J. B. STRAUSS.

DOUBLE DECK BASCULE BRIDGE.

APPLICATION FILED MAR. 18, 1908.

1,170,703.

Patented Feb. 8, 1916.

2 SHEETS—SHEET 1.

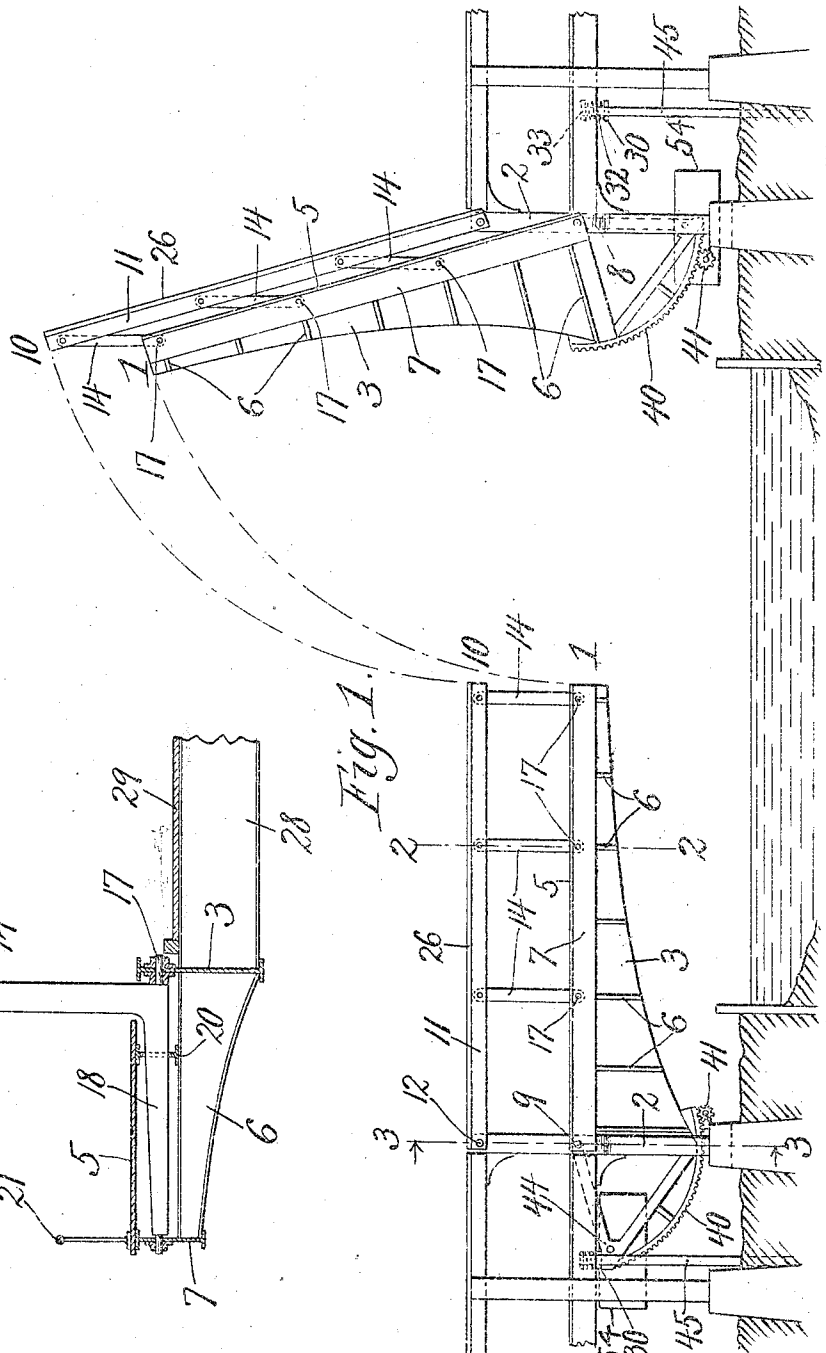

Fig. 1.

Fig. 2.

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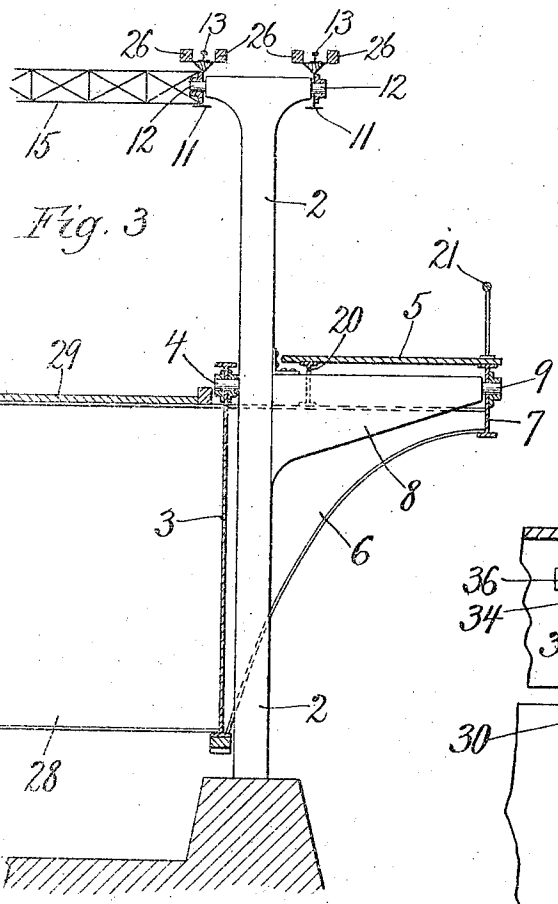

Fig. 3

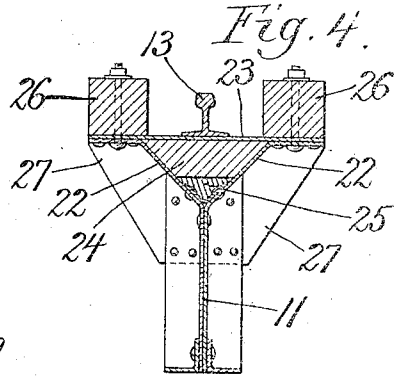

Fig. 4.

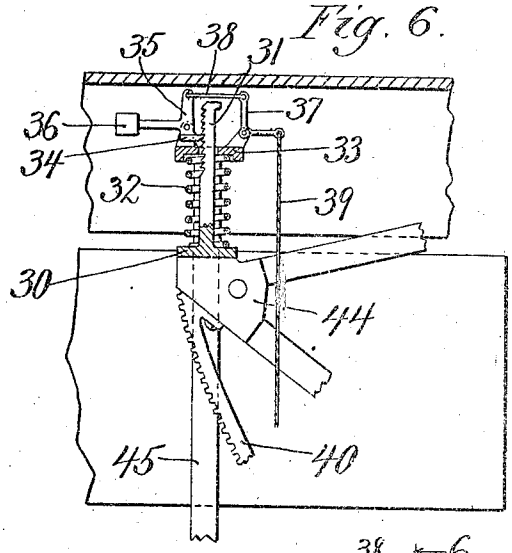

Fig. 6.

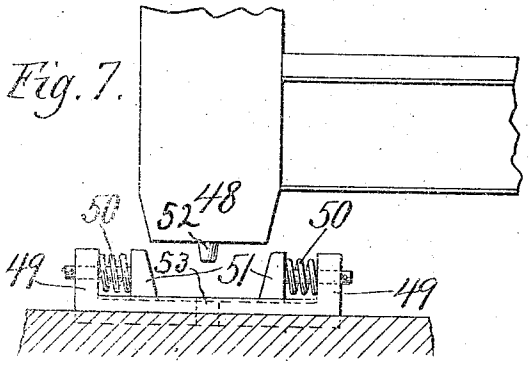

Fig. 7.

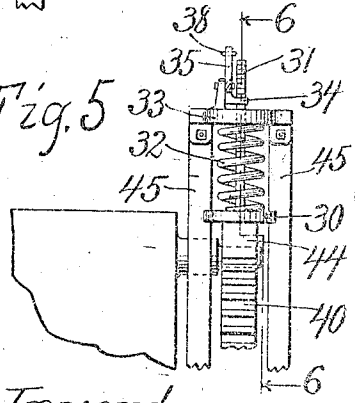

Fig. 5

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UNITED STATES PATENT OFFICE.

JOSEPH B. STRAUSS, OF CHICAGO, ILLINOIS.

DOUBLE-DECK BASCULE-BRIDGE.

1,170,703. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed March 18, 1908. Serial No. 421,930.

To all whom it may concern:

Be it known that I, JOSEPH B. STRAUSS, 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 Double-Deck Bascule-Bridges, of which the following is a specification.

This invention relates to bascule bridges, and has for its object to provide a new and improved bridge of this description having two decks or thoroughfares in different horizontal planes.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a view showing a double leaf bridge embodying my invention; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a sectional view taken on line 3—3 of Fig. 1; Fig. 4 is an enlarged sectional view through one of the rail supporting girders; Fig. 5 is a view of one form of bumper; Fig. 6 is a sectional view taken on line 6—6 of Fig. 5; Fig. 7 is a view showing a modified form of bumper.

Like letters refer to like parts throughout the several figures.

Referring now to the drawings, I have shown in Fig. 1 a double leaf bascule bridge. The two leaves are practically duplicates, and I will therefore describe one of them. In this construction the main leaf 1 may be of any desired construction, and is mounted upon suitable trunnions so that it may be lifted and lowered. Suitable supporting devices 2 are mounted upon proper foundations, and the main trusses or girders 3 of the main leaf are connected thereto by trunnions 4. The trusses 3 are semi-through trusses and project above the floor, but not above the clearance line. If desired a suitable walk 5 for pedestrians may be located at the side of the main leaf, as shown in Figs. 2 and 3. In this construction the main girders 3 are provided with a series of side-walk brackets 6, connected to the side-walk girders 7. These side-walk girders are pivoted at one end to the braces 8 fastened to the main supporting devices 2 by means of suitable pivots or trunnions 9. Associated with the main leaf is a secondary or auxiliary leaf 10 located in a different horizontal plane from the main leaf, and preferably above it, the two leaves being pivotally connected together. The auxiliary leaf is pivoted at one end to the main supporting devices 2, the pivots therefor being in the same vertical line with the pivots for the main leaf.

The main supporting devices 2 are enlarged at their upper ends and have pivoted thereto by pivots 12 the two girders 11 of the auxiliary leaf. These girders carry the rails 13 which are used when the auxiliary leaf is arranged to be used for street, elevated or railway cars, or the like. Supporting posts 14 are provided at intervals pivotally connecting the two leaves together. These posts preferably connect the leaves together at the panel points as shown. These supporting posts are flared or enlarged at their upper end like the main supports 2 and the girders 11 carrying the rails are pivoted thereto (see Fig. 2). The posts on each side of the bridge are connected together in any desired manner, as by the connecting pieces 15. The supporting posts are also connected by pivots 17 to the main girders 3 of the main leaf. When the side-walk is used these supporting posts are provided with lateral projections 18 to which are pivoted the side-walk girders 7. The side-walk 5 is suitably mounted on the girders 7 and 20, and a suitable hand-rail 21 is provided. One form of the girders 11 is illustrated in Fig. 4, wherein such girders are shown as made up of pieces. The top flanges of the girders are provided with bent plates 22 which are connected together at intervals at the top by straps 23. In the V thus formed, I place a bearing block 24 which if desired may be supported upon some cushioning material 25. On the outstanding ends or legs of the flanges are placed suitable guard rails 26 which are bolted securely in position on the flanges. To stiffen these outstanding legs gusset plates 27 may be provided.

It will thus be seen that the rails are placed directly on the center line of the girders. This lightens the structure and secures great stability. When the main leaves are open the main trunnions or pivots 4 and 12 remain fixed, while the other trunnions or pivots move in relation to them, the supporting posts 14 and the main supports 2 remaining always parallel. In this way the center of gravity of the structure remains in the main trunnions of the main leaf, and greater stability is secured. This construction also does away with the heavy floor system otherwise necessary, and permits an

ornamental structure. The main girders 3 of the main leaf are connected together by the floor girders 28 which carry the floor 29.

To provide for any unbalanced load I arrange a bumping device at the tail end of the main leaf. This bumping device is illustrated in detail in Figs. 5 and 6. The tail end 44 of the main leaf engages the bumping block 30 between the anchor posts 45. Connected with the bumping block is a toothed post 31. A spring 32 engages the bumping block and a fixed part 33 connected with the anchor post 45. A pawl 34 is adapted to engage the teeth on the post 31, and is connected with a pivoted part 35 carrying a weight 36. The part 35 is connected to the bell crank lever 37 by link 38, and a rope 39 is connected to said lever. The main leaf is operated by means of the rack 40 and the gear 41. When the main leaf is closed the tail end strikes the bumper plate 30 which tends to stop it. The striking of the bumper plate moves it upwardly against the compression of the spring, and the pawl engages the teeth of the post 31 and holds it in this position, thus preventing the recoil of the spring against the tail end of the main leaf. When the main leaf has come to rest the operator pulls the rope 39 and releases the post 31, the spring moving it until the bumper plate engages the tail end of the leaf.

In Fig. 7 a modified form of bumper device used with a single span bridge is shown. In this construction the end of the leaf 48 farthest from the pivots is provided with inclined faces which engage inclined blocks 51, arranged to slide in a guiding and holding device 49 fastened to the pier. These blocks are provided with springs 50 which act as a cushion. The end of the leaf is also provided with a centering pin 52 which engages a hole 53 in proper position to receive it. When the leaf is closed the beveled faces on the end of the part 48 engage the beveled faces on the parts 51 and force the parts 51 back against the pressure of the springs 50.

It will be noted that in the construction of bridge herein illustrated the main leaf and the secondary leaf are separate and distinct from each other, and are each provided with an independent set of girders, these girders being connected together by posts extending between the girders or trusses at the panel points. The supporting devices are preferably pin-connected to the girders. It will further be noted that when the secondary leaf is used for cars it is provided with a stringer having an upper flange 23 forming a direct rail support. It will also be noted that the supports 2 project between the two girders 11, such girders being symmetrically disposed thereabout, thus permitting the rails to be carried directly over the main girders of the main leaf, the rails being directly supported upon the girders of the secondary leaf. A counterweight 54 is applied to the lower leaf so as to balance the weight of both leaves. It will be noted that the secondary leaf is provided with a series of girders by means of which it is connected with the main leaf, there being cross connections between said girders at intervals, the spaces between said cross connections being open.

Where I have used the term "semi-through trusses" I mean girders which project through the roadway floor but are not cross connected above the roadway floor.

I claim:

1. A bascule bridge comprising a main leaf and a secondary leaf in different horizontal planes, a support for said leaves to which they are pivotally connected at different points so as to rotate about different centers, whereby said leaves move relatively when the bridge is opened.

2. A bascule bridge comprising a main leaf and a secondary leaf, both pivoted to a stationary support, and pivoted posts connecting the two leaves together near the outer ends said posts pivoted to both leaves.

3. A bascule bridge comprising a main leaf and a secondary leaf both pivoted to a single support, the pivots thereof being in the same vertical plane and means for moving the two leaves simultaneously.

4. A bascule bridge comprising a main leaf and a secondary leaf in different horizontal planes, and pivotally connected to a fixed support, movable connections between the leaves and a counterweight applied to the lower leaf back of the pivotal point thereof to balance the weight of both leaves as they are moved about their pivotal points.

5. A bascule bridge comprising a main leaf and a secondary leaf mounted upon pivots and connected together, and a counterweight connected with one leaf back of the pivotal point thereof arranged to counterbalance the weight of both leaves as they are moved about their pivotal points.

6. A bascule bridge comprising a main leaf and a secondary leaf, a fixed support to which they are pivoted, supporting posts movably connecting them together, said posts having flared tops, the girders of the secondary leaf connected to said flared tops and extending at right angles thereto.

7. A bascule bridge comprising a main leaf having longitudinal girders at each side thereof, a secondary leaf located above the main leaf and also having longitudinal side girders, a fixed support to which said girders are pivotally connected, supporting devices pin-connected to the girders of both leaves and connecting the leaves.

8. A bascule bridge comprising a main leaf provided with semi-through trusses, a secondary leaf above the main leaf, a fixed

support to which said main and secondary leaves are pivotally connected, posts upon which the secondary leaf is mounted, said posts connected with the trusses of the main leaf at separated points therealong by pivotal connections.

9. A bascule bridge comprising a main leaf, trusses upon which it is mounted, a secondary leaf above the main leaf, a fixed support to which said main and secondary leaves are pivotally connected, posts extending from the trusses of the main leaf at the panel points and connecting with said secondary leaf, said posts connected to both leaves by pivotal connections.

10. A bascule bridge comprising a main leaf and a secondary leaf, one above the other, a fixed support to which said main and secondary leaves are pivotally connected, each leaf provided with trusses, the lower trusses being below the level of the upper leaf, and connections between the two leaves so that one is supported upon the other.

11. A bascule bridge comprising a main leaf and a secondary leaf in different planes, a support to which they are pivoted, two girders forming part of the secondary leaf, a support projecting between said girders and to which they are attached, and a connection between said support and the main leaf.

12. A bascule bridge comprising a main leaf and a secondary leaf in different planes and movable with relation to each other, two girders forming part of the secondary leaf, a support therefor, one of the girders being attached to each side of the support so as to be symmetrically disposed thereabout, and a connection between said support and the main leaf.

13. A bascule bridge comprising a main leaf and a secondary leaf in different planes, a support to which they are pivoted, two girders forming part of the secondary leaf, a support therefor, one of the girders being attached to each side of the support so as to be symmetrically disposed thereabout, the girders being pivotally connected to the support, and a pivotal connection between said support and the main leaf.

14. A bascule bridge comprising a main leaf and a secondary leaf located in different planes, a fixed support to which said leaves are pivotally connected, posts extending between the two leaves, the ends of said posts pivotally connected with said leaves, means for moving one of said leaves about its pivotal connection, said posts transmitting the motion to the other leaf.

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