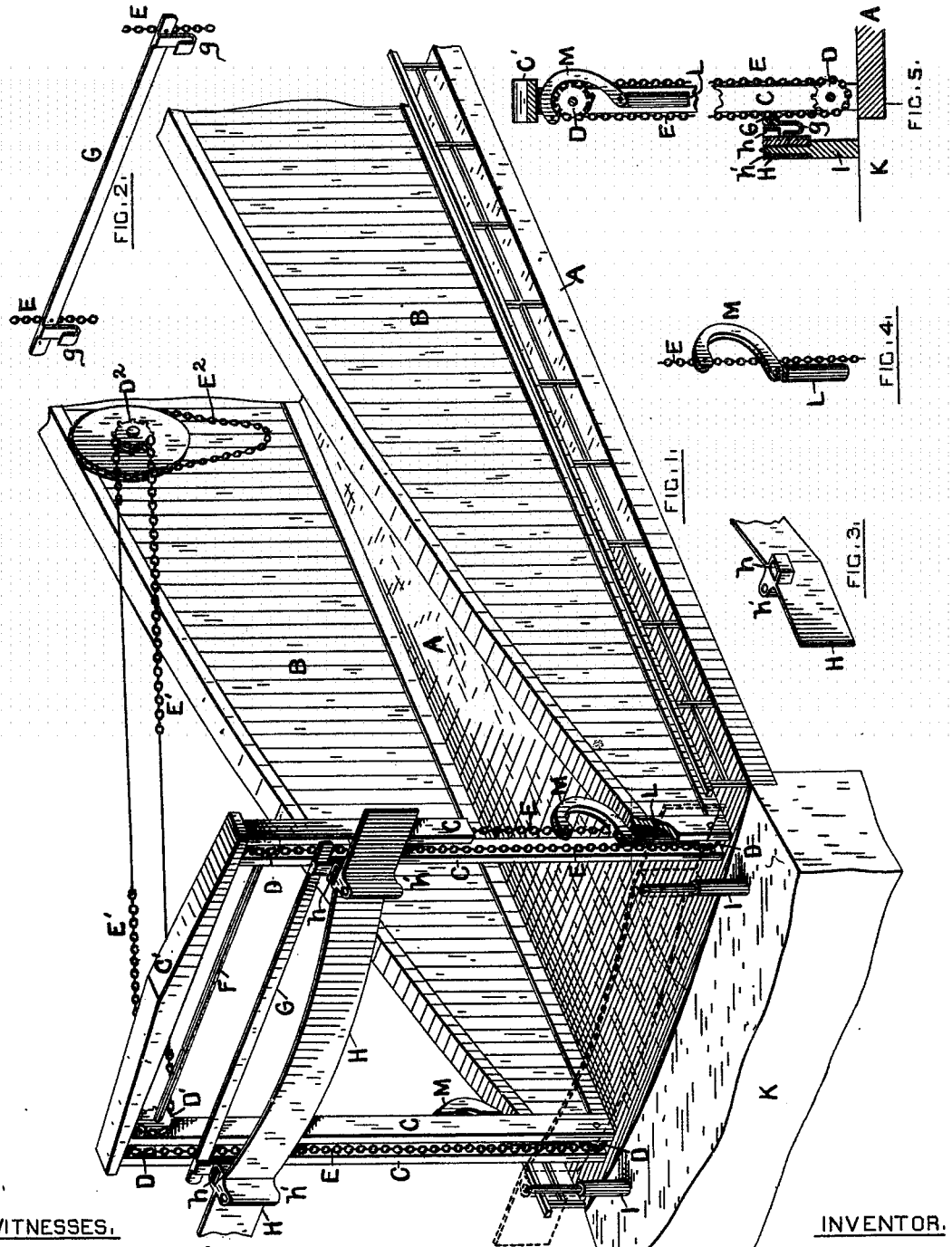
A. R. SHERMAN.

Barrier for Draw-Bridges.

No. 206,046. Patented July 16, 1878.



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IMPROVEMENT IN BARRIERS FOR DRAW-BRIDGES.

Specification forming part of Letters Patent No. **206,046**, dated July 16, 1878; application filed June 22, 1878.

To all whom it may concern:

Be it known that I, ALBERT R. SHERMAN, of Natick, in the county of Kent and State of Rhode Island, have invented certain new and useful Improvements in Draw-Bridges, which improvements are fully described in the following specification and illustrated in the accompanying drawing, making a part of the same, in which—

Figure 1 represents, in perspective, one-half of a draw-bridge having my improvements. Fig. 2 shows a perspective view of the hooked bar used in operating the barrier to be placed across the thoroughfare approaching the bridge. Fig. 3 represents, in perspective, a portion of the said barrier. Fig. 4 shows, in perspective, the counter-weight and goose-neck hook suspending the same upon a chain; and Fig. 5 represents a vertical section of a portion of the bridge and abutment, showing position of barrier, hooked bar, and suspended counter-weight when the thoroughfare is closed and the bridge ready to be swung.

The improvements hereinafter described have reference to that class of draw-bridges which are moved in a horizontal plane, the same being known as "swinging draw-bridges;" and they particularly relate, first, to the placing of barriers upon the abutments of the bridge to close the thoroughfare or road approaching the bridge when the same is to be swung to allow of the passage of vessels, and to the removal and suspension of the said barriers when the draw has been returned to place that travel may proceed; second, to an arrangement by which the barriers may be deposited upon and removed from the abutments by the attendant who swings the draw, he being located upon the central portion of the draw and operating the barriers from such position, the said arrangement affording great convenience of manipulation and saving a great amount of time in closing and opening the thoroughfare.

Devices have been in use for the purpose of closing the roadway leading to a draw-bridge; but they have required attendants to be located upon the abutments, or have necessitated the presence of the draw-operator or other person at each end of the bridge before the draw could be swung, causing either considerable expense or much loss of time to both land and water travel.

The objects, therefore, of my invention are, first, in connection with a draw-bridge, to furnish barriers which, when deposited upon the abutments of the bridge, shall completely close the thoroughfare to both vehicles and pedestrians; and, second, to provide arrangements by which the attendant who works the draw may conveniently and without loss of time deposit upon and remove the said barriers from the abutments while in his position upon the central portion of the draw.

Referring to the drawing, it will be seen that but one abutment and one-half of the draw is shown, and for convenience will only be considered; but it is to be understood that both ends of the draw and both abutments are furnished with the devices shown and now to be described.

As illustrated at Fig. 1, A represents the draw, which is supplied with the usual suspension-trusses B B, and has the usual central support to allow of rotation. At each end of the draw is located a "gallows-frame," composed of uprights C, and cross-beam C′, each pair of uprights being supplied with two sprocket-wheels, as at D, which engage with endless chains E E, the two upper wheels being upon a shaft, F, which operates to transmit motion from one pair of wheels to the other. Located upon the shaft F is another sprocket-wheel, as at D^1, which engages with an endless chain or equivalent, E^1, which also passes around and is engaged by a sprocket-wheel, as at D^2, located at the center of the draw upon the truss B, and operated by means of the endless chain E^2, or any preferred mechanism. Securely attached to the chains E E is a cross-bar, as at G, Figs. 1 and 2, having dependent hooks *g g*, whose office is to engage with eyes *h h* on the barrier H, Figs. 1 and 3, the said bar G, hooks *g g*, and chains E E operating, when worked, to raise, hold suspended, and lower the said barrier H, which, to close the thoroughfare, is to be deposited upon posts, as at I, located upon the abutment K, the barrier being provided with socketed projections *h′* to receive the said posts. To assist in rais-

ing the barrier, and to obviate the necessity of a stop mechanism to prevent the chains from running back by force of the gravity of the barrier H when it is in a raised position, the chains E E are each supplied with a counter-weight, L, each weight being attached to a two-part goose-neck hook, M, Figs. 1 and 4, which straddles the chain E and is securely attached thereto, hanging the weights L between the uprights C, as shown in Figs. 1 and 5. A pair of these weights L exactly balances the barrier H, so that the operator in raising or lowering it only has friction to overcome; or the said weights may be made to slightly overbalance the barrier to perfectly insure its remaining up, and the operator thereby be assisted in raising the barrier and be obliged to exert but little more force in lowering it. When, however, the barrier has been deposited on the posts I preparatory to swinging the draw, it is necessary before the operation can be performed to clear the hooked bar G from engagement with the barrier by so lowering the said bar that the hooks *g g* pass out of the eyes *h h*, assuming the position shown at Fig. 5. The weight of the barrier is therefore removed from the chains E E; and when it is remembered that the weights L act as a counter-balance to the barrier, it will be seen that, to prevent the hooks *g g* from becoming again engaged by a retrograde motion of the weights and chains, it is either necessary for a locking device to be applied to the mechanism directly operated by the attendant or for the chains E E to be relieved of the force of the weights L. Either method may be adopted; but I prefer the latter, and accomplish the object through the agency of the goose-neck hooks M, which, just before the barrier is seated upon the posts I, gradually take bearing upon the upper sprocket-wheels D D, so that by the time the hooks *g g* are cleared from the eyes on the barrier the upper or curved portion of the hooks M will be found seated upon the said sprocket-wheels, as shown at Fig. 5, and the weights L suspended thereon, and their force removed from the chains E E, allowing the attendant to immediately give his attention to working the draw. The weights, however, may be suspended in any other manner, as, for instance, by seating them on pins, hooks, or other devices attached to the uprights C C.

Having described my improvements, I will proceed to their operation.

From the foregoing description it will be understood that when the draw is closed the barrier is carried by the end of the draw and held suspended on the gallows-frame. When it is desired for any reason to close the thoroughfare, the attendant upon the central portion of the bridge, by working the chain E^2, revolves the sprocket-wheels D^1 and D, and consequently the chains E^1 and E E, thereby lowering the barrier and depositing it upon the posts I. The chains E E, with their accompanying hooked bar G, are then still farther lowered to clear the hooks *g g* from the barrier-eyes *h h*, which operation raises the weights L and carries the upper portion of the goose-neck hooks M over and onto the sprocket-wheels, thereby suspending the weights.

When it is desired to open the thoroughfare the operation is the reverse, the mechanism being worked to raise the hooks *g g* into engagement with the barrier-eyes *h h*, during which time the goose-neck hooks M pass off the sprocket-wheels, and the force of the counter-weights L is brought into play to balance the barrier, which is just on the point of being raised. A still further operation of the mechanism in the same direction raises the barrier into the desired position as shown by full lines at Fig. 1 of the drawing, where it is held suspended by the counter-weights L.

In the description above given the closing of the thoroughfare at but one end of the bridge has been considered; but it is to be understood, as first stated, that the draw is supplied with barriers at both ends, and with duplicate mechanism to work them. Those portions of such mechanism directly operated by the attendant are located in close proximity at the center of the draw, so that he may conveniently and without loss of time raise or deposit both barriers at one and the same time, it being only necessary for him to grasp the endless chains E^2 each with a hand to perform the operation.

Should the position of vehicles or pedestrians, or any other cause, render it undesirable to lower both barriers at the same time, either may be worked separately without the attendant moving from his position at the chains E^2.

It is to be understood that I do not claim the exact mechanism for operating the barriers herein shown and described, for this may be varied without departing from the spirit of my invention; but

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

1. For closing the thoroughfare leading to a draw-bridge, a barrier which, when in a raised position, is suspended upon and carried by the draw, and which, when the thoroughfare is to be closed by it, is deposited upon the bridge-abutment and disconnected from the said draw by mechanism contained upon and operated from the draw, substantially as described and shown.

2. In combination with a draw-bridge, a barrier for closing the thoroughfare leading to the bridge, and mechanism wholly contained upon the draw for depositing the said barrier upon the bridge-abutment and removing it therefrom, substantially as described and shown, and for the purposes specified.

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Witnesses:
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