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## (54) Anti-vibration resilient insulation material for ballast supported railroad tracks.

(57) The present invention relates to an anti-vibration resilient insulation material for ballast supported railroad tracks, which comprises a resiliently yielding material layer applied on a rigid supporting construction and a load distributing layer arranged between the resiliently yielding layer and a ballast material, which load distributing layer is suitable for evenly distributing the load of the overlaying ballast material.

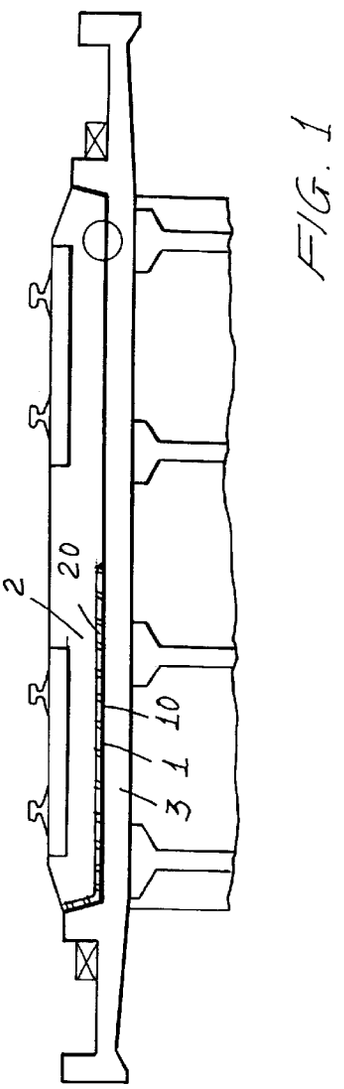


FIG. 1

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## BACKGROUND OF THE INVENTION

The present invention relates to an anti-vibration resilient insulation material for ballast supported railroad tracks.

As is known, a very important problem in the building field is that of preventing the so-called environment pollution.

This problem is at present very felt in the railroad track field, in particular for those portions of the tracks which are arranged on ballast material, in turn supported by a rigid supporting arrangement such as, for example, the floor of a viaduct or any other rigid supporting construction.

In the railroad track field, in particular, the requiremenf of properly dampening the vibrations due to travelling trains is very felt as the trains travel near built-up areas to which the train vibrations are directly transmitted through the soil or the railroad track supporting constructions.

These vibrations, in particular, subject the buildings to mechanical and acoustical stresses contributing to the above mentioned problem of the acoustic pollution.

At present there are not available means and materials for properly solving the above mentioned problem and, moreover, all the made efforts have been found to be very complex and expensive without providing any useful result.

## SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to solve the above mentioned problem, by providing an anti-vibration resilient insulation material or element for ballast supported railroad tracks which is very effective in dampening the vibrations transmitted by a moving train to the railroad track supporting construction, mainly in the frequency range from 20 to 150 Hz.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such an anti-vibration resilient material which can be installed in a very quick and easy way and which, moreover, is provided with very effective anti-wear properties.

Another object of the present invention is to provide such an anti-vibration resilient insulation material which is very reliable and safe in operation.

Yet another object of the present invention is to provide such an anti-vibration resilient insulation material which can be easily made starting from easily available elements and which, moreover, is very competitive from a mere economic standpoint.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an anti-vibration resilient insulation material for ballast supported railroad tracks, characterized in that said material comprises a resiliently yielding material layer adapted to be applied on a rigid supporting construction and a load distributing layer, arranged between said resiliently yielding material layer and a ballast material, said loading distributing layer being adapted to evenly transmit and distribute the load stress from the overlaying ballast material.

## BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will become more apparent from the following detailed disclosure of a preferred, though not exclusive, embodiment of an anti-vibration resilient insulation material for ballast supported railroad tracks, which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic cross-sectional view illustrating a railroad track; and

Figure 2 shows, on an enlarged scale, a detail of a possible procedure for applying the resilienf insulation material according to the present invention.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the anti-vibration resilient insulation material for ballast supported railroad tracks according to the invention comprises a resiliently yielding material layer, of an elastomeric type, generally indicated at the reference number 1.

The embodiment being disclosed refers to a case in which one has to insulate railroad tracks on ballast material supported on a rigid supporting construction, such as the floor of a viaduct or any other rigid construction.

For reducing the vibrations transmitted to the ballast supporting construction, and accordingly to the soil, it is necessary to make the railroad track as yielding as possible.

To this end, there is applied the above mentioned elastomeric material layer 1 which, more specifically, is arranged between the ballast material 2 and the rigid supporting seat or construction 3.

The resiliently yielding layer 1, to provide the required vibration dampening characteristics, is generally provided with low surface stiffness values and, accordingly, will comprise low density materials, and, in particular, a deformable material sensitive to "punching" effects which could be exerted by the ballast material if the latter would be arranged in a direct contact relationship therewith.

In order to prevent such a possible damaging effect from occurring, there is advantageously provided a load or stress distribution layer, indicated at

the reference number 10, which preferably comprises a sand layer and which will operate for evenly transmitting and distributing the load stresses from the overlaying ballast material, so as to properly protect the resiliently yielding material layer from the ballast load.

In order to prevent ballast material from passing though the sand layer, there is provided a punching resistant material layer 20 which is arranged between the ballast material and sand layer.

Thus, a dampening arrangement is obtained which will provide an even distribution of the overlaying load due to the ballast, without generating through the "carpet" localized deformations which would change the stiffness values, calculated as optimal, in addition to damaging the layer itself, as mentioned.

With the disclosed arrangement, the ballast load will be efficiently distributed and, in the meanwhile, the vibration will be perfectly dampened.

From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of whiwh will come within the spirit and scope of the appended Claims.

## Claims

1. An anti-vibration resilient insulation material for ballast supported railroad tracks, characterized in that said material comprises a resiliently yielding material layer adapted to be applied on a rigid supporting construction and a load distributing layer, arranged between said resiliently yielding material layer and a ballast material, said loading distributing layer being adapted to evenly transmit and distribute the load stress from the overlaying ballast material.

2. An anti-vibration resilient insulation material according to Claim 1, characterized in that said insulation material comprises a punching resistant material layer arranged between said load distributing layer and said ballast material.

3. An anti-vibration resilient insulation material according to Claims 1 and 2, characterized in that said resiliently yielding material layer comprises an elastomeric material having low stiffness values and a low density.

4. An anti-vibration resilient insulation material according to one or more of the preceding claims, characterized in that said load distributing layer comprises a sand layer.

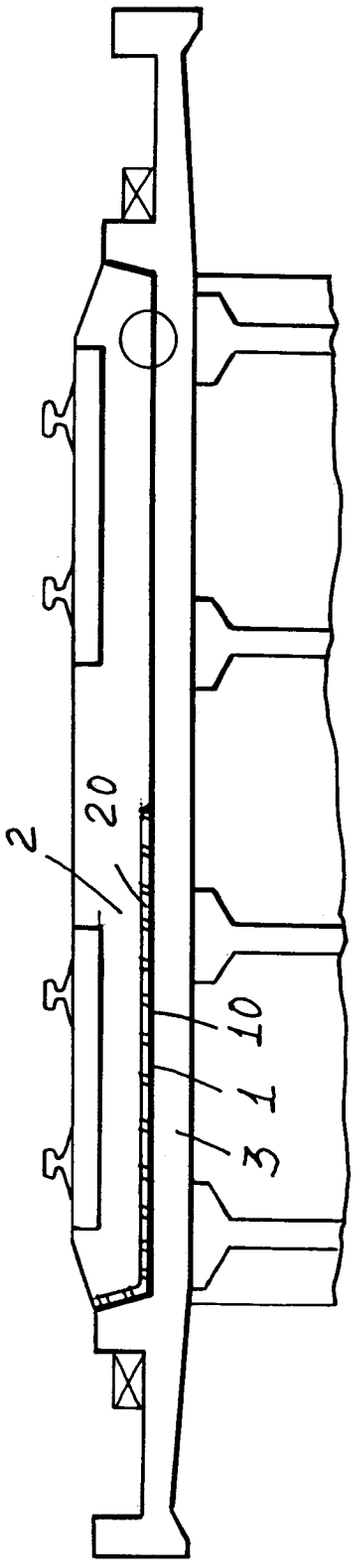


FIG. 1

FIG. 2