W. R. ROOF.

PROTECTIVE COVERING FOR WATERPROOFING COATING ON CONCRETE.

APPLICATION FILED SEPT. 12, 1921.

1,407,772. Patented Feb. 28, 1922.

FIG. 1

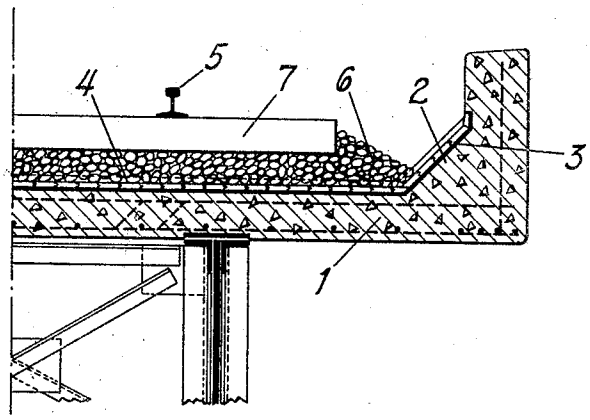


FIG. 2

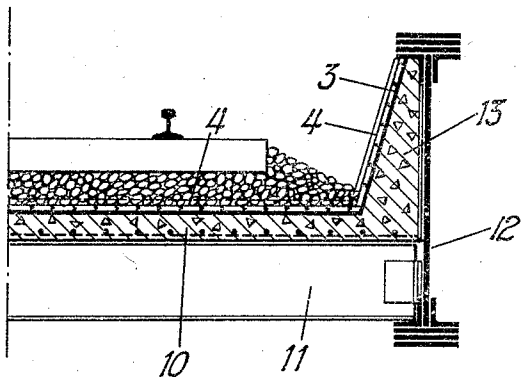


FIG. 3

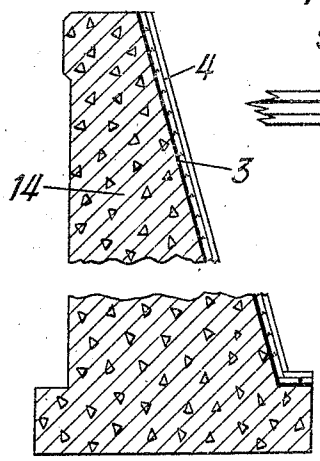


FIG. 5

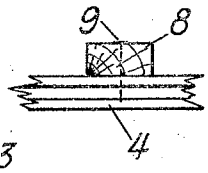
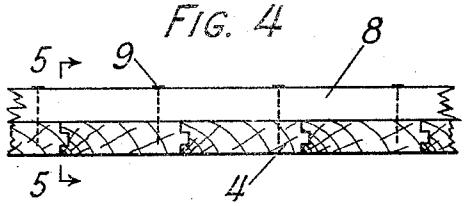


FIG. 4



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PROTECTIVE COVERING FOR WATERPROOFING COATING ON CONCRETE.

1,407,772. Specification of Letters Patent. Patented Feb. 28, 1922.

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To all whom it may concern:

Be it known that I, WALTER R. ROOF, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Protective Coverings for Waterproofing Coating on Concrete, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

In the construction of concrete bridges, retaining walls, and the like, it is customary to coat the concrete surfaces which are in contact with ballast or fill with a waterproof material to prevent the entrance of moisture. Then, in order to prevent the ballast or fill from cutting into the waterproofing and perforating it, it is customary to cover the latter with a suitable shield or armor. The principal materials used for protective coverings or armor are brick laid in cement mortar or served with hot pitch, a plain or reinforced cement mortar, plain or reinforced concrete, and bituminous mastic. It will be seen that protective coverings made of the materials just mentioned become, when set, substantially monolithic slabs apt to crack in service and, because of their comparatively unyielding nature, often causing too great a concentration of pressure at single points or lines in the waterproofing coating. Furthermore, in order to secure the requisite mechanical strength, particularly in bridge work where the load imposed by the passing rolling stock may at times be very great, it is necessary to make protective coverings of the materials heretofore mentioned quite thick and adding to the vertical height between the bottom of the arch and the rails. This is quite a serious matter in track elevation work where the clearance above roads passing underneath the bridges should be as great as possible and the elevation of the rails be kept as low as possible to reduce the amount of fill between bridges to a minimum; while at the same time the depth of the ballast across the bridge should not be reduced below a certain minimum.

My invention has for its object to produce a simple and novel protective covering for waterproof concrete which shall be comparatively cheap in initial cost, which will effectively protect the waterproofing from being damaged by the overlying material, which will be sufficiently yieldable not to crack or break while at the same time having capacity to distribute pressures localized thereon, and which may be made much thinner than coverings composed of any of the materials heretofore mentioned.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a cross section through a portion of a deck plate girder bridge embodying my invention;

Fig. 2 is a view similar to Fig. 1, showing a through plate girder bridge or span;

Fig. 3 is a vertical cross section through a retaining wall in which the waterproofing is protected in accordance with my invention;

Fig. 4 is a cross section through a fragment of the protective covering, on a larger scale than employed in Figs. 1, 2 and 3; and

Fig. 5 is a section taken approximately on line 5—5 of Fig. 4.

Referring to Fig. 1 of the drawing, 1 represents a concrete bridge floor the upper surface of which slopes upwardly at the sides as indicated at 2. The floor itself, and the slopes are covered with a layer 3 of any usual or suitable waterproofing material. In accordance with my invention I cover the entire area coated with waterproofing material by means of matched wooden boards 4, that is boards joined by tongues and grooves. The individual boards are preferably laid parallel with the overlying track, of which one rail 5 is shown. The boards are preferably treated with creosote or other preservative before being placed in position, so that the life thereof will be indefinitely prolonged. On top of the boards is placed the usual ballast 6 in which are set the railroad ties 7 on which the rails rest. The boards are preferably tied together so as to be held against accidental displacement. This may conveniently be accomplished by laying cleats 8 crosswise of the boards and fastening them to the boards by means of nails 9, as indicated in Figs. 4 and 5, or otherwise.

It will be seen that the wooden protective

covering may be made thin as compared with those made out of the other materials to which I have heretofore referred, that the wood, while possessing the necessary stiffness to protect the waterproof covering is at the same time more or less yieldable. It will also be seen that the inherent elasticity of the wood permits it to expand and contract to adapt or adjust itself to the varying conditions which may be encountered, without being crushed beyond the elastic limit or cracking.

In the arrangement shown in Fig. 2, the bridge is of the through girder type. The concrete floor 10 is supported upon cross-beams 11 which are in turn supported by the deep longitudinal girder 12. The concrete is continued upwardly at each side, as indicated at 13, along the webs of the girders. Both the floor and the side walls of concrete are coated with a waterproofing material 3 which is in turn covered by my improved protective covering 4 of boards.

In Fig. 3 I have shown a retaining wall 14 of concrete. The sloping face against which the fill rests is coated with a waterproofing layer 3 which is in turn covered with a protecting layer 4 of boards similar to that heretofore described. In this instance, as in the case of the bridges, the wooden protective covering serves as a strong, tough, durable shield or armor for the waterproofing while it is at the same time to a degree yieldable and flexible so as to permit it to remain intact under various conditions which would cause ordinary protective coverings to deteriorate to such an extent as to prevent them from thereafter properly performing their intended functions.

While I have illustrated and described with particularity only a single form of my invention and a few uses to which it may advantageously be put, I do not desire to be limited to the exact structural details thus illustrated and described, or to such specific uses, but intend covering all forms and arrangements which come within the terms employed in the definitions of my invention constituting the appended claims.

I claim:

1. In combination, a concrete wall, a waterproofing coating on said wall, and a wooden shield completely covering said waterproofing coating.

2. In combination, a concrete wall, a waterproofing coating on said wall, and a protective covering for said coating made of interlocked boards.

3. In combination, a concrete wall, a waterproofing coating on said wall, and a protective covering for said coating made of waterproofed wooden boards laid side by side.

4. In combination, a concrete structure having a transverse upwardly-directed supporting face, a waterproofing coating on said face, a protective covering of wooden boards extending entirely over said waterproofing coating, and a bed of loose material resting on said boards.

5. In combination, a concrete wall, a waterproofing coating on said wall and a shield for said coating comprising a series of boards laid side by side and a cleat extending across and fastened to said boards.

In testimony whereof, I sign this specification.

WALTER R. ROOF.