

(No Model.)

2 Sheets—Sheet 1.

P. H. DAY.  
GATE FOR SWINGING BRIDGES.

No. 428,079.

Patented May 20, 1890.

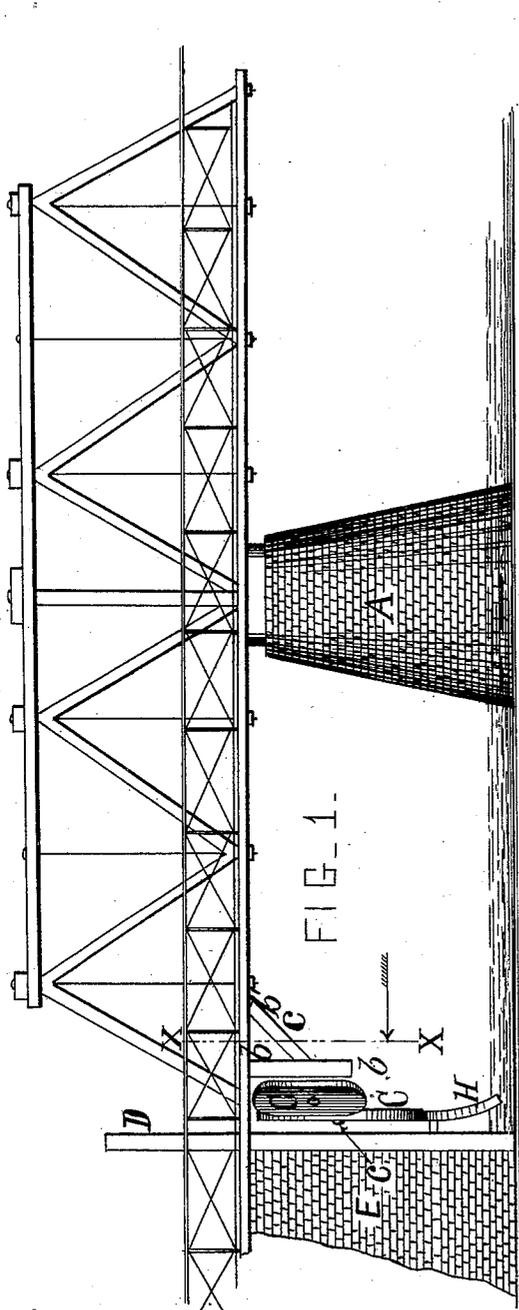


FIG. 1-

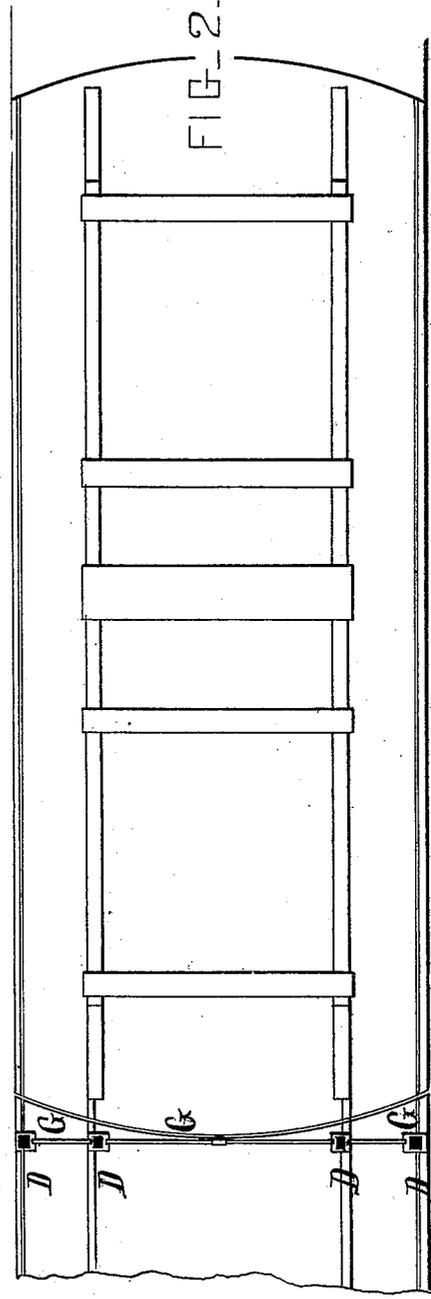


FIG. 2-

WITNESSES

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*by N. DuBois his Atty.*

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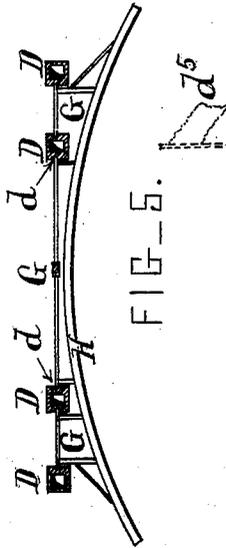


FIG. 5.

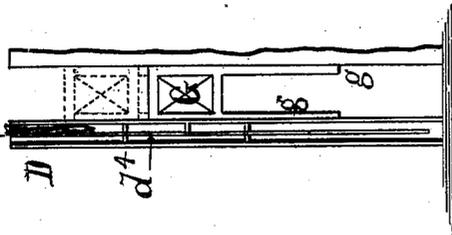


FIG. 6.

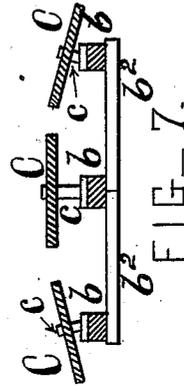


FIG. 7.

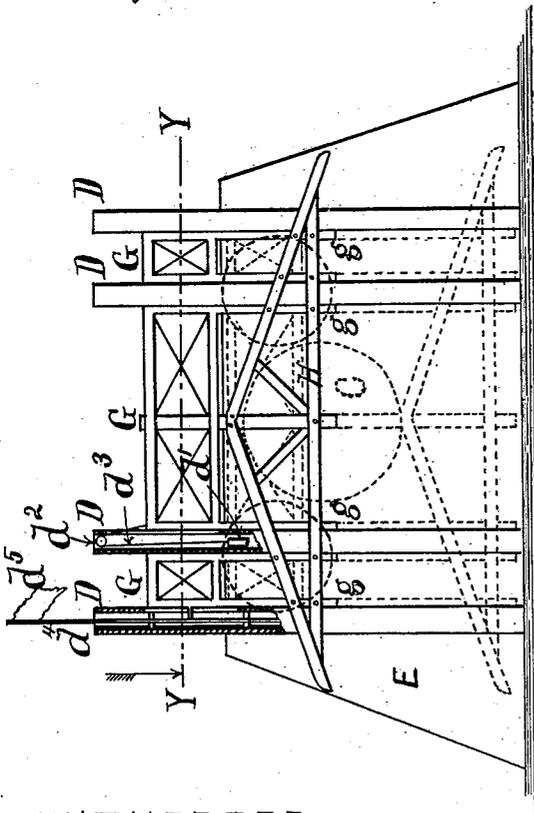


FIG. 4.

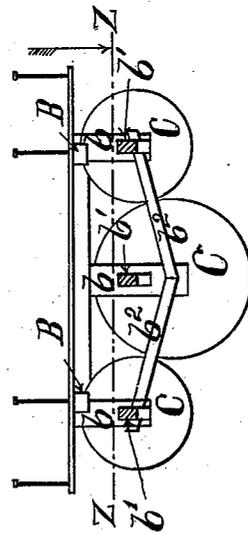


FIG. 3.

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# UNITED STATES PATENT OFFICE.

PATRICK H. DAY, OF SPRINGFIELD, ILLINOIS.

## GATE FOR SWINGING BRIDGES.

SPECIFICATION forming part of Letters Patent No. 428,079, dated May 20, 1890.

Application filed February 10, 1890. Serial No. 339,939. (No model.)

To all whom it may concern:

Be it known that I, PATRICK H. DAY, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Improvement in Gates for Swinging Bridges, of which the following is a specification.

The purpose of my invention is to provide means for automatically closing sliding gates at each end of the bridge when the bridge is swung open and for automatically opening said gates when the bridge is closed, also to provide a danger-signal automatically displayed when the draw is open and concealed when the draw is closed. I attain these purposes by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a partial side view of the bridge, showing at one end in position the mechanism operating the gates. Fig. 2 is a top view showing at one end the gates in position closed. Fig. 3 is a transverse section on the line X X of Fig. 1, showing the frame-work supporting the wheels C. Fig. 4 is an elevation showing the guide-posts, the gates, the cam-frame attached to gates, and the danger-signal. Fig. 5 is a horizontal transverse section on the line Y Y, Fig. 4. Fig. 6 is a vertical section through one post, showing the mechanism of the danger-signal. Fig. 7 is a transverse section on the line Z Z, Fig. 3.

Similar letters in all the figures indicate the same parts.

The bridge is a swinging bridge of ordinary construction supported by a pier in the center of the stream, and turns on a pivot.

To the under side of the bridge-stringers B are attached the hangers  $b$ , secured by braces  $b'$  and cross-pieces  $b^2$ . To the front of the hangers  $b$  are secured spindles  $c$ , supporting one central and two lateral wheels C. The practical advantage of this construction is that the lateral wheel C, whichever way the bridge is turned, rides on and pushes the cam-frame H part way down. Then the center wheel C engages with the cam-frame and pushes it down the remainder of the distance, thus moving gradually and obviating side-thrust of the cam and the abrupt motion which would occur if only one large wheel were used. This construction also permits a longer downward stroke than would be prac-

tical with a single wheel, since it is important that the wheel should not project beyond the sides of the bridge.

To the face of the pier E are suitably secured four vertical posts D, having in their sides grooves  $d$ , in which the gates G slide. These posts are made hollow, so as to permit the weights  $d'$  to move freely inside of the posts. The end rails  $g$  of the gates G extend downward, and have secured to them the triangular cam-frame H, so that as the triangular cam-frame falls or rises the gates fall or rise with it.

Inside of each of the inner posts D is a grooved pulley  $d^2$ , over which runs a cord  $d^3$ . One end of this cord is attached to the top of the gate G. To the other end of the cord is attached the weight  $d'$ . As the gates G descend, the weight is pulled up, when the pressure is removed, as hereinafter explained. The weight falling by gravity, pulls the gates up again.

Within one of the outer posts D is a vertical rod  $d^4$ , moving vertically in unison with the gate G in suitable guides. To the top of this rod is attached a red flag  $d^5$  by day or a red light by night to serve as a danger-signal. When the gate G descends, it pulls downward the danger-signal out of sight. Contrariwise, when the gate rises the signal also rises and is exposed to view.

The operation of my device is as follows: Supposing the bridge to be swung open, the gates being pulled upward by the weights will be closed—that is to say, will stand above the roadway and bar the approaches to the bridge. As the bridge is swung closed the wheels C will come in contact with and ride on top of the triangular cam-frame H; but, as heretofore explained, the cam-frame H is secured to the gates G, so that as the bridge continues to turn, the wheels C, instead of rolling up the incline of the cam-frame H, will, by reason of the greater weight of the bridge, force downward the cam-frame H and with it the connected gates G, so that when the bridge is fully closed the top of the gates will lie beneath the roadway, and will be held in that position by the central wheel C, resting on top of the cam-frame H. This position of the gates G, the wheels C, and the cam-frame H is clearly shown by dotted lines in Fig. 4.

When the bridge is again swung open, the rollers C move off the cam-frame H, thereby releasing the cam-frame H and the attached gates G, which are immediately pulled upward by the descending weights  $d'$ , the gates are closed, and the danger-signal again exposed.

What I claim as new, and desire to secure by Letters Patent, is—

10 1. A centrally-supported swinging bridge having at its ends vertical hangers  $b$ , to which are secured horizontal spindles  $c$ , supporting a central wheel and on each side thereof a lateral wheel of smaller diameter, in combination with vertically-sliding gates G, having at  
15 their lower ends a triangular cam-frame H, substantially as shown and described, and for the purpose stated.

2. In a swinging bridge, the combination of  
20 the stringers B, the hangers  $b$ , the braces  $b'$  and  $b^2$ , the spindles  $c$ , secured to the hangers  $b$ , the wheels C, and the triangular cam-frame H, secured to the gates G, all co-operating substantially as shown and described, and for  
25 the purpose stated.

3. In a swinging bridge, the combination of

the stringers B, the hangers  $b$ , the braces  $b'$  and  $b^2$ , the gates G, the triangular cam-frame H, attached to the gates, and the hollow guide-posts D, having in their faces vertical channels in which the gates slide, substantially as shown and described, and for the purpose stated. 30

4. In a swinging bridge, the combination of the sills B, the hangers  $b$ , the braces  $b'$  and  $b^2$ ,  
35 the spindles  $c$ , the wheels C, the cam-frame H, attached to the sliding gates G, the hollow vertical guide-posts D, inclosing the pulleys  $d$ , the cord  $d^2$ , and the weight  $d'$ , substantially as shown and described, and for the  
40 purpose stated.

5. In a swinging bridge, the combination of the sills B, the hangers  $b$ , the braces  $b'$  and  $b^2$ ,  
45 the spindles  $c$ , the wheels C, the cam-frame H, the sliding gates G, the hollow guide-posts D, the sliding rod  $d^1$ , and the danger-signal  $d^5$ , substantially as shown and described, and for the purpose stated.

PATRICK H. DAY.

Witnesses:

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J. DRENDEL.