Nov. 4, 1930. W. H. LAWRENCE 1,780,622

PROTECTIVE COVERING FOR BRIDGES

Filed April 18, 1927

Fig. 1

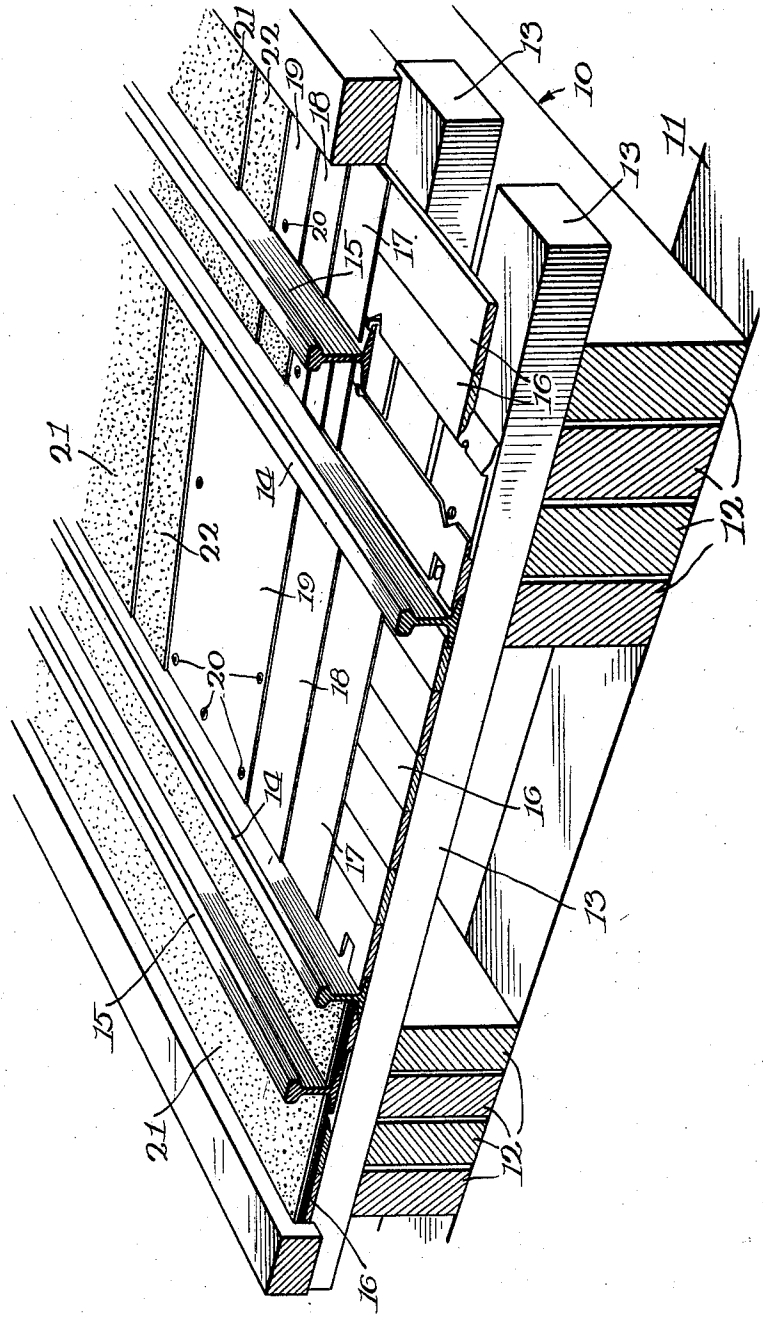
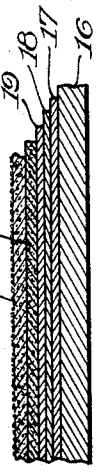


Fig. 2



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UNITED STATES PATENT OFFICE

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PROTECTIVE COVERING FOR BRIDGES

Application filed April 18, 1927. Serial No. 184,497.

This invention relates to bridges and like structures, and more particularly to protective coverings for railway bridges and the like.

The principal object of the invention is the provision of improved means for protecting the timbers of railway and other bridges from fire and the deteriorating effects of water, brine and the elements, to which these timbers are normally exposed.

Another object of the invention is the provision of a protective covering for bridges, culverts and trestles for railroads and other highways.

A still further object of the invention is the provision of new and improved means for protecting the wooden timbers of bridges, culverts, trestles and like structures from fire, oxidation and the like, that is cheap to manufacture, efficient in use, and that may be applied to the structures with a minimum amount of time, labor and expense.

Other and further objects and advantages of the invention will appear from the following description taken in connection with the accompanying drawings, in which

Fig. 1 is a perspective view of a bridge showing the invention thereon, with parts in section; and

Fig. 2 is a vertical section of a small portion of the covering indicating the position of the different layers.

The annual loss by fire of wooden bridges and trestles, especially on railroads, is considerable. The timbers of the bridges or trestles are likely to be ignited by red hot cinders, clinkers or lumps of burning fuel from the fireboxes of locomotives, or even from white hot firebricks which sometimes become loosened from the oil burner furnaces of oil burning locomotives. The temperatures of these elements range all the way from red hot cinders and clinkers at from 1200° to 1500°, to white hot fire bricks from 2500° to 3000°.

It has been proposed to employ sheet metal as a protective covering for railway bridges, but this is objectionable because the metal is soon corroded by oxidation, or if galvanized, by galvanic action between the zinc and the iron rails, or by the chemical action of brine escaping from passing refrigerator cars and the like, as well as by the action of chemicals employed in preserving the wooden timbers of the bridge.

When a hole has once developed in a sheet metal covering it rapidly expands by further rusting and also by reason of the fact that the track walker or inspector, as well as others walking over the same will often strike the edges of the opening with his feet and tear the hole, leaving the edges turned up to be further torn by other pedestrians and by vehicles passing over the bridge.

The present invention seeks to remedy these defects and provide a protective covering that will not be affected by the weather, that is fire-proof, and that is not affected by the chemicals employed in preserving the wood, or by brine or the like.

In the arrangement of the materials selected to illustrate one embodiment of the invention, which is by way of example only, the reference character 10 designates a bridge or trestle having the transversely extending members 11 and the longitudinally extending members or supports 12 on which the ties or rail supports 13 are mounted. The rails 14 and guards 15 are secured to the ties in the usual manner. The structure thus far described is the conventional railway bridge or testle, and may be constructed in any approved manner. The ties 13, as well as the remaining wooden timbers of the bridge, are usually creosoted or otherwise chemically treated to preserve the wood.

As a support for the protective covering, a wooden floor 16 is laid over the trestle between and at each side of the tracks. The boards constituting this floor are preferably creosoted or otherwise chemically treated before the floor is laid, to protect the wood against decay, as is well known in the art. Over the flooring one or more layers 17 of paper are laid to protect the layer above from the action of the wood preserving chemicals contained in the floor 16. Any suitable paper of substantially inert material such as asbestos may be employed. That shown is what is known in the trade as unsaturated asbestos paper. Any desired number of layers may be

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employed, the object being to protect the layer or layers of fireproof material from beneath. As shown, one layer 17 is employed.

Over this layer of paper one or more layers of fireproof material is laid. Any suitable material may be employed for this purpose. That shown is what is known in the trade as asbestos fireproofing felt. This felt is preferably a mixture of an asphaltic compound and asbestos fiber. Any suitable number of layers may be employed. In the drawing two layers 18 and 19 are employed. These layers of paper and fireproofing material are now secured to the floor 16 by suitable nails or fasteners 20 in the usual manner.

One or more layers of what is known in the trade as surfacing material, which is also fireproof, are now laid over the top layer of fireproofing material. This surfacing material comprises a layer of grit, as gravel, ground slate or the like with a suitable binder. Preferably this layer comprises an asphaltic compound and a layer of grit such as gravel, ground slate and the like. Any suitable number of surfacing layers may be used, but preferably a plurality of these layers are employed. In practice, from two to three layers give satisfactory results. In the drawings, by way of example only, two layers 21 and 22 are shown.

These surfacing layers may be laid in any suitable manner, but the following method of applying them has been found to be very satisfactory.

The asphaltic compound after being melted is poured over the top layer of fireproofing layer to a depth of, say one eighth of an inch. When applied to the layer of fireproofing material it may be considered as forming, and in fact does form, a part of that layer. A layer of grit, as gravel, to a depth of say from ¼″ to ½″ is then spread over the layer of road surfacing material to embed the same in the asphaltic compound, and rolled down. The loose gravel is then swept off and the next layer applied in the same manner. This process is repeated for each additional layer except that the loose gravel is not removed from the top layer.

It will thus be apparent that a protective covering for bridges or trestles is provided that will not be affected by the preserving chemicals in the wooden structure supporting the covering, and that will not only efficiently protect the wooden structure from fire but will also protect it from rain, sleet, snow and the like, as well as providing a suitable walking surface. The covering is also held firmly in position by fastening means that are thoroughly protected by the surfacing material.

It is thought from the foregoing taken in connection with the accompanying drawings that the construction and operation of my device will be apparent to those skilled in the art, and that various changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. In combination, a supporting structure, wooden ties supported by said structure, a flooring on said ties, said structures and ties being impregnated with a chemical to prevent decay, a layer of unsaturated asbestos paper over said floor, a layer of felt impregnated with a bituminous compound secured over said layer of paper, a layer of bituminous material on said felt, and a layer of gritty substance over said layer of bituminous material and embedded in the upper surface thereof.

2. In combination, a bridge structure comprising wooden members treated with a preservative chemical to prevent decay of said members, forming a floor for said structure, a sheet of fibrous material not affected by said chemical over said structure in contact with said members, a plurality of layers of asbestos felt impregnated with an asphaltic compound on said sheet, a layer of asphaltic material on each layer of felt, and a layer of grit embedded in each layer of asphalt.

3. A weather and fire protective covering for railway bridges having their wooden members impregnated with a chemical for preventing decay of said members, comprising a sheet of asbestos paper laid over said members, a plurality of layers of felt impregnated with bituminous material laid over said sheet, a layer of bituminous material over each layer of felt, and a layer of granules imbedded in each of said last-named layers, all loose granules being removed except from the uppermost layer.

In testimony whereof I affix my signature.

WILLIAM H. LAWRENCE.

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