

(No Model.)

A. J. SMITH.
BRIDGE GATE.

No. 484,470.

Patented Oct. 18, 1892.

Fig. 1.

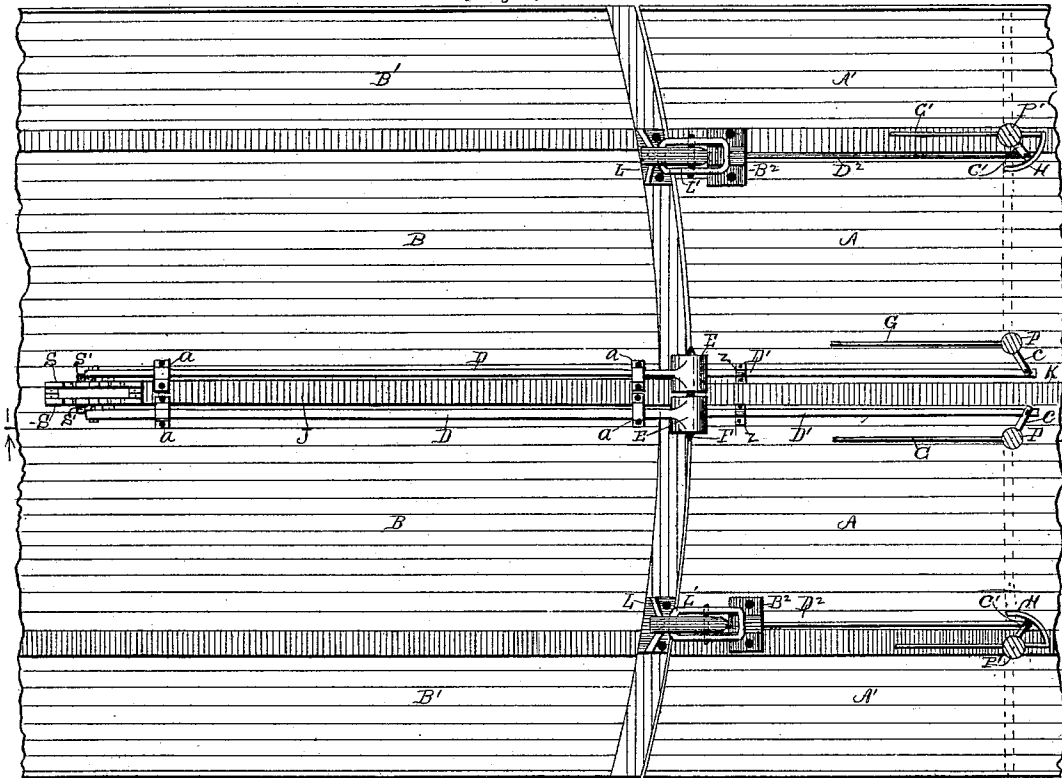


Fig. 2.

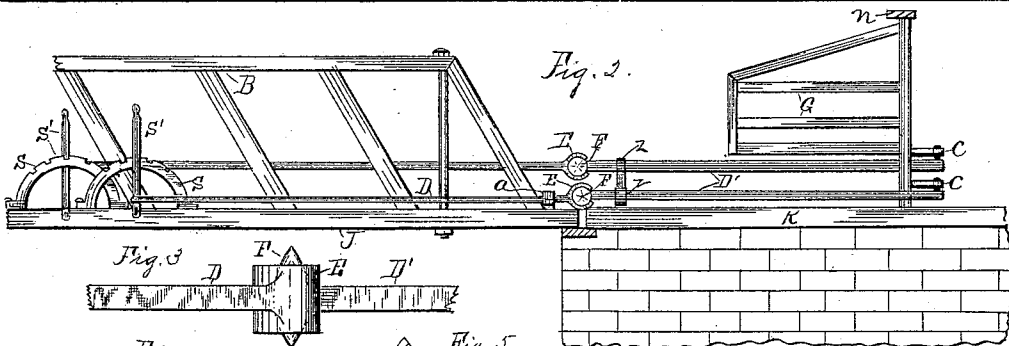


Fig. 3.

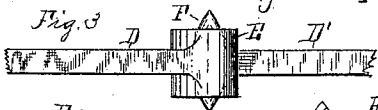


Fig. 4.

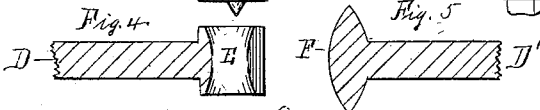


Fig. 5.

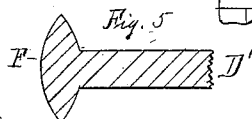


Fig. 7.

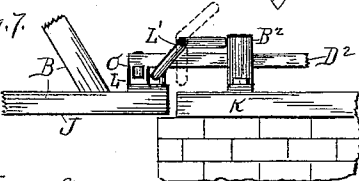
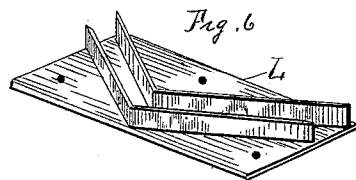


Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

AUSTIN J. SMITH, OF COAL CITY, ILLINOIS.

BRIDGE-GATE.

SPECIFICATION forming part of Letters Patent No. 484,470, dated October 18, 1892.

Application filed June 18, 1892. Serial No. 437,124. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN J. SMITH, a citizen of the United States of America, residing at Coal City, in the county of Grundy and State of Illinois, have invented certain new and useful Improvements in Bridge-Gates, of which the following is a specification, reference being had therein to the accompanying drawings, and to the letters of reference thereon, forming a part of this specification, in which—

Figure 1 is a plan of a section of a swing-bridge and of a section of one of its approaches, showing two roadways and two sidewalks, and bridge-gates for closing the roadways and sidewalks to travel and the mechanism for automatically operating said sidewalk-gates. Fig. 2 is a side view of the central truss and of the roadway-gates and of the mechanism for operating said gates, taken on line 1 of Fig. 1, looking in the direction of the arrow. Fig. 3 is a plan view of one of the couplings for operating the roadway-gates. Figs. 4 and 5 are horizontal sections of said couplings detached from each other. Fig. 6 is a perspective view of one of the cams for operating the sidewalk-gates. Fig. 7 is a side view of the mechanism for operating the sidewalk-gates.

This invention relates to certain improvements in bridge-gates for use on swing-bridges intended to be opened and closed to travel as the bridge is turned in either direction, and relates more particularly to the mechanism for operating said gates.

Referring to the drawings, an end section of a swing-bridge B B is shown, having two roadways and two sidewalks B' B', and also a section of an approach is shown, having corresponding roadways and sidewalks A and A'. The object sought is to furnish means for closing the gates across the approaches, so as to intercept travel when the bridge is turned away from its approaches, and also to initially close a roadway-gate at each end of the bridge to intercept travel toward the bridge and leave open a sidewalk and roadway gate at each end of the bridge until those on the bridge can pass off the bridge, and when all are off the bridge then close all the gates while the bridge is away from its approaches,

or close them all immediately before the bridge has moved away from its approaches.

G G is a pair of swinging gates stepped by means of their posts P in suitable boxes in the approach and one on either side of the central truss or stringer K of the roadway and journaled at the top in a suitable frame N. These gates are provided with crank-arms C C, connected, respectively, to the inner ends of the coupling-rods D' D', having on their opposite ends the conical heads F and secured in place by suitable boxes z, in which said rods may reciprocate, as shown in Fig. 1.

D D is a pair of coupling-rods located on the bridge and in line, respectively, with coupling-rods D' and one above the other, so that their coupling ends will not interfere with each other as the bridge swings. Said coupling-rods are provided on their outer ends with integral heads E, respectively having a transverse eye or opening wider at each end than in its central part and having a horizontal slot in their outsides, as shown in Fig. 2, for receiving the coupling-rods D' and their heads F. The opposite ends of said coupling-rods D' are connected to hand-levers S', having their lower ends pivotally connected with the bridge, by means of which hand-levers said coupling-rods may be reciprocated to turn the gates G in either direction. It is intended that the eye in the head E shall correspond in diameter with the conical head F, so that when the two are coupled together they will closely fit and prevent lost motion when the two bars are reciprocated in either direction, and it is intended that the eye in head E shall be located so that the conical head F may enter it from either direction when the bridge is turned and so said conical heads will rest in said eyes when the bridge is open to travel, as shown in Figs. 1 and 2, so that the gates G G may be operated by means of such coupling while the bridge is open to travel and to close them before the bridge swings away and uncouples said rods. It is intended that these roadway-gates G G are only to be operated by the bridge-tender and not by the bridge itself.

G' G' is a pair of similar gates intended to close the sidewalks to travel. Their posts P' 100

are provided with crank-arms G' , connected to the rods D^2 . These rods have on their undersides, near their outer ends, the friction-rollers O (shown in Fig. 7) for traversing the cam-channel on plate L , located on the bridge, so that as the bridge moves in either direction from that shown in Fig. 1 it will automatically draw the rods D^2 toward the bridge and turn the gates G' across the sidewalks, as shown in the broken lines, and when the said rods D^2 are so drawn forward the latch L' will fall down behind the box B^2 , as shown in Fig. 7, and lock said rods and gates, so that they cannot be turned until the bridge returns, when said latch will be engaged by the said cam and elevate its outer end to disengage it from said box and permit the gate to be opened, as shown in Fig. 1.

The gates G' are each provided with the curved arms or hooks H for hooking into or through the outer ends of the gates G when they are turned across the roadways, as shown in the broken lines.

It is intended to first turn the gates G to the position shown in the broken lines, and then when the bridge turns and turns the gates G' across the sidewalks the hooked arms H will turn around through the gates G and hold them locked while the bridge is turned away from its approaches, so that when the bridge is turned away from its approaches all the gates will be locked across their respective ways and cannot be unlocked until the bridge returns.

In operation, looking at Figs. 1 and 2, the bridge is shown as open to travel and the gates all turned parallel with the roadway. In case it is desired to turn the bridge and turn the gates to be across the roadways and sidewalks to intercept travel while the bridge is turned the bridge-tender will first take hold of a lever S' and draw the coupling-rods D D' , so as to turn a gate G across an approaching roadway, one at either end of the bridge, so as to intercept travel toward or onto the bridge, leaving the other two gates G open until the bridge is clear, supposing that travel is in opposite directions and that the travel is always in the same direction on the same roadway or sidewalk. After the bridge is clear he then takes hold of the other lever S' and draws the said coupling-rods connected with it and closes the other gate G . The bridge is then turned, and as it moves it will automatically turn the gates G' across the sidewalks, and they will be locked closed by means of the latch L' , as stated, and the gates G will be locked closed by means of the hooked arms H , as stated, so that all the gates will be simultaneously locked closed and remain so until the return of the bridge to automatically unlock gates G' and turn them back to their first position and release gates G , so that they may be turned back to their first position by the bridge-tender. When the heads E and F

separate from each other as the bridge swings away, they remain in the same position with respect to each other, so that when the bridge returns they will couple with each other and remain coupled while the bridge is open to travel, and it is intended that these couplings shall be located so that they will not interfere with each other or with the mechanism for operating the sidewalk-gates. It will be observed that no amount of oscillation of the bridge will disconnect or uncouple said rods, as the head on one is inclosed within the eye of the other and the two cannot be separated from each other except when the bridge moves laterally.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, to wit:

1. In a swing-bridge gate, the combination, with the bridge and its approach, of the coupling bars or rods D , having the heads E , provided with transverse eyes having their ends flared to be of greater diameter than in their part between their ends and having a transverse slot opening into said eye arranged on the plane of said rods, the coupling-bars D' , having the conical heads F for entering said eyes, the gates G P , and the means for reciprocating said rods and for turning said gates, substantially as and for the purpose set forth.

2. In a bridge-gate, the combination of the coupling-rods D D' , having, respectively, the head E , provided with a transverse eye and the conical head F and adapted to be detachably connected with each other as the bridge opens and closes, substantially as and for the purpose set forth.

3. In a bridge-gate, a reciprocating coupling-rod located on the bridge-approach, having an integral head on its outer end, arranged in a horizontal position transversely to said rod, and having its laterally-extending sides conical or pointed in form for adapting it to enter an eye on the outer end of a corresponding reciprocating rod on the bridge, a gate mounted on said approach and adapted to be turned by said rod as it is reciprocated, a reciprocating coupling-rod located on the swing-bridge in line with the coupling-rod on the approach and having a transversely arranged integral head on its outer end, provided with a transverse eye and a transverse slot leading to said eye, said eye being funnel-shaped at each end for adapting it to receive said conical head and for detachably connecting said rods as the bridge is moved laterally and for preventing disconnection of said rods by any oscillatory motion of the bridge when said rods are in line with each other and coupled together, and the means for reciprocating said rods to turn said gate, substantially as and for the purpose set forth.

4. In a bridge-gate, the combination of the gate G P , having locking-preforations, and

gate G' P', having the hooked arm H and the means for turning said gates, substantially as and for the purpose set forth.

5 In a bridge-gate, the combination of gate G P, having locking-perforations, and the means for turning said gate, the gate G' P', having the hooked arm H for securing gate G across the roadway, the reciprocating

rod D², having the friction-roller O, and the latch L', cam L, and box B² for locking gate 10 G', substantially as and for the purpose set forth.

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Witnesses:

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