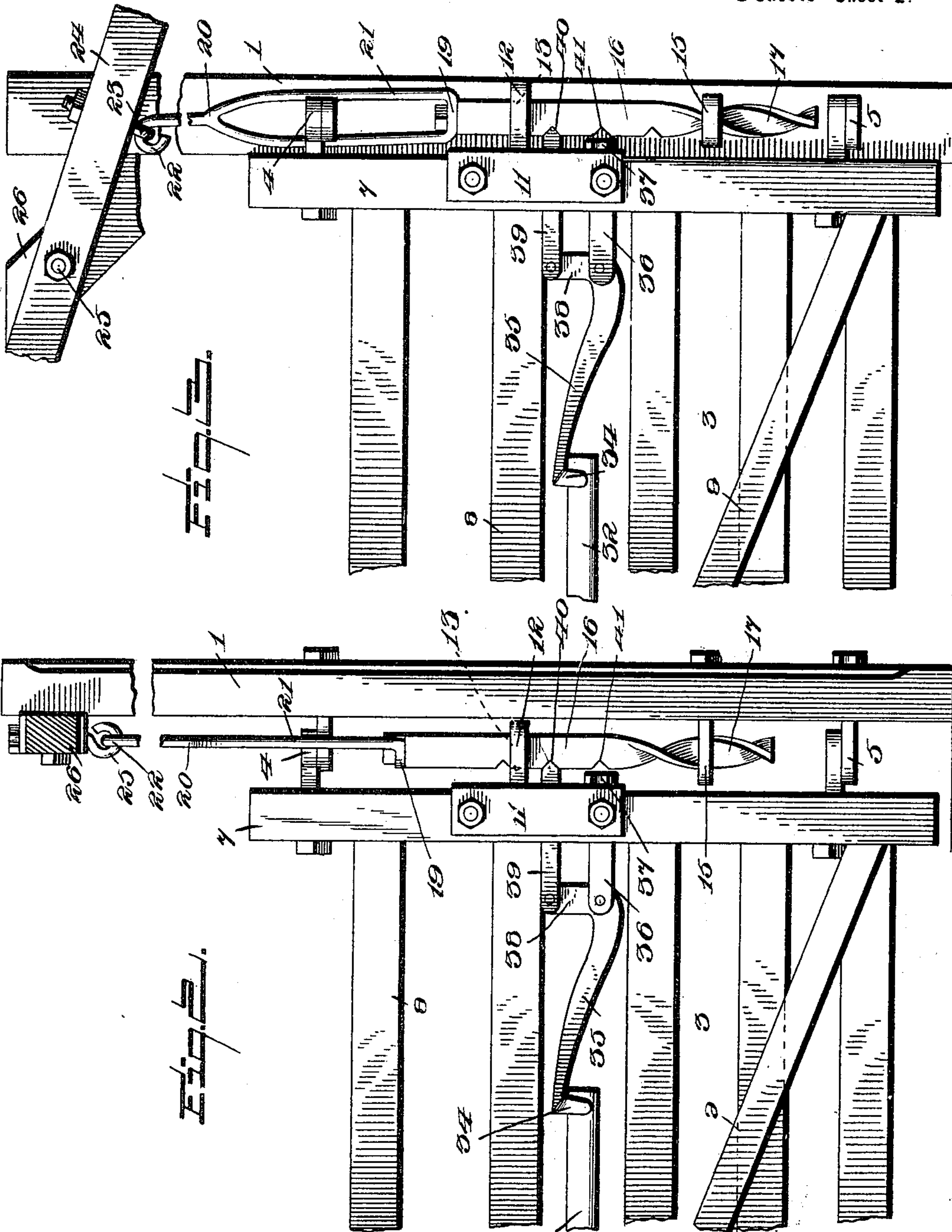
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# UNITED STATES PATENT OFFICE.

JOHN WILLIAM CARSON, OF SANGERVILLE, VIRGINIA.

## GATE.

SPECIFICATION forming part of Letters Patent No. 666,376, dated January 22, 1901.

Application filed May 21, 1900. Serial No. 17,446. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WILLIAM CARSON, a citizen of the United States, residing at Sangerville, in the county of Augusta and State of Virginia, have invented a new and useful Gate, of which the following is a specification.

My invention relates to improvements in gates, but more particularly to that type of gate which is adapted to be opened by a person approaching the gate without necessitating his alighting from a conveyance and which is closed in a similar manner after the gate has been passed.

The object in view is to provide simple and durable gate-operating mechanism which will not only facilitate the swinging of the gate, but which will automatically effect the unlatching of the gate and the subsequent swinging of the gate upon its hinges without necessity for other manipulation of the device than the single movement of the gate-operating element, which in its broadest aspect may be defined as means for unlatching and operating the gate. Subordinate to this general object are several others, which will more fully appear in the succeeding description, which is directed to that structure illustrated in the accompanying drawings and embraced within the scope of the appended claims.

In said drawings, Figure 1 is a perspective view of my gate complete, illustrating it in its closed position. Fig. 2 is a side elevation, on a somewhat-enlarged scale, of the hinged end of the gate and the gate supporting and operating mechanism, the gate being in the closed position; and Fig. 3 is a similar view of the gate in one of its open positions.

Referring to the numerals of reference employed to designate corresponding parts in the several views, 1 and 2 indicate a pair of gate-posts, between which in its closed position is disposed the gate 3. The post 1 constitutes the support for the gate, which is hinged thereto by hinges 4 and 5, composed, respectively, of lapping hinge-plates extending from the rear of the gate and from the post 1 and having vertically-alined pintles. Various other forms of hinging means may be substituted, however, if desired. The gate is preferably made up of front and rear

standards 6 and 7 and horizontal bars or slats 8, braced by a pair of parallel diagonal brace-bars 9 and by short supplemental braces 10.

Around the rear face of the gate-standard 7 is bent and suitably secured an angular plate 11, from which extends rearwardly a horizontal lug 12, provided with an oblong slot 13, which in the closed position of the gate is located over a similar slot or opening 14 in a fixed lug or bracket 15, extending forwardly from the gate-post 1. These openings 13 and 14 in the oppositely-extending lugs 12 and 15 are designed for the reception of an element which for the purpose of succinct definition in the claims will be variously termed an "actuator," an "actuating and latch-controlling element," and a "spiral plate." This plate 16 is formed from a flat strip of metal the cross-sectional contour of which corresponds to the openings 13 and 14. The lower portion of the plate 16—that is to say, that portion which engages the fixed lug 15—is twisted to form a terminal spiral 17, while its upper portion, which is designed to move within the opening 13 of the lug 12, is flat and untwisted and terminates above the lug 12 in a reduced neck 18, extending through a horizontal eyelet 19, formed at the lower end of a pitman 20, preferably having its lower portion bifurcated or looped, as indicated at 21, and having a hook 22 at its upper end for engagement with an eyebolt 23, piercing a comparatively long gate-operating lever 24. The lever 24 extends at right angles to the gate when the latter is in its closed position and is fulcrumed upon a bolt 25, passing through a lateral projection 26, extending from the post 1, in order to locate the fulcrum of the operating-lever a sufficient distance to one side of the pitman connection to insure the longitudinal movement of the plate or actuator 16 when the gate-operating lever is swung in a manner which will be hereinafter more fully apparent.

The extremities of the gate-operating lever 24 are located at the side of the road and at sufficient distances from the post 1 to permit a traveler approaching or passing the gate to swing the lever for the purpose of effecting the swinging of the gate without danger of the operation of the latter being interfered



with by the operator. To facilitate the swinging of the lever, handle-rods 27 may be loosely connected to the outer ends thereof.

By reference to Fig. 1 of the drawings it will be noted that in the closed position of the gate those portions of the plate 16 engaging the openings 13 and 14 will be disposed in proper alinement to permit alined positions of the openings. If now the operating-lever 24 is swung to depress the plate 16, the spiral 17, by reason of its engagement with a fixed part, will cause the plate to rotate, and as the lug 12, fixed to the rear standard of the gate, is irrevolubly engaged to the plain portion of the plate the rotation of the latter will cause the gate to be swung upon its hinges to an extent controlled by the extent of rotary movement of the plate. Thus the swinging of the operating-lever 24 either upon approaching the gate or after it is passed will effect the swinging of the gate from its closed position, as shown in Fig. 1, to its open position, as shown in Fig. 3, or from its open position back to its closed position, the direction of movement of the gate being governed by the direction of movement of the plate 16.

The device thus far described constitutes a complete embodiment of my invention in its broadest aspect, inasmuch as we have seen that by the coöperation of the elements enumerated the gate may be easily operated by the passing traveler without necessitating his alighting from the vehicle. I prefer to pursue the development of the device still further, however, and to provide for the latching of the gate in its various positions and for the automatic unlatching of the gate by the initial movement of the mechanism which subsequently operates the gate. I therefore provide the gate-post 2 with a keeper 28, having a center recess 29 in its upper edge and cam-faces 30 at opposite sides of the recess. At a suitable point upon the diagonal braces 9 I pivot, as indicated at 31, a comparatively long latch-lever 32, the front end of which is designed to engage the keeper 28 in the ordinary manner as the gate is swung into alinement with the posts 1 and 2 from either side, and this front end of the latch-lever is normally depressed by a spring 33, which serves to urge the latch-lever into engagement with the keeper, but yields sufficiently to permit the former to ride upon the cam-faces 30 as the gate is swung to the closed position. The rear extremity of the latch-lever 32 is straddled by the forward bifurcated extremity 34 of a bell-crank lever 35, fulcrumed at its angle in the elongated bifurcated end 36 of a bolt 37, which passes through the standard 7 and plate 11 and is secured by a nut, as usual. The horizontal arm of the bell-crank lever engaging the latch-lever is much longer than the vertical arm 38, which is pivotally connected to the rear extremity of what may be termed the "latch-bar" 39, passed through the standard 7 and plate 11 and having a beveled end 40, which is designed to engage one

of a series of V-shaped notches or recesses 41 in one edge of the plate 16. The shape of the coöperating portions of the latch-bar 39 and the latch-operating member 16 is immaterial, however, provided there is such relation of the contacting faces of said members as will insure the longitudinal movement of the latch-rod 39 when the plate or actuator 16 is moved longitudinally.

Now by again referring to Fig. 1 of the drawings it will be seen that in the closed position of the gate the latch-bar 39 will be in engagement with one of the notches 41 and that the front end of the latch-lever 32 will be in engagement with the recesses 29 of the keeper 28. If now the actuator or plate 16 is depressed by the swinging of the operating-lever 24, the first effect of such movement will be to force the latch-bar 39 out of the recess in the plate 16, which will cause the bell-crank lever 35 to be swung, the adjacent end of the latch-lever to be depressed, and the forward end of the latch-lever to be elevated out of the recess 29 against the resistance opposed by the spring 33. Continued movement of the plate 16 in the same direction will compel its rotation by reason of the progress of the spiral 17 through the opening 14 in the stationary lug 15, and this rotary movement will of necessity be accompanied by the swinging of the gate because of the engagement of the flat upper end of the plate 16 with the opening 13 in the lug 12, fixed to the gate. The spiral 17 is so proportioned that when sufficient longitudinal movement has been imparted to the plate 16 to present the gate in a position at right angles to its normal position—as, for instance, as shown in Fig. 3—the latch-bar 39 will be opposed to another notch 41 in the edge of the plate 16 and will be urged therein under the impulse of the spring 33. Ordinarily this will take place just as the end of the latch-bar arrives above the recess 29 in a keeper mounted upon supplemental gate-posts located to retain the gate in its open positions, one of these posts being indicated by dotted lines in Fig. 1 of the drawings. Attention is called to the fact, however, that the latch-bar 39 constitutes of itself a positive latch for the gate, inasmuch as it retains the plate 16 against that longitudinal movement which is necessary to the swinging of the gate, and the latch-lever and its coöperating parts may therefore be omitted in some constructions, and the application of spring-power to urge the latch-bar in the direction of the plate may be effected more directly. The location of the latch-bar at the hinged end of the gate, however, makes it desirable in many instances to employ a supplemental latch, located at the free end of the gate, and the construction illustrated and described in detail is therefore believed to be preferable.

From the foregoing it will be observed that I have produced a simple and ingenious gate equipped with latching mechanism and with



gate-operating mechanism which are operated in succession for the purpose of unlatching and swinging of the gate by a single movement of the gate-operating lever; but while the present embodiment of my invention appears at this time to be preferable I wish to reserve the right to effect such changes and modifications of the structural details defined as may be suggested by experience and experiment and may be embraced within the scope of the appended claims.

What I claim is—

1. The combination with an apertured fixed part and a relatively-movable gate, of a reciprocatory actuator having a twisted portion forming a spiral passed through the aperture in the fixed part to effect the axial movement of the actuator when the latter is reciprocated, and a connection between the actuator and gate permitting independent longitudinal movement of the actuator but compelling the gate to move with the actuator as the latter is moved axially.

2. The combination with a fixed part and a gate, of a reciprocatory actuator, a spiral device disposed to effect axial movement of the actuator through the longitudinal movement thereof, means for moving the gate through the axial movement of the actuator, and gate-retaining means operated by the actuator.

3. The combination with a fixed part and a gate, of a vertically-disposed actuator having a longitudinal movement and also having axial movement on a longitudinal axis, a spiral formed on the actuator and engaging the fixed part, a connection between the actuator and gate permitting relative longitudinal movement of the actuator, but compelling the gate to be swung with the actuator as the latter is moved axially, and latch mechanism arranged to retain the gate, and operated by the longitudinal movement of the actuator.

4. The combination with an apertured fixed part and a relatively-movable gate, of an actuator having a spiral portion engaging the opening in the fixed part, an apertured projection upon the gate engaging the actuator above its spiral portion and permitting longitudinal movement of the actuator, and latch mechanism arranged to retain the gate and operated by the longitudinal movement of the actuator.

5. The combination with an actuator having longitudinal movement and also having axial movement on a longitudinal axis, of a gate operated by the axial movement of the actuator, and a spring-pressed latch element arranged to retain the gate and operatively related to the actuator for retraction through the longitudinal movement of the latter.

6. The combination with an axially and longitudinally movable actuator, of a movable gate operatively connected to the actuator, a bar carried by the gate and arranged for engagement with the actuator, and means for

yieldingly urging the bar into engagement with the actuator.

7. The combination with an axially and longitudinally movable actuator, of a gate operatively connected therewith, a bar carried by the gate in operative relation to the actuator, a spring-actuated latch-lever also carried by the gate and designed for engagement with a keeper, and means for operatively connecting the bar and latch-lever to effect the operation of the latch-lever when the bar is moved by the actuator.

8. The combination with an axially and longitudinally movable actuator provided with a plurality of recesses, of a movable gate operatively connected to the actuator, a bar carried by the gate and engaging said recesses, and means for reciprocating the actuator.

9. The combination with an axially and longitudinally movable actuator provided with a series of recesses, of a movable gate operatively connected with the actuator, a bar carried by the gate for engagement with said recesses, a spring-urged latch-lever carried by the gate, a bell-crank lever intermediate of the bar and latch-lever, and means for reciprocating the actuator.

10. The combination with an apertured fixed part, of a reciprocatory actuator having a spiral portion extending through the opening in the fixed part and provided above said spiral portion with a series of recesses, a movable gate having an apertured projection engaging the actuator above the spiral portion thereof, a bar carried by the gate for engagement with the recesses in the actuator, and a spring-urged latch-lever operatively connected with the bar.

11. The combination with a gate-post provided with an apertured projection, and an operating-lever pivoted upon the post, of an actuating-plate provided with a spiral portion extending through the opening in the projection and having a series of recesses in one edge, a pitman intermediate of the operating-lever and actuator and having a swiveled connection with the latter, a hinged gate having an apertured projection engaging the actuating-plate at a point above its spiral portion, a bar arranged for engagement with the recesses in the plate, and a latch-lever operatively connected with the bar.

12. The combination with a gate-post and a gate hinged thereto, of an apertured lug and an operating-lever both carried by the post, another apertured lug carried by the gate, an actuating-plate engaging the lug upon the gate and provided with a series of recesses in one edge and with a spiral extremity engaging the lug upon the post, a pitman having a swiveled connection with the upper end of the actuating-plate and connected to the operating-lever, a bar carried by the gate for engagement with the recesses in the actuating-plate, a bell-crank lever connected to the bar, a latch-lever carried by the gate and en-



gaging the bell-crank lever, and a spring urging the latch-lever in a direction to cause the engagement of the bar with the recesses in the actuating-plate.

- 5 13. The combination with an actuating-plate having a series of V-shaped recesses in one edge and having a spiral at one end, of an apertured fixed part for the reception of the spiral, a movable gate provided with an  
10 apertured projection engaging the plate above the spiral, and a bar carried by the gate

and having a V-shaped extremity designed for engagement with the recesses in the actuator.

In testimony that I claim the foregoing as 15 my own I have hereto affixed my signature in the presence of two witnesses.

JOHN WILLIAM CARSON.

Witnesses:

W. B. BLAKEMORE,  
C. W. ANDERSON.