No. 652,201. Patented June 19, 1900.

F. G. VENT.

ROCKING BASCULE BRIDGE.

(Application filed Apr. 20, 1900.)

(No Model.) 3 Sheets—Sheet 1.

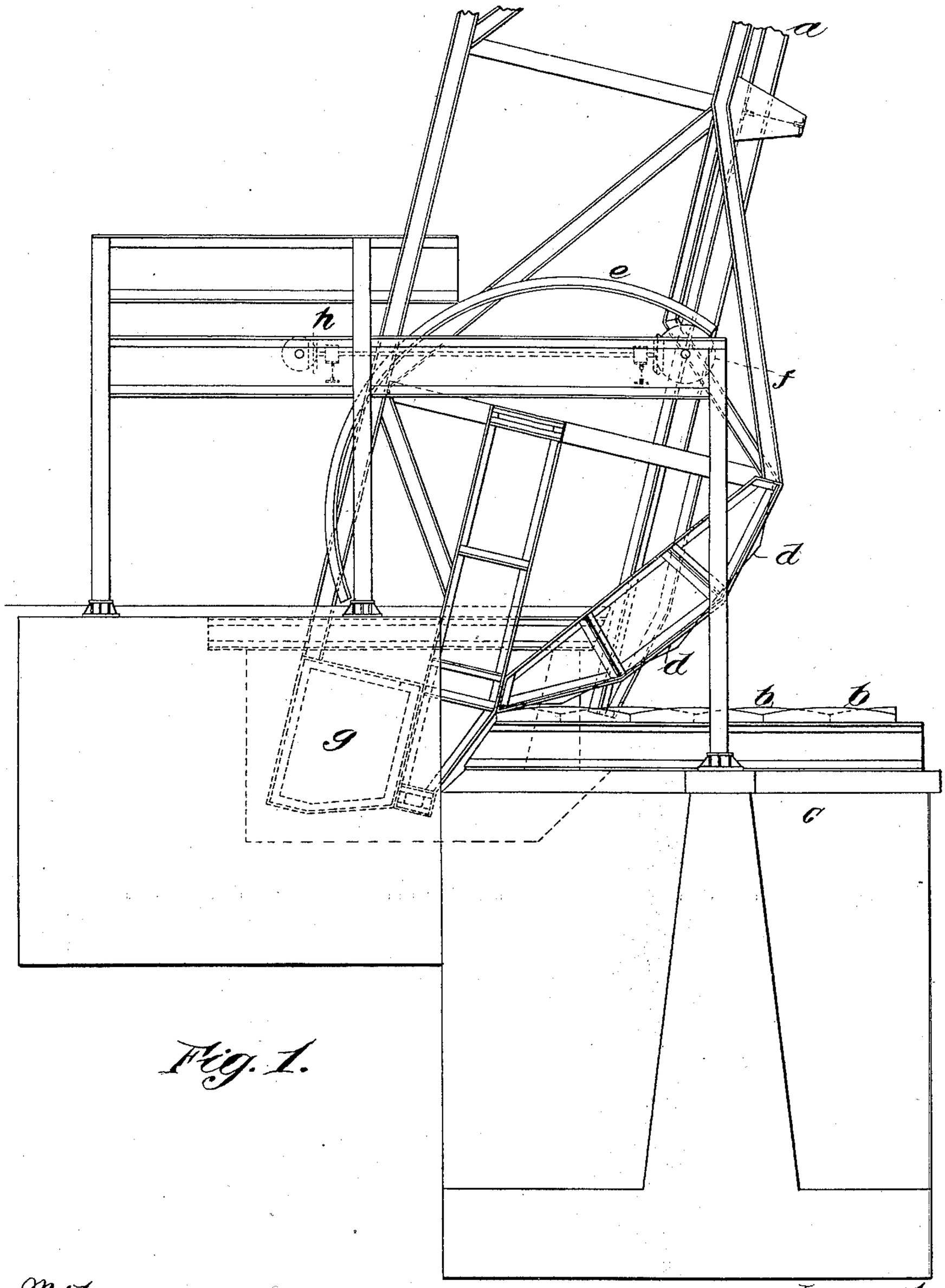


Fig. 1.

Witnesses:
J. M. Skinkle.
A. D. Harrower.

Inventor:
Frederick G. Vent,
By Jno. P. Barton
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 652,201. Patented June 19, 1900.

F. G. VENT.

ROCKING BASCULE BRIDGE.

(Application filed Apr. 20, 1900.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

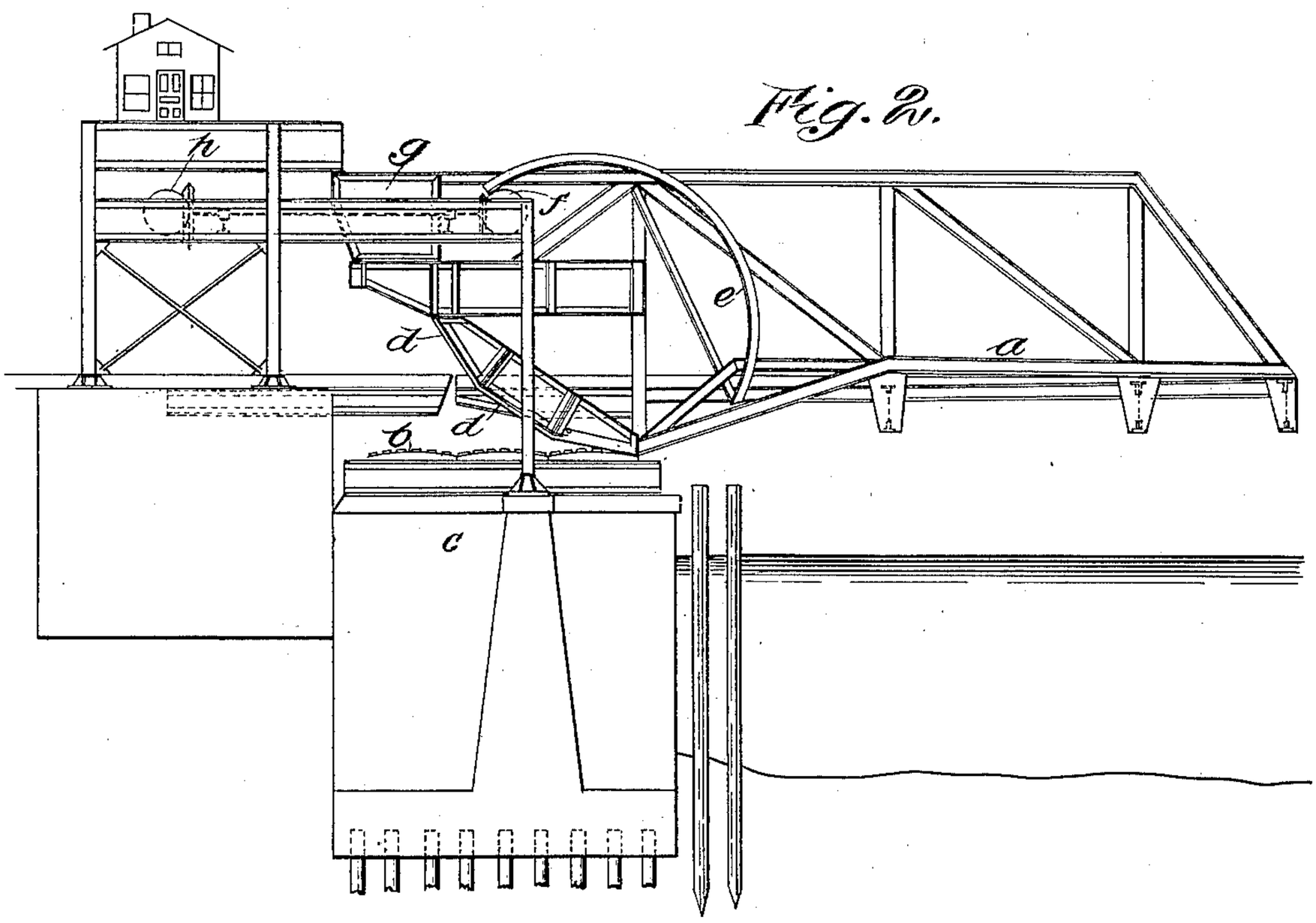
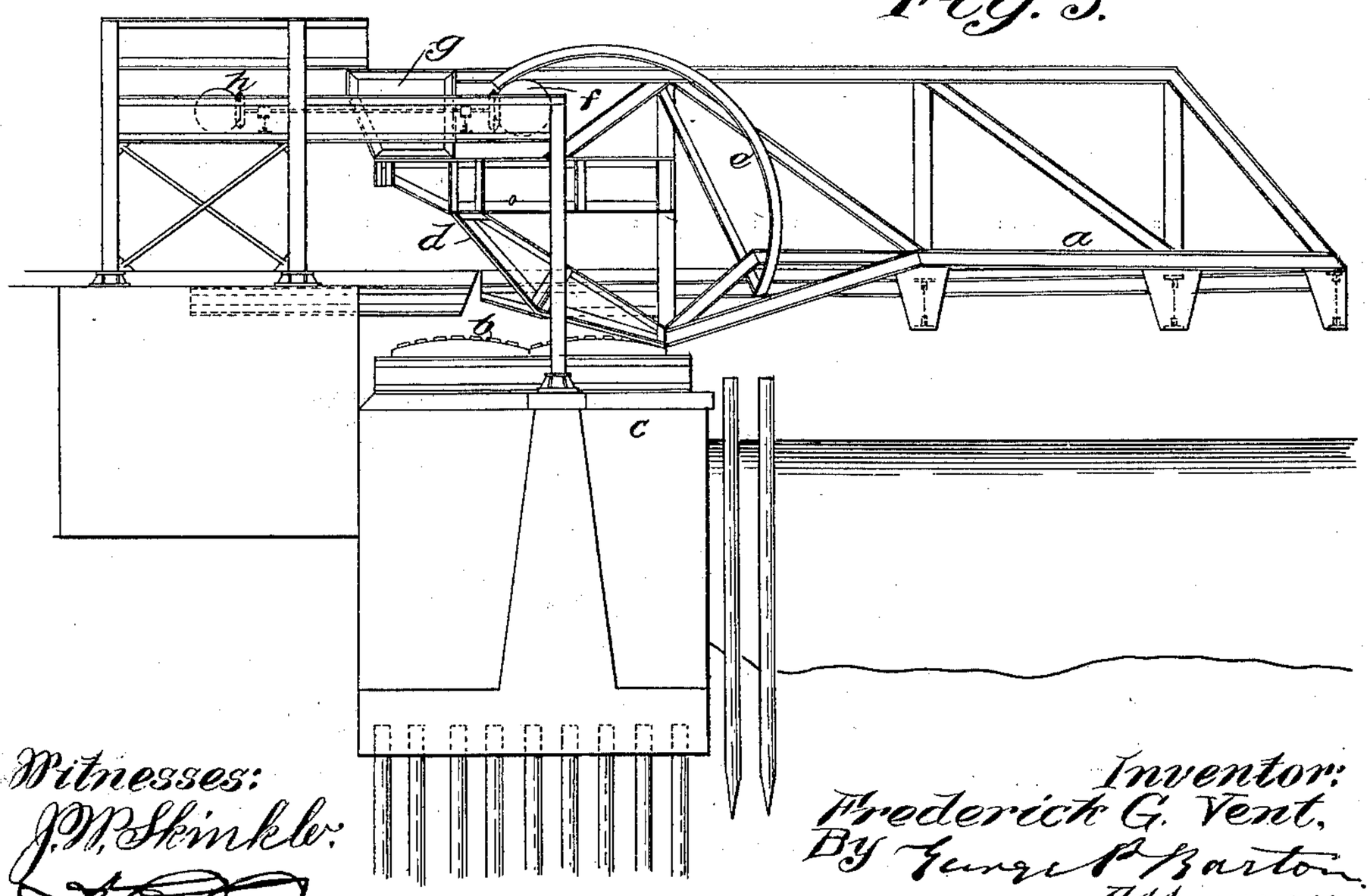


Fig. 3.



Witnesses:
J. P. Skinkle.
A. D. Lawrence.

Inventor:
Frederick G. Vent,
By George P. Barton.
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 652,201. Patented June 19, 1900.

F. G. VENT.

ROCKING BASCULE BRIDGE.

(Application filed Apr. 20, 1900.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 4.

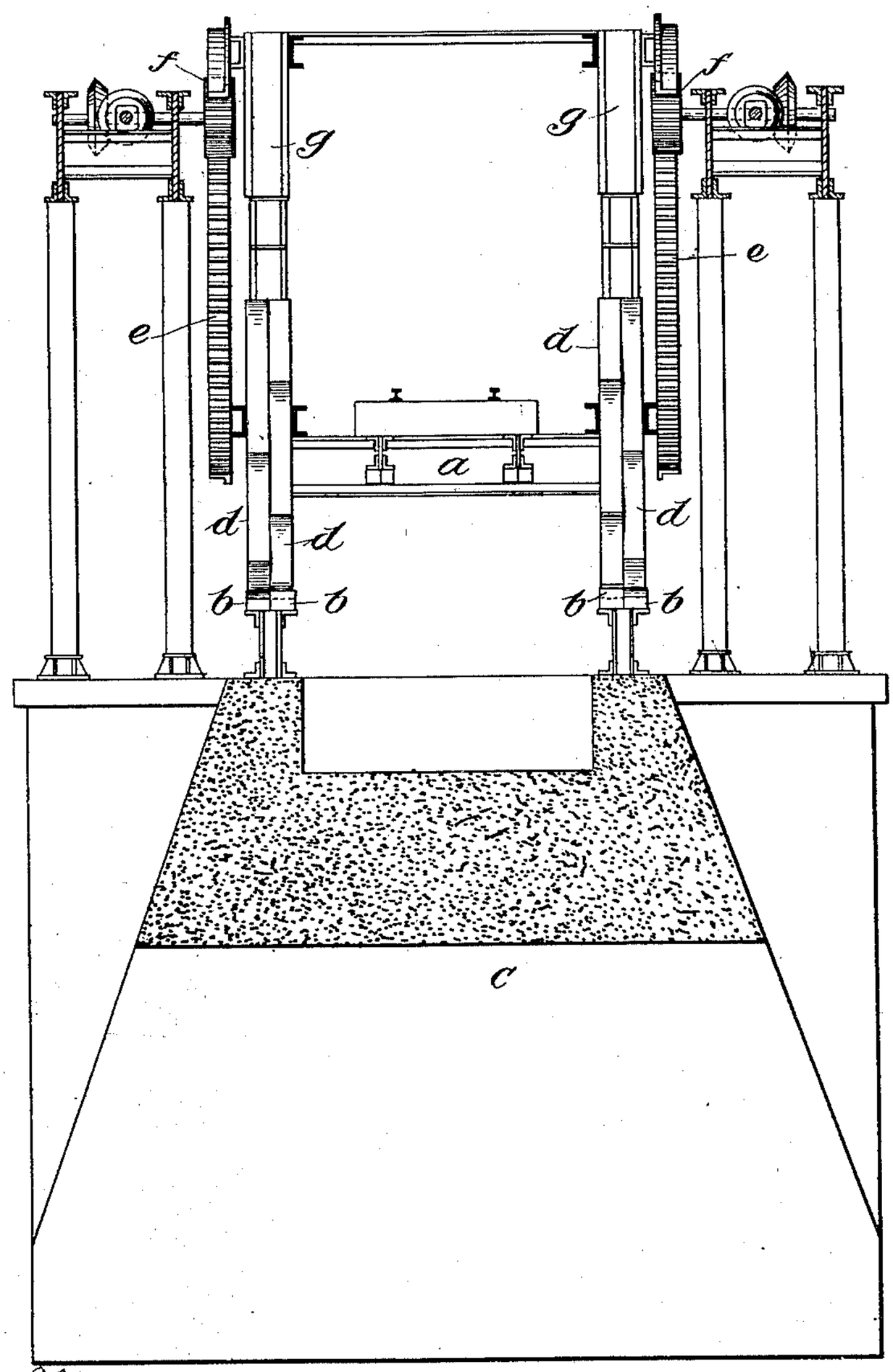
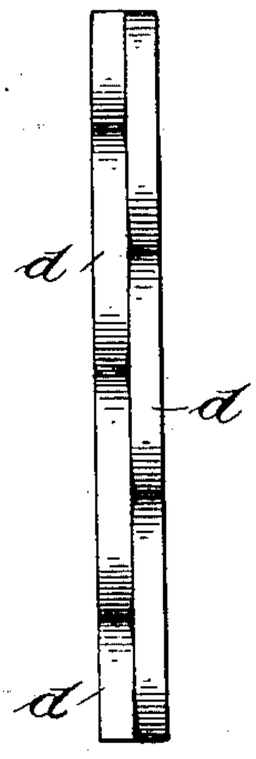


Fig. 5.



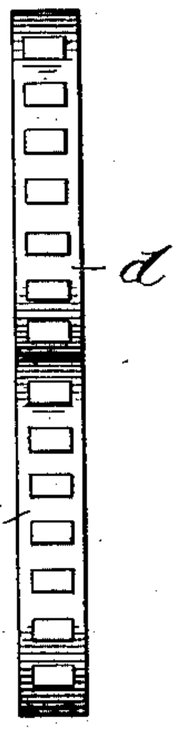


Fig. 6.

Witnesses:
J. M. Shinkle.
A. D. Wadsworth.

Inventor:
Frederick G. Vent,
By Jenner & Burton,
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FREDERICK G. VENT, OF CHICAGO, ILLINOIS.

ROCKING BASCULE-BRIDGE.

SPECIFICATION forming part of Letters Patent No. 652,201, dated June 19, 1900.

Application filed April 20, 1900. Serial No. 13,575. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK G. VENT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Rocking Bascule-Bridges, (Case No. 2,) of which the following is a full, clear, concise, and exact description.

My invention relates to improvements in rocking bascule-bridges, and has for its object the provision of a structure possessing the advantages of marked simplicity in construction and operation combined with ease of actuation and minimum liability of getting out of order. In bridges of this type known in the prior art it is a common objection that curved members or girders are requisite, which greatly increase the cost of construction and difficulty of manufacture. In the bridge herein shown and described these disadvantages are overcome and the same is extremely simple and economical in construction and operation.

The bridge embodying my invention may be briefly described as consisting of a substantially straight-trussed span or spans having preferably a plurality of supporting members, angularly disposed with respect to each other, provided thereon, which supporting members are adapted to be rocked upon a corresponding set of curved supporting-surfaces stationarily mounted upon the piers or abutments. If desired, the respective sets of supporting members and their curved supporting-surfaces may be staggered or longitudinally displaced, whereby the employment of toothed engaging members or anchoring appliances, such as chains or cables, may be dispensed with.

I preferably employ in connection with my improved bridge an actuating member of irregular curvature, having an interiorly-toothed face adapted to be engaged by a coacting gear.

The improvements of my invention are applicable to bridges having non-pivoted rocking spans, and by providing a plurality of curved supporting-surfaces, whereon the straight supporting members are adapted to be rocked, the tendency of the parts to slip and to wear each other is largely overcome. Moreover, the center of gravity of the span may thereby be caused to move in substantially a straight line. By employing the staggered or displaced supporting parts above named all necessity for using intermeshing teeth or their equivalents is entirely done away with, while precisely the same or increased advantages are found in my improved structure as in those of the prior art.

My invention will be more readily understood by reference to the accompanying drawings, illustrating embodiments thereof, wherein—

Figure 1 is a side view of a portion of the shoreward end of the bridge-span in an open position, the same being provided with displaced or staggered supporting parts. Fig. 2 is a view illustrating a span in a closed position provided with three toothed supporting members. Fig. 3 is a similar view of a span having two straight supporting members. Fig. 4 is a view, partly in section, of the shoreward end of the bridge-span shown in Fig. 1, and Figs. 5 and 6 are plan views illustrating in detail the supporting-surfaces of Figs. 1 and 3.

The same letter of reference is employed to designate similar parts in each of the several figures of the drawings.

Referring specifically to Fig. 1, it may be observed that merely the shoreward end of one bridge-span is therein illustrated in an open position, the same being, however, of the same general type as that shown in Figs. 2 and 3. The bridge-span *a* is of the straight-trussed type and is adapted to rock upon the curved supporting-surfaces *b*, crowning the shore-pier *c*. The span is provided with straight carrying members *d*, which are angularly disposed with respect to each other and with the chords of the bridge-span. These carrying members have plane bearing-surfaces and are duplicated upon each side of the truss, the members of each lateral set being longitudinally displaced or staggered, as shown in Figs. 1 and 4. The supporting-surfaces *b* (illustrated in Figs. 1 and 5) are constructed to present slightly-curved rocking surfaces for their respective supporting members and are also longitudinally displaced or staggered. An interiorly-toothed actuating member *e* is mounted near the shoreward end of the span and is made of

slightly-irregular curvature to secure, during the motion of the span, its engagement with the gear-wheel *f*, preferably disposed perpendicularly above the central portion of the supporting-surfaces *b*. A counterweight *g* is mounted at the extreme shoreward end of the span and is preferably adjusted to maintain the span in a half-open position. The actuating gear-wheels *f* are connected by gearing and shafting *h*, which are driven by any suitable motor device.

The bridge-span, it will be seen, is free to rock upon the curved supporting-surfaces *b*, which by reason of the lateral displacement of such surfaces and their corresponding engaging members *d* serve to overcome any tendency of the parts to slip upon one another, thus obviating the necessity of providing toothed engaging surfaces, which are more likely to wear and cannot be as cheaply constructed. By disposing the actuating gear-wheel *f* in a position immediately above the central portion of the set of curved supporting-surfaces *b* a relatively-long leverage is obtained at either extremity of the movement of the bridge-span, which thus enables said span to be actuated more easily. Moreover, the operation of rocking the span upon its plurality of curved supporting-surfaces causes the center of gravity of the span to move backward and forward substantially in a straight line.

As is well known, a straight-trussed bridge-span may be much more cheaply and readily constructed than can one involving the use of curved girders. On the other hand, the curved supporting members *b* may be very economically constructed by casting them to conform to the arc of a circle of relatively-large radius.

In the structure of Fig. 2 I have shown the bridge-span *a* in a closed position, the same conforming very closely to that of Fig. 1, but eliminating the use of staggered or displaced carrying members and coacting supporting-surfaces. As shown in said figure, the three carrying members in such case are preferably provided with intermeshing teeth or parts for preventing the slippage of such engaging members.

In the bridge of Fig. 3 the span *a* has two supporting members angularly disposed with respect to each other and to the chords of the span, two coacting curved surfaces *b* being provided therefor. The latter structure may be more advantageously used under certain conditions or the same may be provided with staggered or laterally-displaced sets of curved supporting-surfaces and carrying members, as previously described in connection with the structure of Fig. 1.

In the drawings I have shown but a single rocking span, although it will be understood that ordinarily a second span of identical construction is required upon the opposite shore-abutment.

A minor advantageous feature found in my improved bridge is the ease with which the curved supporting members may be replaced if accidentally broken or injured, since the span may be rotated out of engagement with the damaged supporting part and a duplicate of such part may then be substituted upon the shore-abutment.

With the use of staggered or longitudinally-displaced curved supporting-surfaces it will be seen that the span is naturally maintained in its plane of rotation by the interengaging surfaces of the supporting and carrying members. Moreover, when the stagger amounts to one-half the length of the curved supporting-surfaces it will be readily appreciated that the tendency of one part to slip upon another is effectively counteracted by the corresponding parts of the displaced set. By mounting the carrying members of a span at an angle therewith I am enabled to construct and position the coacting curved supporting-surfaces whereon the span is rocked, so that the curvature of the latter is not sufficient to cause the engaging faces to slip, and by multiplying these curved surfaces this tendency to slip is reduced, while the center of gravity during the rocking of the span moves very nearly in a straight line. The interiorly-toothed actuating member is advantageous by reason of the fact that the intermeshing teeth, both of the gear-wheel and said member, are protected from the accumulation of dirt and ice, which would interfere with the satisfactory operation of the bridge.

Any suitable means known in the art for locking the span in its closed, open, or intermediate positions may be employed, the same forming no part of the present invention.

It will be appreciated that numerous modifications in the construction herein shown and described may be made without departing from the spirit of my invention, and I do not desire to be understood as necessarily limiting myself to the precise embodiments herein shown and described.

I therefore claim as new, and desire to secure by these Letters Patent, the following:

1. In a bridge of the class described, the combination with a rocking span, of a plurality of substantially-straight carrying members angularly disposed with respect to the span, and a plurality of stationary supporting-surfaces crowning the abutment, whereon the carrying members are adapted respectively to rock, substantially as described.

2. In a bridge of the class described, the combination with a rocking span, of a plurality of substantially-straight carrying members angularly disposed with respect to each other, a plurality of stationary curved supporting-surfaces crowning the abutment, whereon the carrying members are adapted respectively to rock, and means, substantially as described, for maintaining the span in its plane of movement and for preventing the engaging parts from slipping upon one another.

3. In a bridge of the class described, the combination with a rocking span, of a plurality of substantially-straight carrying members angularly disposed with respect to each other, arranged at the sides of the span, a portion of said carrying members being longitudinally displaced or staggered, and a plurality of corresponding curved supporting-surfaces stationarily mounted upon the abutment, whereon the carrying members are adapted respectively to rock, substantially as described.

4. In a rocking bascule-bridge, the combination with a substantially-straight trussed non-pivoted rocking span, of a plurality of straight carrying members provided thereon angularly disposed with respect to the span and to each other, a plurality of stationary coacting curved surfaces upon which said carrying members are adapted to rock, said carrying members and supporting-surfaces being disposed at either side of the span, and means for preventing the carrying members from slipping upon their respective supporting-surfaces, substantially as described.

5. In a bascule-bridge, the combination with a plurality of curved supporting surfaces or members provided therein, a non-pivoted rocking bridge-span constructed with substantially-straight bottom chords, a plurality of carrying members angularly disposed with respect to each other and to said span, adapted respectively to rock upon the curved supporting-surfaces, and means for maintaining the span in its plane of rotation and for preventing the rocking parts from slipping, substantially as described.

6. In a rocking bascule-bridge, the combination with a plurality of curved supporting-surfaces provided upon the shore-abutment, a portion of said curved surfaces being longitudinally displaced, a rocking bridge-span, a plurality of carrying members angularly disposed with respect to each other, associated each to each with the curved supporting-surfaces, whereon the same are adapted to rock, and means for rocking the said span, substantially as described.

7. In a rocking bascule-bridge, the combination with a non-pivoted rocking span, of an interiorly-toothed actuating member mounted thereon, the said member being of irregular curvature, and a coacting gear meshing therewith, disposed centrally above the rocking surface of the span, adapted to impart rocking movement to said span, substantially as described.

8. In a rocking bascule-bridge, the combination with a non-pivoted bridge-span having curved surfaces upon which it is adapted to rock, of an actuating member of irregular curvature secured to said span, and a coacting gear centrally disposed with respect to the supporting-surfaces of said span, adapted to operate the same, said actuating member being shaped to secure its operative engagement with the gear in the different positions assumed by the span, substantially as described.

9. In a rocking bascule-bridge, the combination with a non-pivoted bridge-span having curved surfaces upon which it is adapted to rock, of an interiorly-toothed actuating member of irregular curvature secured between the top and bottom chords of said span, and a coacting gear centrally disposed with respect to the supporting-surfaces of said span, adapted to operate the same, said actuating member being shaped to secure its operative engagement with the gear in the different positions assumed by the span, substantially as described.

10. In a rocking bascule-bridge, the combination with a substantially-straight trussed bridge-span, of a plurality of curved supporting-surfaces crowning the shore-abutment, a portion of said curved surfaces being longitudinally displaced or staggered, a plurality of substantially-straight carrying members angularly disposed upon said span, associated each to each with corresponding curved supporting-surfaces, an actuating member mounted upon the span, and means for imparting movement to said span through the medium of said actuating member, substantially as described.

In witness whereof I hereunto subscribe my name this 18th day of April, A. D. 1900.

FREDERICK G. VENT.

Witnesses:

J. W. SKINKLE,

A. LYNN LAWRENCE.