

(No Model.)

2 Sheets—Sheet 1.

M. G. SCHINKE.
DRAWBRIDGE.

No. 517,809.

Patented Apr. 3, 1894.

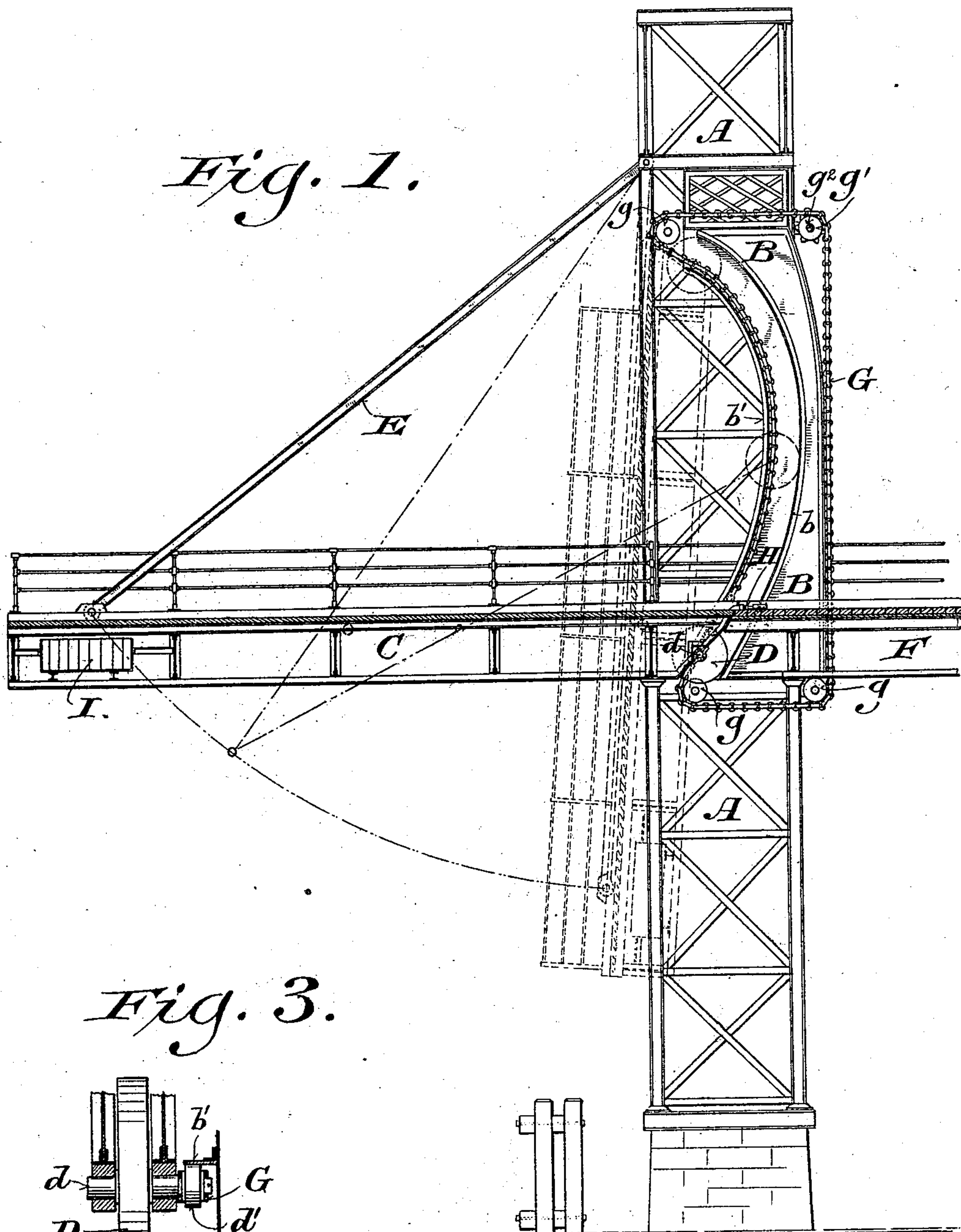
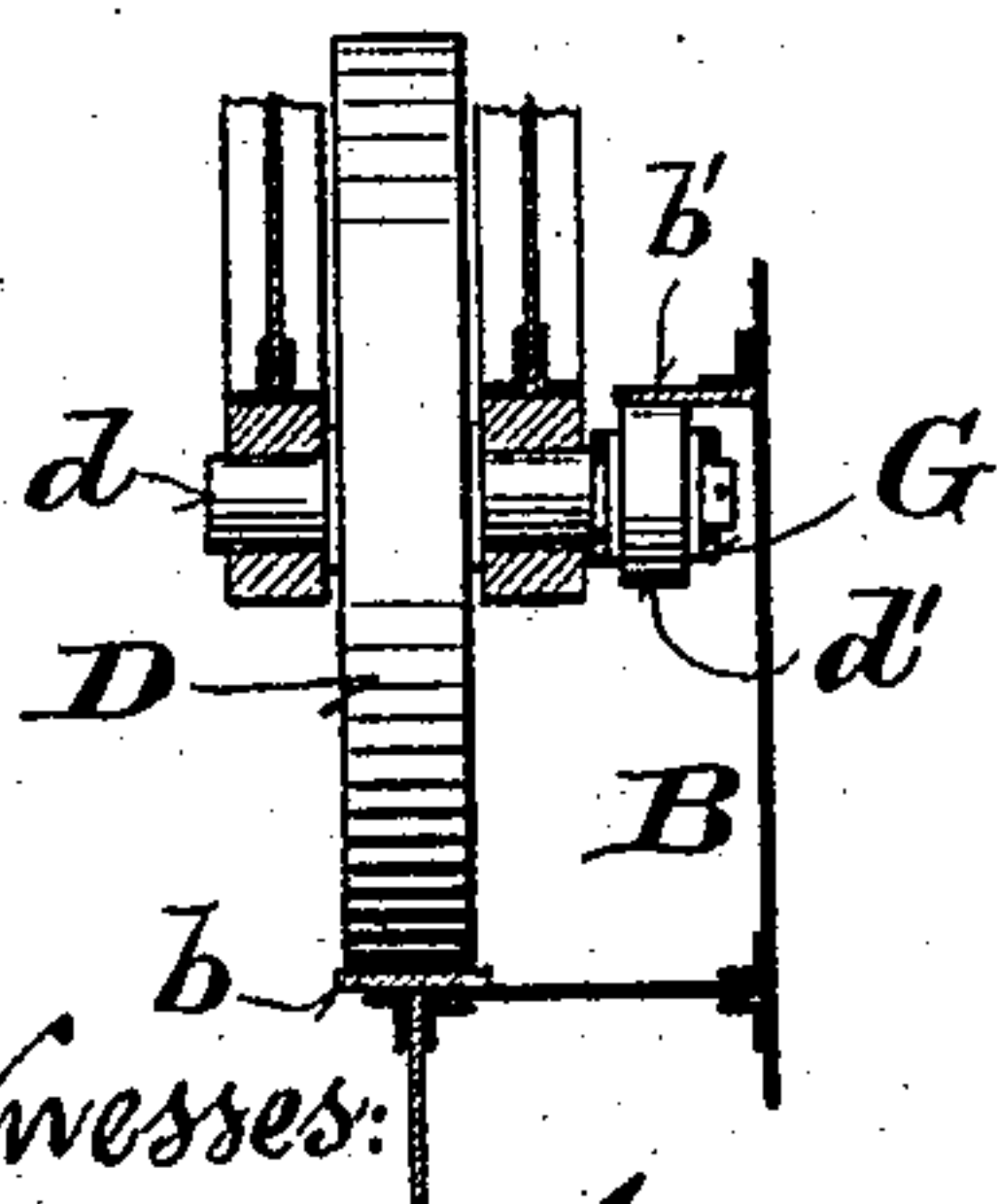


Fig. 3.



Witnesses:
Geo. W. Young.
Chas. L. Goss.

Inventor:
Max G. Schinke,
By Walter Henderson Smith & William Giles
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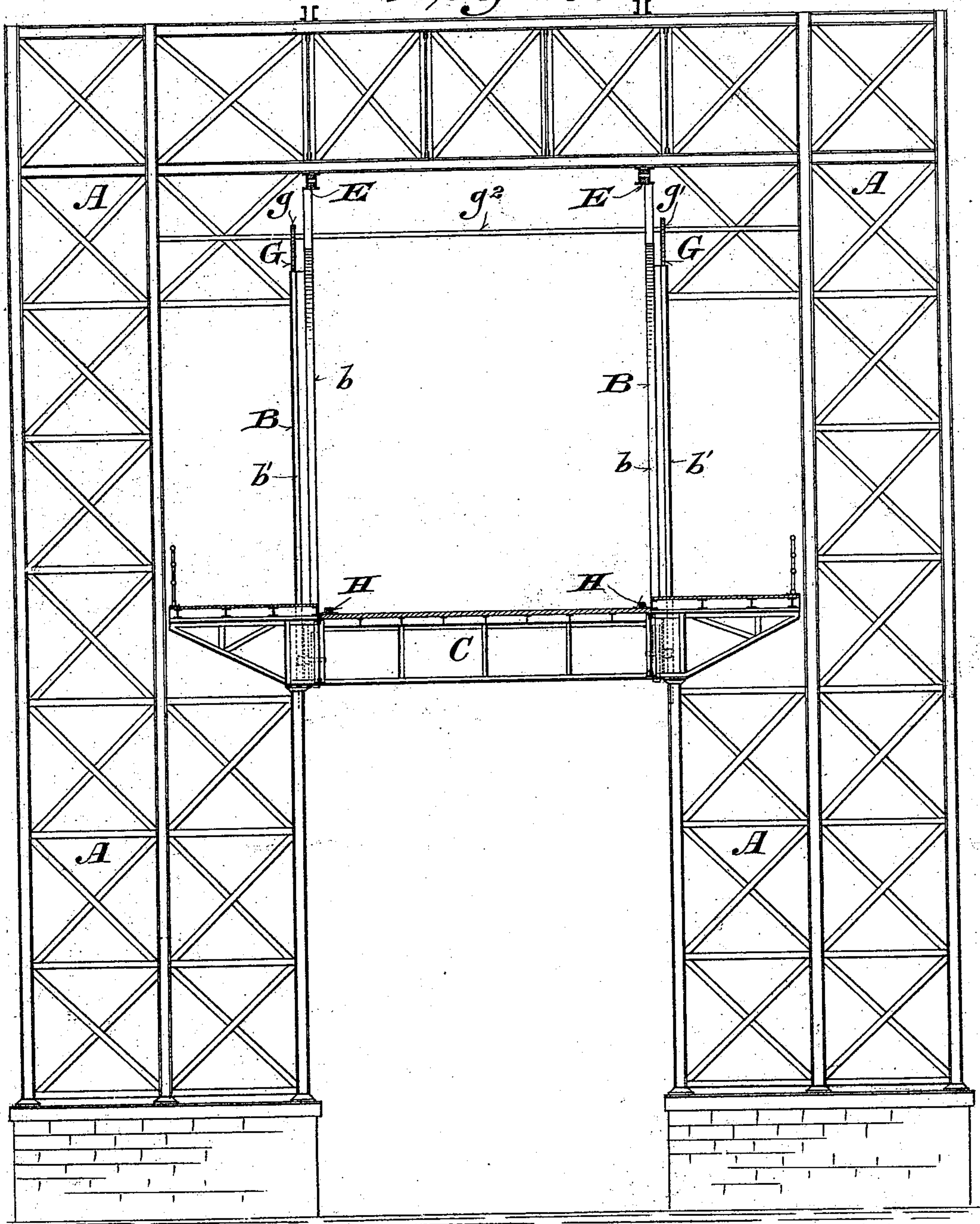
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Fig. 2.



Witnesses:
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Chas. L. Coas.

Inventor:
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UNITED STATES PATENT OFFICE.

MAX G. SCHINKE, OF MILWAUKEE, WISCONSIN.

DRAWBRIDGE.

SPECIFICATION forming part of Letters Patent No. 517,809, dated April 3, 1894.

Application filed September 28, 1893. Serial No. 486,672. (No model.)

To all whom it may concern:

Be it known that I MAX G. SCHINKE, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Drawbridges; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main objects of my invention are to dispense with the middle pier upon which horizontally turning bridges are supported, thus removing its obstruction to the passage of boats and admitting of shorter bridges; to simplify the construction and facilitate the operation of tilting or vertically swinging bridges.

It consists essentially of an abutment or support located at one side of the channel to be spanned and provided with one or more vertically disposed guide-ways, and a vertically swinging bridge having one or more movable supporting connections at one end with said guide-way or guide-ways, and a link connection at the other end with said support, and of certain novel features in the construction and arrangement of the bridge supporting and operating connections hereinafter particularly described and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a vertical longitudinal section of a bridge embodying my improvements. Fig. 2 is a vertical cross section of the same; and Fig. 3 is a detail view on a greatly enlarged scale, partly in section and partly in plan view, of one of the vertically movable connections between the bridge and its support.

A represents the bridge support, which is located on one side of the channel to be spanned, and may be conveniently constructed of iron in the form of a frame or tower, upon a pier or foundation of masonry, as shown. It is provided on each side of the road or passageway, with vertically disposed guides B B, comprising parallel ways $b\ b'$,

which under suitable conditions I prefer to make curved, so as to cause the center of gravity of the bridge to move in a horizontal direction in opening and closing and thereby economize power in its operation, but under other conditions, said ways b and b' may be made straight and set perpendicular or at an inclination to a perpendicular, according to the circumstances of each case. The guides B with their ways b and b' , may be conveniently constructed as shown, of ordinary forms of plate, angle, T or I iron, riveted together and the curvature or shape and position of the guide-ways will be determined in each case according to familiar geometrical rules by the length of the bridge, location of center of gravity, the location of the link connection with the bridge, &c., so as to produce as nearly as practicable a horizontal movement of the center of gravity of the bridge in opening and closing.

C is a vertically swinging bridge provided at one end on each side with sheaves or rollers D D, which are arranged to bear against and traverse the concave side of the curved ways $b\ b'$. Upon the outer ends of the roller axles $d\ d'$, are mounted friction rollers d'' , which are arranged to bear against and traverse the convex side of the inner curved ways b' , as shown in Fig. 3, thereby co-operating with the sheaves D D in retaining the adjacent end of the bridge in place. The opposite end of the bridge C is connected on each side by parallel links E E, with the frame or tower A constituting the bridge support. The rollers d'' serving to prevent accidental displacement of the bridge by wind or other external forces, may be altogether dispensed with by arranging the guide-ways $b'\ b'$ in the same planes with the guide-ways $b\ b'$, in position to be engaged by the sides of the sheaves D D, opposite said guide-ways $b\ b'$, so as to enable said sheaves to perform the function of said rollers. Under certain conditions the guides B B may be placed below the roadway and the links E E pivoted to the support below.

G G are chain belts attached as shown in Fig. 3, to the projecting ends of the roller axles $d\ d'$, and passing over sheaves or drums $g\ g$ and g' , two above and two below the guides B B on each side of the bridge. One of the upper sheaves on each side is placed at or

near the upper end, and one of the lower sheaves at or near the lower end of the way b' , and the chain belt G mounted thereon, passes between them over the convex side of and is guided by the said way b' . The chain belts are preferably constructed as shown, with friction rollers, at the articulations of their links, like or similar to the rollers d' , so as to cause them to run easily, noiselessly and without wear over the guiding ways $b' b'$. One of the sheaves or drums g' on each side of the bridge may be formed with sprockets and connected by a cross shaft g^2 with the corresponding sheave or drum on the opposite side, for the purpose of driving the chain belts in either direction and opening and closing the bridge, power being communicated to the shaft g^2 in any convenient manner.

I do not wish to be understood as limiting myself to the use of the particular means above described for operating my improved bridge, as other mechanism or devices suitable for the purpose may be employed.

F represents a portion of the viaduct or permanent approach to the draw-bridge.

$H H$ are latches by which the bridge is secured in place when closed, and I is a counterweight by which it is properly balanced. With the construction shown in the drawings, in which the center of gravity of the bridge moves in a straight horizontal line in opening and closing, very little if any counterweight is required, but under other conditions, where it is necessary to raise or lower the center of gravity in opening the bridge, a greater weight becomes necessary, the amount and arrangement of the weight being determined according to the circumstances of each case.

In the construction and arrangement shown, the end of the bridge next to the support rests when closed, upon two columns, constituting a part of said support, and the bridge being evenly balanced and easily moved, the latches $H H$ are provided to prevent the accidental elevation of its end next to the support when a load passes over the opposite overhanging end.

It is obvious that the construction shown in the drawings may be duplicated in cases where the channel to be spanned is too wide for a single swinging section supported on one side of the channel only, and that under proper conditions one as well as two or more guides may be employed at one end of each swinging bridge section. In short various other changes in the minor details of construction and arrangement of the component parts of the bridge and its connections may be made within the spirit and intended scope of my invention.

I claim—

1. The combination with a suitable abutment or support on one side of the channel to be spanned, provided with a vertically disposed guide-way, of a vertically swinging draw bridge having a movable supporting

connection at or near one end with said guide-way; and a link connection at or near the other end with said support, whereby one end of said bridge is caused to rise and the other to descend simultaneously in opening and closing, said bridge being otherwise unsupported between said connections, substantially as and for the purposes set forth.

2. In a draw bridge, the combination with a support located on one side of the channel to be spanned, and provided with a curved guide-way, of a vertically swinging bridge having a supporting connection at or near one end with said guide-way, and a link connection at or near the other end with said support, substantially as and for the purposes set forth.

3. In a draw bridge, the combination with a support located on one side of the channel to be spanned, and provided with a vertically disposed guide-way, of a vertically swinging bridge provided at or near one end with a sheave or roller arranged to engage with and traverse said guide-way, and a link connection at or near the other end of said bridge with said support, substantially as and for the purposes set forth.

4. In a draw bridge, the combination with a support located on one side of the channel to be spanned and provided with a vertically disposed guide-way, of a vertically swinging bridge having a supporting connection at or near one end with said guide-way, and a link connection at or near the other end with said support, and an operating chain or cable attached to said bridge and passing over sheaves above and below it, substantially as and for the purposes set forth.

5. In a draw bridge, the combination with a support on one side of the channel to be spanned, provided with vertically disposed guide-ways, of a vertically swinging bridge having sheaves or rollers at or near one end engaging with said guide-ways, and a link connection at or near the other end with said support, substantially as and for the purposes set forth.

6. In a draw bridge, the combination of a support located on one side of the channel to be spanned and provided with curved guide-ways, of a vertically swinging bridge having rollers at or near one end engaging with said guide-ways, and a link connection at or near the other end with said support, substantially as and for the purposes set forth.

7. In a draw bridge, the combination with a support on one side of the channel to be spanned provided with vertically disposed guide-ways, of a vertically swinging bridge provided at or near one end with sheaves or rollers engaging with said guide-ways, a link connection at or near the other end of said bridge with said support, and chains or cables attached to said bridge and passing over sheaves above and below it, substantially as and for the purposes set forth.

8. In a draw bridge, the combination with

a support on one side of the channel to be spanned, provided with a vertically disposed guide-way, of a vertically swinging bridge having a supporting connection at or near one end with said guide-way, and a link connection at or near the other end with said support, said guide-way being so constructed and arranged as to cause the center of gravity of the bridge to move as nearly as practicable in a horizontal direction in opening and closing, substantially as and for the purposes set forth.

9. In a draw-bridge, the combination with a support provided with vertically disposed guides comprising parallel ways, of a vertically swinging bridge provided at one end with sheaves which bear against one and the projecting axles of which engage with the other of each pair of ways, and links connecting the opposite end of said bridge with said support, substantially as and for the purposes set forth.

10. In a draw-bridge, the combination with a support provided with vertically disposed guides comprising parallel ways, of a vertically swinging bridge connected at one end by links with said support and provided at the other end with sheaves which bear against one of each pair of ways and the axles of which are provided with friction rollers arranged to engage the other of each pair of ways, and chain belts having friction rollers at the articulations of the links, attached to said axles and passing over sheaves above and below said guides, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

MAX G. SCHINKE.

Witnesses:

A. W. EMERY,
CHAS. L. GOSS.