No. 731,595. PATENTED JUNE 23, 1903.

W. MUESER.

CONCRETE-STEEL SIDEWALK.

APPLICATION FILED APR. 23, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

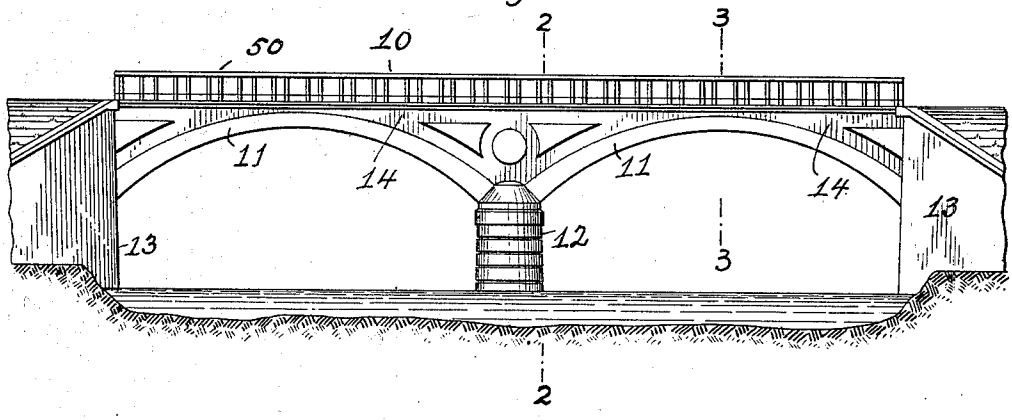


Fig. 2.

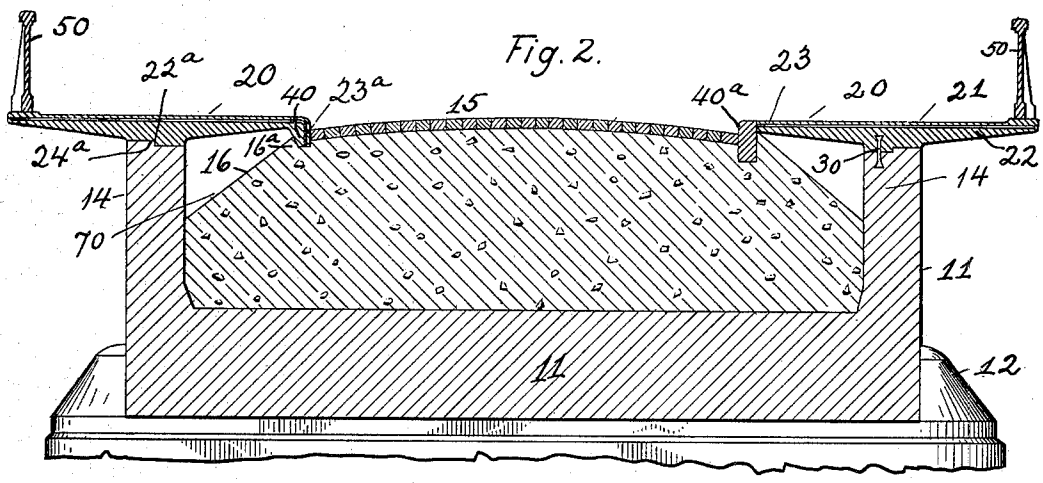
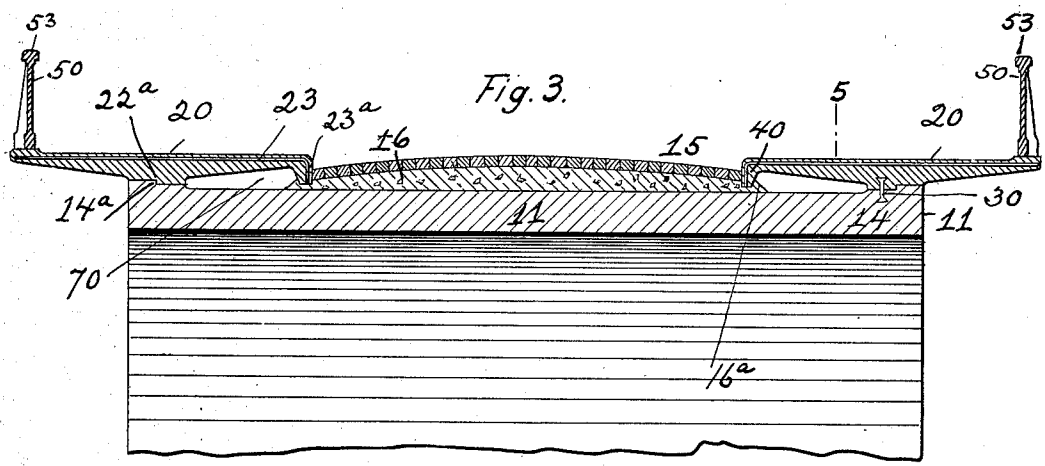


Fig. 3.



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

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

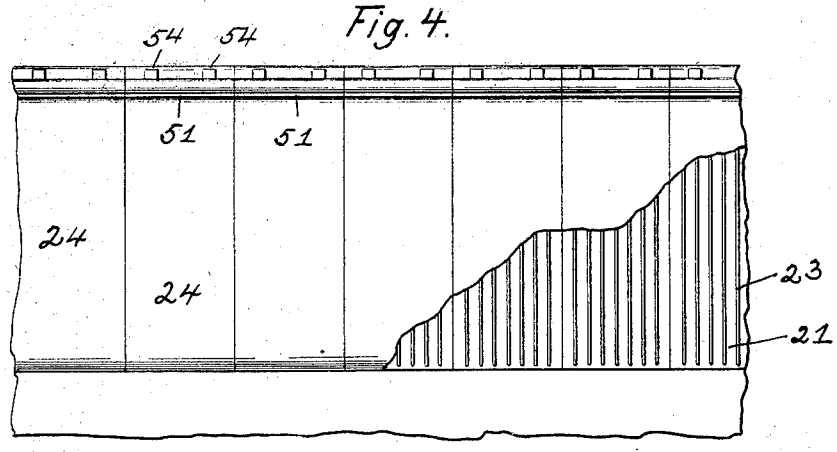


Fig. 5.

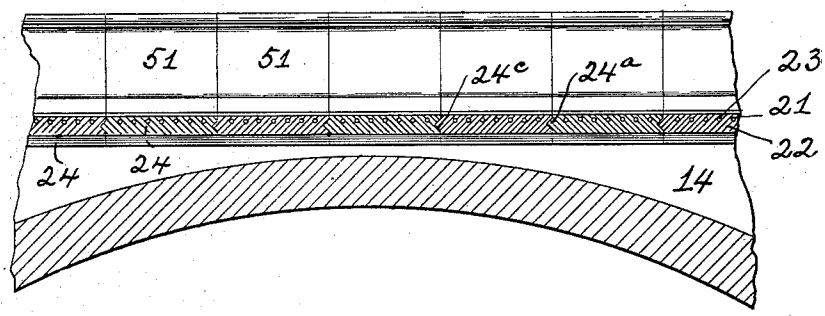


Fig. 6.

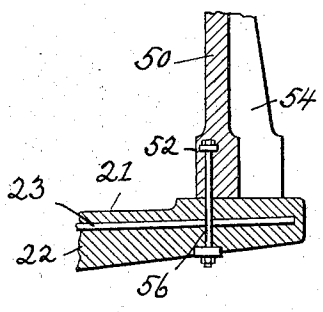


Fig. 7.

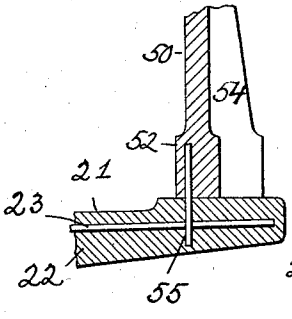
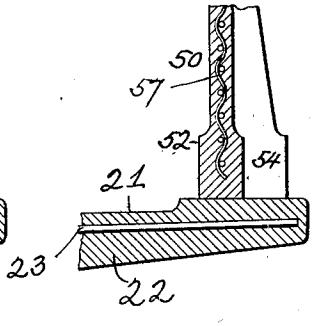


Fig. 8.



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No. 731,595. Patented June 23, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM MUESER, OF NEW YORK, N. Y.

CONCRETE-STEEL SIDEWALK.

SPECIFICATION forming part of Letters Patent No. 731,595, dated June 23, 1903.

Application filed April 23, 1903. Serial No. 153,934. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MUESER, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Concrete-Steel Sidewalks, of which the following is a specification.

My invention relates to sidewalks for bridges and viaducts; and its novelty consists in the construction and adaption of the parts, as will be more fully hereinafter pointed out.

In the drawings, Figure 1 is a side elevation of a bridge composed of two spans and provided with my improved invention. Fig. 2 is a vertical section of the same on the plane of the line 2 2 in Fig. 1. Fig. 3 is a similar view on the plane of the line 3 3 in Fig. 1. Fig. 4 is a top plan view of the sidewalk, a part of the upper layer of concrete being broken away. Fig. 5 is an enlarged side elevation and partial vertical longitudinal section of a part of the sidewalk. Figs. 6, 7, and 8 are detailed vertical sections of the lower portions of the parapet and its sidewalk connections.

My invention relates to what is known as "concrete-steel" construction—that is, it carries out the principle of incorporating steel in concrete to form an integral part and practically homogeneous structure, the steel reinforcing the concrete.

Sidewalks on the upper longitudinal sides of bridges and viaducts are now frequently made of concrete or cement. The present practice is to build such sidewalk structures into place after the bridge or viaduct proper has been nearly completed and is supported for its whole width by the bridge or viaduct. The purpose of my invention is to construct a concrete-steel sidewalk which will be supported on its center and will overhang the spandrel-walls, one which will be light, strong, and stable, weigh less and cost less, and be more economically erected than the present devices known to me, and which by reason of its overhang will save very materially in the cost and weight of the bridge or viaduct itself, as the bridge can be narrower to the extent of the amount of overhang, which means a corresponding reduction in the arch-masonry, piers, and abutment-masonry, and earth or other filling over the arches, piers, and abutments, and also a decreased amount of excavation and size of foundations on account of the reduction in width of the bridge or viaduct and the smaller weight to be carried.

In the drawings, 10 is a bridge composed of two spans. 11 11 are the arches. 12 is the central pier. 13 13 are the wing-walls concealing the abutments. 14 14 are the spandrel-walls. 15 is the roadway, and 16 the earth fill. All of these parts are of usual construction and need no especial or detailed description to one skilled in the art.

20 is my concrete-steel sidewalk, composed of an upper layer of concrete 21 and a lower layer of concrete 22. Embedded in the concrete are transverse steel bars 23, placed at suitable intervals and molded in place in the course of the construction of the sidewalk. The sidewalk is preferably made in slabs or sections 24 of any convenient or suitable size, and these may be made at the place of erection of the bridge or elsewhere and transported to the place of such erection. The lower layer of concrete 22 is thicker at its middle portion than elsewhere and is adapted to rest upon the upper surface of the spandrel-wall 14. It may be and preferably should be provided with an offset 22^a, adapted to engage with a similar offset 14^a in the spandrel-wall, so as to prevent any outwardly lateral shifting. Where the strain on the sidewalk is apt to be greater than would be taken care of by these offsets, there are arranged at suitable intervals anchor-bars 30, cast into the lower concrete layer 22 of the sidewalk and the upper part of the spandrel-wall. These are shown in the right-hand sidewalks in Figs. 2 and 3.

As an additional precaution against rotation or displacement of the sidewalk under an excessive load, I prefer to extend the bars 23 inwardly and turn them down at 23^a to form a curb 40. This curb extends longitudinally along the outer edges of the roadway and is partly embedded in a portion of the earth fill 16^a. This curb being a part of the sidewalk requires considerable less material than the curbs now in use along the outer edges of the roadway and which must be

firmly set and embedded deep enough in the earth fill 16^a to insure their independent stability. However, the curb may be made of stone or concrete, as at 40^a in Fig. 2, in the usual manner. In such case the inner edge of the sidewalk should merely abut against this curb.

In order to strengthen the slabs or sections 24 in their longitudinal union, I make each slab with a projection 24^a and a corresponding indentation 24^c on its opposite edge to afford means of interlocking the slabs. Metal dowels or other forms of dovetailing would be an equivalent of this construction and may be used, if deemed desirable.

I provide the sidewalk on its outer edge with a parapet or hand-rail, which may be of any usual construction; but I prefer a parapet of a peculiar form which is especially adapted for use with this form of sidewalk. This parapet consists of vertically-placed monolithic slabs 51 51 51 and each having a base member 52 and a top member 53 and each provided with one or more laterally-extending buttresses 54 at suitable intervals. The parapet may be set along the edge of the sidewalk and joined to it with mortar or cement in the usual manner; but where additional strength and security are required I prefer to anchor it to the concrete body of the sidewalk by rods 55, bolts 56, or some similar equivalent construction, as shown in Figs. 6 and 7. To strengthen and render easier the construction of the slabs 51, I prefer to make them at times with an incased layer of woven-wire fabric 57, as shown in section in Fig. 8.

The advantages of my invention are considerable. The sidewalk being balanced, it exerts only a vertical pressure upon the spandrel-wall and requires no other form of support by brackets or the like. It effects a saving in the width of the entire structure, and therefore a serious economy in its construction. It may be built as the bridge is built or made in slabs elsewhere and then and there erected as the bridge progresses, saving all false work or staging. It uses the usual material for the sidewalk, but saves the filling under the usual sidewalk and leaves a space, as 70, for the receipt of pipes, electrical conductors, and the like.

What I claim as new is—

1. In a bridge or viaduct comprising a spandrel-wall, a concrete-steel sidewalk made in slabs and centrally supported along the top of the spandrel-wall.

2. In a bridge or viaduct comprising a spandrel-wall, a concrete-steel sidewalk, centrally supported along the top of a spandrel-wall.

3. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and engaging therewith through offsets on the lower part of the sidewalk and the upper part of the wall.

4. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and engaging therewith through offsets on the lower part of the sidewalk and the upper part of the wall, and anchored thereto by bars or bolts embedded in both.

5. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and anchored thereto by means of bars or bolts embedded in a sidewalk and the wall.

6. In a bridge or viaduct, comprising a spandrel-wall and a roadway, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and provided with a downwardly-turned inner flange to form a curb.

7. In a bridge or viaduct, comprising a spandrel-wall and a roadway a concrete sidewalk provided with embedded transverse metallic bars and centrally supported along the top of the spandrel-wall.

8. In a bridge or viaduct, comprising a spandrel-wall and a roadway, a concrete sidewalk provided with embedded transverse metallic bars and centrally supported along the top of the spandrel-wall, the bars and their surrounding concrete envelop being turned down at the inner edge of the sidewalk to form a curb.

9. In a bridge or viaduct, comprising a spandrel-wall and a roadway, a concrete-steel sidewalk made in slabs and centrally supported along the top of the spandrel-wall and provided with transverse metallic bars each slab being provided with means for interlocking with the slab adjacent to it.

10. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk made in slabs and centrally supported along the top of the spandrel-wall, each slab being provided with means for interlocking with the slab adjacent to it and with the spandrel-wall.

11. In a bridge or viaduct, comprising a spandrel-wall and a roadway, a concrete-steel sidewalk made in slabs and centrally supported along the top of the spandrel-wall, each slab being provided with means for interlocking with the slab adjacent to it and with the spandrel-wall, and provided with an inner flange, to form a curb.

12. In a bridge or viaduct comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and provided with an upwardly-extended parapet.

13. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and provided with an upwardly-extended parapet consisting of slabs of concrete united to the upper surface of the sidewalk in any suitable manner.

14. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and provided with an upwardly-ex-

tending parapet consisting of slabs of concrete with means uniting them to the upper surface of the sidewalk and provided at suitable intervals with buttresses.

15. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and provided with an upwardly-extended parapet consisting of slabs of concrete in which are embedded sheets of woven-wire fabrics and provided at suitable intervals with buttresses.

16. In a bridge or viaduct, comprising a spandrel-wall, a concrete-steel sidewalk centrally supported along the top of the spandrel-wall and provided with an upwardly-extending parapet consisting of slabs of concrete anchored to the sidewalk by bolts or bars embedded in both.

Witness my hand, this 21st day of April, 1903, at the city of New York, in the county and State of New York.

WILLIAM MUESER.

Witnesses:
B. J. SMITH,
HERMAN MEYER.