

(No Model.)

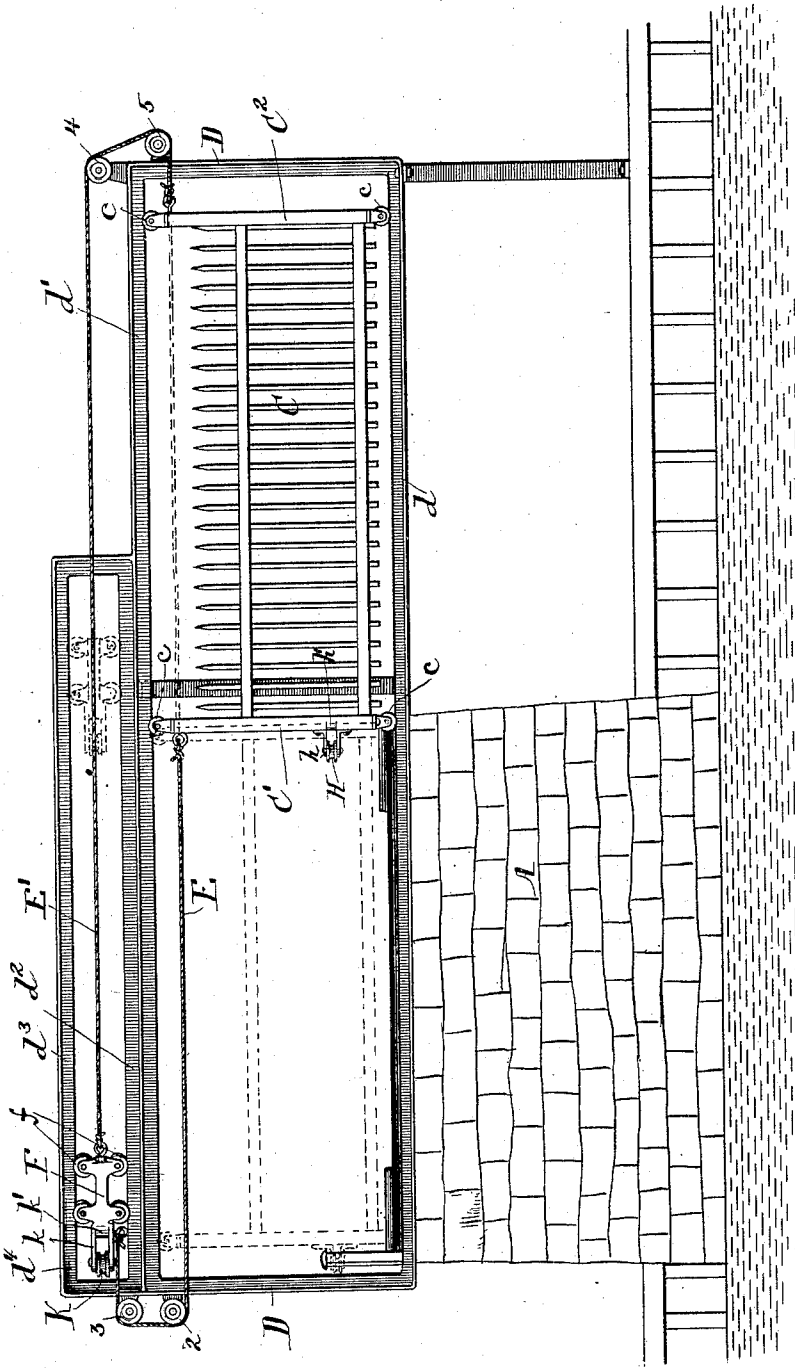
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W. HAYNES.
BRIDGE GATE.

No. 474,125.

Patented May 3, 1892.

Fig 1.



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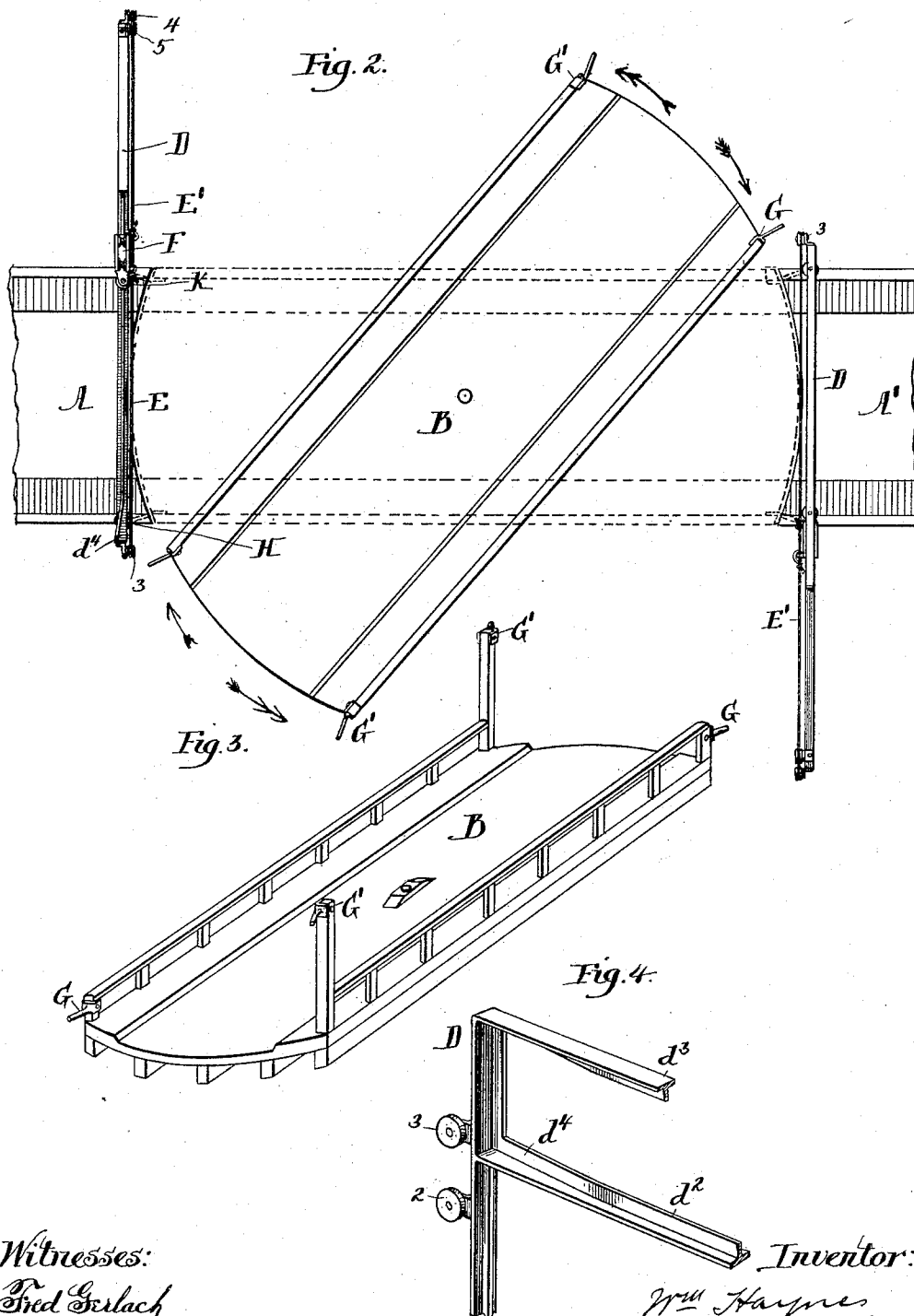
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2 Sheets—Sheet 2.

W. HAYNES.
BRIDGE GATE.

No. 474,125.

Patented May 3, 1892.



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UNITED STATES PATENT OFFICE.

WILLIAM HAYNES, OF CHICAGO, ILLINOIS.

BRIDGE-GATE.

SPECIFICATION forming part of Letters Patent No. 474,125, dated May 3, 1892.

Application filed June 25, 1891. Serial No. 397,425. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAYNES, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bridge-Gates, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention has for its object to provide improved means for operating the safety-gates of swinging bridges; and this object I have accomplished by the novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in end elevation of one of the abutments of the bridge, my improved gate - operating mechanism being shown mounted thereon and in side elevation. Fig. 2 is a plan view of a swinging bridge and the abutments at the opposite ends thereof, my improved mechanism being mounted upon the arms. Fig. 3 is a perspective view of a swinging bridge having suitable projections or arms for engaging parts to effect the opening and closing of the gates. Fig. 4 is a perspective view of a portion of a gate-frame, showing curved or inclined tracks, wherein will slide a shifting frame.

A and A' denote, respectively, the abutments at the opposite ends of the bridge B. This bridge is of a type commonly known as a "pivot" or "swinging" bridge, being sustained by a pier beneath its center and being arranged so that it can be turned or swung in either direction.

Upon each of the abutments A A', at the ends of the approaches to the bridge, is mounted my improved gate mechanism.

The gate C is preferably a laterally-movable gate of any suitable type, and is shown as provided with rollers c, adapted to travel upon the upper and lower rails d and d' of the gate-frame D. It is obvious, however, that the gate may C may be sustained in any other convenient manner.

To the front post C' of the gate C is connected the cable-section E, that trains over the idler-pulleys 2 and 3 at the end of the

gate-frame D and near its top, the opposite end of this cable-section E being connected to the shifting block or truck F, that is preferably provided with carrying-rollers f, adapted to travel upon the rails d² and d³, extending partially across the gate-frame D. To this shifting block or truck F is also connected the cable section E', that trains over the idler-pulleys 4 and 5 at the rear end of the gate-frame D, the opposite end of this cable-section being connected to the rear post C² of the gate. It is obvious that, if desired, a continuous cable, chain, or the like might be used, although I prefer to employ the cable in sections, as shown.

The front post C' of the gate is provided with means for engaging an arm or post G, projecting from the end of the bridge D, and the shifting block or truck F is provided with means for engaging another arm or post G', projecting from the end of the bridge at a higher elevation.

While I do not wish the invention to be understood as restricted to any particular means for effecting the engagement of the gate and of the truck F with the arms that project from the bridge, I prefer to provide the front post C' of the gate with a suitable holder to engage the arms G of the bridge, in which is mounted a friction-roller H, (or other form of stop may be used,) this roller being sustained at a slight distance from the post C' of the gate, so as to permit the arms G of the bridge to enter the space between the roller H and the post C'. Preferably, also, the post C' is beveled, as shown at h', to insure the more ready engagement and disengagement of the arm G with the gate. In like manner also the block or truck F is provided at its end with a suitable holder or engaging device to coact with the arms G' of the bridge, this holder consisting, preferably, of the bracket-arms k, in which is journaled the friction-roller K, (or other form of stop may be used,) this roller being held at a distance from the end of the truck sufficient to permit the arm G' of the swinging bridge to enter the space between the roller K and the end of the truck, in order to shift the truck back and forth, as will presently appear.

Preferably, also, the end of block F is inclined, as at h' , to permit the more ready engagement and disengagement of the arm G' therewith. I prefer that the ends of the rails d^2 d^3 shall be backwardly inclined or curved, as seen at d^4 , Fig. 4, in order to insure that the arms G and G' shall not engage simultaneously with the gate-post C' and with the block or truck F. This backward curving of the rails, however, while desirable, is by no means essential, since if the arms are of proper length and the spaces adjacent the rollers K and H of proper size to admit the arm there will be no serious danger of the binding of the parts. Preferably the arms G are extended in the direction of the radius of the circle upon which the bridge swings, since by this means a better engagement of the arms with the truck or block F and with the gate is secured—that is to say, the arms engage these parts in such manner as to exert a more direct thrust in their line of movement.

By reference to Figs. 2 and 3 of the drawings it will be seen that the arms G G' are arranged at the ends of the bridge, so that the arms G upon the lower level shall be at diagonally-opposite corners of the bridge and the arms G' that are on the higher plane shall also be at diagonally-opposite corners of the bridge, the purpose of this arrangement being to insure the operation of the gates at the opposite ends of the bridge, irrespective of the direction in which the bridge may be swung.

From the foregoing description the operation of my improvements will be seen to be as follows: When the bridge is in the open position illustrated in Fig. 2 of the drawings, the gates C upon the abutments of the bridge will be closed, and at such time the shifting blocks or trucks F will be withdrawn to the position shown in the drawings, Fig. 2. If now the bridge be turned in the direction of the single arrow, Fig. 2, it is manifest that the arms G at diagonally-opposite corners of the bridge will engage with the posts C' of the gates C and will force these posts in backward direction until the bridge is closed and the gates are completely opened to permit travel across the roadway of the bridge. If, however, the bridge D is swung in the direction of the double arrows shown in Fig. 2, it is plain that the arms G' at diagonally-opposite corners of the bridge will enter the spaces between the rollers K and the blocks F and will draw the trucks F forward until when the bridge is closed the parts assume the position illustrated in Fig. 1 of the drawings. Assuming that the bridge is in closed position and the gates are open, as illustrated in Fig. 1 of the drawings, the lower arms G of the bridge will be within the spaces between the rollers H and the posts C', while the upper arms G' will be within the spaces between the rollers K and the sliding blocks or trucks F. Hence if the bridge be swung in order to open it in the direction of the single arrow, Fig. 2, the arms G' will contact with the ends

of the trucks or blocks F, forcing these blocks to move backward, and by means of the cable-sections E and E', connected therewith, to draw the gates C to their closed position. On the other hand, if the bridge in order to open it is swung in the direction of the double arrows, Fig. 2, the arms G will contact with the rollers H, and as the bridge is swung open will draw the gates C to their closed position. Hence it will be seen that no matter in which direction the bridge may be swung the gates will at all times be properly opened when the bridge is closed and will be closed when the bridge is open.

By reference to Fig. 1 of the drawings it will also be seen that when the gates C are in the open position and the bridge is in the closed position the trucks or blocks F will be partially upon the outwardly bent or inclined portion d^4 of the rails d^2 and d^3 , and consequently the roller K of each of the trucks will be slightly shifted to such position that there will be no danger of its contacting with the arm G' when the bridge is swung open, (in the direction of the double arrows, Fig. 2,) the shifting of the gates C at such time being effected by the engagement of the arms G with the rollers H upon the posts C' of the gates.

It is manifest that the details of construction above set out may be varied within wide limits without departing from the spirit and scope of my invention. Thus, for example, the gate C, while preferably constructed to move bodily in the manner above described, might be constructed upon the lazy-tongs principle, in which case the post C² would be stationary and the section-cable E' would be connected with the post C'. It is obvious, also, that instead of employing a block or truck F any other suitable shifting device adapted to be engaged by the bridge and connected with the gate might be used.

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

1. The combination, with a gate, of a suitable shifting device—such, for example, as a block or truck—connected with said gate and arranged to move in directions opposite to the movements of the gate, and a bridge provided with arms or projections arranged at different elevations to engage the gate and the block or truck, substantially as described.

2. The combination, with a movable gate, of a suitable shifting device—such, for example, as a block or truck—suitable connections between said shifting device and the gate, and suitable projections upon the bridge, one of said projections being arranged to engage the gate and the other of said projections being arranged to engage the shifting device, substantially as described.

3. The combination, with a movable gate, of a suitable shifting device—such, for example, as a block or truck—cable-sections connecting said block or truck with the gate in such manner that said block or truck and said gate

shall move in opposite directions, and suitable projections upon a bridge for engaging with the gate and with the block or truck, whereby said gate may be opened or closed by the swinging of the bridge in either direction, substantially as described.

4. The combination of a sliding gate, a block or truck F, cable-sections E and E', connected to said block or truck, said block or truck F and said gate being provided with means for engagement with suitable arms or projections upon the bridge, and a bridge provided with arms or projections, substantially as described.

5. The combination of a sliding gate, a block or truck F, cable-sections E and E', connected to said block or truck, suitable supports whereby said gate and said block or truck are sustained in a manner permitting them to move in opposite directions, and a bridge provided with arms or projections arranged at different elevations and adapted, respectively, to engage with the block or truck and with the gate, substantially as described.

6. The combination, with a sliding gate, of a block or truck arranged in a manner permitting it to be moved back and forth, cable-sections connecting said block or truck and said

gate, pulleys over which said cable-sections are extended, so that the movement of the block or truck shall be opposite that of the gate, and a bridge provided with two sets of arms arranged at different elevations, like arms being arranged at diagonally-opposite corners of the bridge, said arms being adapted to engage with the block or truck and with the bridge-gate, substantially as described.

7. The combination, with a sliding gate and with a gate-frame, of a block or truck F, provided with a stop or roller K, whereby a double engagement can be secured with an arm projecting from a bridge, cable-sections E and E', connecting said stop or truck F and said gate C, said gate being provided with a stop or roller H, whereby a double engagement can be effected with an arm or projection upon the bridge, and a bridge having suitable arms or projections arranged at different elevations to engage, respectively, with the stop or truck F and with the gate C, substantially as described.

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Witnesses:

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