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R. Z. DRAKE

BRIDGE CONSTRUCTION

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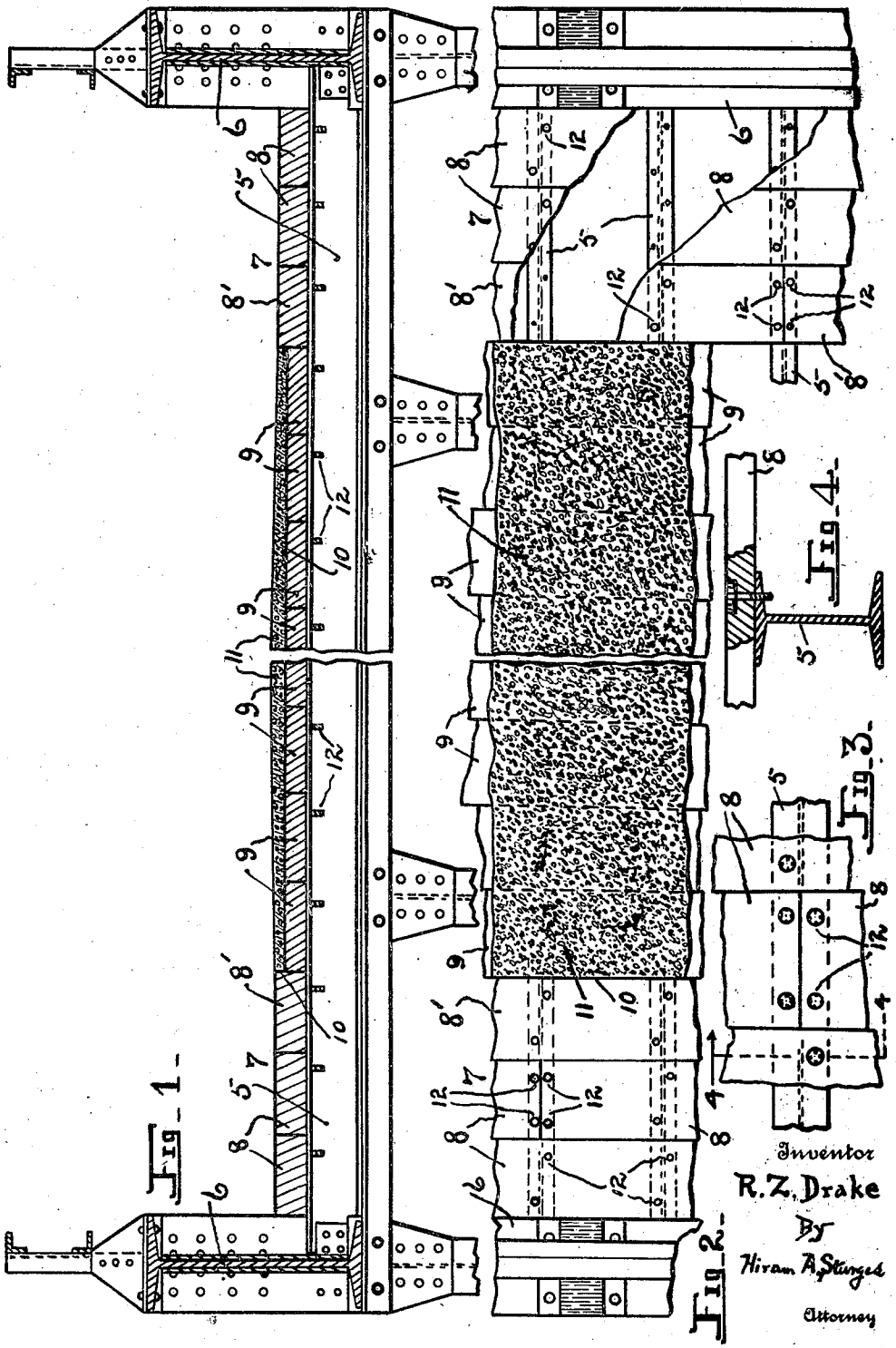


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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ROBERT Z. DRAKE, OF OMAHA, NEBRASKA.

BRIDGE CONSTRUCTION.

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To all whom it may concern:

Be it known that I, ROBERT Z. DRAKE, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Bridge Constructions, of which the following is a specification.

This invention relates to an improvement in bridges, and particularly to an improved roadway or floor for a bridge, and has for its object, broadly, to provide a floor of, comparatively, light weight and unusual durability, consisting of such parts that it may be constructed conveniently and at moderate expense.

Another object, more specific, is to provide a metallic bridge provided with a floor or roadway of such construction that it may have the advantages, in that respect, of a bridge of stone or concrete construction.

The invention includes the use of planks or similar fibrous strips of approximately uniform thickness for the side sections of the floor of a bridge and strips of lesser thickness for the middle part thereof, to form a channel between the side sections for containing asphaltum, concrete, cement or other paving material. The invention also embodies certain features found to be practical in the formation of the floor, the planks or fibrous strips being disposed end-to-end, longitudinally of the bridge, and the joists, therefore, being disposed transversely of the bridge.

With the foregoing objects in view, the invention presents a novel and useful construction, combination and arrangement of parts, as described herein and claimed, and as illustrated in the accompanying drawing, wherein,—

Fig. 1 is a broken view showing a bridge in transverse section. Fig. 2 is a broken away, plan view illustrating parts of the bridge shown in Fig. 1. Fig. 3 is an enlarged, broken detail relating to Fig. 2. Fig. 4 is a transverse section on line 4—4 of Fig. 3.

In the practical use of the invention, the floor joists 5 are disposed approximately at right-angles to the line of travel, and in the present instance they are secured at their ends to the I-beams 6, at the sides of the bridge.

Numerals 7 indicate floor-sections at the respective sides of the roadway, consisting of fibrous strips or planks 8 and 8′ disposed side-by-side and being, approximately, of uniform thickness. These side sections may have any suitable width, depending upon the proportions required for a bridge, incident to its use.

Numerals 9 indicate secondary fibrous strips or planks of approximately uniform thickness, disposed side-by-side to occupy the area between the planks 8′ of the side sections 7, the thickness of the planks 9 being less than the thickness of the planks 8′ or 8, to form a channel 10 for containing an indurate, imperforate filler or bed 11, such as concrete, cement, asphaltum or similar material used for paving.

All of the planks are secured at intervals of their length to the floor joists by suitable keepers, as by means of tap bolts 12, and the ends of the planks do not form any obstruction, since they are joined end-to-end, the abutting ends of the planks being secured firmly to the floor joists 5 by means of the tap bolts, as best shown in Figs. 2 and 3.

The channel 10 may have any suitable depth, depending upon the requirements of the bridge, and difference in the thickness of the planks mentioned, and the channel may have any suitable width to permit the passage of vehicles in opposed directions on the bed 11. However, the floor portions 7, while less durable, may be driven upon by vehicles, the planks 8′ forming no obstruction whatever since the surface of the bed 11 at its junction with the planks 8′ is disposed in the plane of the upper surface of the floor-sections 7.

It will be appreciated that the floor thus provided will be durable. As is well known, the middle part of a bridge driven upon by vehicles, if the floor is constructed of wood, readily becomes worn, and replacement involves a considerable expense, but since by use of the invention a channel is provided for containing the paving material, durability is attained. Also it will be appreciated that while the bed 11 may have a greater weight than wood or other fibrous material, it discharges the function of durability as well, practically, as a stone or concrete bridge, with the additional advantage that, comparatively, it is of light weight.

It will be seen that the bridge floor as described may be conveniently constructed. The planks should first be subjected to any

suitable process for their preservation, as an immersion in or coating of creosote or tar, and after they have been secured to the transversely disposed joists, as mentioned, a channel of suitable width and depth will be formed extending longitudinally of the bridge. An imperforate bed is then formed in the channel simply by depositing the plastic or semi-plastic material therein, which soon becomes hardened and will be stationary with the planks 9, ready for use, each of the side walls of the bed abutting upon a wall of the planks 8′ of a side section, and the upper surfaces of these abutting parts being disposed in the same horizontal plane.

While it is possible that the channel could be formed by other means than described, it would not be practical and would be prohibitive on account of the great expense. In order that the side walls of the channel, which abut upon and support the sides of the bed, may be formed in a practical manner and conveniently, the planks should be disposed longitudinally of the bridge, and it therefore follows that it would be necessary that the floor joists be disposed transversely of the bridge.

It should also be stated that floor planks disposed longitudinally of a bridge sustain stresses to better advantage and will have a lesser degree of vibration than when disposed transversely.

While I have shown and prefer metallic construction for bridges, including metallic floor joists and tap-bolts threaded in the joists, it will be understood that I do not limit myself in these respects, nor to form, size, proportion of the parts or minor details, changes in these matters being determined by the scope of the invention as claimed.

I claim as my invention,—

1. In a bridge floor, the combination with floor joists disposed transversely of the bridge, of fibrous strips disposed end-to-end longitudinally of the bridge and secured to the floor josts to form opposed side sections, secondary fibrous strips disposed longitudinally of the bridge between the side sections and secured to the floor joists, said secondary strips being of lesser thickness than the thickness of the first named strips to form a channel between the side sections, and an imperforate, indurate bed in said channel.

2. In a bridge floor, sections extending longitudinally of the bridge at its respective sides, each section including fibrous strips, secondary fibrous strips of lesser thickness than the thickness of the first named strips disposed between the sections to form a channel, and a bed having a greater degree of hardness than that of the fibrous strips and disposed to substantially fill said channel.

3. In a bridge floor, the combination with floor joists disposed transversely of the bridge, of fibrous strips disposed end-to-end longitudinally of the bridge and secured to the floor joists to form opposed side sections, secondary fibrous strips disposed longitudinally of the bridge between the side sections and secured to the floor joists, said secondary strips being of lesser thickness than the thickness of the first named strips to form a channel between the side sections, and an indurate bed in the channel having each of its side walls abutting upon a wall of a side section, the upper surface of the bed and the upper surface of the side sections at their abutting walls being disposed in the same horizontal plane.

In testimony whereof, I have affixed my signature in presence of two witnesses.

ROBERT Z. DRAKE.

Witnesses:
GRACE V. GREEN,
ROY W. ANDERSON.