(No Model.) 2 Sheets—Sheet 1.

W. FILIATREAULT.

GUARD GATE FOR SWING BRIDGES.

No. 587,685. Patented Aug. 3, 1897.

Fig. 1.

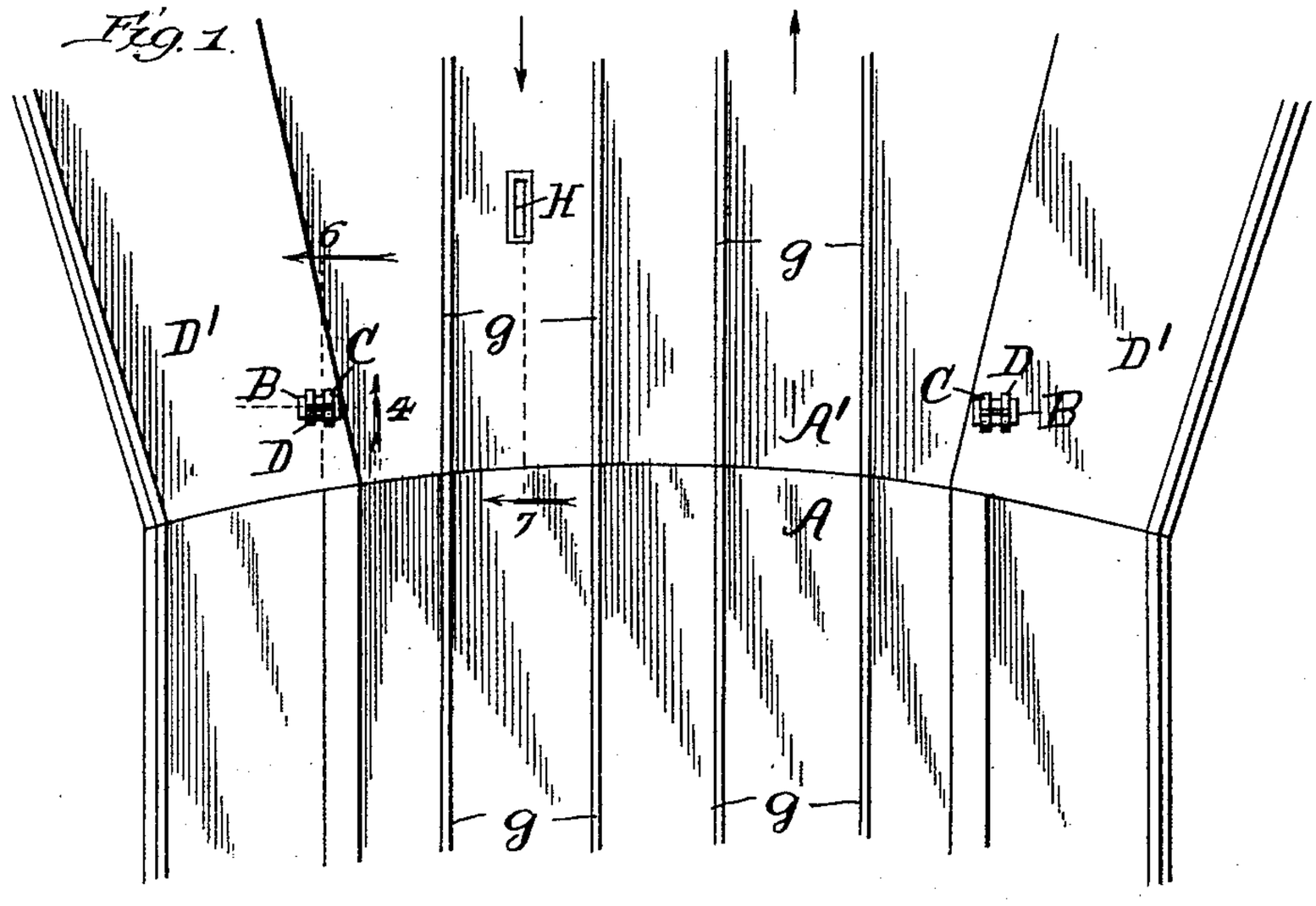


Fig. 2.

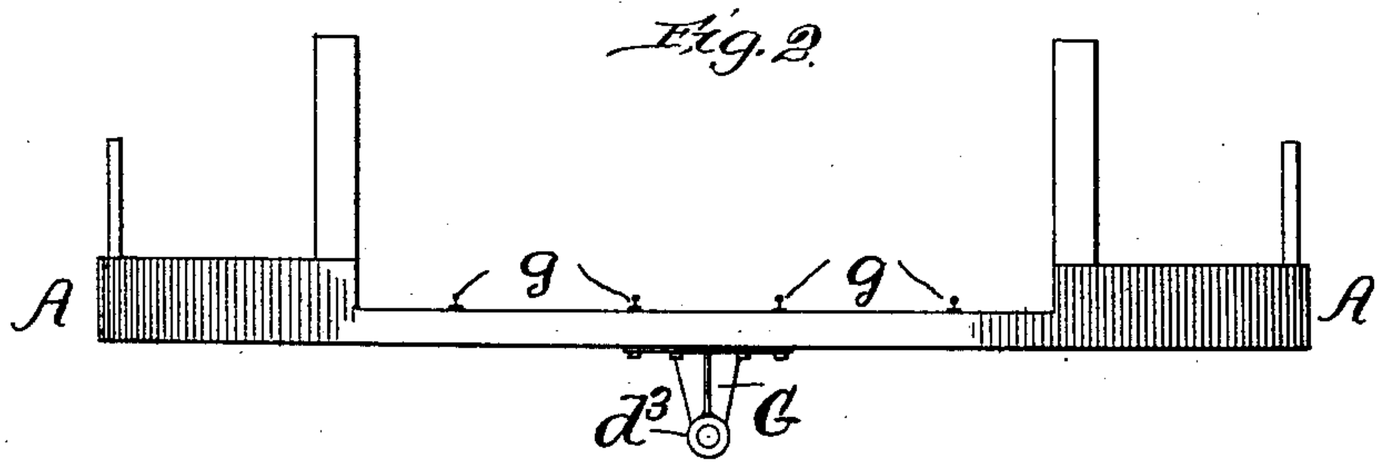
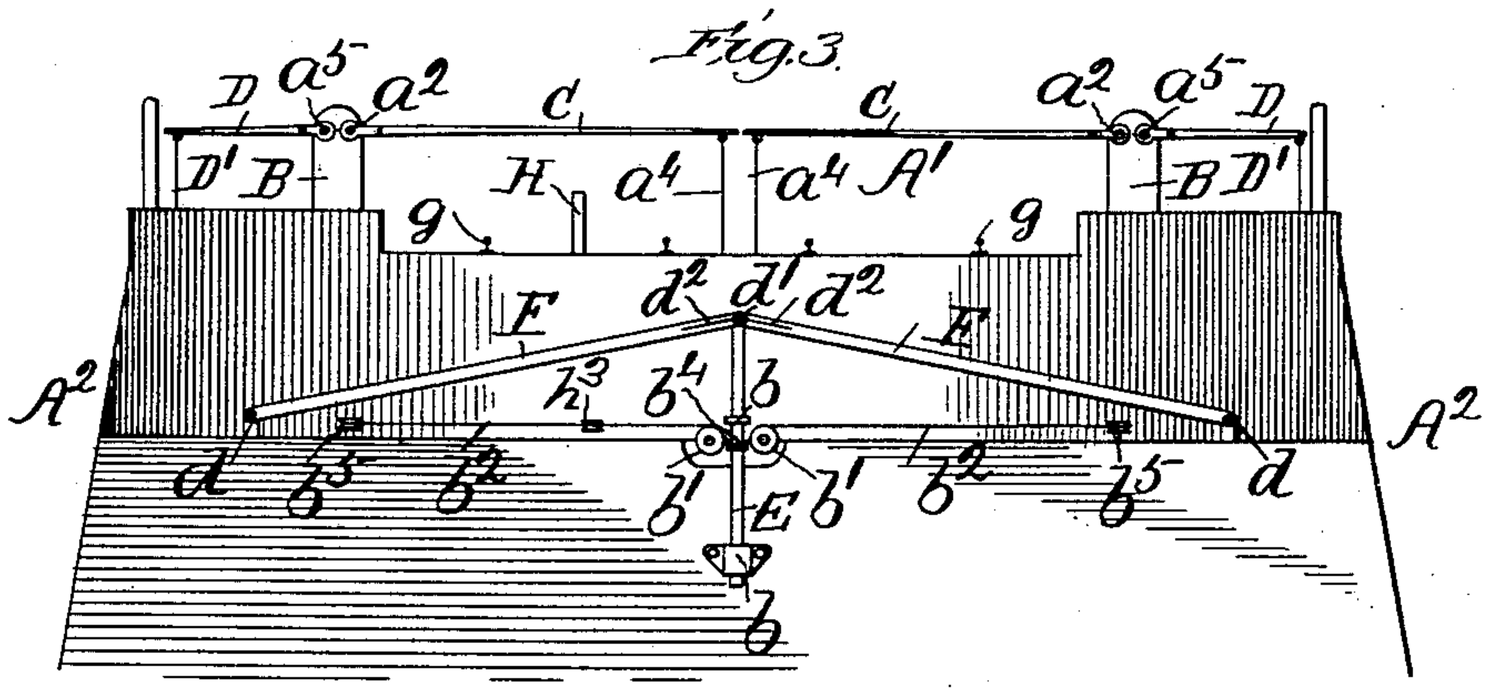


Fig. 3.



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(No Model.)

2 Sheets—Sheet 2.

W. FILIATREAULT.

GUARD GATE FOR SWING BRIDGES.

No. 587,685. Patented Aug. 3, 1897.

Fig. 4.

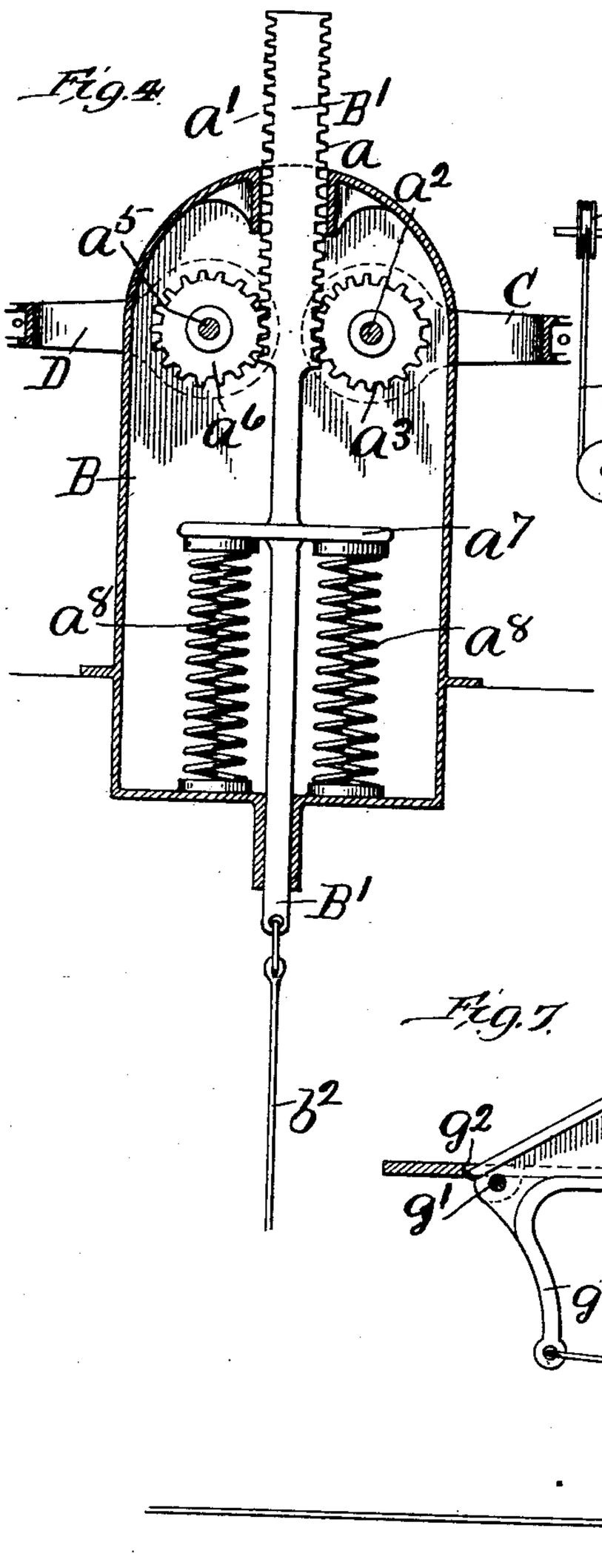


Fig. 5.

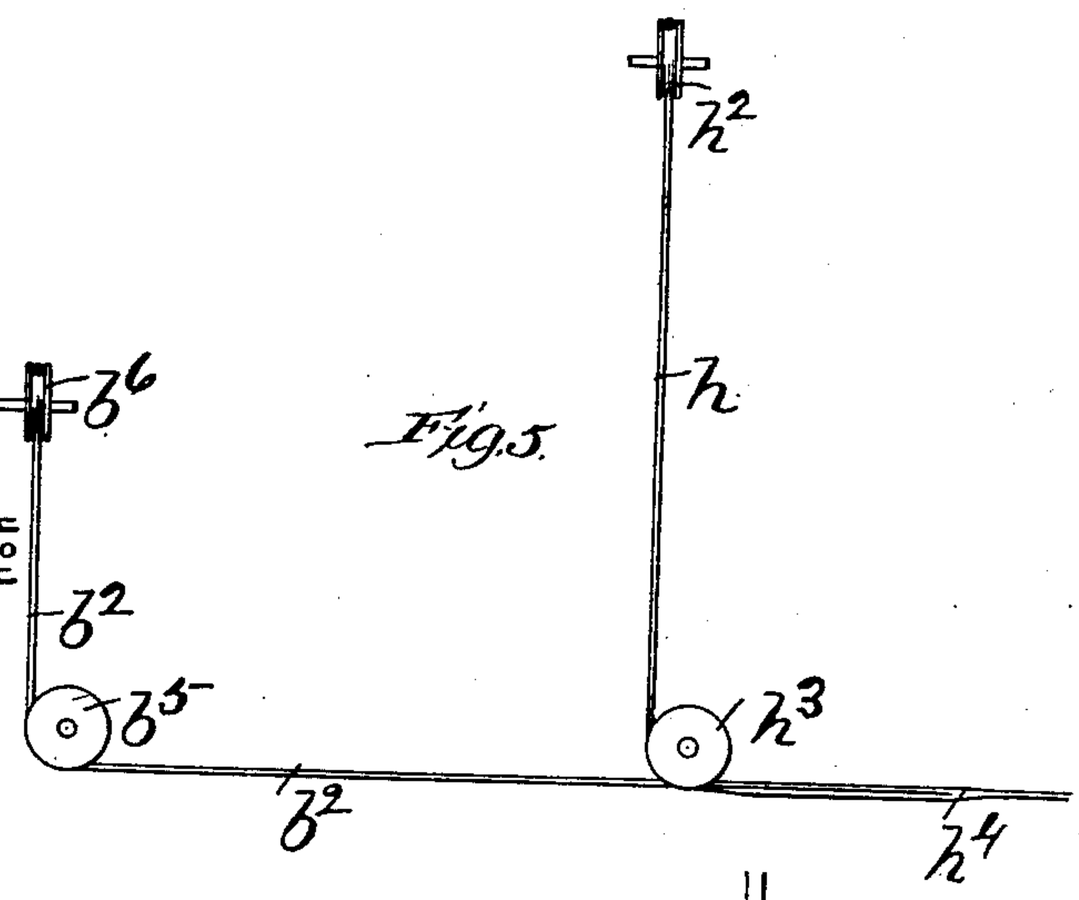


Fig. 6.

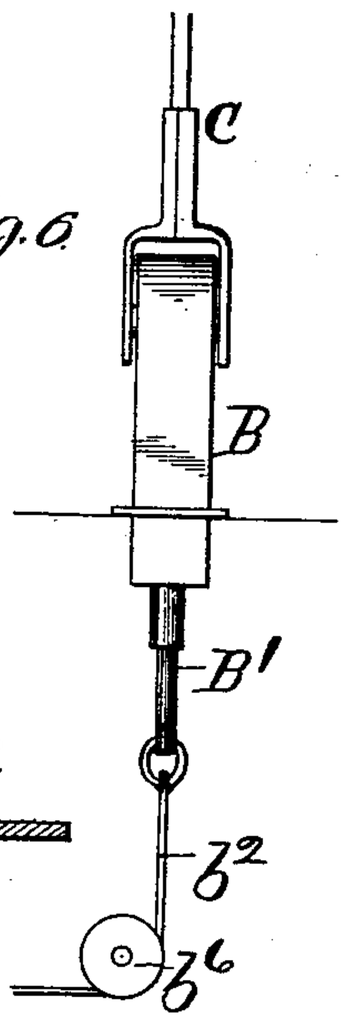
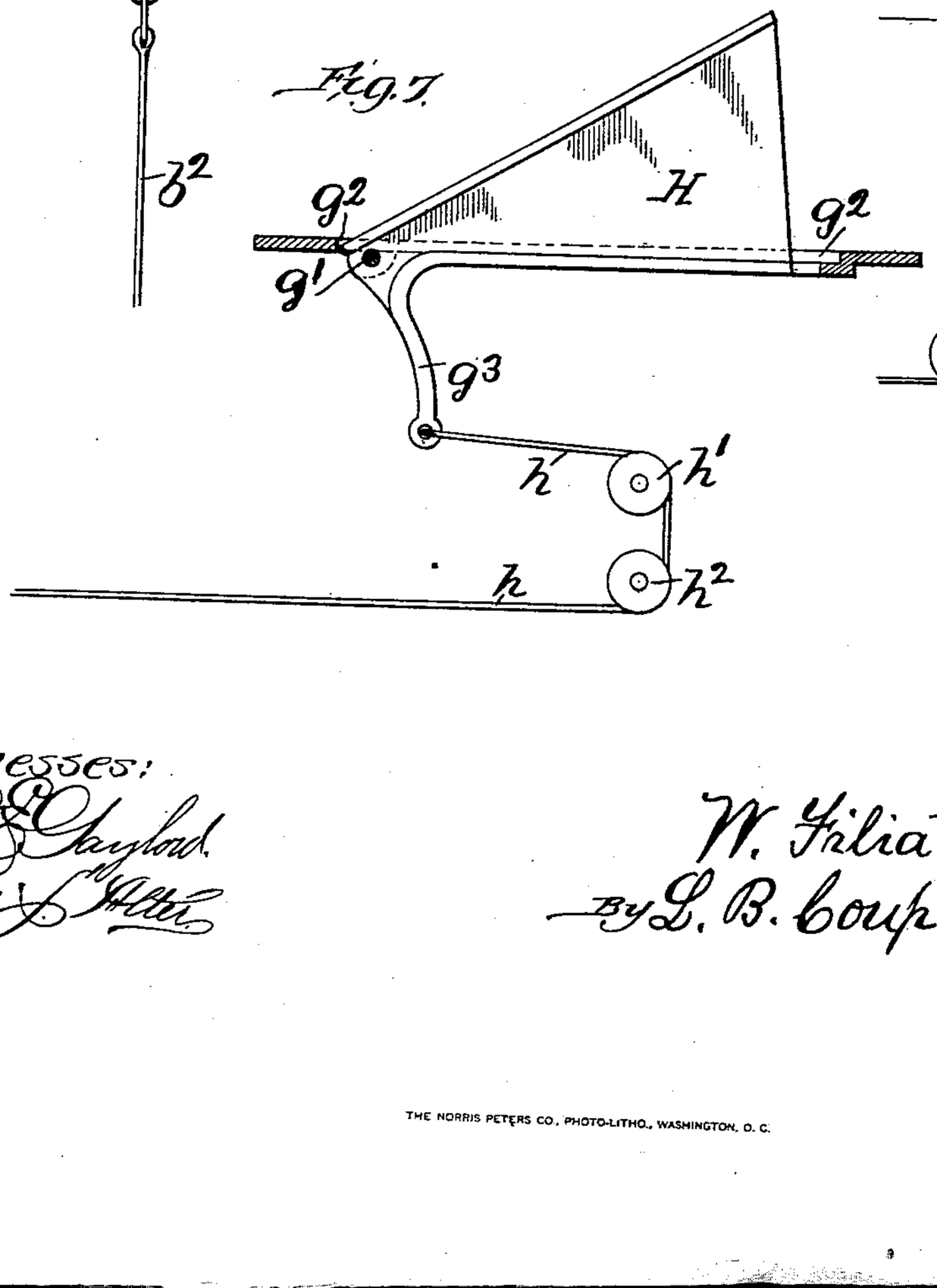


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILFRID FILIATREAULT, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO HENRY M. MEEHAN, OF SAME PLACE.

GUARD-GATE FOR SWING-BRIDGES.

SPECIFICATION forming part of Letters Patent No. 587,685, dated August 3, 1897.

Application filed May 24, 1897. Serial No. 637,891. (No model.)

To all whom it may concern:

Be it known that I, WILFRID FILIATREAULT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Guard-Gates for Swing-Bridges; and I do hereby 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.

This invention relates to improvements in that class of devices employed to guard the approach to open draws, the gates being automatically operated by the opening and closing of the bridge.

Figure 1 is a broken-away plan showing the approach and a part of the bridge and the relative position of the guard-gates. Fig. 2 is an elevation of one end of the bridge; Fig. 3, a view looking at the face of the bridge-abutment; Fig. 4, a vertical transverse section on line 4, Fig. 1, looking in the direction indicated by the arrow; Fig. 5, a diagram showing a plan of the operating-cables; Fig. 6, a sectional elevation on line 6, Fig. 1; and Fig. 7, a vertical longitudinal section on line 7, Fig. 1.

A may represent the bridge, A′ the approach, and A^2 the abutment.

In Fig. 1 the bridge is shown in its closed position, the gates being in their elevated open position.

At the two sides of the bridge-approach are mounted companion casings B B, rigidly secured in place. A rack-bar B′, Fig. 4, is placed on the inside of the casings and adapted to have a vertical movement therein. This rack-bar is provided on the inner side with teeth a and on the outer side with teeth a'. A shaft a^2 is journaled in the casings and has a pinion a^3 mounted thereon, which engages with the inner side of the toothed rack-bar. The outer ends of the gate-bars C C are rigidly mounted on the shaft a^2, the opposite ends being free to swing up or down in the act of opening and closing. The gate-bars C C when closed extend across the driveway of the bridge-approach, as shown in Fig. 3, this being the position they assume when the bridge is open. Props a^4 a^4 are pivoted to the inner ends of the gate-bars and swing therewith and automatically assume the supporting position shown when the gates are closed. A shaft a^5 is also journaled in the casings and located on the opposite sides of the rack-bar and has a pinion a^6 mounted thereon. This pinion engages with the outer side of the rack-bar. The inner ends of gate-bars D D are rigidly mounted on shaft a^5, the opposite free ends of these bars swinging across the pathway D′ at either side of the bridge-approach and closing the same. The rack-bar extends down through the bottom of the casings and is provided near its longitudinal center with a cross-bar a^7, which forms a cap-bearing for the upper ends of companion springs a^8 a^8, the lower ends bearing on the inside bottom of the casing. The rack-bars are made of a proper weight to act as a counterweight for and to regulate the movement of the gates—that is, the springs are compressed on the down movement of the rack-bar when the bridge closes and gradually force the rack-bar up and lower the gates to their closed position when the bridge opens.

In the center of the face of the abutment, Fig. 3, and below the street-surface is located a bar E, having a vertical movement in guides b b. On either side of this bar are located sheaves b' b', which are rotatably mounted in place. The inner ends of the operating-cables b^2 b^2 pass over the top of these sheaves and are secured to the opposite sides of bar E, as at b^4. These cables then run along in a horizontal plane and around the guide-sheaves b^5 b^5, then turn at right angles and run back under the approach and up over guide-sheaves b^6 b^6 and connect with the lower end of the rack-bars actuating the gates, as shown in Figs. 4, 5, and 6.

The outer ends of a pair of levers F F are pivotally mounted, as at d, the inner ends being adjustably attached to the upper end of bar E by a pivot-pin d', Fig. 3. The joining ends of the levers are each provided longitudinally with a slot d^2, which feature permits the same to conform to the change of position necessary in opening and closing the bridge.

A bracket-arm G, Fig. 2, is secured to the under side and end of the bridge and has a

friction-roller d^3 mounted on the lower end thereof. This roller is adapted to have a frictional contact with the levers F F, which lie in the pathway of the same in the opening and closing movement of the bridge. When the bridge is open, the companion levers assume the inclined position shown in Fig. 3, the gates being closed. When the bridge is turned to its closing position, the roller d^3 comes in contact with one or the other of the companion levers in accordance with the direction in which the bridge is moving and gradually depresses the same and forces down the bar E, which in turn has the effect of drawing down on the cables connecting with the same and throwing them upward to their open position. When the bridge is swung open, the roller on the bracket-arm gradually passes out of contact from the levers as they are gradually raised to their normal position by the action of the springs a^8, forcing the rack-bars upward and gradually lowering the gates to their closed position.

An additional precaution is provided in the way of a bumper or stop H, which is located on the approach some way back from the gates. This bumper is adapted to shut down level with the street-surface, Fig. 1, when the the bridge is closed, and assume a raised position, Figs. 3 and 7, and obstruct the roadway when the draw is open. This bumper is more especially necessary where the bridges are crossed by street-car lines, g representing track-rails. A double track is shown, the arrows in Fig. 1 indicating the direction of travel, so that but one bumper is necessary at each end of the bridge for the stopping of street-cars.

One end of the bumper is mounted on a pivot-pin g', located below the street-surface and adapting the opposite end to swing up and down in an opening g^2. The pivoted end is provided with a lever-arm g^3, extending downwardly therefrom. To the lower end of this arm is connected one end of a cable h, which leads down over guide-sheaves h' h^2 and then runs back around guide-sheave h^3, Figs. 3 and 5, and is secured to the gate-cable b^2, as at h^4. This connection will automatically throw the bumper up to the guard position (shown in Figs. 3 and 7) when the bridge is opened. The bumper shuts down into the approach flush with the surface by force of gravity when the bridge closes, thus having a simultaneous movement with that of the guard-gates.

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

1. In a guard-gate for swing-bridges, the combination with the companion casings, of a rack-bar, provided with teeth on opposite sides and adapted to have a vertical movement, a shaft, a^2, journaled in said casings, a pinion, a^3, mounted on said shaft and engaging one side of said rack-bar, the gate-bars, mounted on said shaft, a bar E, having a vertical movement, the companion sheaves, b' b', the operating-cables, having their inner ends secured to bar E, and their opposite ends connected with the lower ends of the rack-bars, the companion levers F F, pivotally mounted at their outer ends, the inner ends being adjustably attached to bar E, and the bracket-arm secured to the end of the bridge and adapted to have contact with said levers and force the same downwardly with bar E and raise the gates to their open position when the bridge closes, substantially as described.

2. In a guard-gate for swing-bridges, the combination with the companion casings, of the rack-bars, provided with a cross-bar and adapted to have a vertical movement therein, the springs inserted between said cross-bar and the bottom of the casings, the shafts, journaled in said casings, the pinions, mounted on said shafts, and the gates, connected with said shafts, whereby the gates are lowered to a closed position when the bridge is opened, substantially as described.

3. In a guard-gate for swing-bridges, the combination with the bracket-arm, secured to the end of the bridge, of the bar E, the companion levers F F, the cable b^2, the cable h, connected thereto, and a bumper, having a pivotal movement on the bridge-approach, and with which the cable h has a simultaneous movement with that of the bridge-gates, substantially as described.

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

WILFRID FILIATREAULT.

Witnesses:

L. M. FREEMAN,

L. B. COUPLAND.