

(No Model.)

2 Sheets—Sheet 1.

F. W. SENSIBA.

GATE.

No. 337,089.

Patented Mar. 2, 1886.

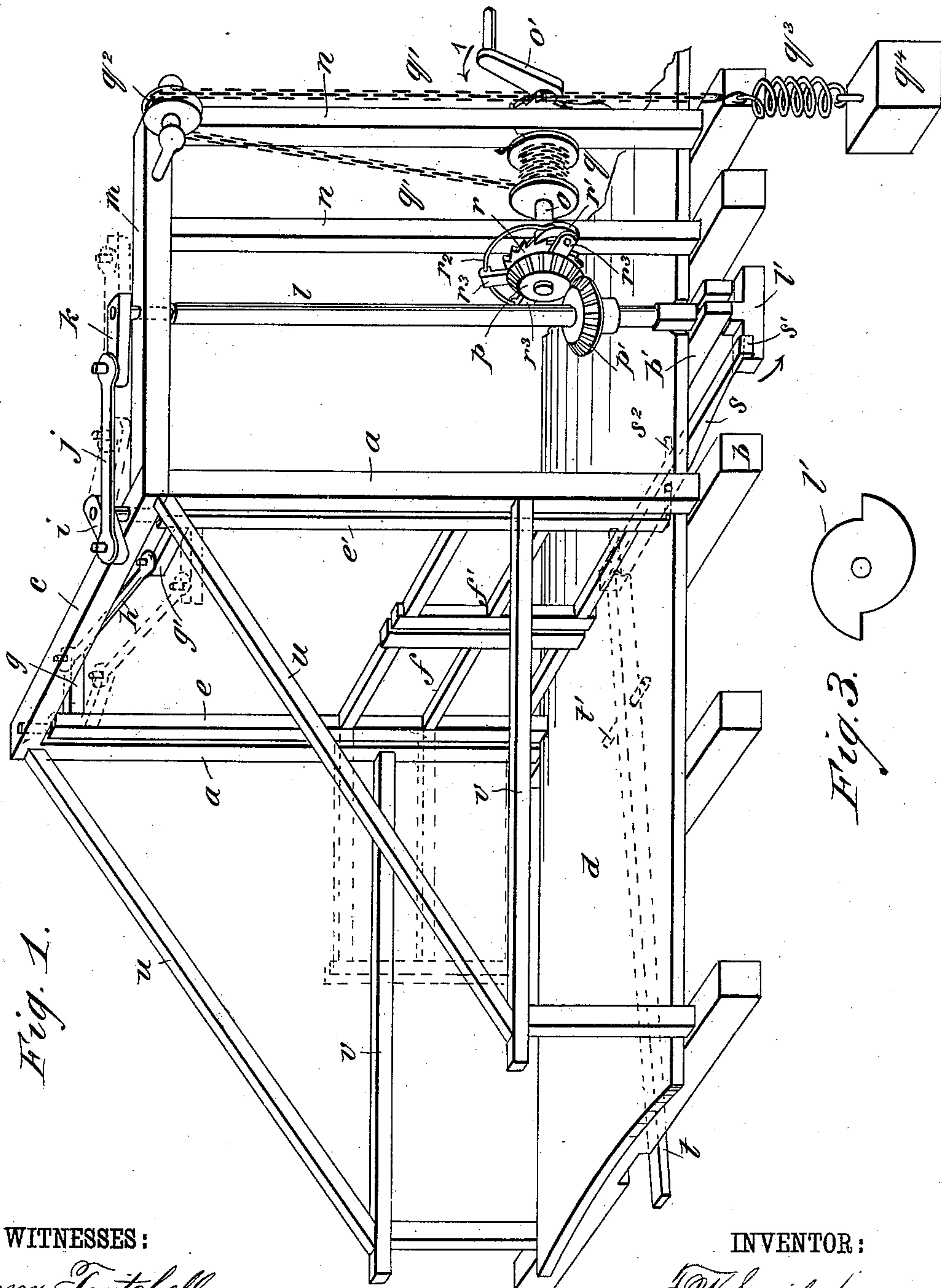


Fig. 1.

Fig. 2.

WITNESSES:

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INVENTOR:

F W Sensiba

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(No Model.)

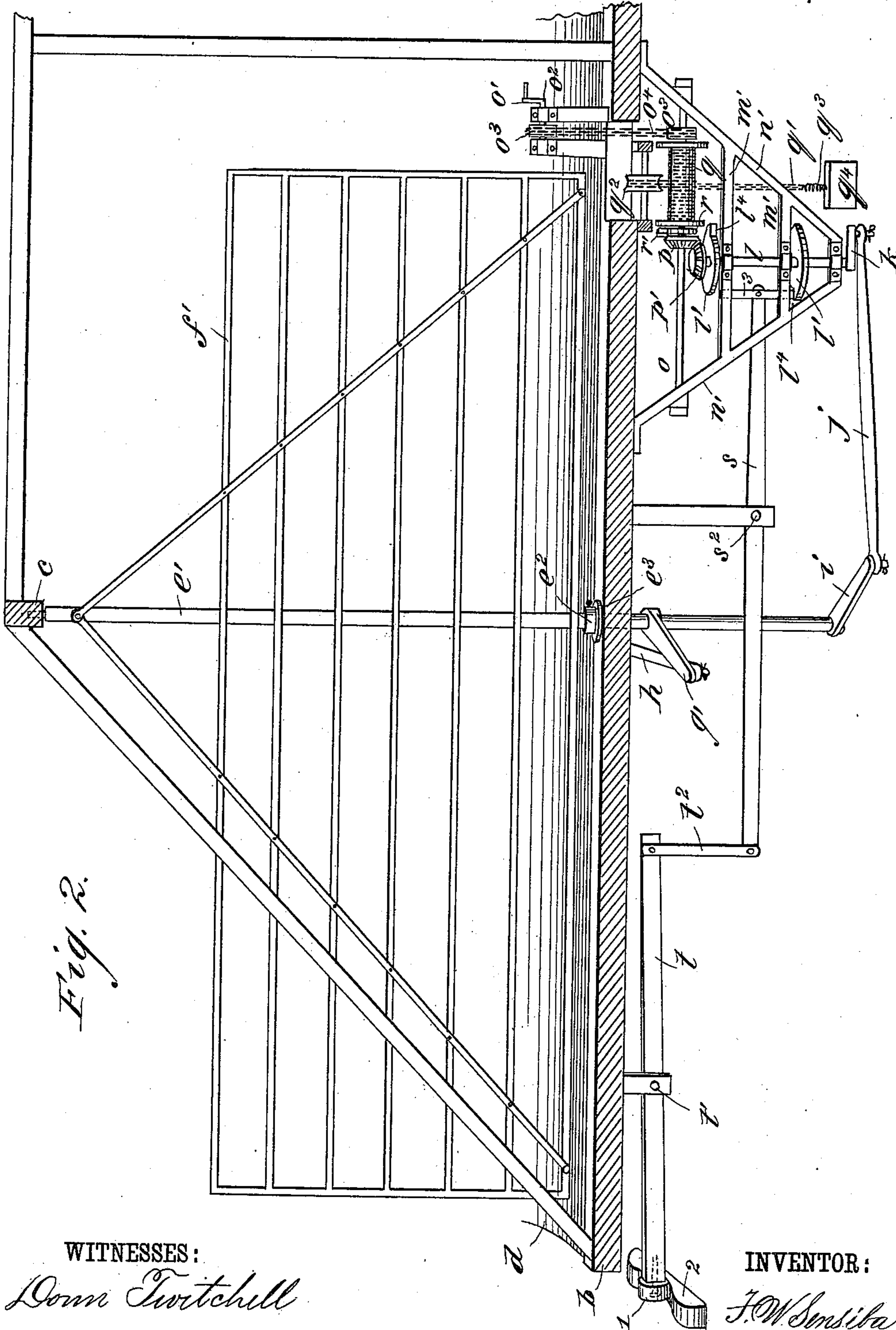
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UNITED STATES PATENT OFFICE.

FRED. W. SENSIBA, OF TALBOT, MICHIGAN.

GATE.

SPECIFICATION forming part of Letters Patent No. 337,039, dated March 2, 1886.

Application filed September 18, 1885. Serial No. 177,447. (No model.)

To all whom it may concern:

Be it known that I, FRED. W. SENSIBA, of Talbot, in the county of Menominee and State of Michigan, have invented certain new and useful Improvements in Gates, of which the following is a full, clear, and exact description.

The object of my invention is to provide a practical automatic gate designed more especially for draw-bridges, but which may be successfully used in various other situations.

The invention consists in the construction, arrangement, and combination of parts, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my new and improved gate as it appears applied to a draw-bridge, with the mechanism above the level of the bridge-floor, and showing the gates closed. Fig. 2 is a longitudinal sectional side view showing a modification of the same, with the mechanism mostly below the level of the bridge-floor, the gates being shown open; and Fig. 3 is a detail view.

In constructing my new gate as illustrated in Fig. 1, I form an upright frame composed of the posts *a a*, secured at their lower ends to the sill *b*, and tied together at their upright ends by the cross-bar *c*. In this instance the sill *b* is one of many similar sills that, together with the platform *d*, form a gangway or approach to a draw-bridge. Journaled in the cross-bar *c* at their upright ends, and in the sill *b* or platform *d* at their lower ends, are the posts *e e'*. To the post *e* is secured the gate *f*, and above the gate *f* is secured the arm *g*, which stands at right angles to the gate *f*. To the post *e'* is secured the gate *f'*, and above is secured the arm *g'*, which is parallel to gate *f'* and projects at right angles to the arm *g*. The arms *g g'* are connected together by the connecting-rod *h*, hinged or pivoted at its ends upon suitable pins or other connections attached at or near the outer ends of the arms.

To the upper end of the post *e'* is secured the crank *i*. This is connected by rod *j* to the crank *k*, secured to the upper end of the vertical shaft *l*, these cranks being of such length relatively to each other that a full rotation of *k* produces rotary reciprocation of *i*. The shaft *l* is journaled at its upper end in the horizontal bar *m*, which stands at right angles

to bar *c*, and is supported by one of posts *a* 55 and the posts or uprights *n n*. The lower end of the vertical shaft *l* is journaled in or stayed by the intermediate sill, *b'*, and at its lower end, below the sill *b'*, it is provided with the locking-head or T-piece *l'*, or with the notched disk, (shown in Fig. 3,) for the purposes hereinafter described. 60

In the uprights *n n* is journaled the horizontal shaft *o*. On this, next to the vertical shaft *l*, is placed loosely the beveled gear-wheel *p*, 65 which meshes with the beveled gear-wheel *p'*, secured upon the vertical shaft *l*. Between the uprights *n n* is secured upon the crank-shaft *o* the drum *q*, on which is wound the rope or chain *q'*, which passes from the drum 70 up over the pulley *q'*, and has the spring *q'* attached to its free end. To the spring is attached the weight *q'*, for operating the gates, as hereinafter described. The spring *q'* might be omitted, if desired, but I prefer to use it to 75 prevent jar and the racking effect which the weight would otherwise produce in opening and closing the gate.

Upon crank-shaft *o*, near the beveled gear-wheel *p*, is secured the ratchet-wheel *r*, which 80 is engaged by the spring-pawl *r'*, which prevents the shaft *o* and its attachments from turning backward, except with the gear-wheel *p*, but permits the shaft to be turned by crank *o'* in the direction of the arrow 1 independently of the gear-wheel *p* for winding up the chain or rope *q'* for elevating the weight *q'*. The pawl *r'* and its spring *r'* are held by arms *r'*, secured to the gear-wheel *p*.

The locking-head or T-piece *l'* is adapted to 90 be engaged by a stop-lever, *s*. In this instance the stop-lever *s* is formed with the hook or detent *s'*, and is pivoted on pin *s'* below the platform *d*, and to its inner end is attached the lever *t*, which stands at right angles to the lever 95 *s*, and is pivoted on pin *t'* and reaches to the front of the platform *d*, where it may be operated by hand or by opening and closing the draw.

The posts *a a* may be braced in any suitable manner by the braces *u u*, reaching from the upper ends of the posts to the railing *v v*, or otherwise. 100

In the arrangement shown in Fig. 2, and which is the preferred arrangement for draw-bridges provided with a carriage and a foot way, the gate *f'* is mounted near its center on the post *e'*, and this post *e'* is journaled at its 105

upper end in the cap *c*, or it may be the trestle-frame of the bridge, and extends at its lower end, at the inner edge of the foot-walk, through and below the bridge or its sill *b*, the crank *i* being on the lower end below the bridge. The post *e'* is supported by a collar, *e²*, on a bearing-plate, *e³*. The shafts *o* and *l*, windlass *g*, and the other parts of the mechanism are supported in a frame, *n'*, secured to the under side of the bridge and operated in substantially the same manner as in Fig. 1; but instead of the crank *o'* being directly on the shaft *o*, it is on a counter-shaft, *o²*, connected with shaft *o* by the sprocket-wheels and chain *o³ o⁴*. The lever *s* is in this case arranged in a lower plane than lever *t*, and is connected therewith by the connection *t²*. For releasing the shaft *l* to permit the gate to be operated by the weight *q⁴*, the shaft *l* is provided with two notched plates or disks, *l' l'*, having each a notch or shoulder, *l²*, arranged on the shaft a short distance apart, and so that the notches *l²* are diametrically opposite, and the lever *s*, instead of the hook *j*, is provided with the cross-rod 3, which can engage with one or the other of the notches *l²*. The levers *s* and *t*, instead of being overbalanced, as in Fig. 1, to insure the engagement of the hook *s'*, are proportioned to remain in position as moved.

The outer end of the lever *t* is provided with a roller, 1, and on the draw is a cam-block, 2, having rounded ends and a central concave depression, in which the roller rests when the draw is closed, and so that the rod 3 is depressed, engaging the notch *l²* of the lower plate *l'* and holding the gate open, as in Fig. 2.

When the draw is turned in either direction for opening it, the outer end of the lever *t* is raised, and consequently the rod 3 is raised to engage the upper plate *l'*, which will allow the shaft *l* to make half a revolution, and thereby close the gates. When the draw is again closed, by depressing the outer end of lever *t* the rod 3 is disengaged from the upper plate *l'* and depressed to re-engage with the lower plate *l'*, and the shaft *l* can make a half-revolution, opening the gates.

In operation, the chain or rope *q'* being wound up to close the gate, the outer end of the lever *t* must be elevated. This will cause its opposite end to depress the inner end of the lever *s*, and this movement will elevate the opposite end of said lever *s* and cause it to release the locking-head *l'* of Fig. 1 or the lower plate *l'* of Fig. 2. This will cause weight *q⁴*, acting through chain *q'*, drum of shaft *o*, and gear-wheels *p p'*, to turn the vertical shaft *l*. The first half-revolution of this shaft will cause cranks *k i*, acting by connecting-rods *j h* and arms *g g'*, to simultaneously turn the posts *e e'* one-half around, which will open the gates *f f'*. To close the gate the outer end of lever *t* must be again raised, which will again release the shaft *l*, and the next half-revolution of vertical shaft *l* and crank *k* will reverse the movement of the posts *e e'* and close the

gates *f f'*. With the arrangement shown in Fig. 1, the outer end of the lever *t* being once raised, it should be instantly released, which, owing to the greater weight of its outer end, will reset lever *s'* in position to engage the locking-head *l'* at the first half-revolution to lock and hold the gates open. To again shut the gates the lever *t* has simply to be lifted, as before, when the action above described will be repeated. In this manner it will be seen that the gate is automatic in its action as long as the weight is wound up, so that the gate requires no attention except to wind up the weight at intervals and to operate lever *t* when the gate is to be opened.

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

1. In a gate for draw-bridges, the combination of the following elements: a gate hung on a vertical shaft, as *e*, which shaft is provided with a crank-arm, a vertical shaft, as *l*, rotated by a mechanism operated by a weight, a crank-arm on shaft *l* of shorter sweep than the crank-arm of shaft *e*, a connecting-rod for said crank-arms, a retaining plate or plates on shaft *l*, and a pivoted lever, as *s*, engaging said plate, substantially as herein set forth and described.

2. In a gate-operating device for draw-bridges, consisting of a gate hung upon a shaft which is rotary reciprocated by connections from another shaft rotated by a weight and held from revolution by the end of a lever, as *s*, the combination, with said gate, its operating devices, substantially as described, and the retaining-lever *s*, of a cam-block on the draw, and a pivoted lever, as *t*, engaging the free end of the lever *s* and the said cam-block, as set forth.

3. The posts *e e'*, to which the gates are attached, connected by arms *g g'* and rod *h*, the vertical shaft *l*, and gearing and weight attachments, substantially as described, for revolving the shaft *l*, the latter being connected to post *e'* by levers *k i* and connecting-rod *j*, and provided with the locking-plates *l'*, in combination with locking-lever *s*, for engaging with the said locking-plates, substantially as and for the purposes set forth.

4. The vertical shaft *l*, connected to the gate-posts by levers *i k* and rod *j*, and provided with locking-plates *l'*, and gear-wheel *p'*, in combination with the locking-lever *s*, shaft *o*, gear-wheel *p*, pawl and ratchet *r r'*, drum *q*, chain *q'*, and weight *q⁴*, substantially as and for the purposes set forth.

5. The gates *f f'*, secured to posts *e e'*, provided with opposite arms, *g g'*, in combination with connecting-rod *h*, crank *i*, secured to the upper end of the post *e'*, the shaft *l*, provided with the crank *k*, the connecting-rod *j*, and means for operating said shaft, substantially as described.

FRED. W. SENSIBA.

Witnesses:

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W. P. KEZAR.