O. E. BRAY.

PLANKING FOR BRIDGES, ETC.

APPLICATION FILED SEPT. 9, 1920.

1,415,304.

Patented May 9, 1922.

3 SHEETS—SHEET 1.

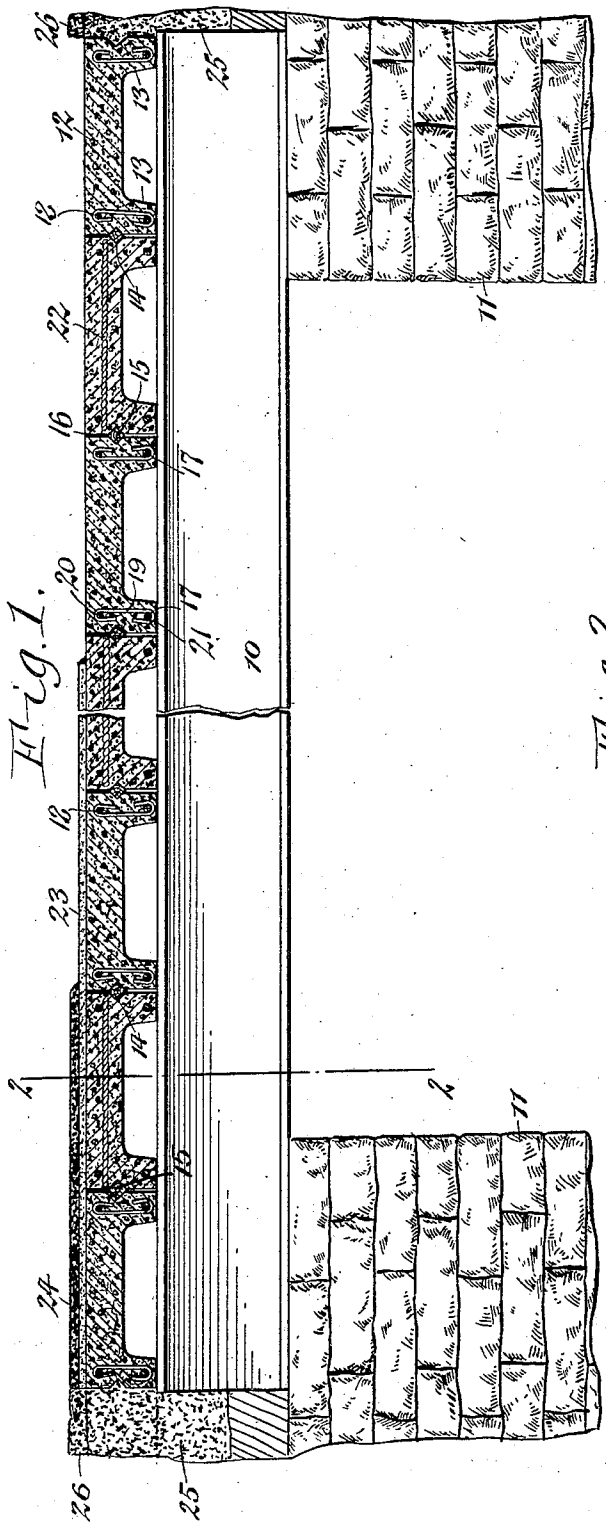


Fig. 1.

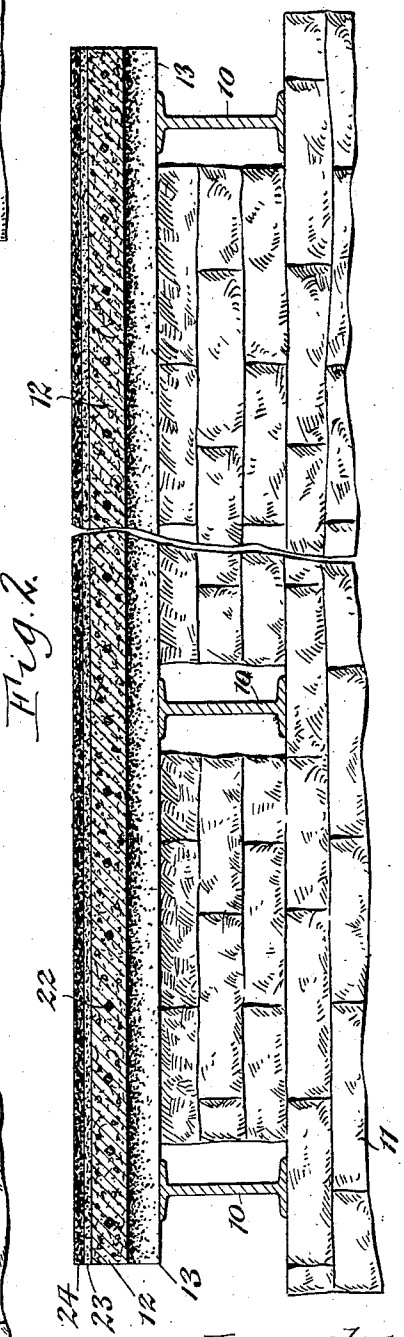


Fig. 2.

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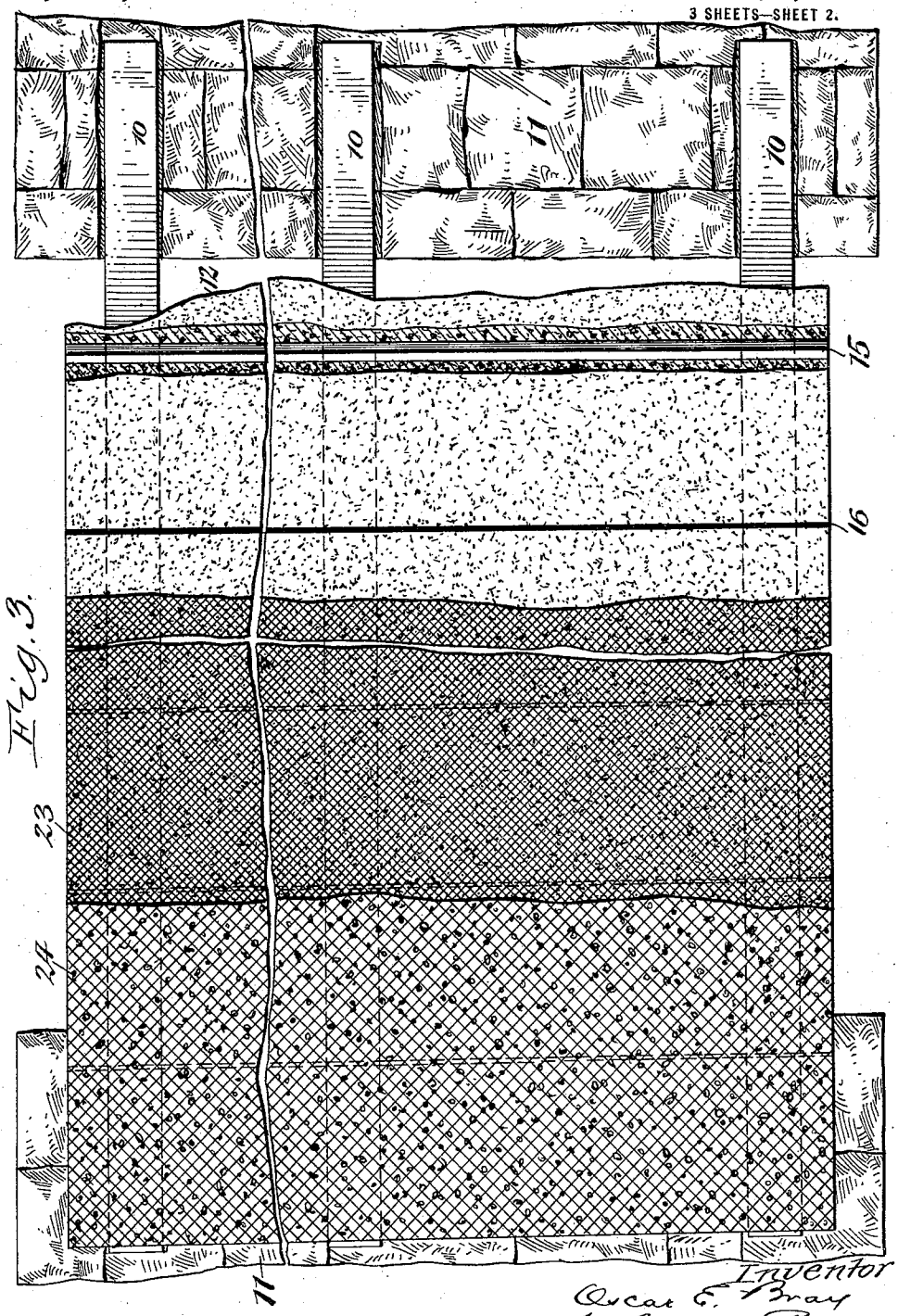


Fig. 3.

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3 SHEETS—SHEET 3.

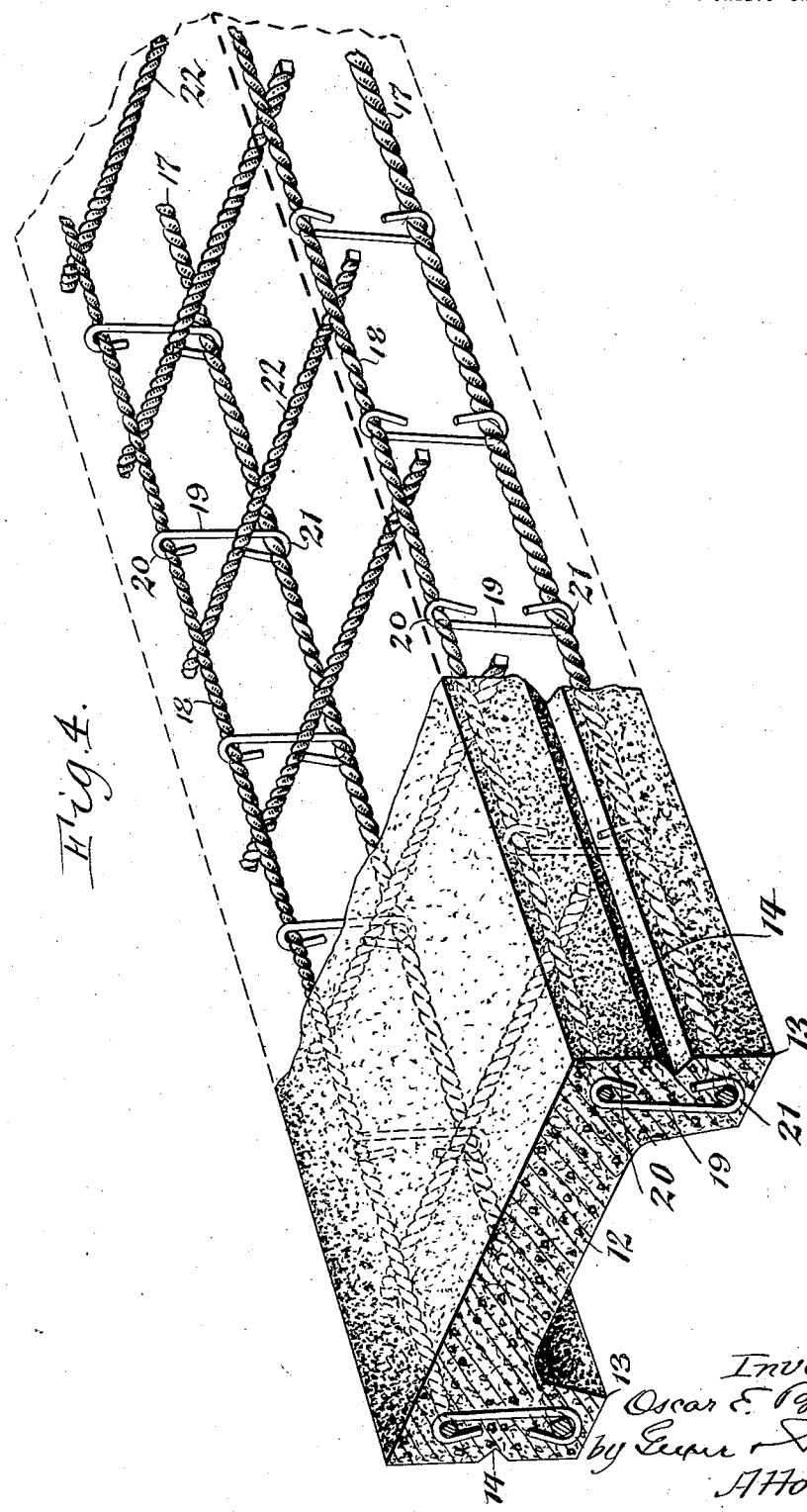


Fig. 4.

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UNITED STATES PATENT OFFICE.

OSCAR E. BRAY, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF TO GEORGE C. BROADBOOKS, OF ATTICA, NEW YORK.

PLANKING FOR BRIDGES, ETC.

1,415,304. Specification of Letters Patent. **Patented May 9, 1922.**

Application filed September 9, 1920. Serial No. 409,186.

To all whom it may concern:

Be it known that I, OSCAR E. BRAY, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Planking for Bridges, Etc., of which the following is a specification.

This invention relates to a construction which is more particularly designed for use as a floor for bridges although the same may also be used to advantage in roofs and floors or ceilings of buidlings.

The object of this invention is to produce a planking for the floors of bridges and other structures which is relatively low in original cost, comparatively light and strong and not liable to increase in weight after being installed by absorbing water, which is practically free from wear and thus insures low expense for maintaining the same in its most efficient condition, and which is so organized that the load upon the same is distributed over a wide area of the planking.

In the accompanying drawings:

Figure 1 is a fragmentray vertical longitudinal section of a bridge embodying my invention. Figure 2 is a cross section of the same taken on line 2—2, Fig. 1. Figure 3 is a top plan view of the same. Figure 4 is a fragmentary perspective view of a plank constructed in accordance with my improvements.

Similar characters of reference indicate corresponding parts throughout the several views.

In the drawings which show my invention embodied in a bridge, 10 represents the longitudinal beams, joists or girders which are arranged parallel and spaced suitable distances apart and form the main support of the bridge and rest at their ends on piers or foundations 11.

On top of the beams is mounted my improved flooring which comprises a plurality of planks which are arranged side by side crosswise on the beams. Each of these planks has its body made of concrete which is preferably of channel or U-shaped in cross section so as to form a horizontal web 12 and two vertical flanges or legs 13, 13 depending from the opposite longitudinal edges of the web. The joints between the planks are closed by sealing and locking means which are so constructed that the planks are practically interlocked and cause a depression of one plank to be transmitted to adjacent planks and also prevent leakage through the flooring. This is accomplished, for example, by providing each plank on the outer side of its flanges with longitudinal grooves 14 and providing a plurality of longitudinal keys or splines 15 each of which is seated firmly on its opposite sides in the grooves on the opposing surfaces of two adjacent planks. The keys are preferably constructed of wood and soaked in creosote before inserting the same between the planks to render them water proof and prevent the same from rotting and insuring a tight joint between the planks.

As an additional means of sealing the joints between the plank and preventing leakage, the upper part of each joint above the key therein may be filled, as shown at 16, with any suitable sealing medium such as pitch, tar, cement or leadite.

For the purpose of strengthening the planks the same are reinforced by metal embedded in the concrete body of the plank. This reinforcement is preferably organized as follows:

17, 17 represent two lower longitudinal reinforcing bars arranged lengthwise in the lower parts of the flanges of the concrete body, 18, 18 two upper longitudinal bars arranged in the upper part of said body at the junction between the flanges and web and immediately above and of somewhat lighter weight than the lower longitudinal bars, a plurality of hangers connecting the upper and lower longitudinal bars and embedded in the body and each consisting of an upright bar 19, an upper hook 20 engaging over one of the upper longitudinal bars and a lower hook 21 engaging under the companion lower longitudinal bar, and a plurality of horizontal transverse bars 22 arranged crosswise at suitable intervals in the web of the body and each being substantially as wide as said body and engaging its opposite ends under the upper longitudinal bars. These bars and hangers are arranged in this relative position in the mold in which the body of the plank is formed preparatory to pouring the soft concrete in the mold and enclosing the reinforcing members. The plank is by this means reinforced in a most effective manner with a minimum amount of metal which is so distributed that no part of the metal is exposed to the corrosive action

of the weather and no unnecessary weight and added to the plank, thus securing the maximum strength and economy of construction. The upper and lower longitudinal bars and the horizontal cross bars are preferably constructed of twisted steel rods and the hangers are constructed of steel wire, as shown, but these members may be otherwise constructed, if desired.

The opposite ends of the horizontal transverse rods 22 extend close to the outer vertical sides of the concrete body and are also close to and overhang the upper sides of the longitudinal grooves 14 thereof, whereby the upper sides or corners of these grooves are strengthened and not liable to be broken off or chipped during handling or transportation and permit of fitting the same properly to other planks of like construction.

Any suitable covering may be placed on top of the flooring to serve as a wearing surface for the traffic running over the same. For instance, as shown in the drawings, the covering may consist of a lover base layer or coat 23 of asphaltic pitch or cement and an upper wearing layer or coat 24 of asphaltic pitch or cement and fine gravel.

In order to hold the planks against spreading on the beams, trenches are dug in the ground at opposite ends of the beams and these are filled with abutments 25 of concrete, so that the upper surface of the same is level with the top of the planking, as shown in Fig. 1, after which the roadway above the abutments may be finished with a surfacing 26 similar to that on the planking or any other suitable manner.

I claim as my invention:

A plank having a concrete body consisting of a horizontal web and vertical flanges depending from opposite longitudinal edges of the web and each flange being provided on its outer side with a horizontal longitudinal groove, and a reinforcement for said body consisting of a plurality of transverse metal bars arranged in a longitudinal row in the web and each extending substantially the full width of said body and having its opposite ends arranged immediately above the longitudinal grooves in said flanges, two upper metal longitudinal rods arranged in the body at the corners between its web and flanges and resting on said transverse rods, a plurality of metal hangers arranged vertically at intervals in each of said flanges throughout the length thereof and each provided at its upper end with a hook engaging over one of said upper longitudinal rods and provided at its lower end with a lower hook, and a lower metal longitudinal rod arranged lengthwise in the lower part of each flange and supported by the lower hooks of the hangers in the respective flange of the body.

OSCAR E. BRAY.