

No. 610,575.

Patented Sept. 13, 1898.

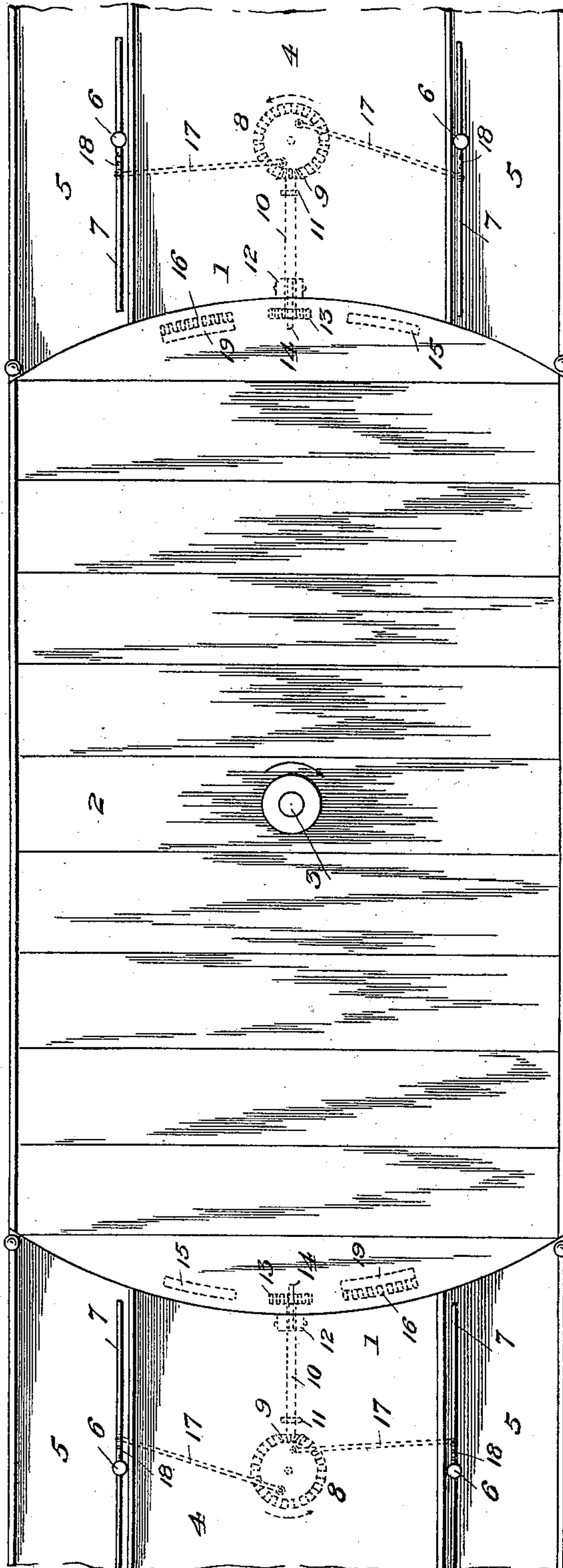
E. C. AKERS.

DRAWBRIDGE,

(Application filed Dec. 27, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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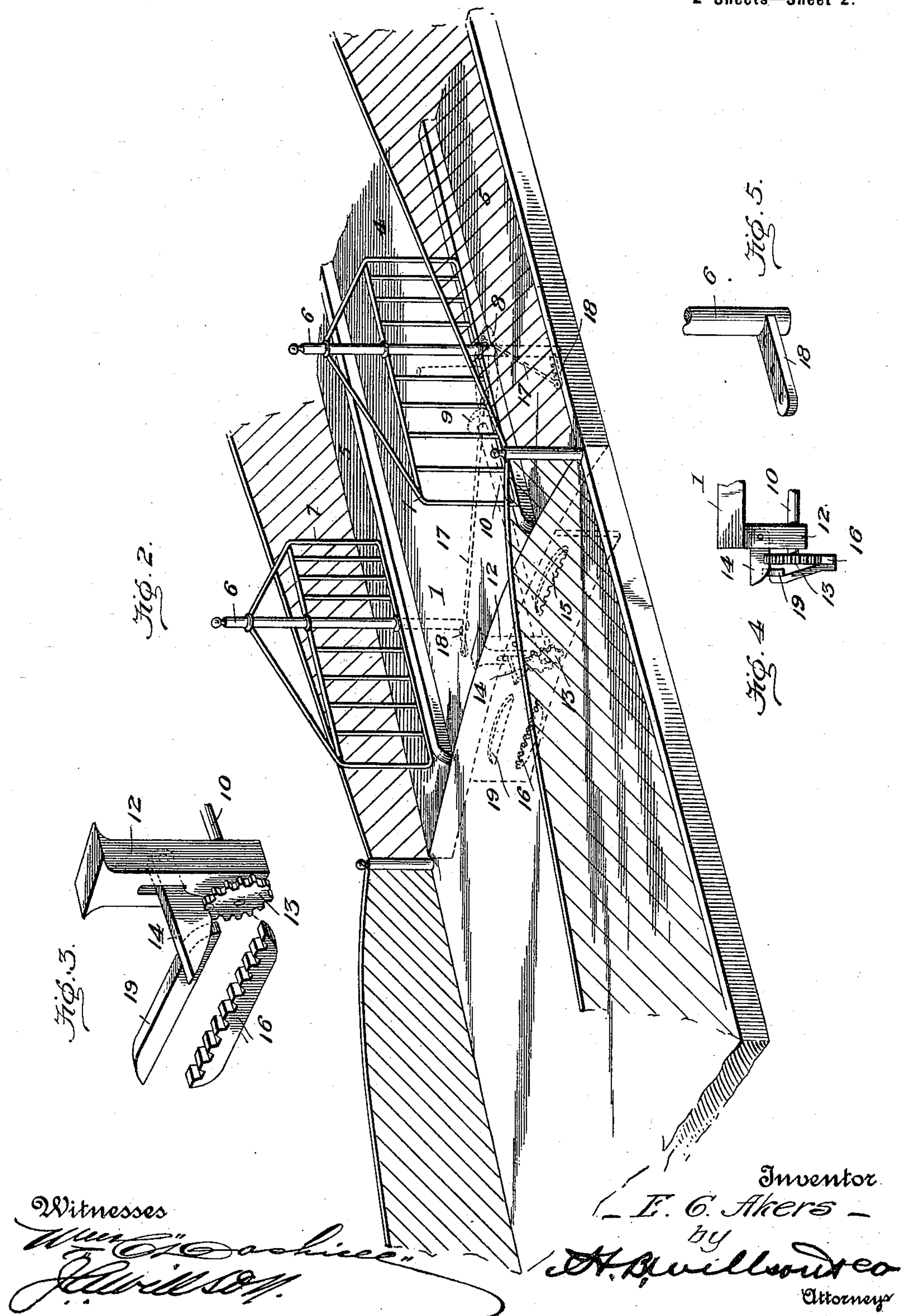
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UNITED STATES PATENT OFFICE.

EARL C. AKERS, OF PORT HURON, MICHIGAN.

DRAWBRIDGE.

SPECIFICATION forming part of Letters Patent No. 610,575, dated September 13, 1898.

Application filed December 27, 1897. Serial No. 663,644. (No model.)

To all whom it may concern:

Be it known that I, EARL C. AKERS, a citizen of the United States, residing at Port Huron, in the county of St. Clair and State of Michigan, have invented certain new and useful Improvements in Drawbridges; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention has relation to drawbridges, and more particularly to gates guarding the approach to the draw and means for automatically opening the gates in the act of closing the draw and for automatically closing the gates in the act of opening the draw.

The object of the invention is to provide a construction whereby when the gates are opened by the draw they will be locked in this position and will also be locked when they are closed, thus preventing any person opening the gates when the draw is open and closing them when the draw is closed.

With this object in view the invention consists in the combination, construction, and arrangement of the parts, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the draw of a bridge and the approach to the draw, showing the draw closed and the gates open. Fig. 2 is a perspective view showing in dotted lines the arrangement of the operating mechanism. Fig. 3 is a detail perspective view of the rack-bar or locking-dog and the trip for actuating said dog. Fig. 4 is an end view of the same parts, and Fig. 5 is a detail perspective view of the lower end of one of the gate-posts.

In the drawings, 1 denotes the approach to the draw, which may be either to the adjacent ends of the bridge or land.

2 denotes the draw, which is adapted to establish communication between the two approaches. This draw is supported on a central post 3 and has a swinging motion common to draws of this character, and a further description is not thought to be necessary.

4 denotes the road-bed of the bridge, and 5 the footwalks, divided from the bed by the longitudinal stringers.

6 denotes gate-posts which are journaled in the bridge at a point inside of the stringers and support the gates 7, which are adapted to be swung across the road-bed and footwalks of the approach and prevent the passage of pedestrians or teams. Journaled under the approach near each end is a beveled gear 8, which meshes with the pinion 9, secured to a longitudinal shaft 10, having its outer end journaled in a bracket 12, secured to the extreme end of the approach and having its inner end supported in a box 11. The outer end of this shaft is provided with a rack-wheel 13, which is engaged by a locking-dog 14, pivoted in the bracket above the rack-wheel.

15 and 16 denote rack-bars secured at each end of the draw and having the teeth projecting in opposite directions. The rack-bar 15 is adapted to engage the wheel 13 above its shaft when the draw is swung in one direction, and the rack-bar 16 is adapted to engage the wheel below its shaft when the draw-bar is swung in the opposite direction.

17 denotes links the inner ends of which are pivoted to the face of the beveled gear 8 and the outer ends of which are pivoted in crank-arms 18, provided with a row of perforations to permit of proper adjustment.

It is evident that when the draw is swung in either direction to open it one of the rack-bars will engage the rack-wheel 13, rotate the same, and close the gates, and when the draw is closed the gates will be opened.

To prevent persons opening the gates when the draw is open or to maliciously close the gates when the draw is closed is one of the principal features of my invention. It is evident that when the draw is swung to the left the rack-bar 15, which has its upper edge in the form of a trip, will first engage the dog and lift it from engagement with the wheel 13. By this time the under side of the rack-bar has engaged the wheel 13 and begun to rotate it. It will thus be seen that the rack-bar 15 has a double function—namely, that of tripping the dog and rotating the wheel. Over the rack-bar 16 is placed a trip 19, which is adapted to operate the dog in the same manner as hereinbefore described. The inner adjacent ends of these trips project slightly be-

yond the inner adjacent ends of the racks, so that the trips will engage the dog before the racks begin to turn the rack-wheel.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring an extended explanation. It is evident that in opening the draw one of the trips will engage the dog, release it from the wheel 13, and permit the rack to operate said wheel to close the gates. As soon as the rack has passed from engagement with the wheel, the dog, which has been held from engagement with the wheel during the engagement of the rack therewith, will now drop into the wheel and lock it against rotation, thereby preventing any person upon the approach opening the gates. Inclosing the draw when it has been swung around to nearly its desired position one of the trips will release the dog from the wheel 13 and permit one of the rack-bars operating the wheel to open the gates and allow the pedestrians and vehicles to pass. The gates are operated automatically from the bridge either by rack-bars on end of bridge engaging with pinion or arms secured to end of bridge engaging with studs in face of pinion.

Although I have specifically described the construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

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

1. The combination with a swinging draw and the approaches thereto, gates journaled upon said approaches to swing across the same, a beveled wheel journaled to each ap-

proach, a longitudinal shaft journaled to the approach and provided at one end with a beveled pinion to engage the beveled wheel, and at the other end with a rack-wheel, connections between the beveled wheel and the posts of the gate, a locking-dog pivoted to engage the rack-wheel, a combined trip and rack-bar secured to the draw and adapted first to release the locking-dog, engage the rack-wheel above its axis and rotate it, a second rack-bar secured to the draw and adapted to engage the rack-wheel below its axis and rotate it, and a trip arranged above the last-named rack-bar and adapted to engage the catch and elevate it before the said last-named rack-bar engages the rack-wheel, substantially as described.

2. In combination, the swinging draw and the approaches thereto, swinging gates journaled upon said approaches and adapted to be swung across the same, a rack-wheel journaled in said approaches, intermediate mechanism connecting said rack-wheel with the gates, a pivoted catch to engage said rack-wheel and lock it against rotation, a combined trip and rack-bar secured to the draw and adapted first to release the locking-dog, engage the rack-wheel above its axis and rotate it, a second rack-bar secured to the draw and adapted to engage the rack-wheel below its axis and rotate it, and a trip arranged above the last-named rack-bar and adapted to engage the catch and elevate it before the said last-named rack-bar engages the rack-wheel, substantially as set forth.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

EARL C. AKERS.

Witnesses:

THOS. J. FITZGERALD,
JEANNIE RYAN.